

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 1: Protection of the territory and water resources

1. Description of the component

Summary box

Policy area/domain: Protection of the territory and water resources

Objective:

The safety of the territory, understood as the availability of water resources, the elimination of soil, water and air pollution and the mitigation of hydraulic and hydrogeological risk, is a fundamental aspect not only for protecting the health of citizens, but also for attracting businesses, investors and tourism.

The objectives of this Action (“Component”) are as follows:

- 1) To strengthen the forecasting capacity of the effects of climate change;
- 2) To prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory;
- 3) To safeguard the quality of the air and the biodiversity of the territory through the protection of green and marine areas and soil;
- 4) To ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters.

Therefore, this Action contributes significantly to the green transition by promoting a more efficient and sustainable use of water resources and prevention actions against the risks associated with climate change. Great attention is also paid to the digitalization of processes, with particular reference to the digital management of water resources and the efficiency of the networks, to be transformed into a “smart network”.

Summary box

Reforms and/or investments:

Objective 1. To strengthen the forecasting capacity of the effects of climate change

Investment 1.1. Implementation of an advanced and integrated monitoring and forecasting system

Objective 2. To prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory

Investment 2.1. Measures for flood risk management and hydrogeological risk reduction

Investment 2.2. Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities

Reform 2.1. Simplification and acceleration of the procedures for implementing interventions against hydrogeological instability

Objective 3. To safeguard the quality of the air and the biodiversity of the territory through the protection of green and marine areas and soil

Investment 3.1: Protection and enhancement of urban and peri-urban forests

Investment 3.2: Digitization of national parks

3.2.a: Nature conservation - monitoring of pressures and threats on species and habitats and climate change

3.2.b: Digital services to visitors to national parks and marine protected areas

3.2.c: Administrative simplification - Digitisation and simplification of procedures for services provided by Parks and Marine Protected Areas

Investment 3.3: Re-naturification of Po area

Investment 3.4. Remediation of “orphan-sites soil”

Investment 3.5: Restoration and protection of the seabed and marine habitats

Reform 3.1. Adoption of national programs on air pollution control

Objective 4. To ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters

Investment 4.1. Investments in primary water infrastructures for the security of water supply

Investment 4.2. Reduction of losses in water distribution networks, including digitization and monitoring of networks

Investment 4.3. Investments in the resilience of the irrigation agrosystem for a better management of water resources

Investment 4.4. Investments in sewerage and purification

Reform 4.1. Simplification of legislation and strengthening of governance for the implementation of investments in the water supply infrastructures

Reform 4.2. Measures to ensure full managerial capacities for integrated water services_

Estimated cost overall: 15,06 billion, requested under RRF

2. Main challenges and objectives

The Action represents a clear and effective response to the priority challenges identified for Italy in the Council Recommendation of 20 July 2020 on “the 2020 National Reform Programme of Italy and delivering a Council opinion on the 2020 Stability Programme of Italy” (published in the Office Journal of the European Union n. 2020/C 282/12). In the aforementioned document, the Council of the European Union highlighted, among other things, that Italy is very vulnerable to extreme meteorological phenomena and hydrogeological catastrophes, and that infrastructural deficits in water management generate an environmental and health impact that entails considerable costs and loss of income for the Italian economy.

Overall, the Action is coherent with the priorities of the European Green Deal, in particular with the Climate Action and the European Biodiversity Strategy 2030. The Action is also coherent with the new EU Climate Adaptation Strategy. Through the national planning process, its coherence and complementarity will be ensured with the policy objective "A greener Europe" of the cohesion policy 2021 - 2027 (specific objectives b.4 "promoting adaptation to climate change, risk prevention and resilience to disasters" and b.5 "Promoting sustainable water management").

The investments and reforms proposed in the Component are fully in line with the priorities established in the national investment strategies and plans, consistent with the European framework defined as a priority by the Flood Risk Directive (2007/60 / EC) and the main directives in the integrated water sector, such as the Water Framework Directive (2000/60 / EC), the Drinking Water Directive (1998/83 / EC) and the Urban Waste Water Treatment Directive (1991/271 / EC).

In particular, investments in water resources are defined in the "National plan of interventions in the water sector", currently divided into a "aqueducts" section, on the initiative of the Regulatory Authority for Energy, Networks and the Environment (ARERA) and the Ministry of Infrastructure and Transport, and in a "invasi" section, on the initiative of the Ministry of Infrastructure and Transport (Directorate General for Dams and Water and Electricity Infrastructures).

Investments in purification are instead defined in the “Plan for the collection and purification of wastewater and overcoming EU infringement procedures” of the Ministry of the Environment and Protection of the Territory and the Sea (formerly MATTM, now MiTE).

Furthermore, at the local level, there are the "Hydrographic District Plans" for the various uses of water resources (irrigation, industrial, civil, electricity) and the "Area Plans" for the Integrated Water Service, which define the priorities for intervention and investments. in water, irrigation and purification infrastructures in the various hydrographic districts and territorial areas.

With specific reference to the issue of the integrated water service tariff, since 2012 the tariffs have been regulated by the Regulatory Authority for Energy, Networks and the Environment (ARERA) as a national regulator in line with the EU principles of cost coverage and the "polluter pays principle". With Resolution 580 of 27 December 2019, ARERA approved the Method for the 2020-2023 tariffs, a regulatory scheme which, in full consistency with the European regulatory framework, intends to bring up to date those who are behind in terms of

national standards and ensure the objectives of efficiency in operating and management costs, as well as greater awareness of citizens regarding their habits.¹

Finally, investments for the reduction of hydrogeological risk are fully in line with the priorities established by the National Strategy for mitigation and adaptation to climate change, the National Strategy for the protection of forest heritage and the development of its supply chains, as well as the "National Plan for the mitigation of hydrogeological risk, the restoration and protection of the environmental resource" (so-called *Proteggitalia*), referred to in the DPCM of 20 February 2019. The latter Plan pursues the formation of a unitary framework of needs and is structured around different areas and intervention measures (emergency measures, prevention measures, maintenance and restoration measures, as well as simplification and governance strengthening measures).

The measures of the Component are therefore defined within a broader and more general framework to ensure the complementarity of the various programs and full synergy with other European and national funds. In this regard, it is planned to integrate and strengthen the investments envisaged in the PNRR with:

- EAFRD resources (1 billion euro) for sustainable forest management actions, with particular reference to the prevention of forest fires and the restoration of areas affected by disasters;
- REACT-EU resources for the reduction of losses in the water distribution network (313 million euros);
- Ordinary national resources, as provided in particular by the latest Budget Law, for interventions to combat hydrogeological instability (160 million euros) and for the resilience and enhancement of the territory in the municipalities (600 million);

a) Main challenges

Significant negative impact of hydrogeological instability on the population and on the economic and productive fabric of Italy

- According to the data collected by the Higher Institute for Environmental Protection and Research (ISPRA) and reported in the Report on hydrogeological instability in Italy (2018 edition), 7,275 municipalities (91% of the total) are at risk from landslides and / or floods; 16.6% of the national territory is classified as particularly dangerous; 1.28 million inhabitants are at risk of landslides and over 6 million inhabitants at risk of floods. Only with reference to the landslide phenomenon, major events (those that caused deaths, injuries, evacuees and damage to buildings, cultural heritage and infrastructures) number a few hundred a year and this number is constantly rising: 70 events in 2011, 85 in 2012, 112 in 2013, 211 in 2014, 311 in 2015, 146 in 2016, and 172 events in 2017.
- There are huge costs for the restoration from damages and the reconstruction of the territories affected by emergency events: only in 2018, with the Legislative Decree 119/2018 (tax decree) and the law 145/2018 (budget 2019), more than 3.1 billion EUR were allocated for the

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In the context of water tariffs for agricultural use, there are regional regulations to quantify water uses for irrigation (based on the guidelines issued by MIPAAF with DM 31/07/2015), as well as a database (Webgis SIGRIAN) to quantify collective and individual water uses (and allow monitoring of illegal abstractions).

mitigation of hydrogeological risk in areas where disasters had occurred and a state of emergency had been declared.

The amounts assigned to the Fund for National Emergencies (FEN) from 2014 to 2021 to address hydrogeological risk amount to 1.7 billion, against a much higher amount requested by the Regions.

Delays in the implementation of hydrogeological risk reduction projects

- The project selection procedure and the method of transferring financial resources is complex and lengthy, and the awarding by tender, often conducted by small local authorities, has led to delays in the time required for carrying out the works. Added to this is the limited number of projects that can be set up, which the establishment of planning funds has only partially overcome.
- The identification of extraordinary commissioners to address issues of hydrogeological instability has signalled the beginning of an improvement in the overall spending capacity. However, not being equipped with adequate technical support structures, often for the performance of the contracting authority functions, and sometimes also for the verification / approval of projects, the Commissioners rely on local authorities, whose weakness constitutes a bottleneck for the progress of procedures.
- Also with reference to the activities of residual risk reduction and restoration of damage following a calamitous event, in most cases the local administrations are identified as implementing subjects. They indicate to the person responsible for the implementation of the measures (Delegated Commissioner/Region/Autonomous Province) the interventions to be implemented and manage their implementation. The task of the person responsible is to identify the priority interventions by coordinating the activities within the territory and this planning often requires numerous discussions and refinements.

Fragmented and inefficient management of water resources, characterized by high losses and incomplete systems

- Lack of strong public governance at the basin level to ensure integrated management of water resources - for civil, irrigation and industrial use - and of solid wholesale managers from a technical and financial point of view.
- Lack of extraordinary maintenance interventions and the need to complete and upgrade primary water supply systems, in order to increase the efficiency and resilience of water infrastructures and water schemes for potable and/or irrigation use.
- Fragmentation of the managers in the Integrated Water Service (there are 290, more than 3 for the Optimal Territorial Area) and poor effectiveness and industrial capacity of the subjects implementing investments in the water sector in the South.
- Lack of measurement and knowledge about the effective water volume used in agricultural sector, both for collective irrigation by Local Agencies for Water Management - LAWM (the irrigation and reclamation bodies) and for self-supply.
- High level of water resource losses: in distribution for civil uses, the average loss is 41% (51% in the South) and causes rationing in periods of drought. Even in irrigation use, the losses are very high and the possibilities for improving efficiency are significant. "Intelligent" extraordinary maintenance is therefore required, using digital tools and pressure regulation in order to efficiently reduce leaks.

Sewerage and purification not in line with Community Directives, especially in the South

- 4 infringement procedures have been opened by the EU against Italy, for more than 900 agglomerations which do not comply with the requirements of Directive 91/271/EEC. They are concentrated in Sicily (255 cases), Calabria (190), Campania (104), as well as in Lombardy (147 cases).²
- There are delays in spending the funds available for the Integrated Water Service (SII) in the South. The data from the Department for Cohesion Policies and the Agency for Territorial Cohesion show that funds and contributions (from the EU) are available for the Integrated Water Service - ESI - and national - FSC funds), but that the spending capacity is rather limited³. Currently, around EUR 4 per capita per year vs. EUR 40 per capita per year nationwide.

Loss of biodiversity and ecosystem services

- In order to improve the effectiveness and efficiency of the system of national protected areas responsible for safeguarding the most at-risk treasure chests of the country's biodiversity and ecosystem services, action is taken through a digital infrastructure of management tools and services to citizens and visitors. It is recalled that the loss of biodiversity reduces agricultural yields and fish catches, increases economic losses due to floods and other disasters, and deprives us of potential new sources of medicines. Through digitalisation, the managing bodies of protected areas will be able to increase the accuracy and timeliness of their actions to prevent threats from climate change and, at the same time, ensure the conditions for the growth of a nature-based economy that ensures territorial protection and sustainability of social and economic dynamics

Lack of digital, smart and organic management of information and monitoring systems

- Climate change and short-sighted planning have made our territory, already very fragile, subject to increasing risks and problems that affect the lives of citizens and that now require to impose a careful management of the territory to avoid that resources that today we consider abundant become rare in the near future. In order to improve the effectiveness and efficiency of investments in land and water infrastructures and in the protection of the territory, it is necessary to have: (i) integrated surveillance/monitoring system to deploy both preventive measures, targeted interventions to optimize the use of resources and emergency management interventions; (ii) monitoring of water networks to detect malfunctions and reduce waste; (iii) monitoring of irrigation uses of water resources both on collective networks and for private uses (iv) monitoring of water infrastructures for the prediction of their useful life and the planning / verification of maintenance interventions; (v) monitoring of Waste water treatment plants (WWTPs) with potential for irrigation reuse.

Contaminated soils and “orphan sites”

² Since May 2018, Italy has been ordered to pay 30 million euros for each six-month delay in bringing the over 70 agglomerations over 15,000 equivalent inhabitants without adequate sewerage systems and purifiers into compliance with the law.

³ For the 2007-2013 and 2014-2020 programming cycles, the total amount of public resources available is € 10.3 billion. Of these, about 83% is destined for the territories of the South and the Islands, 12% to the North and 3% to Central Italy. The area of the South and the Islands is experiencing significant delays: the rate of completion of the interventions in July 2019 was "only" at 18%, for an amount of 760 million euros of expenditure, while 22% of the projects, corresponding to 1,464 million euros in loans, has not yet started.

In Italy, the total surface of contaminated sites is (ha) 18.026 and the surface of sites likely contaminated (still under assessment) is (ha) 14.185.

Within these areas, there are a number of contaminated sites where the polluter cannot be identified and the site owner is not liable anymore and therefore the polluter pays principle cannot be fully applied. Those sites, referred as “orphan sites”, are been defined from the legal point of view, with the provisions of the Ministerial Decree n.269 of 29th December 2020.

Despite the lack of a specific estimation of the orphan sites, there is clear evidence that the problem affects a lot of municipalities and constitutes a risk for the population, the environment, and indirectly for the economic growth of the concerned territories and the neighbouring industrial areas.

b) Objectives

- 1) To strengthen the forecasting capacity of the effects of climate change
 - Develop a future-proofed and integrated surveillance/monitoring system to deploy both preventive measures (planned maintenance of the territory and maintenance/ upgrades of infrastructures), targeted interventions to optimize the use of resources and emergency management.
- 2) To prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory;
 - Mitigate the risks related to hydrogeological instability by combining structural and non-structural measures, in order to reduce the damage caused by the increasingly frequent extreme weather events;
 - Increase the resilience of territories affected by calamitous events of a hydrogeological nature by improving the integration of post-event measures aimed at reducing residual risk with preventive ones. Promote the resumption of normal living and working conditions in the territories affected by flood and weather events;
 - Increase the resilience of territories in urban areas through interventions aimed at reducing their vulnerability to the negative effects of climate change and through preventive and mitigation actions aimed at favoring the enhancement and sustainable development of the territory.
- 3) To safeguard the quality of the air and the biodiversity of the territory through the protection of green and marine areas and soil
 - Introduce relevant measures for the reduction of the emissions of the air pollutants and greenhouse gas emissions;
 - Strengthen green urban and peri-urban green areas and equip national protected areas with digital tools to monitor biodiversity, prevent threats from climate change, improve quality of use and simplify permit processes
 - Contribute to the recovery of the ecological PO area, consisting of considerable diversity of environments (e.g., shores, islands, sandbars, etc.) which must be protected and restored.

- Provide large-scale interventions for the restoration and protection of the seabed and marine habitats in Italian marine waters aimed at reversing the trend towards the degradation of Mediterranean ecosystems enhancing their resilience to climate change.
 - To give the land a second use, fostering its re-entry into the real estate market, reducing the environmental impact, and promoting the circular economy. This general objective will be reached by taking actions for the identification of orphan sites, their characterization, and their remediation if necessary.
- 4) To ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters
- Improve the security of water supply by planning extraordinary maintenance, upgrading and completion of water supply systems (dams, reservoirs, diversions and supply networks), including through monitoring and control systems for identifying the main vulnerabilities. Primary water infrastructures for civil, agricultural, industrial and environmental uses must be made efficient and resilient, with a view to adapting to climate change in progress, so as to ensure the overcoming of increasingly frequent water crises and an "emergency".
 - Increase the efficiency and resilience of the irrigation agroecosystem to extreme climatic events, such as instability and drought, by investing both in infrastructural interventions and in monitoring uses (through the digitization, technological innovation of networks and data collection systems), for a better and more sustainable management of water resources and a reduction in losses.
 - Encourage the quantification and metering of water volume used in agriculture, both for collective irrigation by Local Agencies for Water Management (the irrigation and reclamation bodies) and for self-supply as a prerequisite for reaching water pricing policies based on the actual volumes for promoting an efficient use of water resources, and to reduce illegal water withdrawals in rural areas.
 - Obtain a significant reduction in the dispersion of water in the water distribution networks, also with the aid of new technologies, to favor the complete transformation of the networks into a "smart network" and increase the resilience of systems to climate change.
 - Achieve a higher quality of inland and maritime waters through investments in purification and wastewater treatment plants, which have beneficial effects on public health and the environment and allow for a reduction in infringements of Community directives;
 - Contribute to overcoming the water service divide between the South and the Center-North of the country, giving a concrete impetus to the start of industrial management in areas of the country where the integrated service has not yet been entrusted to managers able to guarantee effective implementation of interventions.

3. Description of the reforms and investments of the component

Objective 1) To strengthen the forecasting capacity of the effects of climate change

Investment 1.1: Implementation of an advanced and integrated monitoring and forecasting system

Challenges

Climate science and models clearly show how climate is already changing, and further change is unavoidable: the planet's temperature has risen by about 1.1 degrees on average since the 1880s making weather and climate extremes (e.g. heat waves, extreme rains and snow falls, winds) more frequent and severe, and additional warming will be inevitable even after cessation of emissions⁴.

Climate change and short-sighted planning have made our territory, already very fragile, and several infrastructures subject to increasing risks. Being able to monitor and predict these risks in a granular way, leveraging state of the art knowledge and technologies, is a prerequisite to optimize the resources allocation and to ensure the appropriate prevention and resiliency plans for the territory and the infrastructures.

Objectives

The objective is to develop a future-proofed and integrated surveillance/monitoring system to deploy both preventive measures (planned maintenance of the territory and maintenance/ upgrades of infrastructures), targeted interventions to optimize the use of resources and emergency management. The system will be built around four building blocks:

- Remote sensing applications and data field sensors: Collection and homogenization of data from land, sea, agricultural crops, and urban context leveraging both satellite observation systems, unmanned aeronautical systems, ground based sensors and Information systems of facilities on the territory (integrating all the map assets of the AGEA air flight database). A crucial aspect of the project will be the choice of sensors to be installed and their location: CCTV (video cameras), ANPR (license plate readers), Radar, Electro-Optical Systems and Environmental sensors.
- Telecommunications network: Continuous operation with most advanced security requirements guaranteeing the protection of information. The communication system allows operators in the Control Rooms to coordinate personnel in the field who may belong to different organizations (ARPA, civil protection, carabinieri, police, etc.). The project considers already available infrastructure transmission network (backbone) and the design/provision of additional communications networks which may be necessary.
- Central and Regional Control Rooms: heart of the system and allows operators to access the information collected by the field through a system of Command and Control highly sophisticated. Acquires heterogeneous and diversified information sources and integrates different vertical systems, each oriented to a specific function, providing a synthetic view of the situation: e.g., climate events probabilistic projections with granular geographical resolution, real-time data integration and management (analysis of signals from on-site sensors and environmental monitoring units), modelling and simulation of interventions (through 3D modelling of land and Earth digital twin), predictive maintenance through data analytics and machine learning (analysis of subsidence and landslides, status pollutants, soil moisture and vegetative state, analysis of anthropic activities).
- Cyber-security systems and services: fundamental component of the proposed system to protect from dedicated and specific cyberattacks.

The applications of this Integrated Monitoring System are modular and scalable to manage multiple "verticals" of the Italian heritage (i.e, a nature, agriculture and biological ecosystem as well as relevant infrastructures exposed to extreme climate events) with possible synergies and with the aim of extending its use to multiple stakeholders in parallel. In the short-term, 5 "use-cases" will be prioritized:

⁴ A Climate Resilient Europe, European Commission Directorate-General for Research and Innovation, 2020

- Hydrogeological instability monitoring: INSAR technology (Interferometry Satellite Radar) allows to identify and monitor slow kinematic deformation phenomena with millimeter precision, providing the evolution in time, even in historical, over vast areas of the territory and on single structures. The results of the analysis allow the early detection of phenomena of instability (landslides, subsidence) and, in complement to traditional technologies, can guide interventions with instrumental monitoring systems.
- Smart Agriculture: Satellite images and drones monitoring allow to evaluate site characterization, crop zoning, and real-time data management for yield analysis and crop health status. Precision farming will enable significant benefits: resource saving, conscious management of water, targeted and careful management of fertilizers, respect for the phenological cycle of plants, etc.
- Maritime and coastal pollution monitoring: The integration of multi-source data allows to provide services to support the conservation of the coastal environment e.g., monitoring of coastal waters in terms of pollution (e.g., “oil spill” and marine litter prevention – in line with “Global partnership on marine Litter” and and, as the plastic-free healthy Mediterranean sea pilot, launched by the “Bluemed” initiative), monitoring of water quality, assessment of coastal erosion trends also through the extraction of wave and wind fields, support to the monitoring of coastal landslides and subsidence phenomena.
- Environmental crimes identification: Multi-temporal analyses from high-resolution aerial data allow the identification of suspicious areas in the territory on which to perform inspections, also leveraging drones. This will be particularly effective in tackling illegal disposal of waste affecting central and southern Italy (e.g. “Terra dei Fuochi”) and open-air waste combustion. Furthermore, monitoring activities could be addressed to strategic waste treatment plants.
- Emergency support (natural disasters): Satellite analysis is the first data available that can provide information about very large areas even in remote locations and in a short time with detailed maps on: e.g., event extension (delineation), damage analysis (grading).

Implementation

The implementation foresees a “preliminary design” phase carried out by the MITE, with the support of the Civil Protection Department. Coordination with other Ministries will be deployed for specifications development and on a case-by-case basis, depending on the objective of the use-case (e.g., MIPAAF on Smart Agriculture). A call for tender, organized by MITE together with the Civil Protection Department, will be intended for private infrastructure entities in co-funding for the improvement of proprietary monitoring systems, and for public entities for the creation of the new “Center” to serve the territory.

Target population: cities and urban and rural territories of the entire country, with focus on the areas characterized by greater risk and criticality.

Timeline: the expected milestones for initiative are: approval of the detailed operational plan (by Q3 2021); launch of the calls for tender (by Q4 2021); successful completion of the Preliminary Design of the integrate monitoring system (by Q1 2023); start of Operations/utilization Phase (by Q2 2024)

State aid: not relevant (the measure will be implemented through public procurement managed by public entities)

Objective 2) To prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory

Investment 2.1. Measures for flood risk management and hydrogeological risk reduction

2.1.a)

Challenges:

The threats due to hydrogeological instability in Italy, exacerbated by the effect of climate change, compromise the safety of human life, the protection of productive activities, the protection of ecosystems and biodiversity, the protection of environmental and archaeological assets, agriculture and tourism. To reduce emergency interventions, increasingly necessary due to frequent disasters, it is necessary to intervene in a preventive way, through a broad and widespread program of measures.

Objectives:

- Securing of built-up areas and hydrographic basins exposed to hydrogeological risk;
- Environmental remediation and mitigation of the effects of climate change;
- Greater level of control and management of flood risk;

In order to achieve the indicated objectives, it will be necessary to combine structural measures (such as those aimed at securing landslides or reducing the risk of flooding in metropolitan areas) with the additional non-structural measures envisaged by the water and flood risk management plans, focused on active maintenance of the territory, requalification, monitoring and prevention. Furthermore, in order to preserve and improve the state of water bodies and reduce land consumption, it will be necessary to increase the use of "nature-based" and "land-based" interventions, which allow for the integration of risk mitigation needs with the protection and recovery of ecosystems and biodiversity.

These interventions benefit from complementary resources of 160 million euros from the appropriations of the Budget Law.

Furthermore, in addition to the measures described, interventions for sustainable forest management, with particular reference to the prevention of forest fires and the restoration of areas affected by disasters; will be financed by the EAFRD (for 1 billion euro).

Implementation:

The interventions may concern the entire national territory and, as regards structural measures, will be selected by the MITE starting from those inserted in the ReNDiS database on the basis of technical and objective criteria (such as people and goods at risk, the frequency of calamitous events to be addressed, the approved design level and the construction site), considering the necessary compatibility with the timing of the Recovery Plan (dictated not only by the design maturity, but also by the type and size of the intervention).

Thus, the investments – some of which located in urban areas - will be equally distributed across regions on the basis of the territorial area, the resident population in the region and the risk of landslides, flood and coastal erosion. Although the interventions are addressing a nationwide need, the priority areas are identified by the regions, with the help of the territorial competent River Basin Authorities, in order to address the most significant risk situations.

As regards the methods of implementation, starting from Legislative Decree 91/2014, interventions regarding hydrogeological instability are implemented by the Presidents of the Regions as extraordinary Government Commissioners. However, even within the same regulatory framework, the regional administrations do not act in the same way and in many cases the

Commissioners, lacking adequate technical support structures, delegate the implementation of the interventions to the beneficiary Municipalities. This situation is part of the motivation behind reform no. 2.1 which aims, inter alia, at strengthening the technical structures of the Commissioners.

Target population: inhabitants of areas classified as at greatest risk, throughout the national territory.

Timeline: project selection by Q4 2021; award of the works by Q4 2023; completion of the works by Q2 2026.

State Aid: not relevant (resources allocated by public entities through public procurement)

2.1.b)

Challenges:

The threats due to hydrogeological instability in Italy, exacerbated by the effect of climate change, compromise the safety of human life, the protection of productive activities, the protection of ecosystems and biodiversity, the protection of environmental and archaeological assets, agriculture and tourism. To reduce emergency interventions, increasingly necessary due to frequent disasters, it is necessary to intervene in a preventive way, through a broad and widespread program of measures.

Objectives:

- Integration of post-disaster measures aimed at reducing residual risk with preventive ones;
- Increase of resilience in local communities affected by calamitous events.

In the areas affected by disasters, interventions will be carried out to restore damaged public structures and infrastructures (*type E interventions*) and to reduce residual risk strictly connected to the event and aimed primarily at protecting public and private safety, in line with existing programming and planning tools (*type D interventions*).

Implementation:

With reference to the interventions resulting from calamitous events, for which the declaration of the national state of emergency has occurred, the residual risk mitigation and restoration action is carried out on the basis of investment plans drawn up at a local level and approved by the Head of the Civil Protection Department.

Target population: inhabitants of areas affected by disasters.

Timeline: approval of the intervention plans / investment plans by the responsible party (Delegated Commissioner / Region / Autonomous Province) by 2021; award of 100% of the works by Q2 2025; completion of the works by Q2 2026.

State Aid: not relevant (measure includes interventions carried out by public entities; there are no measures to support enterprises or private entities).

Investment 2.2. Interventions for the resilience, enhancement of the territory and energy efficiency of the municipalities

Challenges:

In urban areas, where the majority of the population lives, some of the most delicate challenges are concentrated. Climate change and the increase in the frequency of extreme events observed make it increasingly urgent to address the geological-hydraulic criticalities in cities, such as floods, erosion and gravitational instability, and the consequent damage (consisting, among other things, of deterioration of the building stock, damage to the underground service networks and interruptions to the road network).

Nevertheless, on the basis of ISTAT data, has been estimated a contraction of about 40% of local Authorities investments in the period 2008-2017 (-6.5 billion of euro). The discussions with local authorities revealed that this trend was due to budget constraints that involved lack of resources and complexity and uncertainty of public finance rules. To reverse the above-mentioned trend, starting from 2019, has been adopted a simplification of the system of public finance constraints aiming to allow local authorities medium-term planning; in this context, the investment detailed below represents the completion of the strategy adopted for the revamping of investments aimed at resilience, enhancement of the territory and the energy efficiency of the Municipalities.

Objectives:

The investment in question aims to increase the resilience of the territories and promote their enhancement and sustainable development, through a varied set of interventions, of medium-small size, located in urban areas. The safety measures, aimed at reducing the vulnerability of territories to the negative effects of climate change and limiting damage, are accompanied by preventive and mitigation actions with respect to climate change and promote energy sustainability within the territories.

The planned interventions have, in particular, the objective of Prevention and mitigation of risks connected with hydrogeological risk and safety of the inhabited areas exposed to these risks; Making buildings safe (through seismic improvement and adaptation interventions); Energy efficiency of buildings and public lighting systems.

Implementation:

The interventions have already been the subject of current legislation and concern the urban areas of the entire national territory (they will affect municipalities).

The implementing bodies are the Municipalities. In particular, the resources are assigned to the Municipalities by decrees of the Ministry of the Interior.

Target population: inhabitants of urban areas throughout the national territory.

Timeline: Q2 2026

The investment consists of two submeasures, indicated below. Both contribute to challenges and objectives of the component, in particular the objective 1 (to prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory), through the revamping of the local authorities' investments.

The implementation procedure provides for constant monitoring of the implementation of the interventions. In the event of non-compliance with the deadline for the start of the works or with the other conditions laid down, the same contribution shall be cancelled, in whole or in part, and reallocated.

SMALL PUBLIC WORKS (about 39.000 works for an average amount of about 75.000€)

First submeasure is aimed to stimulate small public works, easy to carry out and with direct effects on the territories concerned, of sustainable land development, safety of schools, public buildings and municipal heritage, removal of architectural barriers, respecting the environment and the landscape and limiting the consumption of the territory. The small public works also concern energy efficiency interventions that may contribute to the objectives and the challenges of the component “Energy efficiency and building requalification”.

The local authorities that may obtain the contribution are all the Italian Municipalities. The financial contribution⁵, for each year from 2020 to 2024, is calculated, on the basis of resident population on the date of 1/1/2018.

The interventions that can be carry out by Municipalities are the follow:

- a) *Promotion of territorial development aimed at protecting the environment and the territory;*
- b) *safety of schools, public buildings and municipal heritage, removal of architectural barriers;*
- c) *Energy efficiency of public buildings also through the installation of plants for the production of renewable energy.*

MEDIUM PUBLIC WORKS (about 7.200 works for an average amount of about 450.000 €)

Second submeasure is aimed to stimulate medium public works in safety of public buildings and municipal territory. The submeasure also concern energy efficiency interventions that may contribute to the objectives and the challenges of the component “Energy efficiency and building requalification”.

The local authorities that may obtain the contribution – presenting specific application – are all the Italian Municipalities. The financial contribution, for each year from 2020 to 2024, is calculated, on the basis of resident population.

The financial contribution is allocated on the basis of the follow order of priority:

- (a) Investments in the safety of the territory at hydrogeological risk;
- (b) Investments in the safety of roads, bridges and viaducts;
- (c) Investments in the safety and energy efficiency of buildings, with priority to school buildings, and other facilities owned by the municipalities.

The distribution of the financial contribution shall take place on the basis of progress of works.

State Aid: not relevant (resources will be allocated exclusively to municipalities that will use them trough public procurement.

Reform 2.1. Simplification and acceleration of the procedures for implementing interventions against hydrogeological instability

Challenges:

In its investigation relating to the 2016-2018 planning fund, the Court of Auditors highlighted the absence of an effective national policy to combat hydrogeological instability, of a preventive and non-emergency nature; the difficulty of administrations in incorporating the protection of the territory into their ordinary functions; the weakness of the subjects implementing the interventions

⁵ Doubled for 2021.

and of the Extraordinary Commissioners / Presidents of the Region, who do not have dedicated technical structures. The Court of Auditors also underlined the procedural stickiness, the absence of adequate controls and a unitary system of databases.

Objectives:

- Simplification of project implementation and financing procedures.
- Strengthening of the extraordinary Commissioners and strengthening of the technical structures to support them in the design, procurement and supervision of projects.
- Strengthening the operational capacity of the district and provincial authorities.
- Systematization of information flows in order to eliminate redundancy in reporting between the various information systems of the State.

Some corrective actions have already been introduced with the so-called "Simplification Decree" (Law 11 September 2020, n. 120), which also provides that:

- the Extraordinary Commissioners for hydrogeological instability can avail themselves of technical assistance and operate in derogation from the Code of Public Contracts, always in compliance with the mandatory constraints deriving from belonging to the European Union;
- the maximum deadline for issuing opinions at the conference of services is thirty days.

Implementation:

In order to speed up the whole process of planning, programming and implementing the interventions, other actions to reform the current legislation have been undertaken by the Ministry of the Environment. One of the most important is the revision of the Prime Ministerial Decree of 28 May 2015 (containing the criteria and methods for establishing the priorities for assigning resources to the interventions), with which the aim is to simplify the preliminary procedure for projects, including:

- the involvement of the District Authorities right from the insertion of the interventions in the ReNDiS database (so as to instruct, for the purposes of selection, only the interventions that have already obtained a positive opinion from the same Authority);
- the standardization of processes by establishing timelines for each phase;
- updating of the classification criteria on a technical-scientific basis, with the support of ISPRA;
- the inclusion of financial penalties in the event of a slowdown in spending by the Region.

Furthermore, a Decree Law is being defined by the competent Offices of the Ministry of the Environment which aims to further simplify the various processes, to insert innovative elements in terms of interoperability of IT reporting systems, to rationalize and systematize the regulatory framework of the sector. The provision provides for the strengthening of the operational capacity of Government Commissioners, also through the use of in-house state companies. Furthermore - to lay the foundations for a future, gradual return to ordinary management of resources - it has been planned to strengthen the role of the Provinces, setting up a specialized office within them for the activities of contrasting hydrogeological instability, of which the Commissioner can also avail.

Finally, a strengthening of the control at central level is envisaged, with the establishment of a technical control room at the MITE (formerly MATTM) and the possibility of activating a National Task Force for specialized technical support for implementation.

Target population: cities and urban and rural territories of the entire country, with particular reference to the areas characterized by greater risk and criticality.

Timeline: final approval of the decree law and revision of the Prime ministerial decree (DPCM) of 28 May 2015 by Q2 2022.

Objective 3) To safeguard the quality of the air and the biodiversity of the territory through the protection of green and marine areas and soil

Investment 3.1: Protection and enhancement of urban and peri-urban forests

Challenges:

Italian cities are increasingly exposed to problems related to air pollution, the impact of climate change and the loss of biodiversity, with evident negative effects on the well-being and health of citizens (more than 65,000 premature deaths per year in Italy due to PM2.5 particles alone). This makes it important to implement measures aimed at environmental sustainability and the enhancement of the territory in the urban environment.

Objectives:

In line with national and European Union strategies, the project includes a series of large-scale actions aimed primarily at the 14 metropolitan cities, to improve the quality of life and well-being of citizens through the development of urban and peri-urban forests.

The goal is to plant at least 6.6 million trees (for 6,600 hectares of urban forests), identifying locations and quantities according to the principle of using "the right tree in the right place". The Charter of the Ecoregions of Italy drawn up at the level of "34 ecoregions" will make it possible to select and assign to each metropolitan area the most suitable trees in terms of ecological, biogeographical and response to different local needs. In this way, it will be possible to contribute to:

- preserve and enhance diffuse naturalness, biodiversity (in line with the European Biodiversity Strategy), and ecological processes linked to fully functional ecosystems;
- contribute to the reduction of air pollution in metropolitan areas, thereby helping to protect human health;
- help reduce air quality infringement procedures;
- recover man-made landscapes by enhancing internal areas in direct ecological relationship with urbanized areas (ecological corridors, territorial ecological networks) and enhancing the system of protected areas present in the immediate vicinity of metropolitan areas;
- curb soil consumption and restore useful soils.

The project also responds to social and economic needs. In many urban areas, especially in the South, green infrastructures could represent an important opportunity for employment development both in the field of plant production and in the management of green areas.

Implementation:

The implementing bodies of the interventions will be the Municipalities, with a focus on Metropolitan Cities. The project is consistent with the experimental activity for urban reforestation launched pursuant to article 4 of the law of 12 December 2019, 141 (so-called climate law).

The implementation foresees a planning phase carried out by the metropolitan cities, after the elaboration of basic technical-scientific documentation by the MITE, in collaboration with the CIRBISES - Sapienza Research Centre and other subjects of the special Cabina di regia, such as ISPRA, ISTAT and the Committee of Public Green. Once the planning phase on the part of the metropolitan cities has been completed, the MITE will verify the coherence of the projects with the criteria elaborated in the previous phase.

Target population: inhabitants of the municipalities of the 14 metropolitan cities (almost 22 million inhabitants)

Timeline: in 2021 design activities of the interventions to be carried out by the metropolitan cities, after elaboration of the basic technical-scientific documentation by MITE; in 2022 planting of 1.65 million trees; in 2023 planting of another 1.65 million trees; in 2024 planting of another 3.3 million trees.

Investment 3.2: Digitization of national parks

3.2.a: Nature conservation - monitoring of pressures and threats on species and habitats and climate change

Challenges:

The impacts of threats and pressures on habitats and species and the effects of climate change on biodiversity act through complex interactions. It is difficult to fully assess their scope, capable of modifying both the structure of habitats and their ecological functions, changing the composition of communities and consequently trophic networks, inducing the movement of species within biocenoses. These affect both physical elements of the systems, the relationships between species and their ability to survive, in particular for migratory species and the mountain environment. The most direct and immediate effects of climate change in our country are expected on mountain environments (Alpine and Apennine) affected by the system of national protected areas. The orographic characteristics, isolation and difficulty of access have helped to preserve relative integrity of the natural and cultural heritage with the maintenance of a consequent and extraordinary diversity not only biological but also cultural.

Objectives:

- Deepen knowledge and fill knowledge gaps on the consistency, characteristics and conservation status of habitats and species and of the ecosystem services they provide, as well as on direct and indirect threat factors;
- Deepen knowledge about the value of ecosystems and services they provide, with the identification of potential beneficiaries and actors playing an effective role in the management of these systems;
- Promote sustainability in the use of natural resources and introduce the application of the ecosystem approach and the precautionary principle in their management;
- Integrate biodiversity issues at the regulatory level within large-scale and local-scale planning tools to ensure the maintenance of the flow of ecosystem services and the ability to mitigate and adapt to climate change;
- Implement policies aimed at ensuring the satisfactory conservation status of native habitats and species, also through the implementation of pilot actions of protection and restoration, in situ and ex-situ;
- Implement policies to remove and/or mitigate the anthropogenic root causes of climate change and, at the same time, implement an adaptation strategy aimed at reducing the impact of climate change on the species and habitats used, with particular reference to migratory species and mountain environments;
- Develop a permanent monitoring action of migratory species in relation to climate change.

For the achievement of the objectives, collection and processing of big data are planned from heterogeneous sources, both for the monitoring of climate change and for scientific purposes, for

example the study of the effects on target habitats and species, and for the direct use of threat alerts on the territory, land and sea, through apps or web portals.

Sources of data collection will be proximity sensors, which can be installed without the need for power supply, even placed directly on IP systems, to measure the different environmental parameters of air and water (pollution, CO₂, temperature, humidity, ...). Other specific sensors, also usable to make audio/video recordings (phototrap) will allow the monitoring of target species and the acquisition of large amounts of scientific data while updating those already available. Particular importance will be given to the planned and continuous use of drones with sensors installed (both in national parks and marine protected areas), and open data collected by the Sentinel satellites of the Copernicus program (<https://scihub.copernicus.eu/>). For the marine environment, it is foreseen the installation, on the buoys of perimeter zoning of marine protected areas, of multiparameter probes for the monitoring of parameters such as optical dissolved oxygen, specific and absolute conductivity, pH, salinity, temperature, level, the visual census.

The data will be included in the database of the Marine Strategy which, in implementation of the European Directive, has set up a monitoring network. Crossing this large amount of big data, stored in a Cloud infrastructure, predictive models and artificial intelligence algorithms can be applied to detect and prevent phenomena related to pressures on species and habitats, the spread of pathogens and other threats to plant species to the occurrence of fires. From an economic point of view, it has been estimated a cost module for an area of 5,000 hectares equal to €256,000, to be considered as a comprehensive cost that includes the supply of proximity sensors (temp/humidity/CO₂/CO/PM₁₀/PM₅/PM_{2,5}), soil sensors, phototrap, gateways/routers, terrestrial and marine drones, satellite data collection, support for installation and management, cloud-based IT platform, Big Data analysis with artificial intelligence algorithms.

Implementation:

The intervention is promoted by the Ministry of Ecological Transition. The implementing entities will be the Management Bodies of national parks and marine protected areas.

With regard to the provision of tools and equipment, the management bodies will provide them on the basis of indications and guidelines provided by the Ministry of Ecological Transition.

Following the cognitive analysis of management needs and the most suitable measures to improve their effectiveness carried out in the first 6 months, the interventions - which will cover the entire system of National Parks and AMP - will be identified according to the characteristics of the protected areas.

With regard to the adoption strategy, a network is proposed for each national park of 5000 hectares, an average representative extension of the integral reserve areas, of maximum naturalistic and environmental value, which can be activated in 3 months from start of the project. The data collection in the trial should cover a period of 9 months for the observation of phenomena linked with seasonal change.

With reference to training and information measures, specific guidelines will be developed by the Ministry of Ecological Transition, also with the support of other subjects with digital and naturalistic expertise.

Target population: the populations of the 600 municipalities affected by National Parks and Marine Protected Areas

Timeline: the cognitive activity will end with the definition of the aforementioned agreements between the Ministry of Ecological Transition and the AAPP management bodies. For the

subsequent realization of the interventions planned for digitization, a time frame of 4 years is estimated, from the design to the final realization.

3.2.b: Digital services to visitors to national parks and marine protected areas

Challenges:

The areas covered by the parks suffer from a lack of services that are essential for an aware and consistent use of protected places. This is a deficit resulting from the location of protected areas outside the main lines of services and communication, which has a strong impact on park policies, both in terms of managing visitor flows during peak periods and in terms of difficulties in enhancing the little-known territories. The creation of services for visitors on digital platforms ensures an infrastructure of the PN and AMP system that could provide a model for mobility and accessibility solutions that should not be identified in expensive infrastructure investments, but rather in the integration between different mobility systems and in the implementation of innovative management solutions based on intermodality and car pooling.

Objectives:

- Prevent and minimize impacts on biodiversity components and landscape resulting from tourism activity and promote restoration actions;
- Promote integration between conservation and sustainable use of biodiversity and tourism development;
- Ensure basic information, also through specific indicators, enabling assessments and informed decisions at all levels on tourism and biodiversity;
- Increase the level of safety and awareness of visitors to natural environments;
- Create the conditions for a natural capital-based economy through services and activities focused on local resources (nature, food and wine, crafts, art, culture, etc.);
- Promote education, training, information and awareness on the issues of sustainable tourism and critical consumption of resources;
- Promote the national image in a perspective of sustainable tourism on world markets, enhancing the Italian system of parks, biodiversity, resources and characteristics of different territorial areas.

To achieve these objectives, it is planned to extend free Wi-Fi coverage, to facilitate access to emergency services, to provide weather updates, to allow people to stay in touch with friends and relatives in case of accidental separation, to ensure the possibility of calling rescue workers and, at the same time, to make the Parks closer to the new "tech-focused" generations. At the same time, the platform of parks and marine protected areas (NaturaItalia.it) will be implemented with a series of services dedicated to the visitors and with virtual tours of the park (Virtual reality, Snapchat and Facebook Live, augmented reality app for the display of virtual environments through smartphones, especially for children, park podcasts); Installation of webcams for live transmission from particular points of each park; opening of a channel "Talk to the Park" (also apps) to establish contact with citizens (chatbots, mail) to report proposals /disruptions. For example, some functions already active and to be implemented such as the NaturaItalia.it portal, the street view function managed by Google on the paths of some parks, or a virtual environments function with updated views in 2020. Investments will be made in sustainable mobility with a specific edition for national parks of a dedicated App, in order to enhance the intermodality of the public transport network (in particular those by rail), with the offer of sharing services, both bike and electric vehicles, together with the network of cycle paths or dedicated routes. The App itself, in addition to acting as a service for mobility, will be used to convey services consistent with the Park and the AMP (companies with the Park and AMP Brand, operators of the European Charter of Sustainable

Tourism CETS, park guides, typical local products, etc.) to allow the visitor to choose a solution that enhances the places in line with the aims of the protected area, also ensuring an added value to the territory with the purchase of additional services (catering, accommodation, guides, purchase of products, etc.) that bring economic and employment repercussions.

Implementation:

The intervention is promoted by the Ministry of Ecological Transition. The implementing entities will be the Management Bodies of national parks and marine protected areas.

With regard to the provision of tools and equipment, management bodies will provide them on the basis of indications and guidelines provided by the Ministry of Ecological Transition.

Following the cognitive analysis of the needs for the creation of digital services for visitors and the most suitable measures to improve their effectiveness carried out in the first 6 months, the interventions - which will concern the entire system of National Parks and MPAs - will be identified on the basis of the characteristics of the protected areas and the potential of the tourist market for the nature offer.

With reference to training and information measures, specific guidelines will be developed by the Ministry of Ecological Transition, also with the support of other subjects with digital and naturalistic expertise.

Target population: the populations of the 600 municipalities affected by National Parks and Marine Protected Areas

Timeline: the cognitive activity will end with the definition of the aforementioned agreements between the Ministry of Ecological Transition and the AAPP management bodies. For the subsequent realization of the interventions planned for the creation of digital services and the release of the Apps, it is estimated a total time frame of 3 years, from the design to the final realization.

3.2.c: Administrative simplification - Digitisation and simplification of procedures for services provided by Parks and Marine Protected Areas

Challenges:

Currently in each protected area, depending on the size and characteristics of naturalness and anthropization, there is a considerable work effort to acquire, instruct and conclude the technical-administrative procedures for the issue of opinions, authorizations, impact assessments for interventions in Natura 2000 sites (VINCA). Many of these procedures include detailed, sometimes complex, requirements due to the particular attention that interventions in the park area require and above all for the possible impacts on protected flora and fauna and landscape. Often the analyzes carried out to support the requested interventions are lacking and the Park is necessarily forced to request project integrations and /or carry out inspections and / or foresee the contribution of more subjects with specialized roles, such as the legal office and the Carabinieri Forestry Department, in order to produce an informed decision. Moreover, the opinions or the authorizations of the Park Authority are preparatory to the continuation or definition of procedures for other subjects, thus constituting a bureaucratic burden for the Park citizen (emblematic is the case of building interventions in already urbanized areas), less acceptable if not easy to face and solve with certain times.

Objectives:

- Promote an effective system of protected areas, organically included in the strategies for the conservation of nature and in those for the economic and territorial development of the country, based on the identification of common and differentiated, far-sighted and ambitious objectives and on the strategies to be adopted for their achievement;
- Lay the foundations for a real systemic approach to protected areas by encouraging, in particular, the creation and strengthening of technical structures capable of guaranteeing, through assistance and the provision of qualified digitalized services, the development of the system of protected areas in terms of ecological, social and economic performance;
- Simplify procedures for citizens in the municipalities of protected areas and ensure clarity of terms and certainty of response times to requests;
- Make the protected areas effective focal points in the territory for the issues concerning relations with the PA, the authorization processes and incentives and facilities provided for the Environmental Economic Zones (ZEA).

In order to achieve these objectives, a standardized platform will be created for all parks, where to enter and implement a data set of information, agreed to ensure the confidentiality of sensitive data. Data will be articulated spatially and by type of intervention, in order to immediately provide the user, through free consultation, a picture of the context of reference (pressures and threats to habitats and species, planning, regulatory and disciplinary provisions) useful to orient and properly submit their application. At the same time, a Telematic One-Stop Shop will be set up for applications to provide simplified way of presentation with access by the citizen and/or the technician in charge through SPID and online uploading of the request and the related documentation; to protect the citizen and for the benefit of timing compared to incorrect or non-complete paper instances, the online procedure will allow the request to be registered only after having duly filled in the required fields and attached all the necessary documentation. Also in the case of AMP, digitization will support administrative action through the automation of the issuance of permits for the performance of professional or recreational activities for which the managing body must issue authorizations on request (professional and recreational fishing, boat rental, passenger transport).

Implementation:

The intervention is promoted by the Ministry of Ecological Transition. The implementing entities will be the Management Bodies of national parks and marine protected areas.

With regard to the provision of tools and equipment, the management bodies will provide on the basis of indications and guidelines provided by the Ministry of Ecological Transition.

Following the cognitive analysis of the needs of creating digital services for citizens and the most suitable measures to improve their effectiveness carried out in the first 6 months, the interventions - which will cover the entire system of National Parks and AMP - will be identified on the basis of the characteristics of the protected areas and the legislation provided for relations with the PA.

With reference to training and information measures, specific guidelines will be developed by the Ministry of Ecological Transition, also with the support of other subjects with digital and naturalistic expertise.

Target population: the populations of the 600 municipalities affected by National Parks and Marine Protected Areas

Timeline: the cognitive activity will end with the definition of the aforementioned agreements between the Ministry of Ecological Transition and the AAPP management bodies. For the

subsequent implementation of the interventions planned for the creation of digital services and the one-stop shop, a total time frame of 3 years is estimated, from design to final implementation.

State aid: not relevant (measure will not relate to any economic activity)

Investment 3.3: Re-naturification of Po area

Challenges

The "European Union Biodiversity Strategy by 2030" sets the ambitious goal of drafting a nature restoration plan to "improve the health of existing and new protected areas and bring back diverse and resilient nature across all landscapes and ecosystems: reducing pressures on habitats and species and ensuring that ecosystems are always used sustainably; Also supporting nature restoration, limiting soil sealing and urban sprawl, and combating pollution and invasive exotic species". The challenge launched by the European Commission with the European Green Deal and the European Strategy for Biodiversity is great and requires an equally great commitment to organize all available resources with the complexity of ensuring proper integration between different lines of policy.

Po is one of the six priority areas for ecological connectivity and adaptation to climate change, where to start a widespread action of environmental restoration, representing a first step for the largest and most important action of restoration ecology and adaptation in our Country. The excessive "canalization" of the riverbed and the consumption of land, which has seen in the last 50 years a significant loss of natural flooding areas with the reduction of ecosystem services, have increased the hydrogeological risk and the fragmentation of natural habitats. It is therefore essential to initiate a widespread renaturation action along the entire area to reactivate the natural processes and promote the recovery of the longitudinal and transverse connectivity of the great river.

The area taken into consideration by the proposal, extends from the province of Pavia to Rovigo, involving Lombardy, Emilia Romagna and Veneto. 37 areas have been identified for renaturalization, with priority along the middle Po Valley, in addition to 7 areas in the Po Delta. The proposal embraces the principles and contents of the Sediment management programs of the Po River, drawn up in the implementation of the management of sediments Directive, adopted with resolution n. 9 of the Institutional Committee of April 5, 2006.

The deployment of resources for more integrated and sustainable management of waterways, the protection and improvement of the quality of water and ecosystems in the next three years, are essential to achieve the goal of ecological quality and overcome the EU Pilot and infringement procedures set by the European Commission.

Objectives

Besides addressing priority targets of the National Strategy for Adaptation to Climate Change and the European Strategy for Biodiversity and EU objectives in general, the project allows the development of the intentions of the UNESCO MAB "Po Grande". Moreover, the requalification of the Po area meets the goal of strengthening the security and resilience of the country in the face of natural disasters, climate change, epidemic crises and geopolitical risks. The project aims to balance active morphological processes, by lowering the embankments for navigation, which over the years have become too high to be overflowed by the ordinary flow of the Po, but which are adjusted to ensure the renaturation of the river and the guarantee of the current conditions of navigability.

More specifically, the resources will be deployed for the following interventions:

- Requalification of 1.559 ha of abandoned oxbows and branches
- Reactivation and reopening of 51.486.900 mc of abandoned oxbows and branches
- Reduction of 37 km of riverbed artificiality
- Other interventions (i.e., 337 ha of naturalistic reforestation, forest maintenance, preservation of Delta, ecc.)

The proposal aims to contribute to the recovery of the ecological corridor represented by the riverbed, consisting of considerable diversity of environments (e.g., shores, islands, sandbars, etc.) which must be protected and restored. Natural reforestation to consolidate and enlarge the present wooded strips are promoted, and interventions for the restoration and reactivation of lateral branches and oxbows are planned.

The executive projects will guarantee an adequate diversity of habitats, supported by a comparison with the managing bodies of Rete Natura 2000. In addition, the project foresees a broad range of actions for the containment and eradication of invasive alien plant species.

Among the objectives, the priority to define and propose a linear authorization process to simplify the implementation of interventions persists.

The total cost estimated for this Investment amounts to 0,36 billion euros, to be attributed to the NPRR.

More specifically, the investment demand for the renaturation of Po River includes the following:

- Requalification of abandoned oxbows and branches: 0,02 billion euros
- Reactivation and reopening of abandoned oxbows and branches: 0,19 billion euros
- Reduction of riverbed artificiality: 0,08 billion euros
- Other interventions (i.e., naturalistic reforestation, forest maintenance, preservation of Delta, ecc.): 0,07 billion euros

Implementation

The implementation phase of the projects will involve the District Basin Authority, the Interregional Agency for the Po, the Regions and all competent local authorities. Po River Basin District Authority will coordinate the implementation of the project and will promote the establishment of a round table involving the Regions, AIPO, as well as all relevant public bodies, scientific institutions and non-institutional actors and other territorial stakeholders. The identified governance will promote and ensure participation for the design and implementation of interventions.

Target population: the main beneficiaries are the populations along the Po river. The environmental improvement benefits the local populations and the development of tourism; there is a collective benefit for the improvement of ecosystem services. Moreover, the rehabilitation works will allow the involvement of many companies for the implementation of the works.

Timeline: by Q1 2022 the Basin Authorities and the Regions prepare the operational programmes to implement the general sediment programme and to prepare the reforestation and alien species vegetation control programmes; in 2023 the projects are prepared and all the necessary authorisations (VINCA, VIA, etc.) are obtained and AIPO prepares, according to the current regulations, the procedures for awarding the works; works will be awarded by Q1 2024 and will be completed by Q1 2026.

Investment 3.4. Remediation of “orphan-sites soil”

Challenges:

At present time in Italy, many orphan sites may pose a significant risk to human health and the environment. Moreover, the quality of life of their neighbourhood is strongly impacted by their presence. On the contrary, redeveloped sites should be considered as a resource for economic development and planners should give priority to these areas in comparison to using greenfields that would mean losing additional natural capital and a potential impact on biodiversity.

The contaminated sites were picked up in the debate on innovation in several EC initiatives. The European Commission with the provisions of the No Net Land Take by 2050⁶ has long advocated the re-use of this kind of site. In fact, reading the COM (2011) 5717 we find this strong political statement “By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050; soil erosion is reduced and the soil organic matter increased, with remedial work on contaminated sites well underway.”

Re-using orphan sites for development is socially, economically, environmentally, and culturally important for the development of our cities and regions and a valuable alternative to urban sprawl. They may comprehend also abandoned urban industrial, mining, or others.

The main challenges are:

- Integrating characterization with subsequent remediation as a contribution to a comprehensive land-use strategy for the entire urban or rural area
- Addressing the high rate of orphan sites in Italy. The current economic crisis following COVID-19 pandemic has led to considerable new problems including the raising of a number of orphan sites from various sectors.
- Policymakers and municipalities may stimulate different stakeholder perspectives when considering orphan site redevelopment.
- The need to take a ‘circular’ view to save soil and groundwater from being contaminated.
- How can these actions encourage a move towards more compact, sustainable, and cohesive cities that avoid sprawl? The local land planning should consider the development of those areas as a priority.

These sites are both a challenge and an opportunity. Although the technical problems of restoring contaminated sites could be many, the challenge is to give them a useful after or second life. In the context of the 2050 vision for Europe the re-use of land could be a major contributor to the smart growth agenda. This could be combined with the Circular Economy in which everything is designed for re-use which means to use again something that was originally built for a similar or a completely different purpose.

Objectives:

The general objective of this component is to give the land a second use, fostering its re-entry into the real estate market, reducing the environmental impact, and promoting the circular economy. This general objective will be reached by actively taking actions over these situations, following these specific objectives:

⁶ https://ec.europa.eu/environment/integration/research/newsalert/pdf/no_net_land_take_by_2050_FB14_en.pdf

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52011DC0571>

1. Identification of orphan sites in all 21 Regions/Autonomous Provinces (in Italy there is an estimation of hundreds of orphan sites, also if clear numbers are not available yet);
2. Characterization of orphan sites;
3. Remediation (when needed) with sustainable remediation techniques that work on site-specific basis

Regarding the first point, Regions/Autonomous Provinces will be able to:

- Evaluate which contaminated sites already in their Database fall in the definition of orphan sites;
- Evaluate if these orphan sites are eligible for being funded (art. 4, Ministerial Decree 269/2020);
- Identify other orphan sites that may be eligible.

Regarding the second point, the project will use the best innovative investigation technologies available in order to identify the actual remediation needs and to allow the development of the area respecting the target objectives that will be set for current and future human and environmental receptors. The main objective of the project is in particular to create a virtuous system that uses innovative and green technologies to achieve its aim. The project is scalable and it could be applied to a number of sites according to the available funds.

Regarding the third point, which is the core of the activity, following the characterization phase, some orphan sites will not need remediation activities but just management and land-use limitations. For the other, the project will transform orphan sites by means of the above-mentioned objectives to obtain a new area available for the community's beneficial use.

The expected impact of this investment is relevant for different elements such as employment, growth, environment, public health. The implementation of these solutions might increase new jobs and the employment-related to the site reuse. The general growth of the quarter/area/city is linked not only to the new use of the area but also to the related activities. Environment and public health will be brought at a level acceptable for the relevant receptors identified according to the applicable laws and standards.

Implementation:

The nature of the investment is due to a set of activities and materials.

The total amount need for this investment is 500.000.000 euro up to 2% will be used in services.

The investment is in continuity with the "National program for financing interventions of remediation and environmental restoration of orphan sites", adopted with Ministerial Decree no. 269 of December 29, 2020, whose budget amounts to a total of € 105,589,294.00.

Target population: polulation living near orphan sites

Timeline: the activity of the investment will implement in 4 years (48 month). The timeline of the investment will be:

- IV quarter 2021 Identification of orphan sites defined by Ministerial Decree n. 269/2020
- IV quarter 2022 Definition of program agreements economic resorces allocation
- II quarter 2024 Projects approved by the competent authorities
- II quarter 2026 Conclusion of contamination management actions

State aid: not relevant (no economic advantage for private entities derives from the investment)

Investment 3.5: Restoration and protection of the seabed and marine habitats

Challenges

The 2030 EU Biodiversity Strategy sets the goal of protecting and/or restoring and managing through various types of solutions, at least 30% of marine areas, 10% of which through strict protection measures.

The Marine Strategy Framework Directive (MSFD - Directive 56/2008/CE) requires monitoring of marine waters to assess the achievement of Good Environmental Status and effectiveness of the program of measures.

In Italy, to date, 19,1% of national waters are under conservation measures. However, Italy will soon establish its EEZs resulting in a sharp increase in the surface of national waters and thus increasing the gap to be filled to reach 2030 Biodiversity protection goal. These objectives impose a series of actions that require an in-depth knowledge of location, extent and status of coastal and deep-sea habitats of the EU interest, for their protection and restoration.

Monitoring data from the MSFD confirm the recent report of the European Court of Auditors which considered the environmental protection policies adopted at the Mediterranean level insufficient to counteract the serious depletion of marine resources.

Objectives

The plan we have developed is meant to provide large-scale interventions for the restoration and protection of the seabed and marine habitats in Italian marine waters aimed at reversing the trend towards the degradation of Mediterranean ecosystems enhancing their resilience to climate change thus favoring the maintenance and sustainability of fundamental activities not only for coastal areas, but also for essential production chains of the Country (fishing, tourism, food, blue growth).

- Adequate mapping of seafloor habitats and environmental monitoring are a prerequisite for defining effective protection measures and disclosing the potential of a sustainable blue growth.
- In order to ensure the adequate planning and implementation of large scale restoration and protection measures it is necessary to strengthen the national research and observation system for marine and coastal ecosystems, including the availability of up-to-date research vessels, currently lacking in Italy and, more generally, in the entire Mediterranean basin. Additionally, marine observation platforms need to be enhanced and strengthened in order to increase the technical-scientific capacity to monitor the marine environment, and in particular to assess the effectiveness of protection and management measures under the climate change scenario. Such investments will then enable a systematic and comprehensive mapping of sensitive habitats in Italian marine waters, to implement environmental restoration and the designation of protected areas, in line with the 2013 EU Biodiversity Strategy and the Marine Strategy Framework Directive. This large scale, geo-referenced, knowledge-base will also support the implementation of the Maritime Spatial Planning Directive. Investments in the implementation of the observation system will generate long-term benefits beyond the duration of the foreseen project. Indeed, they will allow Italy to build the last generation observing system, whose use will continue for decades both for monitoring purposes (e.g. assessing the effectiveness of protection measures), completing the mapping on benthic habitats, and for supporting research activities and blue growth initiatives.

As for digital objectives, the proposal aims at promoting an upgrade of marine monitoring facilities in terms of up-to-date research vessels and observation platforms equipped with enhanced data management infrastructures, elaboration data capabilities and security.

As for the green objectives (climate tag), the investments are expected to promote biodiversity and nature-based solutions to enhance resilience against climate change (restoration of marine ecosystems, including those acting as carbon sinks; improvement of infrastructures in marine protected areas).

Implementation

The overall plan will be coordinated by the Ministry for Ecological Transition together with the Italian National Institute for Environmental Protection and Research (ISPRA).

Target population: seabed and marine habitats in Italian marine waters

Timeline:

As for the milestones: public procurements for coastal habitat mapping, marine (beyond 12 NM) habitat mapping by Q2 2024; public procurements for research vessels and for operational buoys by Q2 2023.

As for the targets: marine and coastal observation systems (to be completed by June 2025); marine coastal and deep-sea habitat mapping (to be completed by Q2 2026).

State aid: not relevant (measure will not relate to any economic activity)

Reform 3.1. Adoption of national programs on air pollution control

Challenge

The EU legislation promotes a progressive reduction in the emissions and concentrations of atmospheric pollutants to protect, in an integrated way, the environment and the health of citizens from possible damage caused by certain substances, as well as ambitious goals in terms of reduction of the greenhouse gas emissions (GHGs), with clear reduction targets in both areas.

Italy has aligned its relevant national legislation with the approval of the legislative decree 30 May 2018, n. 81, transposing the directive, 2016/2284 setting National Emission Ceilings (NEC) for air pollutants.

The full application of such reform will require the adoption of some implementing acts, both at national and regional level, in order to develop the specific regulatory framework that is needed to translate the objective of the legislation into concrete measures.

Objectives

The reform aims at aligning national and regional legislation, and introducing relevant accompanying measures, for the reduction of the emissions of the air pollutants (in compliance with targets set by Directive 2016/2284 on national emission ceilings) as well as the ones of the greenhouse gas emissions (GHGs). Due to the relevant impact of the measures on the citizens and economic operators the reform will request for its implementation a strong support and involvement of the institutional sector, at central and regional level.

Implementation

The reform proposed by the Ministry of Ecological Transition (MITE) provides the adoption of a National air pollution control Program pursuant to EU Directive 2016/2284.

The reform will be implemented through specific monitoring indicators, as follows:

- Spared emissions of the target pollutants of directive 2016/2284 expressed in t / y;
- Air quality improvement expressed in $\mu\text{g}/\text{m}^3$.
- Reduction of 33% CO₂ emissions by 2030 compared to the target in 2005 in non-ETS sectors expressed in Mt CO₂ eq.

Target population:

The target of the reform are the citizens in terms of improvement of services (better transport infrastructures, incentives etc) and of reduction of the risk of health damages due to air quality pollution.

Timeline: within 1 year.

Objective 4. To ensure the safeguarding and protection of water resources and the improvement of the environmental quality of inland and maritime waters

Investment 4.1 Investments in primary water infrastructure for the security of water supply

Challenges:

The increasingly frequent water crises due to ongoing climate change entail the need to make primary water infrastructures for civil, agricultural, industrial and environmental uses more efficient and resilient, so as to guarantee the security of water supply in all sectors and overcome the "emergency policy".

Objectives:

- Water supply security of important urban areas and / or large irrigated areas;
- Adjustment and maintenance of the safety of structural works;
- Greater resilience of infrastructures, also with a view to adapting to climate change underway;
- Recovery and increase of the useful transport capacity, with consequent economic repercussions, and improvement of the quality of the water resource.

In order to achieve the objectives indicated, investments will be financed in extraordinary maintenance and in the upgrading and / or completion of the derivation, storage and primary supply infrastructures⁸.

The interventions will cover the entire national territory, with different purposes depending on the geographical area. In particular:

- the completion of large unfinished systems mainly in the south;
- extraordinary maintenance interventions aimed at static and seismic safety and greater efficiency in large irrigation systems or for multiple purposes, especially in the center-north;
- interventions on strategic works, which have also been in operation for more than 60-80 years, and the related interconnections, to make them more resilient, throughout the territory;

Implementation:

The program is in continuity of objectives and contents with the National Plan for interventions in the water sector (with particular reference to the "Invasi" section and to the interventions on large drinking water aqueducts in the "Aqueducts" section).

The competent central administration is the MIT Directorate General for "Dams and water infrastructures" which, for each work, signs an agreement with the implementing body to regulate the conditions and methods of intervention. For the "Aqueducts" section, ARERA works alongside MIT in the selection of investments. The implementing bodies will be the primary supply managers, the Reclamation Consortia, the Irrigation Bodies, and the managers of the integrated water service.

⁸ The interventions on the distribution networks will be financed on the investment line no. 2.1.

Investments will be distributed over all regions, according to: i) a strategic assessment of the needs; ii) the capacity of final beneficiaries to implement the interventions in due time. A percentage of around 45-50% of the resources is estimated to be allocated to the southern regions.

To ensure the completion of the projects within the time horizon of the RRF, interventions with defined and clear project profiles will be selected, proposed by subjects with proven spending capacity and without particular uncertainties in the authorization and possibly expropriation phases. In any case, constant monitoring will be carried out by MIT and ARERA and accompanying and replacement mechanisms will be provided in the event of forecasts of non-compliance with the deadlines. It should also be noted that the procedure for selecting the interventions has already been launched by MIT, since September 2020, together with the preliminary activity relating to the National Plan for interventions in the water sector.

Target population: Users of the integrated water service, reclamation consortia, irrigation bodies

Timeline: completion of the design suitable for the contract of works by 2022; awarding of works during 2023 and completion of works in mid-2026.

State aid: not relevant

Investment 4.2. Reduction of losses in water distribution networks, including digitization and monitoring of networks

Challenges:

The recovery of investments in the water sector that has been observed after the attribution to ARERA of the competences in the field of regulation and control of water services, still appears insufficient compared to the actual needs for modernization and development of Italian water infrastructure. The data acquired referring to 2016 show a replacement rate of the adduction and distribution networks equal to 0.39% (compared to an outdated infrastructure: about 35% of the pipelines are aged between 31 and 50 years). This is a low replacement rate, still far from the value of 2%, consistent with a technical useful life of 50 years relating to such infrastructures. The value of the linear water losses (indicator calculated by comparing the total losses to the length of the network) is on average equal to 24 cubic meters / km / day, with an average value of the percentage water losses equal to 41%. The remote controlled district networks are equal to 21.8% of the total distribution networks. The data on service interruptions is strongly influenced by certain critical situations at a territorial level (especially in the South and Islands).

Objectives:

- Obtain a reduction in losses in networks for drinking water;
- Increase the resilience of water systems to climate change;
- Strengthen the digitization of networks, to be transformed into a "smart network", to promote optimal management of water resources, reduce waste and limit inefficiencies.

In order to achieve the objectives indicated, investments will be financed for the modernization and efficiency of the water distribution networks, favoring innovative projects that involve the use of new technologies. To this end, it will be essential to provide advanced control systems that allow monitoring not only of the main nodes, but also the sensitive points of the network, through the measurement and acquisition of flow rates, operating pressures and water quality parameters.

An example of a “flagship” project of great economic, social and environmental value could be that relating to the restructuring of the water networks of the cities of Potenza and Matera in

Basilicata. The managing body is the in-house company Acquedotto Lucano, which already has a feasibility study available and which could quickly prepare a technical-economic feasibility project to be tendered by the end of 2021. Current losses in the water distribution networks there are very high (over 50%) and the supply cost is very high as it is purified water and obtained from a distance of a few hundred meters. The manager's difficult financial situation does not allow these investments to be activated exclusively based on the tariff.

In addition to the PNRR resources, € 313 million from the REACT-EU will also be allocated for reducing the losses in the water distribution network.

Implementation:

As regards the aims and procedures, the proposed intervention is in continuity with the National Plan for interventions in the water sector (with particular reference to the interventions concerning the drinking water distribution networks in the “Aqueducts” section).

Investments will be distributed over all Italian regions, according to: i) the strategic and assessed needs; ii) the capacity of final beneficiaries to implement the interventions in due time. A percentage of around 45-50% of the resources is estimated to be allocated to the southern regions.

The investments will be implemented by the Integrated Water Service Operators. The selection of projects will be carried out by the Ministry of Infrastructure and Transport and by ARERA on the basis of a series of criteria, including: the existence of an integrated operator, in line with Italian and European legislation; the current level of losses and their expected reduction; the technical quality of the proposals taking into account the existing level of digitization; the characteristics of the territory and the population; environmental impact; the ability of the operator, also from a digital point of view; the level of co-financing and coherence with general water planning tools.

Target population: Users of the integrated water service.

Timeline: selection of 70% of projects by Q3 2021 and the remaining 30% by mid-2022; award of works by Q3 2023 and completion by mid-2026.

State aid: not relevant

Investment 4.3. Investments in the resilience of the irrigation agrosystem for the better management of water resources (including digitalisation and technological innovation of distribution networks)

Challenges:

The spectrum of continuous water crises, due to scarcity and the different distribution of resources, has important effects on agricultural production, in particular where constant irrigation is a necessary practice and an essential condition for competitive agriculture. To increase the capacity to deal with emergency situations, it is essential to quantify the volumes used for irrigation purposes to increase the efficiency in irrigation and to encourage the use of non-conventional water to supplement conventional sources. Actually, there is a lack of knowledge about the effective water volume used in agricultural sector, both for collective irrigation and for self-supply. These volumes are often estimated rather than measured.

Objectives:

- Improve water resource management and reduce losses;

- Encourage the measurement and monitoring of uses both on collective networks (through the installation of meterers and remote-control systems) and for self-supply uses (through a monitoring system of private licenses) as a prerequisite for completing the introduction of water pricing policies based on the water volumes for an efficient use of water resources in agriculture;
- Reduce illegal water withdrawals in rural areas;
- Increase the resilience of the irrigation agro-ecosystem to extreme climatic events, with particular reference to drought events.

In order to achieve the objectives indicated, infrastructural interventions on the networks and irrigation systems and on the related digitalisation and monitoring systems will be financed, consisting in: the conversion of irrigation systems towards higher efficiency systems; the adaptation of distribution networks in order to reduce losses; the installation of technologies for an efficient use of water resources, such as meterers and remote control. For each intervention on distribution networks, water metering enabling measurement of water use must be in place or must be put in place as part of the supported investment. In addition, monitoring systems about Waste Water Treatment Plans WWTPS with potential for irrigation reuse will be implemented. The measure does not directly provide for interventions on the re-use of reclaimed water but aims to support mapping and the identification of those WWTPs that are suitable for the production of treated wastewater for agricultural uses or that can become so with appropriate investments. This identification will take into account the characteristics of the WWTPs but also the proximity to irrigable crops with treated wastewater and the required quality characteristics (also in line with the new European regulation that will come into force in 2023). Downstream of this, the design and financing of targeted collective infrastructures for reuse can be envisaged where feasible and convenient based on the monitoring carried out. Finally, a monitoring system of Water Abstraction Licenses (WALs) for private use and their connection to the data system for collective uses (SIGRIAN) will be promoted in the Regions and Public Administrations, with the aim of recording and monitoring the volumes used in self-supply and preventing illicit uses of water (also thanks to the joint measurement of the volumes used on collective distribution networks).

Overall, the proposed irrigation investments, promoting an efficient use of water, will allow for a greater and more constant availability of water for irrigation and are configured, therefore, as a measure of adaptation of the agricultural sector to climate change, increasing the resilience of the agro-ecosystem to drought events.

The proposed irrigation investments do not intervene on company agricultural practices but on the collective water distribution infrastructure to farms, outside the farms. Irrigation measures can be made more efficient also through the adoption of sustainable agricultural practises, such as switching to less water consuming crops, adopting natural water retention measures. These measures at farm level will be promoted under the National Strategic Plan of CAP and, they could be required as accompanying measures by beneficiaries for the interventions to be financed under this Plan.

Implementation:

The implementation of the interventions will be entrusted to the Local Agencies for Water Management - LAWM. They are legal entities with public law personalities that carry out activities of public interest. By law, the collective irrigation infrastructures belong to the State property and are therefore public. The owner of the infrastructure is therefore the State. Therefore, the rules on State aid do not apply to these entities. They apply only if the beneficiary of a measure is the farm.

The Ministry of Agricultural, Food and Forestry Policies will carry out the reconnaissance and selection of the interventions in the initial phase, for the launch of the Plan, using the National Database of investments for Irrigation and the Environment (DANIA). The latter will make it possible to make a selection based on objective criteria, being a tool that collects the interventions (implemented by the irrigation bodies, already financed or only planned), cataloging them according to technical, financial-procedural information, as well as according to the territorial classification. Specifically, priority will be given to projects with a high level of construction capability and deemed to be of greater territorial strategic importance by the regional authorities. Only projects ensuring an adequate water saving and measurement by meters of water volume used will be financed. For the selection of projects, the presence of a water abstraction licence (WAL) from the water body interested by the interventions will be required as a precondition for financing, regardless of the state of the water body.

Moreover, a prerequisite for funding will be the compliance with the statement of *National guidelines on the quantification of irrigation volumes by Regions* (Mipaaf Ministerial Decree 31/07/2025) regarding the methods of quantifying and metering irrigation volumes by Regions (then implemented by individual regional regulations) as well as the use of the Sigrian webgis for the quantification of collective and self-supply irrigation uses.

The National guidelines, approved to fulfill ex ante conditionality for water resources under Cohesion Policies, provide for an obligation for the LAWM to quantify (by measuring or estimation) collective irrigation volumes and to transmit the data to the SIGRIAN to introduce water prices based on water metering.

Therefore, the compliance with this obligation represents both a prerequisite for access to public financing for interventions on irrigation infrastructures, and an ex-post obligation for the beneficiaries of public funds. As a consequence, LAWM that does not meet monitoring obligations, cannot have access to funding under this measure, as it already happens for national and EU funds. The compliance with quantification and monitoring obligations and transmission to SIGRIAN is verified by Regions/AA.PPs through SIGRIAN and then registered in DANIA in a dedicated field ("Compliance by SIGRIAN").

Target population: agricultural production sector, ecosystems related to water.

Timeline: definition of the selection criteria by Q2 2021; project selection by Q3 2021; financing deeds of the selected projects by Q3 2022; assignment of works for 100% of the projects financed by Q4 2023; completion of 100% of the interventions financed by Q2 2026.

State aid: not relevant (measure is implemented by public entities)

Investment 4.4. Investments in sewerage and purification

Challenges:

The quality of water resources has long been in a state of crisis, exacerbated in recent years by climatic variations, by the development of urban agglomerations with an increasingly intense consumption of land and by the presence of emerging pollutants, with consequent problems of safeguarding water resources and more generally of human health. The water systems present a high degree of obsolescence; in particular, sewerage and purification systems, which are not always present, are frequently not adequate in terms of European standards, with consequent burdensome infringement procedures. Since 2016, the establishment of a Single Commissioner has been planned to speed up the implementation of the collection works.

Objectives:

- Make the purification of wastewater discharged into marine and inland waters more effective, also by means of technological innovation;
- Where possible, transform purification plants into “green factories”, which allow energy and sludge recovery, and the reuse of purified wastewater for irrigation and industrial purposes;
- Contribute to overcoming EU infringement procedures in this area.

An example of a “flagship” intervention, relating to the purification plants, could be that in the province of Palermo relating to the completion of the sewage networks and the construction of the new purification plants of Altavilla Milicia, Bolognetta and Partinico. In this case, the managing body would be the in-house company AMAP, which has already available the executive projects or has already started the design tenders to quickly dispose of the definitive projects that allow the tender for the works to be started by the end 2021. These agglomerations are all in infringement proceedings and the financial dimension of the complex of interventions does not allow these investments to be activated exclusively based on the tariff.

In addition to the measures described above, further interventions related to the integrated water service (aqueduct, sewerage and purification) will be financed with the resources of the 2021-27 programming cycle of the cohesion policy.

Implementation:

The Ministry of the Environment and the Protection of the Territory and the Sea (now the Ministry for Ecological Transition, MiTE) has the task of controlling and monitoring the state of implementation of the interventions. The implementation of the interventions will be entrusted to the Integrated Water Service Managers. Their selection will be made by the MiTE and the ARERA regulator, on the basis of a series of criteria, such as: the existence of an integrated operator, in line with Italian and European legislation; the need to deal with an open infringement procedure; the expected improvement in the quality of receiving water bodies; the technical quality of the proposal; the characteristics of the territory and the population and possible synergies with other interventions; the ability of the operator; the level of co-financing; consistency with general water planning tools.

Target population: users of the integrated water service

Timeline: selection of 70% of projects by Q3 2021 and the possibility of selecting the remaining 30% by mid-2022; awarding of works by the end of 2023 and completion by Q2 2026.

State aids: None of the interventions of the component fall within the scope of the legal framework on State aids.

Reform 4.1 Simplification of legislation and strengthening of Governance for the implementation of investments in the field of water supply infrastructures

Challenges:

The articulated regulatory framework and the fragmented management of water resources and related supply infrastructures have a negative impact on the capacity for planning and implementing investments.

Objectives:

- Simplification and more effective implementation of the legislation relating to the National Plan for interventions in the water sector;
- Provision of support and accompanying measures for implementing bodies not able to carry out investments relating to primary procurement within the foreseen time frame.

More specifically, the reform in question intends to act on the legislation that regulates the National Plan for interventions in the water sector (Law 205/2017, article 1, paragraph 516 and following), according to the following lines of action:

- making the National Plan the central public financing instrument for investments in the water sector by unifying the economic resources relating to water supply infrastructures under the Plan;
- overcome the division between the “reservoirs” and the “aqueducts” sections;
- involve ARERA for support in the formation of the entire Plan;
- simplify the training and updating procedures of the Plan;
- simplify the procedures for reporting and monitoring the investments financed;
- provide for central accompanying measures by MIT (directly or through a state company) for subjects with less capacity for planning, design and implementation.

Implementation:

The Ministry of Infrastructure and Transport will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MITE and MIPAAF).

Furthermore, to promote the planning and implementation of interventions according to a systemic and organic logic and strengthen the governance of the sector, the process of strengthening the district basin Authorities will continue⁹, as already begun by MiTE through a community project (We create PA - Line L6W1, funded under the PON Governance 2014-2020).

Target population: users of water resources for different uses.

Timeline: approval of the regulatory provision by Q12022 and finalization of the "internal" procedures for the implementation of the reform (methods for recognizing needs, selection criteria, guidelines for the evaluation of investments) within 2022.

Reform 4.2 Measures to ensure full managerial capacities for Integrated water services

Challenges:

In the South, the insufficient presence of industrial managers and the large number of small direct award contracts for the management of the services reveals a very fragmented context of the water sector: there are 1,069 operators of which 995 are represented by Municipalities which manage the service through small direct award contracts (in particular, 381 in Calabria, 233 in Sicily, 178 in Campania, 134 in Molise). In this context, an initiative of the central authorities aiming at stimulating a process of managerialization could be crucial to improve structurally the water sector in the South.

Objectives:

⁹ In complementarity with the measures to strengthen the district authorities themselves envisaged in the context of reform no. 1.1, for a more effective contrast to hydrogeological risk.

- Promote / strengthen the industrialization process of the sector (meaning by it the support to integrated operators, public or private, with the aim of achieving economies of scale and guaranteeing efficient management of investments and operations);
- Reduce the existing gap (water service divide) between the center-north of the country and the South, where there is a lack of industrial managers.

Implementation:

In order to give concrete and specific impetus to the industrialization process of the sector, the establishment of the Local Government Bodies and the successful entrusting of the integrated service to capable managers will be established as a necessary condition for the allocation of PNRR resources so as to ensure the effective implementation of interventions.

The areas that currently do not meet the aforementioned criteria will have a deadline (Q2 2022) for adaptation to the national and European regulatory framework, so that they too can take advantage of PNRR funding. In particular, it is planned to reserve up to 30% of available funding for one year, in order to allow the lagging regions to align themselves.

In this regard, the MITE, with the project Mettiamoci in Riga - Intervention Line 7, as part of the PON Governance 2014-2020, provided for the definition and signing of specific Memoranda of Understanding with Regions and Government Bodies in the area, to provide support, where delays are recorded, in the preparatory activities for the drafting of the Area Plans and the award of the integrated water service. To date, discussions are underway with the Regions of Sicily, Calabria, Molise and Campania to finalize the memoranda of understanding and start the support activity through a specific working group.

Target population: users of the integrated water service

Timeline: signing of the Memorandum of Understanding between the MITE and the Regions concerned by Q2 2021; verification of the constitution of the ATOs and of the award of the SII by Q2 2022.

4. Open strategic autonomy and security issues

Not relevant.

5. Cross-border and multi-country projects

Not relevant.

6. Green dimension of the component

The Regulation (EU) 2021/241 of The European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility establishes, as a binding objective, that at least 37% of the total allocation of the PNRR must be allocated to the mitigation of and/or adaptation to climate change and the challenges that arise from it.

This Action, comprising over 62% of expenditure for the climate (see Table 1), contributes very significantly to the green transition by promoting a more efficient and sustainable use of water resources and prevention actions against the risks associated with climate change.

In particular, through investments 4.1, 4.2, 4.3, 4.4 and 3.4, the improvement of the environmental infrastructures for the management of water and the reduction of soil and water pollution are pursued, protecting the health and well-being of citizens from environmental risks and their impacts. Through investments 1.1, 2.1, 2.2, 3.1, 3.2, 3.3 and 3.5 the aim will be to protect and restore biodiversity and natural ecosystems, to increase carbon absorption capacity, and to strengthen resilience in the face of climate change.

With reference to the climate and environmental objectives defined in the EU Regulation 2020/852 (Taxonomy Regulation), this Action provides a specific contribution in almost all the areas indicated:

- Adaptation to climate change (through measures to reduce hydrogeological and drought risks);
- Mitigation of climate change (through interventions for energy efficiency in municipalities and measures concerning urban and non-urban green areas);
- Sustainable use and protection of water and marine resources (through measures relating to water supply infrastructures, the resilience of the irrigation agrosystem and water distribution networks);
- Pollution prevention and reduction (in particular, through investments in the “sewerage and purification” sector, aimed at reducing pollution of maritime and inland waters, and through the investment related to orphan-sites soil);
- Protection and restoration of biodiversity and ecosystems (to which we contribute mainly through the restoration of the marine ecosystem and through measures concerning urban and peri-urban forests, the Po area, Parks and Marine Protected Areas).

Please refer to Table T2.

7. Digital dimension of the component

The Regulation (EU) 2021/241 of The European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility establishes, as a binding objective, that at least 20% of the total allocation of the PNRR must be allocated to the digital transition and the challenges that derive from it.

This Action provides for important measures to favor the "digital management" of water resources and related networks, to be transformed into a "smart network". In particular, the installation of software equipment and applications and hardware platforms for the implementation of remote control systems and the digitization of measuring instruments is envisaged.

The most relevant measure in terms of digitization is investment no. 1.1, whose objective is to develop a future-proofed and integrated surveillance/monitoring system to deploy both preventive measures, targeted interventions to optimize the use of resources and emergency management.

Other important measures in terms of digitization are those relating to the Marine Ecosystem Restoration (3.5) and to parks and marine protected areas, which concern monitoring systems (3.2.a), digitization of services (3.2.b) and administrative simplification (3.2.c).

Please refer to Table T2.

8. Do no significant harm

Please refer to “DNSH Table”

9. Milestones, targets and timeline

Please refer to Table T1.

10. Financing and costs

See Table T2.

11. Loan request justification (if applicable)

Tbd.

Annex II: M/Ts of Component 4 of Mission 2

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|---|---|-------------------------------|---|
| Q4-2023 | | | | Based on the new European's Strategy on Adaptation will be updated the Italian National Strategy on Climate Change Adaptation (approved in 2013). Consequently will be revised also the Italian National Plan on the adaptation, that is still under SEA procedure, The Plan will be completely revised in line with the updated Italian National Strategy on Climate Change Adaptation (SNAC) and will include the inputs collected during the SEA procedure. |
| Q3 2021 | Inv. 1.1. Implementation of an advanced and integrated monitoring and forecasting system Milestone. Approval of the detailed operational plan of integrated surveillance/monitoring - Ministerial Decree adopted Q3 2021 | | | |
| Q3 2024 | Inv. 1.1. Implementation of an advanced and integrated monitoring and forecasting system Target. % surface of Southern regions monitored Baseline 0 goal 90% by Q3 2024 | | | |
| Q2-2022 | Reform 2.1. Simplification and acceleration of the procedures for implementing interventions against hydrogeological instability Milestone: Adopt a Law that (as a minimum): <ul style="list-style-type: none"> • Prioritises prevention interventions in line with the National Risk Assessment in line with Article 6 of the Decision 1313/2013 EU and | | | |

| | | | | |
|---------|---|---|--|---|
| | <p>Risk Management Capability Assessment and the Do No Significant Harm principle</p> <ul style="list-style-type: none"> • Sets general principles to simplify project implementation and financing procedures; • Harmonises the information flows to reduce redundancy in reporting between the various information systems of the State, in line with the recommendations of the Italian Court of Auditors; • Creates joint databases on incidents ('dissesto'), in line with the recommendations of the Italian Court of Auditors; • Reinforces the coordination of interventions among different government levels in line with the recommendations of the Italian Court of Auditors; • Establishes maximum timelines for each phase. • Sets a plan to strengthen the capacity of the relevant entities | | | |
| Q2-2022 | <p>Reform 2.1 Simplification and acceleration of procedures for implementing measures against hydrogeological risks</p> <p>Milestone: Revision of Prime ministerial decree of 28 may 2015 for a better identification of hydrological risks and for a more efficient implementation of projects against hydrogeological risks in line with the conclusions of the Italian Court of Auditors.</p> <p>The law shall in particular aim to,</p> <ul style="list-style-type: none"> • Accelerate the procedures for project design and implementation of hydrological risks projects; • Streamline information flows and data sources and develop a system of indicators for a better identification of hydrological risks and for the monitoring of projects aimed at tackling them; | <p>Q2 2022: Revision of the Prime ministerial decree (DPCM) of 28 may 2015 on coordination and strengthening of action against hydrogeological risk</p> | | |
| Q4-2023 | <p>Inv. 2.1.a. Measures for flood and hydrogeological risk reduction</p> <p>Milestone: Award of the contracts for the interventions on risk management and reduction of hydrogeological risks. Q4 2023</p> <p>Int. 2.1.b</p> <p>Milestone: adoption of the decree approving the first intervention plan / investment plan by the responsible party (Commissioner delegate / Region / Autonomous Province) for flood and hydrogeological risk reduction. Q4 2021</p> | <p>The contracts will be awarded to the regions on the basis of the surface, the resident population in the region and the risk of landslides, flood and coastal erosion</p> <p>For the non-structural measures the contracts will be awarded to the River Basin Authorities on the basis of the surface.</p> | | <p>The investment for the reduction of hydrogeological risk contemplates two types of interventions:</p> <ul style="list-style-type: none"> - 2.1 a. the first which acts according to the sector planning carried out by the district authorities and is aimed at reducing the risk. - 2.1 b. the second which acts downstream of emergencies and is aimed at restoring the starting conditions. This second type acts on the basis of interventions proposed with specific emergency plans proposed by the regional |

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| | | | | administrations to the National Civil Protection Department, has streamlined procedures to guarantee the resilience of the territories to disasters |
| Q2-2026 | <p>Inv. 2.1.a. Measures for flood and hydrogeological risk reduction</p> <p>Target: reduction in the number of people at direct flood and hydrological risks. Baseline: 1.750.000; goal 250.000 by Q2 2026</p> | <p>People considered at direct risk are defined as those living in P2, P3, and P4 areas as per the indicators developed by the <i>Istituto Superiore per la Protezione e la Ricerca Ambientale defined by the Flood Risk Management Plans and by the Hydrogeological Plans (piani Asseto Idrogeologico) set out by River Basin Authorities</i></p> <p>People at direct risk are people who risk their own safety in the areas of intervention. The target measures the reduction of people at direct risk in these areas made possible thanks to the structural interventions financed by the PNRR</p> <p>The target will be measured through the Database ReNDiS web, which collects all the information about mitigation measures and projects, provided by the Regions.</p> | | <p>Since the target is considered achieved only when the measure is fully implemented, it is difficult, considering all the variables (e.g. problems during the tender, delays due to expropriation or EIA procedures), giving an intermediate target.</p> <p>However, each year we can send the EU the estimated target for the next year, in order to keep better track of the implementation.</p> |
| Q4-2023 | <p>Inv. 2.2: Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities</p> <p>Target: Complete at least 7 500 interventions for small public works. At least 10% of investments for small public works realized in municipalities are dedicated to energy efficiency of public lighting, of public buildings and/or at the installation of systems for the production of energy from renewable sources.</p> | <p>The percentage of investments is calculated on the total amount of euro assigned for small public works in municipalities (3 bln euro)</p> <p>Details on the territorial distribution will be reported.</p> <p>Small public works should include at least one of the following interventions, a) energy efficiency projects aimed at improving the efficiency of public lighting, improving the energy efficiency of public buildings and at the installation of systems</p> | | |

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| | | <p>for the production of energy from renewable sources;</p> <p>b) interventions in the field of sustainable mobility for the adaptation and safety of schools, public buildings and municipal heritage and for the removal of architectural barriers.</p> | | |
| Q2-2026 | <p>Inv. 2.2: Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities</p> <p>Target: Complete at least 30 000 interventions for small public works.. At least 30% of investments for small public works realized in municipalities are dedicated to energy efficiency of public lighting, of public buildings and/or at the installation of systems for the production of energy from renewable sources</p> | <p>The percentage of investments is calculated on the total amount of euro assigned for small public works in municipalities (3 bln euro)</p> <p>Details on the territorial distribution will be reported.</p> <p>Small public works should include at least one of the following interventions,</p> <p>a) energy efficiency projects aimed at improving the efficiency of public lighting, improving the energy efficiency of public buildings and at the installation of systems for the production of energy from renewable sources;</p> <p>b) interventions in the field of sustainable mobility for the adaptation and safety of schools, public buildings and municipal heritage and for the removal of architectural barriers.</p> <p>Medium public works should include at least one of the following interventions,</p> <p>a) investments for the safety of the territory against hydrogeological risks;</p> <p>c) investments in the safety and energy efficiency of buildings, with priority for school buildings, and other structures owned by the institution.</p> | | |

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| Q4-2023 | <p>Inv. 2.2: Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities</p> <p>Target: Complete at least 1 000 interventions for medium works. At least 10% of investments for medium public works realized in municipalities are dedicated to safety of the territory against hydrogeological risks.</p> | <p>The percentage of investments is calculated on the total amount of euro assigned for medium public works in municipalities (3 bln euro)</p> <p>Details on the territorial distribution will be reported.</p> <p>Medium public works should include at least one of the following interventions, a) investments for the safety of the territory against hydrogeological risks; c) investments in the safety and energy efficiency of buildings, with priority for school buildings, and other structures owned by the institution.</p> | | |
| Q2-2026 | <p>Inv. 2.2: Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities</p> <p>Target: Complete at least 5 000 interventions for medium works. At least 40% of investments for medium public works realized in municipalities are dedicated to safety of the territory against hydrogeological risk.</p> | <p>The percentage of investments is calculated on the total amount of euro assigned for medium public works in municipalities (3 bln euro)</p> <p>Details on the territorial distribution will be reported.</p> <p>Medium public works should include at least one of the following interventions, a) investments for the safety of the territory against hydrogeological risks; c) investments in the safety and energy efficiency of buildings, with priority for school buildings, and other structures owned by the institution.</p> | | |
| Q4 2021 | <p>Reform 3.1 Adoption of national programs on air pollution control</p> <p>Milestone. Adoption of a National air pollution control Program pursuant to EU Directive 2016/2284. Decree of the President of the Council of Ministers (DPCM) by Q4 2021</p> | | | |

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| Q4-2021 | <p>Inv. 3.1: Protection and enhancement of urban and peri-urban forests</p> <p>Milestone: Adopt the urban forestation plan in line with the objectives of the law of 12 December 2019, 141 ('climate law') and following a planning phase to be carried out by the metropolitan cities.</p> <p>Q4 2021</p> | | | |
| Q4-2024 | <p>Inv. 3.1: Protection and enhancement of urban and peri-urban forests</p> <p>Target: Total number of trees planted (cumulative over the years) for urban reforestation launched pursuant to article 4 of the law of 12 December 2019, 141 (so-called climate law)</p> <p>Baseline 0 Goal 6.600.000. By Q4-2024</p> <p>There are two Intermediate targets:</p> <ul style="list-style-type: none"> - Baseline 0; goal: 1.650.000 by Q4-2022; - Baseline 1.650.000; goal: 3.300.000 by Q4 2023 | <p>The goal is to plant at least 6.6 million trees (for 6,600 hectares of urban forests), identifying locations and quantities according to the principle of using "the right tree in the right place". The Charter of the Ecoregions of Italy drawn up at the level of "34 ecoregions" will make it possible to select and assign to each metropolitan area the most suitable trees in terms of ecological, biogeographical and response to different local needs</p> | | |
| Q4-2025 | <p>Inv.3.2: Digitization of national parks - 3.2.a. Nature conservation - monitoring of pressures and threats on species and habitats and climate change</p> <p>Target: Percentage of hectares of Italian national parks and marine protected areas where the new monitoring system is active: Baseline 0 goal 33% by Q4 2025</p> <p>Intermediate target Hectares involved in the experimentation of the new monitoring system of pressures and threats on species and habitats and climate change (HA): 5000 by Q2 2022</p> | <p>Int. 3.2.a. Collection and processing of big data are planned from heterogeneous sources, both for the monitoring of climate change and for scientific purposes, for example the study of the effects on target habitats and species, and for the direct use of threat alerts on the territory, land and sea, through apps or web portals.</p> <p>Sources of data collection will be proximity sensors, which can be installed without the need for power supply, even placed directly on IP systems, to measure the different environmental parameters of air and water (pollution, CO2, temperature, humidity, ...). Other specific sensors, also usable to make audio/video recordings (phototraps) will allow the monitoring of target species and</p> | | |

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| | | <p>the acquisition of large amounts of scientific data while updating those already available. Particular importance will be given to the planned and continuous use of drones with sensors installed, and open data collected by the Sentinel satellites of the Copernicus program (https://scihub.copernicus.eu/). For the marine environment, it is foreseen the installation, on the buoys of perimeter zoning of marine protected areas, of multiparameter probes for the monitoring of parameters such as optical dissolved oxygen, specific and absolute conductivity, pH, salinity, temperature, level, the visual census.</p> <p>The data will be included in the database of the Marine Strategy which, in implementation of the European Directive, has set up a monitoring network. Crossing this large amount of big data, stored in e Cloud infrastructure, predictive models and artificial intelligence algorithms can be applied to detect and prevent phenomena related to pressures on species and habitats, the spread of pathogens and other threats to plant species to the occurrence of fires.</p> | | |
| Q1 2022 | <p>Inv.3.2: Digitization of national parks - 3.2.b. Digital services to visitors to national parks and marine protected areas</p> <p>Milestone. Agreements signed between Ministry of Ecological Transition (MITE) and National Parks and Marine Protected Areas to develop digital services for visitors. Ministerial decree by Q1 2022</p> | | | |
| Q4-2023 | <p>Inv.3.2: Digitization of national parks - 3.2.b. Digital services to visitors to national parks and marine protected areas</p> <p>Target. Percentage of National Parks and Marine Protected Areas which have developed Digital services for park visitors (at least two among the</p> | <p>Int. 3.2.b We will invest in sustainable mobility with a specific edition for Parks and MPAs of the apps currently available for carpooling (Uber type) as an alternative service to Local Public Transport - LPT. The service connects private service partner drivers to users who need to reach a destination. For the Parks, this service will</p> | | |

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| | <p>connection to the Naturalia.it portal; the 5G/wifi or the sustainable mobility app</p> <p>Baseline 0, goal 70% by Q4-2023</p> | <p>cover certain sections identified by the Park as critical and for which this service helps to optimise the transit of private vehicles and, at the same time, acts as an alternative to LPT in poorly served areas. The same App, in addition to serving as a service for mobility, will serve to convey services consistent with the Park and the AMP to allow the visitor a choice that enhances the places in line with the purposes of the protected area, thus ensuring an added value to the territory with the purchase of additional services. The App will also allow the automation of the issuing of permits for the performance of certain activities in protected marine areas, for which the managing body must issue specific authorisations upon request.</p> | | |
| Q4 2024 | <p>Inv.3.2: Digitization of national parks - 3.2.c. Administrative simplification - Digitisation and simplification of procedures for services provided by Parks and Marine Protected Areas</p> <p>Target. Percentage of Park Authorities fully connected to the digital platform for simplification of procedures for services.</p> <p>Baseline 0, goal 100% by Q4-2024</p> | <p>Int. 3.2.c Currently in each PN and MPA, depending on the size, there is a considerable effort to respond to requests for permits, authorisations, clearances, VINCA. Many of these procedures involve detailed, sometimes even complex, requirements. The variety of investigated proceedings is therefore extremely wide, therefore there is a large margin of optimization for proceedings that occur in recurring form that can be dismissed in less time, leaving space and resources for the more complex ones. The digitalisation of services involves the acquisition of authorisations and information via the web, optimising the system for issuing authorisations, provided for by the Regulations, and aimed at both the tourism sector and the professional sector. For each park and AMP, an interface will be organised for the authorization requests set up with the logic of the Single Desk in which the citizen find useful information to guide requests according to the measures of the park.</p> | | |

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| Q3-2023 | <p>Inv. 3.3 Re-naturification of Po area</p> <p>Milestone: Planning and acquisition of authorizations - Approval of the AIPO through adequate administrative measures by Q3 2023</p> | | | |
| Q1-2026 | <p>Inv. 3.3 Re-naturification of Po area</p> <p>Target: Reduction of riverbed artificiality (n. complainent groyne): Baseline 0 goal 24 by Q1 2026.</p> <p>Intermediate target Naturalistic reforestation and forest maintenance (HA): 100 by Q2 2024</p> | <p>Reduction of riverbed artificiality (n. complainent groyne): The project involves the lowering of 24 navigation groynes (Groyne) which are rigid bank structures for hydraulic defense that had been built in the past decades and have helped to close the lateral branches of the Po; the renaturation project foresees their lowering and the reopening of the oxbow lakes / lateral branches upstream to restore the diversity of habitats and increase the capacity of the river to invade.</p> <p>Naturalistic reforestation and forest maintenance (HA): a widespread reforestation action with native species is planned to restore the riparian woodlands of the river to improve biodiversity, increase the protection of the banks and river strips and improve the self-purification capacity of the ecosystem and an initial coverage of at least 100 hectares is expected by 2024</p> | | |
| Q4-2022 | <p>Inv. 3.4. Remediation of “orphan-sites soil”</p> <p>Milestone: Approve an Action Plan for the revitalisation of orphan sites to reduce land take and enhance urban regeneration. It should include as a minimum:</p> <ul style="list-style-type: none"> • The identification of orphan sites in all 21 Regions and/or Autonomous Provinces • The specific interventions to be made in every orphan site to reduce land take and enhance urban regeneration <p>Q4-2022</p> | <p>The Ministry of Ecological Transition transfers to the Regions the resources assigned through the signing of agreements. The agreements define, moreover, a chrono program of the interventions that respects the timing fixed by the recovery funds. The milestone refers to the publication of the list of agreements.</p> | | |

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| Q2-2026 | <p>Inv. 3.4. Remediation of “orphan-sites soil”</p> <p>Target: Percentage of surface revitalized to reduce land take and enhance urban regeneration Baseline:0 Goal:70% by Q2-2026</p> | | | |
| Q2 2024 | <p>Inv. 3.5. Restoration and protection of the seabed and marine habitats</p> <p>Milestone: Public procurements for coastal habitat mapping, marine (beyond 12 NM) habitat mapping, restoration activities completed</p> | | | |
| Q2 2025 | <p>Inv. 3.5. Restoration and protection of the seabed and marine habitats</p> <p>Target: Number of Marine and coastal observation systems. Baseline 0, goal 22 by Q2 2025</p> | | | |
| Q2 2026 | <p>Inv. 3.5. Restoration and protection of the seabed and marine habitats</p> <p>Target: Percentage (%) of Marine and coastal habitat mapping. Baseline 10% at Q4 2025, goal 90% by Q2 2026</p> <p>Intermediate target Baseline 10% goal 55% by Q4 2024</p> | | | |
| Q1 2022 | <p>Reform 4.1 Simplification of legislation and strengthening of governance for the implementation of investments in the water supply infrastructures Objectives:</p> <ul style="list-style-type: none"> - Simplification and more effective implementation of the legislation relating to the National Plan for interventions in the water sector; - Provision of support and accompanying measures for implementing bodies not able to carry out investments relating to primary procurement within the foreseen time frame. <p>Milestone. Approval of the regulatory measure for simplification and more effective implementation of the legislation relating to the National</p> | | | |

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| | Plan for interventions in the water sector. Legislative measure approved by Q1 2022 | | | |
| Q2-2021 | <p>Reform 4.2 “Measures to ensure full managerial capacities for Integrated water services”</p> <p>In order to give concrete and specific impetus to the industrialization process of the sector, the establishment of the Local Government Bodies and the successful entrusting of the integrated service to capable managers will be established as a necessary condition for the allocation of PNRR resources.</p> <p>The areas that currently do not meet the aforementioned criteria will have a deadline (Q2 2022) for adaptation to the national and European regulatory framework, so that they too can take advantage of PNRR funding. In particular, it is planned to reserve up to 30% of available funding for one year, in order to allow the lagging regions to align themselves.</p> <p>In this regard, the Ministry of Ecological Transition (MITE) provided for the definition and signing of specific Memoranda of Understanding with Regions and Government Bodies in the area, to provide support, where de lays are recorded.</p> <p>Milestone: Start of support activities to the Regions concerned, late in the implementation of the integrated water service - Memoranda of understanding Ministry od Ecological Transition (MITE) -Regions concerning support for implementation of projects for integrated water services by Q2 2021.</p> | | | |
| Q3 2023 | Inv. 4.1. Investments in primary water infrastructures for the security of water supply | | | |

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| | <p>Milestone. Completion of the procurement procedure of the selected projects for the security of water supply. 100% of financed project with official award of the tender by Q3 2023</p> | | | |
| Q2-2026 | <p>Inv. 4.1. Investments in primary water infrastructures for the security of water supply</p> <p>Target: Number of complex water systems (at regional, sub-regional or at irrigation district level) for which security of supply has been increased. Baseline 0 goal 25 by Q2-2026</p> <p>Intermediate target Baseline 0, goal 7 by Q4 2025</p> | <p>‘Complex water systems’ and ‘increase security of supply’ are [as a minimum] defined as follows:</p> <ul style="list-style-type: none"> • More resilient infrastructures to climate change • Improved quality of water, where relevant • Increased safety standards of the water infrastructure • Optimisation of water supply, including losses reduction where relevant and ‘increase’ means at least: <ul style="list-style-type: none"> • More water efficiency of supply systems • More water storage • i.e., more availability of water for users • Adaptation/mitigation during water scarcity and drought events <p>Complex water systems are water systems supplying large areas/districts, that could need several interventions/works (maintenance or new infrastructures) for increasing the security of primary water supply (e.g. big cities or residential areas, large irrigation districts).</p> | | |
| Q3 2023 | <p>Inv. 4.2. Reduction of losses in water distribution networks, including digitization and monitoring of networks</p> <p>Milestone. Completion of the procurement procedure for the realization of interventions for the modernization and efficiency of the water distribution networks. 100% of financed project with official award of the tender by Q3 2023</p> | | | |

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| Q2-2026 | <p>Inv. 4.2. Reduction of losses in water distribution networks, including digitization and monitoring of networks</p> <p>Target: Kilometers of districtized water network Baseline 128.000, goal 153.000 by Q2 2026</p> <p>Intermediate target Baseline 128.000 Km; goal 137.000 Km by Q4 2024</p> | Number of km of aqueduct divided into homogeneous districts, not too vast territorially, in order to improve the management and maintenance of the network also through digitalisation for pressure and flow rate control to reduce water losses. | | |
| Q4 2023 | <p>Inv. 4.3 Investments in the resilience of the irrigation agrosystem for better management of water resources</p> <p>Milestone: Completion of the procurement procedure for the realization of the financed infrastructural interventions on the networks and irrigation systems and on the related digitalisation and monitoring system - 100% of financed project with official award of the tender by Q4 2023</p> | | | |
| Q2 2026 | <p>Inv. 4.3. Investments in the resilience of the irrigation agrosystem for the better management of water resources</p> <p>Target: Increase in the percentage of withdrawal sources equipped with meters. Baseline 24%; goal 40% by Q2 2026</p> <p>Intermediate target Baseline 24%, Goal 29% by Q4 2024</p> | <p>Inv. 4.3. Some of the main objectives are:</p> <ul style="list-style-type: none"> - Encourage the measurement and monitoring of uses both on collective networks (through the installation of meters and remote-control systems) and for self-supply uses (through a monitoring system of private licenses) as a prerequisite for completing the introduction of water pricing policy based on the water volumes for an efficient use of water resources in agriculture; - Reduce illegal water withdrawals in rural areas. | | |
| Q2-2026 | <p>Inv. 4.3. Investments in the resilience of the irrigation agrosystem for the better management of water resources.</p> <p>Target. Increase in the percentage of irrigated area affected by efficient use of irrigation resources as a results of interventions</p> | To be considered more efficient the irrigation system should provide for installation of meters at the supply source and on the distribution network, provide for an adequate water saving in absence of increase in irrigated area. | | |

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| | <p>baseline 8%, goal 15% by Q2 2026</p> <p>Intermediate target Baseline 24%, Goal 29% by Q4 2024</p> | | | |
| Q4 2023 | <p>Inv. 4.4 Investments in sewerage and purification</p> <p>Milestone. Completion of the procurement procedure for the realization of interventions in sewerage and purification. 100% of financed project with official award of the tender by Q4 2023</p> | | | |
| Q2-2026 | <p>Inv. 4.4 Investments in sewerage and purification</p> <p>Target: Non-compliant equivalent inhabitants of the agglomerations subject to interventions Baseline 2.572.911, goal 0 by Q2 2026</p> <p>Intermediate target Baseline 2.572.911, Goal 2.011.879 by Q4 2024</p> | <p>The indicator shows the reduction of the number of equivalent inhabitants who do not comply with the requirements of Directive 91/271/EEC.</p> | | <p>The choice of reducing the number of equivalent inhabitants compared to the previous hypothesis is a direct consequence of the elimination of the East Naples treatment plant. It was, indeed, a revamping and not the construction of a new purifier in a territorial reality characterized by a very high population density. The replacement interventions are located in very different and minor territorial realities (hence the lower number of equivalent inhabitants brought up to standard) require the construction of pipelines and often a new plant and not just a revamping. These are the reasons why the financial endowment has remained unchanged in the face of a reduced number of equivalent inhabitants brought into compliance.</p> |

Annex II: M/Ts of Component 4 of Mission 2

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|---|---|-------------------------------|--------------------|
| Q4-2021 | Milestone: | | | |
| Q2-2022 | <p>Milestone: Adopt Law/Regulations and/or modify DPCM May, 28th 2015 so that the new legal framework (as a minimum),</p> <ul style="list-style-type: none"> • Prioritises prevention interventions in line with the National Risk Assessment and with Article 6 of the Decision 1313/2013 EU and Risk Management Capability Assessment and the Do No Significant Harm principle; • Sets general principles to simplify project implementation and financing procedures and hydrological risk projects; • Harmonises the information flows to reduce redundancy in reporting between the various information systems of the State, in line with the recommendations of the Italian Court of Auditors; • Reinforces the coordination of interventions among different government levels in line with the recommendations of the Italian Court of Auditors; | | | |
| Q3-2022 | <p>Milestone: Adopt a general Law / Regulations on water services for their sustainable use and incentivise investment in water infrastructure, which contains measures, which at least:</p> <ul style="list-style-type: none"> • Reduces fragmentation of entities through rules and aggregation mechanisms by stop | | | |

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| | <p>allowing currently autonomous managing operators that have to be integrated into the unique operator for the entire ATO;</p> <ul style="list-style-type: none"> • Provides for proper incentives for a sustainable use of water in agriculture, notably to support the use of the common monitoring system for water uses (SIGRIAN) for collective and self-supply irrigation uses; <p>Comment: Comment: As highlighted in investment 4.3 “Investments in the resilience of the irrigation agrosystem for the better management of water resources (including digitalisation and technological innovation of distribution networks)”, the common monitoring system is already in operation (SIGRIAN), managed by MIPAAF. National investments on irrigation infrastructures by MIPAAF are reserved only to irrigation entities compliant with the statement of National guidelines on the quantification of irrigation volumes by Regions (Mipaaf Ministerial Decree 31/07/2015), regarding the methods of quantifying and metering irrigation volumes by Regions (then implemented by individual regional regulations) as well as the use of the SIGRIAN webgis for the quantification of collective and self-supply irrigation uses.</p> <p>The National guidelines, approved to fulfil ex ante conditionality for water resources under Cohesion Policies, provide for an obligation for the Local Agencies for Water Management (LAWM) to quantify (by measuring or estimation) collective irrigation volumes and to transmit the data to the SIGRIAN to introduce water prices based on water metering. Furthermore, guidelines provide for the obligation for region to implement regional database on volumes used in self-supply and transmission of data to sigrian.</p> <p>Therefore, the compliance with this obligation represents both a prerequisite for access to public financing for interventions on irrigation infrastructures, and an ex-post obligation for the</p> | | | |
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| <p>beneficiaries of public funds. As a consequence, LAWM that does not meet monitoring obligations, cannot have access to funding under this measure, as it already happens for national and EU funds. A proper Technical support will be provided for the LAWM for the completion of the monitoring information in SIGRIAN.</p> <p>Finally, a monitoring system of Water Abstraction Licenses (WALs) for private use and their connection to the data system for collective uses (SIGRIAN) will be promoted in the Regions and Public Administrations, with the aim of recording and monitoring the volumes used in self-supply and preventing illicit uses of water (also thanks to the joint measurement of the volumes used on collective distribution networks).</p> <p>Sets a system of regulated prices that takes adequately into account environmental resource use and pollution in accordance with the polluter-pays principle Comment: the regulated price are set at regional level. With regard to the regulation of irrigation fees and tariffs on the national territory, in July 2016 a technical table was set up at the MATTM (now MITE) to which, among other things, the definition of the general criteria for the determination, by the Regions, of the concession fees for the use of public water, taking into account the environmental and resource costs, in implementation of Article 154, paragraph 3, of Legislative Decree 152/2006. For this purpose, the recognition of the regional regulations concerning the concession fees currently in force was applied, with respect to which to provide for homogeneous revision criteria. During the works, parameters were hypothesized with respect to which to determine the concession fee for each use of water (mainly the amount of water withdrawn and appropriate corrective factors related to the impact of the derivation). With regard to agricultural use, specific factors of reduction of the use of the resource are highlighted, linked to the good practices introduced for the measurement of volumes and the improvement of irrigation efficiency, as well as with respect to the positive externalities</p> | | | |
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| | <p>produced (vivification of canals, groundwater recharge, etc.). To date, however, the drafting process is suspended as work is being carried out, in parallel with the new planning cycle of the River basin management plans - which will have to carry out an analysis of the context and an economic analysis of water use - to define the current% of cost recovery through the tariff and, possibly, provide for a modification of the derivation concessions in terms of volume and / or amounts or other different instruments for internalising the environmental cost and the resource (operation to be completed following the analysis economic).</p> | | | |
| Q2-2022 | <p>Milestone: Revise the current legal framework to as a minimum,</p> <ul style="list-style-type: none"> • Ensures full compliance with the Water Framework Directive for irrigation purposes so as there is no net-deterioration in the status of surface water bodies. | | | |

| Mission | Componen Id | Name | Stato |
|---------|-------------|---------|---------------------------------------|
| M2 | C4 | Inv1.1 | Validato |
| M2 | C4 | Ref2.1 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv2.1a | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv2.1b | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv2.2 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Ref3.1 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv3.1 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv3.2 | Validato |
| M2 | C4 | Inv3.3 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Inv3.4 | Validato |
| M2 | C4 | Inv3.5 | Validato- Rivista numerazione nel tab |
| M2 | C4 | Ref4.1 | Validato |
| M2 | C4 | Ref4.2 | Validato |
| M2 | C4 | Inv4.1 | Validato |
| M2 | C4 | Inv4.2 | Validato |
| M2 | C4 | Inv4.3 | Validato |
| M2 | C4 | Inv4.4 | Validato |

DNSh assessment

Version: 1
 Change: 4
 Related Accession Number: 2024/1133 (Accession for Flood risk assessment and hydrogeological
 Responsibility for research, Civil Protection Department, for the sub-measure of construction
 Date: 07/06/2024

| Environmental objectives | Step 1 | | Step 2 | | |
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| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective | The measure is assignable to the intervention fields D35 and D37 "Adaptation to climate change measures and prevention and management of climate related risks: floods and other risks, such as storms and droughts (including awareness raising, civil protection and disaster management systems, infrastructure and ecosystem based approaches)" in the annex of the REGULATION (EU) 2023/241, with a climate change coefficient of 100%. In force of this, DNSh is considered complied with for the relevant climate change objective. Since the program measures aim to reduce the hydrogeological risks associated with climate change, with interventions that repair the consequences of natural disasters (floods, storms, landslides, etc.), they contribute to the achievement of the objective. | | | |
| 2. Climate change adaptation | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSh for the relevant objective. | The measure is assignable to the intervention fields D35 and D37. Indeed, the measure contains the action aimed at facing the consequences of calamitous events (hydraulic and hydrogeological) by providing for urgent structural and infrastructural investments. Those structural and infrastructural interventions have the following goals: | | | |
| 3. The sustainable use and protection of water and | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective | The measure has different purposes, which concern the safety and resumption of normal living conditions of the territories affected by calamitous hydro-geological events. The measure does not have any interferences with the environmental objective | | | |
| 4. The circular economy, including waste prevention | B. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not mitigated by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The measure only concerns public investment, carried out in compliance with environmental and civil protection legislation, and does not lead to significant inefficiencies: - in the production, incineration or disposal of waste; - in the direct or indirect use of any natural resource at any stage of its life cycle; - in the separate collection of waste at source and the subsequent sending of the separated fractions to preparation for reuse, recovery and recycling, including backfilling operations with waste as a substitute for other materials, in accordance with the waste hierarchy and the EU Protocol on the Management of Construction and Demolition Waste. |
| 5. Pollution prevention and control to air, water or | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | Interventions are designed by adopting requirements of current environmental and civil protection legislation, also acquiring prescriptions of competent authorities, where applicable, during the "Conference of services". |
| 6. The protection and restoration of biodiversity | B. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | NO | Interventions are aimed at restoring the environmental bodies damaged by the calamitous event to their pre-existing conditions. Interventions for which an environmental impact assessment is required by the Italian legislation transposing Directives 2014/52/EU and 2011/92/EU, are designed by carrying out environmental impact assessment, according to the procedures provided for by the specific civil protection provisions, and its conclusions were incorporated into the final project. |

DNSh assessment

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| Ministry | 2 |
| Cluster | 34704 |
| Related Measure (Reform or Investment) | Reform 3.4-Adoption of national programs on air pollution control |
| Responsibility for reporting and implementation | Ministry of Ecological Transition (MTE) |
| Date | |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (F, A, B or C has been selected) | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform covers sector such as transport and renewable energy in line with the provision of the directive, 2018/2001 setting National Director Obligations for air pollutants. | Is the measure expected to lead to significant GHG emissions? Is the measure expected to lead to an increase in the consumption of fossil fuels or other carbon-intensive resources? Is the measure expected to lead to an increase in the consumption of land, or other natural resources? Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? Is the measure expected to lead to a significant decrease in the availability for natural capital of water, with the exception of the consumption of non-consumable freshwater water, or to a significant insufficiency in the direct or indirect use of any natural resource at any stage of its life cycle which are not replaced by artificial resources, or Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform has insignificant impact on the adaptation measure. The reform has insignificant impact on water/marine resources. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? Is the measure expected to lead to a significant decrease in the availability for natural capital of water, with the exception of the consumption of non-consumable freshwater water, or to a significant insufficiency in the direct or indirect use of any natural resource at any stage of its life cycle which are not replaced by artificial resources, or Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform has insignificant impact on water/marine resources. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? Is the measure expected to lead to a significant decrease in the availability for natural capital of water, with the exception of the consumption of non-consumable freshwater water, or to a significant insufficiency in the direct or indirect use of any natural resource at any stage of its life cycle which are not replaced by artificial resources, or Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform has insignificant impact on wastes issue. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform covers sector such as transport and renewable energy in line with the provision of the directive, 2018/2001 setting National Director Obligations for air pollutants. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given by nature, and as such is considered compatible with DNSh for the relevant objective. C. The measure contributes substantially to an environmental objective pursuant to the European Regulation, and as such is considered compatible with DNSh for the relevant objective. | The reform has insignificant impact on biodiversity and ecosystem. | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSh assessment

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| Issue | M7: Green investment and ecological transition |
| Cluster | 04: Protection of factories and water resources |
| Related Measure (reform or investment) | Inv. 5.2.a - Nature conservation - monitoring of greenways and threats on nature and habitats and climate change |
| Responsibility for reporting and implementation | NR7 |
| Date | 14/04/2021 |

| | Step 1 | | Questions | Step 2 | |
|---|--|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| Environmental objectives | | | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure within its life cycle, given its nature, and as such is considered compliant with DGG4 for the relevant objective. | 2. There are investments on low impact tools and technologies (solar, wind, hydro, etc.) whose use has no impact on climate change as they do not use fossil fuels. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DGG4 for the relevant objective. | 3. The measure contributes substantially to increasing the efficiency of protected areas in monitoring climate change and thus to raising the adaptation measures of protected areas management bodies, more specifically protected areas in accordance with Article 10(1) of Regulation (EU) 2020/852, as it provides adaptation solutions which, in addition to meeting the conditions set out in Article 10, meet these substantially to preventing or reducing the risk of adverse effects of the current climate and the expected future climate on people, nature, without increasing the risk of adverse effects on other people and nature. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DGG4 for the relevant objective. | 4. The measure intends to improve the management capacity of Marine Protected Areas with specific services to monitor the state of the marine environment and therefore contributes to define more effective measures for the protection of marine resources according to Art. 12 of Directive (EU) 2009/24/EC for the conservation and the good environmental status of marine waters, including by protecting, preserving or restoring the marine environment or preventing or reducing inputs into the marine environment. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DGG4 assessment. | 5. The measure also intends to improve the capacity of protected areas to monitor air, water and soil and does not produce any soil, air or water pollution. | Is the measure expected to: (i) lead to significant increases in the generation, accumulation or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant inefficiencies in the direct or indirect use of raw materials or an increase of the use of raw materials which are not recycled by suitable materials, or (iii) cause significant and long-term harm to the environment in respect to the circular economy (p. 27 of the Taxonomy)? | NO | The equipment and instruments used (batteries, sensors) will be disposed of at the end of their life cycle in accordance with the current legislation on electronic waste (RE). |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure within its life cycle, given its nature, and as such is considered compliant with DGG4 for the relevant objective. | 6. The measure also intends to improve the capacity of protected areas to monitor air, water and soil and does not produce any soil, air or water pollution. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DGG4 for the relevant objective. | 7. The measure aims to substantially increase the management effectiveness of protected areas through the improvement of collaboration with the Agencies of Habitats and species in relation to prevention and threats from human activities, pollution and climate change and therefore to raise protected areas status and decrease negative effects by the prevention and restoration of biodiversity and ecosystems, also pursuant to Art. 10 paragraph 10, of Directive (EU) 2009/24/EC. It makes substantial contribution to the protection and restoration of biodiversity and ecosystems and makes a substantial contribution to preventing, containing or restoring substantially in addition to having the good condition of ecosystems, and to protecting ecosystems that are already in good condition in protected areas. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Division | W3: Digital transformation and ecological transition |
| Cluster | C4: Protection of the territory and water resources |
| Related Measure (Reform or Investment) | Inv. 3.2.b - Digital services to park visitors |
| Responsibility for reporting and implementation | MITT |
| Date | 14/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|--|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on the objective or contribute to support the objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure intervenes to direct and monitor visitor flows in protected areas. Its effects on climate change mitigation are neutral. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure has no significant direct impact on adaptation to climate change. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure, through educational and informative messages on environmental dynamics via web and apps, contributes indirectly and to a limited extent to increasing the awareness and attention of visitors to parks and nature protected areas towards sustainable behaviour, but does not have a significant direct impact on the sustainable use of water and marine resources. No water or residue are to be disposed. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | Having awareness of respectful behaviour towards protected places directly contributes to sustainable activities in catering, hospitality, and local services but there is direct impact on the circular economy and waste reduction in no waste or scrap is generated. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-hazardous waste; or (ii) lead to significant influences on the direct or indirect use of any natural resource at any stage of its life cycle which are not motivated by absolute necessity or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | It is a digital service so no polluting impact on air, water and soil is expected. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | It is a digital service in accordance with the Art. 16 of Regulation 2020/852 that states that does not compromise long-term environmental objectives and the positive impact on the environment on the basis of life cycle considerations. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Division | INF: Energy transition and ecological transition |
| State | CA: Protection of the territory and water resources |
| Related Measure (Reform or Investment) | Inv. 3.2.a - Administrative simplification |
| Responsibility for reporting and implementation | MITT |
| Date | 14/04/2021 |

| Environmental objectives | Step 1 | | Questions | Step 2 | |
|---|--|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support the objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The investment regards the creation of a digital interface with geo-referenced information on the subsequent measures of the protected areas with the aim of providing guidance for citizens and professionals in the direction of sustainability whose servers are powered by renewable energy. Derived from the geospatial systems installed in the parks through the MITT measure "Parks for the climate", so the impact is zero. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | C. The measure "contributes substantially" to an environmental objective pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The measure intervenes in the form of a more efficient park option for interventions on the territory, and therefore indirectly contributes to making the protected areas' approach to climate change adaptation more effective in accordance with Article 17 paragraph 1 of Regulation (EU) 2020/852, and it provides adaptation solutions that, in addition to meeting the conditions set out in Article 18, contribute substantially to preventing or reducing the risk of adverse effects of the current climate and the expected future climate on people, nature, without increasing the risk of adverse effects on other people and nature. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure "contributes substantially" to an environmental objective pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The measure intervenes to make more efficient the option of parks and to create protected areas for interventions on the territory and the sea. Therefore it contributes to make more efficient the address of parks and to create protected areas for activities that contribute to the sustainable use of water and marine resources also according to art. 12 letter d) of Regulation (EU) 2020/852 by the contribution to the good environmental status of marine waters, including by protecting, preserving or restoring the marine environment and preventing or reducing inputs to the marine environment. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure intervenes to make the option of the park more efficient for interventions on the territory through a digital interface powered by renewable energy and has no direct significant impact on the circular economy and waste reduction. | Is the measure expected to: (i) lead to significant increases in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of the total amount of any stage of its life cycle which are not measured by adequate measures; or (iii) cause significant and long term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure intervenes to make the park's option more efficient for interventions on the territory through a digital interface powered by renewable energy and has no direct significant impact on air, soil, and water. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | C. The measure "contributes substantially" to an environmental objective pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The measure aims to substantially increase the management effectiveness of the protected areas by means of a digital interface that allows for more efficient management of the protection and restoration of habitats and ecosystems, also in accordance with Art. 15 Para. 1 b, c, and d), as it makes substantial contributions to preventing, conserving or restoring biodiversity and ecosystems, and to protecting ecosystems that are already in good condition in the protected area. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of priority interest? | | |

DNHS assessment

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| Version | 3 |
| Cluster | 4 |
| Related Measure (Policy or Investment) | 3.8 Re-carbonification of Fu area |
| Responsibility for research and implementation | NETS Desk, Antonio Mihaljević |
| Date | 16/04/2021 |

| | Step 1 | | Step 2 | | |
|---|--|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objective | | | | | |
| 1. Climate change mitigation | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DDO for the relevant objective. | The measure can be assigned to intervention fields D46, D48 and D50 referred to the Annex of the RRF regulation with a climate change coefficient of 40% and environmental coefficient of 100%. The project involves the reforestation of 12 ha and the restoration of over 1500 ha of wetlands. The reforestation is for naturalistic purposes in order to improve biodiversity, and for this reason native trees and local ecotypes are used such as pedunculate oak (Quercus robur), sycamore ash (Fraxinus ssp.), field maple (Ailanthus glandulosa), field maple (Acer campestre), white willow (Salix alba), white poplar (Populus alba), black poplar (Populus nigra), black alder (Alnus glutinosa), European spruce (Picea abies), European larch (Larix laricina), sycamore maple (Acer sycamore), ash (Fraxinus ssp.), blackthorn (Prunus spinosa), wild rose (Rosa canina), European black alder (Fraxinus ssp.), common European hornbeam (Cornus sanguinea), weeping tree (Viburnum lantana), wild privet (Ligustrum ssp.) and other native species. The project also includes the restoration of wetlands which allow a better protection of the soil with respect to the local environmental and climatic conditions. Management is planned in order to allow the consolidation of the reforestation and to guarantee the stable restoration of multiple ecosystem services such as: the absorption of about 46,000 t of carbon, contributing to the regulation of the hydrological cycle, protecting the banks and lateral strips from erosion (considering a capacity of soil retention by the forest of about 6400 t), improve the self-purification process of the river (about 134,400 t/year of N for wetlands and 87,776 kg/year of N for reforested area) and improve the retention capacity. The planned reforestation interventions (reforestation and wetlands recovery) take place in both the Fu area and the Fu area. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DDO for the relevant objective. | The measure can be assigned to intervention fields D46, D48 and D50 referred to the Annex of the RRF regulation with a climate change coefficient of 40% and environmental coefficient of 100%. The project involves the reforestation of 12 ha and the restoration of over 1500 ha of wetlands which will contribute to the consolidation of the natural riparian habitat and enhance the bank protection, the water retention during heavy rainfall periods and the progressive water return to the river bed, reducing the effects of drought periods. It contributes to the improvement of the habitat, used to improve animal and to the rebalancing of the river solid transport. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | B. The measure is tracked as supporting a climate change or environmental objective with a coefficient of 200%, and as such is considered compliant with DDO for the relevant objective. | The measure can be assigned to intervention fields D46, D48 and D50 referred to the Annex of the RRF regulation with a climate change coefficient of 40% and environmental coefficient of 100%. Natural gas extraction plans an integrated reforestation project in the water cycle by providing, for example, the natural recharge. The Fu area is a natural gas extraction area with a high level of reforestation and the project involves the reforestation of 12 ha and the restoration of over 1500 ha of wetlands which will contribute to the consolidation of the natural riparian habitat and enhance the bank protection, the water retention during heavy rainfall periods and the progressive water return to the river bed, reducing the effects of drought periods. It contributes to the improvement of the habitat, used to improve animal and to the rebalancing of the river solid transport. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct primary effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDO for the relevant objective. | The measure does not address waste management and has no impact on it. | Is the measure expected to: (a) lead to a significant decrease in the generation of waste or to a significant increase in the reuse of waste, with the exception of the management of green-waste; (b) lead to significant efficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not compensated by identical increases; or (c) cause significant and long-term harm to the environment in respect to the circular economy part 17 of the Taxonomy Regulation? | | |
| 5. Pollution prevention and control to air, water or land | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DDO for the relevant objective. | The measure can be assigned to the intervention fields D46, D48, D49 and D50 referred to the Annex of the RRF regulation with a climate change coefficient of 40% and environmental coefficient of 100%. Reforestation interventions won't consider the use of pesticides or other harmful substances. Wetlands and native species contribute natural buffer strips that allow the absorption of large quantities of nutrients. In particular, it is estimated that the planned reforestation is able to absorb 66.8 t of Nitrogen, while from the restoration of the wetlands it is estimated an absorption of at least 656.1 t of N. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | B. The measure is tracked as supporting a climate change or environmental objective with a coefficient of 200%, and as such is considered compliant with DDO for the relevant objective. | The measure can be assigned to the intervention fields D46, D48, D49 and D50 referred to the Annex of the RRF regulation with a climate change coefficient of 40% and environmental coefficient of 100%. The RRF reforestation interventions consider the 'ecological corridor' of the middle Fu valley. In the part of the river there are 27 Natura 2000 sites and it is necessary to ensure the connectivity of the riparian habitats of EU interest and the consolidation of various populations of rare and important species from the operational point of view. Reforestation takes place with native species and local ecotypes in order to ensure a sustainable resilience to climate change, allowing the conservation and enhancement of widespread Mediterranean, biodiversity and ecological processes linked to the full functionality of ecosystems, promoting their resilience and supporting measures services. Furthermore, the Fu project features intervention against invasive alien species restoration systems which represent one of the main threats to biodiversity. The use of intervention also contributes to the improvement of the area in terms of biodiversity. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M2 |
| Cluster | C4 |
| Related Measure | 3.4 Management and remediation of orphan sites |
| Responsibility for reporting and implementation | MITE |
| Date | 07/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|--|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The remediation interventions do not include among the impacts those relating to the mitigation of climate change as the purposes focus on environmental and health aspects in terms of recovery of degraded areas and protection of the health of the population in those areas. No technologies related to remediation as such involves greenhouse gas. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure does not contribute directly and substantially to adaptation to climate change as it is aimed at the efficient and more eco-sustainable use of the soil resource. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The remediation interventions fully comply with the indication of art. 12 of the Taxonomy, as they contribute substantially to achieving the good status of bodies of water, ensuring the progressive reduction of pollutant by carrying out their recovery and preventing their deterioration. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The main objective is to ensure the reuse of contaminated break efficiency in waste and therefore to promote the circularity of the soil resource. The measure promotes the disposal of polluted material also through the use of phytodepuration technologies thus ensuring a circularity of the resources by minimizing / eliminating residues. The waste generated by intervention will be correctly disposed of in accordance with the current regulation. The remediation interventions by their nature produce various types of waste. The BATs available today make it possible to guarantee their management in recovery and recycling processes (soil washing, thermal desorption of activated carbon, etc.). In addition to the necessary technical requirements, the design of the interventions must also refer to the adoption of in situ remediation technologies (bioremediation, bioaugmentation, natural attenuation, etc.) capable of guaranteeing the recovery of areas without the production of large quantities of waste generated. |
| 5. Pollution prevention and control to air, water or land | B. The measure is tracked as supporting a climate change or environmental objective with a coefficient of 100%, and as such is considered compliant with DNSH for the relevant objective. | The measure is assignable to the intervention field 046 and 046bis of the Annex 6 of the Taxonomy. Furthermore, the remediation interventions fully comply with the provisions of art. 14 of the Taxonomy. The remediation activities envisaged by this measure guarantee the removal of pollutants from the soil and groundwater matrix. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The remediation interventions fully comply with the provisions of art. 15 of the Taxonomy, letter a), as they guarantee the restoration of terrestrial ecosystems by improving their condition and the ability to provide ecosystem services. The measure contributes to the protection and restoration of ecosystem biodiversity as the availability of soil previously compromised both from an environmental and biodiversity point of view allows its reuse of the same avoiding to compromise further areas with their ecosystems, thus preserving their biodiversity. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | MC - Green transition and ecological transition |
| Cluster | MFC4 - Fisheries and water resource protection |
| Related Measure (Effort or Investment) | 4.1 Strengthening of legislative and enforcement of Government for the implementation of investments in the field of water supply infrastructure |
| Responsibility for reporting and implementation | MMS - 27M / Directorate General for "Climate and water infrastructure" |
| Date | 15/04/2024 |

| | Prio 1 | Prio 2 |
|---|---|--------------------------------------|
| Does the measure have an or an insignificant foreseeable impact on the objective or condition to support the objective? | Justification if A, B or C has been selected | Justification if D has been selected |
| Environmental objectives | | |
| 1. Climate change mitigation | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |
| 2. Climate change adaptation | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |
| 3. The sustainable use and protection of water and marine resources | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |
| 4. The circular economy, including waste prevention and recycling | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |
| 5. Pollution prevention and control in air, water or land | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |
| 6. The protection and restoration of biodiversity and ecosystems | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DSD for the relevant objective.</p> <p>The measure consists in:</p> <ol style="list-style-type: none"> signification and more effective coordination implementation of the legislation relating to the National Plan of interventions in the water sector; provision of support and accompanying measures for implementing bodies not able to carry out investments relating to priority processes within the business time frame. <p>More specifically, the reform in question intends to act on the legislation that regulates the National Plan of interventions in the water sector (Law 2022/17, article 1, paragraph 5) and following, making the National Plan the tool public funding water for investments in the water sector by applying the maximum resources relating to the water supply infrastructure provided for in the Plan and simplifying the procedure, both for what concerns the formation and updating of the plan, and for what concerns the reporting and monitoring of the financial investments.</p> <p>Given all the above, it is clear that the measure has no foreseeable impact on the environmental objectives, if not it will depend on the procedure for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DSD for the relevant objective.</p> <p>The MMS will present a reform proposal relating to the water supply sector. The reform proposal will be shared with the institutional bodies involved (including MTE and MFAAF).</p> | B |

DNSH assessment

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| Mission | 2 |
| Cluster | 4 |
| Related Measure (Reform or Investment) | 4.2 Measures to ensure full managerial capacities for integrated water service |
| Responsibility for reporting and implementation | Ministry of the Ecological Transition |
| Date | 30th April 2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform consists in support actions towards Regions for the Area Plan preparation and the assignment of the Integrated Water Service management. The fulfilment of the IWS and the overcoming of its fragmentation results in the improvement of the service governance, the implementation of an incentive pricing policy for an efficient use of the resource, the assignment to an industrial entity that will guarantee the application of interventions and will be able to manage and maintain the functionality of the systems over the years. This will allow, especially in the southern regions, the EU resolution dispute regarding urban waste water. Given all the above, is clear that the measure has no foreseeable impact on the environmental objectives, if not it will speed-up the procedures for the implementation of the interventions for climate change mitigation and adaptation, therefore should be considered compliant with DNSH for the relevant objective. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M2 - Green revolution and ecological transition |
| Cluster | MF2 - Territory and water resource protection |
| Related Measure (Directive or Investment) | 4.3 Investments in primary water infrastructures for the security of water supply |
| Responsibility for reporting and implementation | MM2 - STW / Directorate General for "Data and water infrastructure" |
| Date | 16/06/2024 |

| | Pre 1 | Pre 2 | |
|---|---|--|---|
| Environmental objective | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Conditions |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective | <p>The measure is aimed at competing existing or refurbished water schemes, recovering and expanding the treatment and water capacity of dams and secondary water treatment for significant user basins (such as residential areas, schools and high temperature hot water production), contributing to increasing recovery capacity for water basins, including hydroelectricity. Therefore, these measures are not expected to impact on climate change mitigation. Although, if possible, it will be possible to include the most advanced and innovative technologies.</p> <p>The measure does not have an impact in terms of mitigating climate change but does contribute to the objective in the sector.</p> <p>That no actions are envisaged that could compromise or worsen the climate efficiency of the infrastructure.</p> | Is the measure expected to lead to significant GHG emissions? |
| 2. Climate change adaptation | D. No, the measure requires a substantial DNSH assessment. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or ecosystems? | NO |
| 3. The sustainable use and protection of water and marine resources | D. No, the measure requires a substantial DNSH assessment. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | NO |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantial DNSH assessment. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-hazardous waste; or (ii) lead to a significant contribution in the direct or indirect use of any natural resource at any stage of its life cycle, which are not addressed by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)? | NO |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantial DNSH assessment. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>The measure directly involves interventions on infrastructure already in place to be completed. Risk to biodiversity and ecosystems are not identified because, in terms of interventions on existing systems, they have the characteristics of becoming ecologically areas with significant presence of biodiversity.</p> | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of local interest? |

| | Pre 1 | Pre 2 | |
|---|--------|--------|--|
| Substantive justification if NO has been selected | Yes/No | Yes/No | Substantive justification if NO has been selected |
| <p>The measure contributes substantially to the objective pursuant to Article 11, paragraph 1, point a) and b) of the Regulation (EU) 2021/241 of the European Parliament and of the Council of 23 October 2021 on the recovery and resilience plan. The interventions to improve the resilience of water infrastructures and drinking water systems, and to improve the resilience of the sectors affected by climate change. The interventions will cover the entire national territory, with different purposes depending on the geographical area. In particular, interventions include: maintenance or advanced state of dams and water safety and greater efficiency in large irrigation systems or multiple-use systems in the same catchment. Furthermore, interventions are planned on strategic works, in operation for over 40 years, and the related investments will be made through the recovery and resilience plan.</p> <p>The measure will not lead to the deterioration of water bodies, since water retention will be more efficient.</p> | NO | NO | <p>The measure contributes to the reduction of managerial and structural inefficiencies, to the reduction of water losses and waste of water resources, for a sustainable water use.</p> <p>The measure is in line with the objectives of the Water Framework Directive. In this regard, it aims to improve the good ecological status of the water systems, based on their continuity and full integration.</p> <p>The measure will be planned only if it has no or a very low impact on the natural water bodies and, in case impacts might happen, ensure full compliance with the requirements outlined in the Water Framework Directive for new aquatic life (i.e., CO₂ requirements for new dams will be considered).</p> |
| <p>The measure is in line with the relevant national or regional waste management plan and waste prevention programs, in accordance with Article 16 of Directive 2008/98/EC as amended by Directive 2018/853/EU, and, where available, the relevant national, regional or local waste recovery strategy.</p> <p>The measure meets the criteria of green public procurement in compliance with current national legislation (EN 15250:2017) and respects the principles of the sustainability of the products and other aspects thereof, with priority for the water prevention and treatment equipment that is most efficient in terms of water and energy consumption.</p> <p>The measure may also cover the costs for the sustainable management of the construction and demolition waste and for the special regulated aggregate, ensuring compliance with the expected environmental performance levels also through specific planning of the material waste for the recovery operations, including the selection of the contractor and the selection of the material to be used.</p> <p>The measure is in line with the objectives of the Taxonomy, in particular, the use of non-hazardous waste and the use of recycled materials, including the use of construction and demolition waste (including the material as its natural state referred to in the TSD) as the European Union of Article 2(17) of the Taxonomy Regulation (2020/851/EU) produced on the construction site will be prepared for reuse, recycling and other types of material recovery, including building operations that use waste to replace other materials, in accordance with the waste hierarchy and the EU protocols for the management of construction and demolition waste.</p> | NO | NO | <p>The measure will not affect the qualitative aspects of the water resources and will have no impact in terms of air and pollution because the measure complies with existing national and regional pollution reduction plans. Furthermore, it is expected that the measure will lead to a significant increase in emissions of pollutants to air, water or land because:</p> <p>The construction and building activities do not cause additional or substantial or any high concern included in the list of activities subject to authorization in Annex IV of Regulation (EU) 2020/1828.</p> <p>The measure will be taken to reduce noise emissions and emissions of dust and pollutants during specific works.</p> <p>The equipment and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the Annex IV of Regulation (EU) 2020/1828.</p> |

DNSH assessment

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| Mission | M2 - Green revolution and ecological transition |
| Cluster | SPCE - Territorial water resource transition |
| Related Measure (Action or investment) | 4.3 Investments aimed at reducing losses by water distribution networks, including distribution and monitoring of networks |
| Responsibility for reporting and implementation | SMIS - SITA / Directorate General for "Cities and water infrastructure" |
| Date | 28/04/2021 |

| Environmental objectives | Step 1 | | Countries | Step 2 | |
|---|--|---|-----------|--------|--|
| | Does the measure have no or insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or insignificant foreseeable impact on the environmental objective | The investment of the measure is aimed at financing investments for the modernisation and efficiency of the existing networks for the distribution and collection of water, including investments for the modernisation of distribution lines of technical quality, the recovery and expansion of existing and non-existing water resources, as well as measures for water resource security and the development of both small and large water in agricultural, industrial and civil uses. Therefore, the measure does not have a negative impact on terms of climate change mitigation to the extent that no actions are envisaged that could compromise or weaken the positive efficiency of the interventions. | NO | NO | NO |
| 2. Climate change adaptation | D. No, the measure requires a substantive DNSH assessment. | | NO | NO | The measure contributes substantially to the objective pursuant to Article 11 of the Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 (Energy Labelling Directive), letter (a), subparagraph 1, letter (a). The measure contributes to the objective by reducing the risk of the adverse impact of the current climate and the expected future climate on the economic activity and the environment, including climate change, without increasing the risk of an adverse impact on people, nature or assets, or on the ability to provide adaptation conditions that, in addition to satisfying the conditions set out in Article 14, contribute substantially to preventing or reducing the risk of the adverse impact of the current climate and the expected future climate on people, nature or assets, without increasing the risk of an adverse impact on other people, nature or assets. The measure provides for interventions to increase the resilience of water systems to climate change and to enhance the adaptation of networks, to be implemented in a "smart water" approach to promote optimal management of water resources, reduce waste and limit inefficiencies. |
| 3. The sustainable use and protection of water and marine resources | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The measure contributes substantially to the objective pursuant to Article 11, paragraph 1, letter (c) of the Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020. The measure envisaged by the measure with a view to reducing the management and maintenance of the water distribution network, resulting in a reduction in water loss and waste of resources estimated on average between 10% and 20%. | NO | NO | The measure is in line with the relevant national or regional waste management plan and waste prevention programme, in accordance with Article 20 of Directive 2008/98/EC, as amended by Directive 2018/853/EC, and, where applicable, the relevant national, regional or local circular economy strategy. The measure will comply with the requirements of the Energy Efficiency Directive and the Energy Labelling Directive. The measure will also comply with the requirements of the Energy Efficiency Directive and the Energy Labelling Directive. The measure will also comply with the requirements of the Energy Efficiency Directive and the Energy Labelling Directive. The measure will also comply with the requirements of the Energy Efficiency Directive and the Energy Labelling Directive. |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | NO | NO | The measure is expected to (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to a significant increase in the direct or indirect use of any natural resource at any stage of its life cycle, as not required by relevant measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 20 of the Taxonomy). The measure is expected to (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to a significant increase in the direct or indirect use of any natural resource at any stage of its life cycle, as not required by relevant measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 20 of the Taxonomy). |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | NO | NO | The measure is expected to lead to a significant increase in the emissions of pollutants into air, water or land? The measure is expected to lead to a significant increase in the emissions of pollutants into air, water or land? |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, since such is considered compliant with DNSH for the relevant objective. | The measure mainly consists in investments in the construction and maintenance of water distribution networks, which are not expected to have a significant impact on biodiversity and ecosystems, or to be detrimental to the conservation status of habitats and species, including those of high concern. | NO | NO | The measure is expected to (i) significantly deteriorate or the good condition and restoration of ecosystems; or (ii) be detrimental to the conservation status of habitats and species, including those of high concern. |

DNH assessment

| | |
|---|--|
| Client | A |
| Project | A |
| Project Address (Street or Location) | A - 4. Investment in energy and purification |
| Responsible for Location and Development (Name of the Developer/Contractor) | A |
| Date | 10th April 2021 |

| Development objectives | Does the measure have to or an independent framework meet on this objective or agreement to support the objective? | Part 1 | | Comments | Yes/No | Substantive justification if No has been selected |
|--|--|---|--|---|--------|---|
| | | Justification if A, B or C has been selected | Comments | | | |
| 1. Climate change mitigation | 1. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |
| 2. Climate change adaptation | 2. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |
| 3. The sustainability and protection of water and marine resources | 3. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |
| 4. The reduction of energy, including waste generation and recycling | 4. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |
| 5. Pollution prevention and control, air quality and noise | 5. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |
| 6. The protection and restoration of biodiversity and ecosystems | 6. The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | The measure contributes substantially to an environmental objective, general or specific, depending on the nature of the objective, and is consistent with the objective of the environmental policy of the relevant authority. | Justification if A, B or C has been selected | The measure is consistent with the objective of the environmental policy of the relevant authority. | | |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT M3C1 – Investments in railway network

1. Description of the component

Summary box

Policy area/domain:

National rail and road mobility

Objective:

The objectives of this component are: (i) the decarbonization and reduction of emissions through the shift of passengers and freight traffic from road to rail; (ii) the increased territorial connectivity and cohesion by reducing travel times; (iii) the digitalization of transport networks and improved security of bridges, viaducts and tunnels; (iv) the increased competitiveness of the productive systems in the South by improving railway links. These objectives are in line with the nationwide strategy on mobility of the Ministry of Sustainable Infrastructures and Mobility (MIMS) outlined in “#ItaliaVeloce”.

The component is focused on the rail network known as Integrated National Transport System of 1st level (SNIT), with a clear priority on the TEN-T network (core and comprehensive). The implementing entity is primarily the public national company “Rete Ferroviaria Italiana” (RFI), besides some works to be carried out by regional railways.

In the railway sector the interventions are focused on: (i) High-speed railway connections to the South for passengers and freight; (ii) High-speed lines in the North connecting to Europe; (iii) Diagonal connections; (iv) Introducing the European Rail Transport Management System (ERTMS); (v) Strengthening metropolitan nodes and key national links; (vi) Strengthening regional railway lines (management RFI); (vii) Upgrading, electrification and resilience of railways in the South; (viii) Upgrading railway stations in the South.

Reforms and/or Investments:

Outcome 1: Transfer passengers and freight traffic from road to rail, increase rail speed/capacity/connectivity and improve service quality along key national and regional links, strengthen cross-border connections and EU railway interoperability

Reform 1.1: Acceleration of the approval process of the Contract between the MIT and RFI

Reform 1.2: Acceleration of the authorization process of projects

Investment 1.1: High-speed railway connections to the South for passengers and freight;

Investment 1.2: High-speed lines in the North connecting to Europe;

Investment 1.3: Diagonal connections;

Investment 1.4: Introducing the European Rail Transport Management System (ERTMS);

Investment 1.5: Strengthening metropolitan nodes and key national links;

Investment 1.6: Strengthening regional lines (management RFI);

Investment 1.7: Upgrading, electrification and resilience of railways in the South;

Investment 1.8: Upgrading railway stations in the South;

Outcome 2: Support the safety and climate/seismic resilience of bridges, viaducts and tunnels

Reform 2.2: Implementation of the recent “Decree Simplification” (converted into Law n.120 dated 11 September 2020) by issuing a decree concerning the adoption of “Guidelines for the classification and management of risks, the evaluation of security and the monitoring of existing bridges”

Reform 2.1: Transfer the property of the bridges and viaducts from the lower level ranking roads to the higher ranking ones (highways and main national roads), in particular to ANAS

Estimated cost overall:

Investments in railway network: EUR 24,77 billion to be covered by RFF.

Total investments: EUR 24,77 billion to be covered by RFF.

2. Main challenges and objectives

National strategic context

The component is fully aligned with the priorities of the national strategy for mobility, which are outlined in the document “#ItaliaVeloce”. The proposed investments and related reforms focus on the key links of the rail network of national and international interest, known as the Integrated National Transport System of 1st level (SNIT). A priority is given to the TEN-T network.

In the rail sector, the 1st level SNIT covers 8,800 km (around 50% of the national network) and 48 lines. The focus of the component is on the following TEN-T corridors:

- the Mediterranean Corridor crossing Northern Italy from West to East (Lyon-Turin-Milan-Verona-Venice-Trieste).
- the Rhine-Alpine Corridor from Genova to the Alps;
- the Scandinavian-Mediterranean corridor connecting Italy from North to South (Brenner-Trento-Florence-Rome-Naples-Bari-Messina-Palermo).

In terms of cross-border links, the ones included under the RRF are Italy-Switzerland (Genoa-Alps) and Italy-Austria (the Brenner). The Lyon-Turin line has not been included, since its completion is envisaged beyond 2026.

In terms of interoperability to favour the EU Single Market, priority will be given to the roll out the ERTMS along 3,400 km of the railway lines.

Overall, railway investments in the South of Italy under the RRF are estimated to amount to around 40% of total investments. The decision on the use of additional ERDF funds for the railway sector in the South has to be taken, but will in any case be complementary to the RRF.

Most of the investments proposed under the RRF are based on the Investment plans of “Rete Ferroviaria Italiana” (RFI), which operate under “Contratti di Programma” signed with the Italian Ministry of Sustainable Infrastructures and Mobility (MIMS), which are renewed at regular intervals. In order to accelerate the start of the investments, it is being considered that all works inserted in the Recovery Plan should be automatically included in the “Contratti di Programma” with RFI, without the need for a separate approval process.

a) Main challenges¹

Current passenger traffic in Italy is heavily skewed towards roads

- At present passenger traffic in Italy is 90% on roads (860 billion passenger kilometres per year), while the railway represents only 6% of passengers (vs. 7.9% in Europe). The national transport sector is hence responsible for significant GHG emissions, with fossil fuels still representing the main source of energy.

¹ The source of most of the data in this section is the 2020 “#ItaliaVeloce” document of the MIMS.

- Most railway lines (72%) are electrified, while some diesel lines remain mainly at the regional level.

Freight volumes by road are concentrated in the North and at cross border links

- Freight volumes travel 51% on roads (1.05 billion tons in 2019) and 13% by rail (vs. 18.7% in Europe²). Most of the freight volume (65%) is concentrated in Northern Italy (20% in Lombardy). As a result, in the North the traffic of heavy vehicles exceeds 30% of total vehicles in circulation, creating congestion and security problems.
- Road transport is especially relevant for Italy-EU imports (80% share) and exports (90% share), passing through the following key border links: Italy-France with 92% of freight volume on roads; Italy-Switzerland with 30% of freight on roads; Italy-Austria with 72% of freight on roads; and Italy-Slovenia with 94% of freight on roads.
- The total freight traffic crossing the Alps represents 223 million tons, whereby the situation of congestion is particularly critical along the Brenner cross border link, which handles 25% of the Italian trade through the Alps.
- In order to increase freight volumes by rail, an increase in the capacity of the network and nodes is necessary. Also the connectivity of railways to ports and airports needs to be increase. In the long run (by 2050) Italy aims to raise the share of freight traffic by rail up to 50% (for trips exceeding 300 km).

Limited railway connectivity to and within the South and in the Centre

- The high-speed network of Italy runs primarily from North to the South (along the Scandinavian-Mediterranean corridor), until Naples/Salerno.
- The population living south of Salerno is hence disconnected from the high-speed network. Overall in the South the capacity, reliability and frequency of the railway services is limited, resulting in long travel times.
- Also in the Centre of the country, West-East rail connections (e.g. from Rome to Pescara and from Orte to Falconara) are in need of upgrading, and the population living in the internal areas does not have access to a modern rail network.

Guidelines for the definition of homogenous criteria for the classification and management of risks, the evaluation of security and the monitoring of existing bridges, viaducts and tunnels along the road network.

There is insufficient knowledge of the status of the bridges, viaducts and tunnels along the national road network (of ANAS and/or of highway Concessionaires). In addition, the property and responsibility for the maintenance of the bridges and viaducts is not clearly allocated. An in-depth analysis and evaluation, the transfer of the responsibility for all bridges and viaducts to highway operators, and the setting up of maintenance guidelines and a maintenance plan are hence necessary to ensure the resilience of the infrastructure versus climate and seismic risks.

² Data Eurostat 2020.

b) Objectives

The objectives of the component are:

- (i) the decarbonization and reduction of emissions through the passage of passengers and freight traffic from road to rail; furthermore, in the field of rail freight transport, the reduction of emissions is envisaged also through an action of renewal with scrapping and refitting of the obsolete part of the current fleet (locomotives, wagons, intermodal transport units), as well as the electrification of the connecting infrastructures for the transfer of goods on the national railway system.
- (ii) the increased territorial connectivity and cohesion by reducing travel times (an objective of the national strategy is that 80% of the population should be at most 1 hour away from a high-speed connection);
- (iii) the increased competitiveness of the productive systems in the South by improving traffic links.

In particular, in order to increase the attractiveness and competitiveness of the railway network, the focus of this component will be on:

- High-speed railway connections to the South for passengers and freight: three high-speed railway lines will be extended towards the South of Italy, i.e. the Naples-Bari (funded so far from ERDF), the Palermo-Catania and one functional lot of the Salerno-Reggio Calabria (the completion of other lots will be funded from national funds and ERDF). These lines will also increase the capacity to transport freight from the ports of the South.
- High-speed lines in the North connecting to Europe: the freight transport capacity of the Brescia-Verona-Padova line will be increased, in parallel to an increase of freight capacity of the Verona-Brenner link. In addition, the freight transport capacity from Genoa and its port through the Alps will be strengthened.
- Diagonal connections across Italy: investments are foreseen in the following three lines crossing Italy west to east: Orte-Falconara; Rome-Pescara (mainly passenger traffic along the line, including commuters); and Salerno-Battipaglia-Taranto.
- Introducing the European Rail Transport Management System (ERTMS) to ensure interoperability and security: the focus will be on the TEN-T network, starting with passenger traffic lines and then extending the ERTMS also to freight traffic lines.
- Strengthening metropolitan nodes and key national links: a nationwide investment programme of RFI will be dedicated to improve the capacity, reliability, safety and service levels at 12 metropolitan nodes and along key railway links.
- Strengthening of regional railway lines: upgrading investments will also concern a series of regional railway lines managed by RFI.
- Upgrading railway stations in the South of Italy by improving their accessibility.

The investments foreseen in the railway are in line with the 2020 and 2019 Country Specific Recommendations (CSR) for Italy. In particular, 2020 CSR mention the need to “front-load mature public investment projects and promote private investment to foster the economic recovery, focusing investments on the green and digital transition, including sustainable public transport”. Also the 2019 CSR mention that “investment is needed to raise the quality and sustainability of the country’s infrastructure” and that “in the transport sector, Italy has not delivered on its infrastructure investment strategy (Connettere l’Italia)”, with the result that “the EU transport scoreboard shows that the quality of Italy’s infrastructure is below the EU average”.

Twin transition:

By supporting the shift of passengers and freight traffic from road to by rail and reducing road congestion, the component will reduce GHG emissions. In particular, RFI estimates that an increase of the share of passengers using the railway from 6% to 10% could result in annual CO2 saving of 2.3 million tons by 2030.

In addition, the digitalization of railway services through the ERTMS will increase the safety levels of these transport modes, allowing to improve the planning of effective maintenance activities and reducing life cycle maintenance costs, while increasing the resilience of the network.

Jobs and Growth:

In an increasingly connected world with raising trade flows, a digitalized, green and efficient transport network is a necessary condition for economic growth. The investments in smarter, quicker and safer connectivity across Italy will hence improve the competitiveness and productivity of the connected territories.

People will spend less time traveling for work, including commuters. Tourist flows will be able to move more quickly across the country, discovering new areas of cultural interest and reducing the pressure on the main tourist centres.

Freight transport services will be more competitive, facilitating imports and exports of goods, and attracting companies to locate their production sites and/or services close to efficient transport nodes. The increase of rail connectivity to ports in the North, Centre and South of the country will improve the competitiveness and environmental sustainability of the logistic corridors across Italy.

Social resilience:

The investments in national and regional railway networks and nodes in the South of Italy (including the accessibility of railway stations) will reduce the gap in terms of the existing railway infrastructure, reducing travel times and improving social cohesion.

The increase of the capacity of key railway nodes in 12 metropolitan areas will have positive spill-over effects on regional trains, making the city centres more accessible and improving the quality of life of commuters. In addition, some investments will be directly targeted at regional/urban lines that are primarily used by the commuters.

3. Description of the reforms and investments of the component

1) Investments in railway network

Reform 1.1: Acceleration of the approval process of the Contract between the MIT and RFI

Challenges: The long approval times currently required for the Contract defining the investments between the MIMS and RFI (Program Agreement - CdP) do not allow an adequate planning of the investments by RFI and the implementation of the works within established dates.

Objectives: Through the proposed reform, the approval process of the 5-year CdP between MIMS and RFI and of the annual variations will be accelerated, allowing to speed up the planning and implementation of the works.

Implementation: The MIMS will propose a legislative amendment. It could foresee that the competent parliamentary commissions should express an opinion on the strategic guidelines of the CdP and not on the list of investments, prior to the opinion of the CIPE. In addition, the Court of Auditors could carry out in parallel concurrent checks on the CdP at the request of the Government or of the competent parliamentary commissions (as recently foreseen in the "Simplification Decree Law" 2020).

Target population: RFI and rail users.

Timeline: the legislative amendment will be presented by the MIMS by end of 2021.

Reform 1.2: Acceleration of the authorization process of projects

Challenges: The uncertainties concerning the duration of the authorization processes of projects, as well as the time required for the adaptation of the final project design to the prescriptions made by the various administrations, cause delays and cost increases.

Objectives: The MIMS will propose a regulatory change, in order to allow to anticipate the geographic location of the works at the time of the "Economic Technical Feasibility Project" (PFTE), instead of waiting for the definitive project design phase. The location will hence be included as a variation of the urban planning instruments, with a constraint linked to expropriation. The additional authorizations, which cannot be acquired on the PFTE, would be obtained in subsequent project design phases, without convening the "Conferenza dei Servizi", as an exception to Law no. 241/1990.

The following positive effects are expected from the proposed regulatory change:

- all the observations of the various administrations will be collected at the stage of the PFTE, allowing to incorporate them, with savings in terms of time and resources, in the subsequent phases of the project design process;
- the land affected by the works will be reserved from the urban planning point of view, inhibiting building activities by third parties and allowing economic savings for future expropriations;

- the overall time for the authorization process of projects would be reduced from currently 11 months to 6 months.

Implementation: The MIMS, in coordination with the Ministry of the Ecological Transition (MITE) and the Ministry of Culture (MiC), will propose a legislative amendment of art. 13 of Law no. 120/2020 (Simplification Decree Law), and of related regulations included in the Code of Contracts, in the Environmental Code and in administrative procedures.

Target population: RFI and rail users.

Timeline: Legislative amendment to accelerate the permitting process will be proposed by Q4 2021.

Investment 1.1: High-speed railway connections to the South for passengers and freight

Challenges: In order to ensure territorial cohesion and equity, there is a need to improve the connection of the inhabitants in the regions of the South to the high-speed railway network.

Objectives: The proposed investments in the High Speed Network (AVR) allow to develop the long-distance railway passenger and freight services in an effective manner, consistent with the structure of the Italian territory and with the connectivity needs of the southern regions. The proposed interventions will be integrated with the regional transport systems, which play a primary role in supporting the demand of local mobility, and also feed the system of High Speed connections at the national level.

In particular, the High-speed network interventions planned in the South will make it possible to reduce journey times and increase capacity, as illustrated below:

- *Naples-Bari:* upon completion of the project the Naples-Bari section will be covered in 2 hours, instead of the current 3hours 30 minutes; there will be an increase in capacity from 4 to 10 trains/hour on the sections with double tracks, and an adjustment of the performance to allow the transit of freight trains;
- *Palermo-Catania:* upon completion of the entire project there will be a reduction in the journey time of 60 minutes on the Palermo-Catania section, and an increase in capacity from 4 to 10 trains/hour on the sections being doubled;
- *Salerno-Reggio Calabria:* upon completion of the entire project, the journey time will be reduced by 60 minutes on the Rome-Reggio Calabria section, with a recovery of up to 40 minutes on the priority lots of the Salerno-Battipaglia-Paola section; in addition, there will be a performance upgrade to allow the transit of freight trains, in particular for the port of Gioia Tauro. The Salerno Reggio Calabria project involves the construction of a new HS standard line that can be implemented in functional phases, which minimizes the impact on the territory and is consistent with the ongoing and planned investments. The intervention included in the PNRR is Battipaglia – Romagnano (a section of 33 km).

Implementation: the interventions are part of the current RFI Investment Programme in the Contratto di Programma, approved by the MIMS. The Naples-Bari intervention proposed for funding by the RRF (a section of around 90 km) is under construction, with completion of approximately 32 km

foreseen in December 2023. The Palermo-Catania intervention proposed under the RRF (a section of approximately 150 km) is mainly in design phase, while the Bicocca-Catenanuova section (approximately 37 km) is planned for completion by December 2023. The priority lot of the Salerno-Reggio Calabria intervention is in design phase with completion in June 2026.

RFI has demonstrated over the years a strong capacity to implement investments, starting from the planning phase, design, obtaining the necessary permits, launching calls for tenders, selecting and supervising contractors. Furthermore, it is expected that for the works included in the RRF, which still need to start the authorization process, further simplifying procedures will be activated through specific legislative procedures, in order to compress the time required for the authorization procedures foreseen in the planning process (Conferenza dei Servizi - environmental authorizations - cultural heritage superintendence authorizations, etc.).

Target population: users of the indicated railway lines.

Timeline: by 2026.

State aid: The existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU and the paragraph 31 of the Guiding Template related to “Other low emission transport modes – rail and inland waterway”, taking into account that measures have no discernible effect on trade between the Member States and there is no distortion of competition.

Investment 1.2: High-speed lines in the North connecting to Europe

Challenges: In order to increase the freight traffic by rail and to ensure the modal shift from road to rail in the cross-border trade, it is necessary to increase the capacity of railway connections in the North of Italy and with the rest of Europe.

Objectives: The proposed High Speed Network (AVR) interventions will allow to strengthen freight transport services by rail, according to an intermodal logic and by establishing connections with the system of existing ports and airports. In particular, the planned High-speed interventions allow the reduction of travel times and the increase of capacity, as indicated below:

- *Brescia-Verona-Vicenza-Padua:* the proposed interventions refer to the Brescia-Verona section (of 48 km) and the Verona-Bivio Vicenza section (of 44 km). Upon completion of the entire project up to Padua, the journey time on the Milan-Venice section will fall by 15 minutes. The main benefits will be an increase in capacity and in the regularity of traffic due to a specialisation of the services (traditional vs. HS), a significant improvement in the regional transport system due to the higher capacity on the historic line, and a better accessibility of the new station at Vicenza Fiera;
- *Liguria-Alpi:* the intervention will allow the transit of freight trains with as length up to 750 meters. Upon completion of the entire project, journey times will be reduced by 60 minutes on the Genoa-Milan section (compared with the current time required of 1h 30 minutes) and on the Genoa-Turin section (compared with the current time required of 1h 35 minutes). In addition, capacity will be increased from 10 to 24 trains/hour on the sections subject to quadrupling close to the node of Milan (Rho-Parabiago and Pavia-Milano-Rogoredo). The proposed intervention will allow the elimination of bottlenecks at the node, due to the

separation of long-distance passenger and freight traffic flows from metropolitan-regional flows, and due to the increase in the transport offer and of the frequency of regional and metropolitan trains (from 10 to 12 trains/hour on the Voltri-Brignole link);

- *Verona-Brennero - adduction works*: the section that will be built is the Trento bypass. It is part of the project which includes the quadrupling of the Fortezza-Verona line, the bypass of Bolzano and Rovereto city centers and the rationalization of flows from the north entering the node of Verona. Upon completion of the entire project there will be a significant increase in the capacity of trains in transit at the Brenner connection (target 400 trains/day).

Implementation:

The implementing entity is RFI. The Brescia-Verona-Vicenza line is in the implementation phase with completion foreseen in June 2026 for the Brescia-Verona section, and in June 2026 for the Verona-Bivio Vicenza section. The Liguria-Alpi project is under construction for the Genoa Node and Third Giovi Crossing section (of 64 km), with completion foreseen in August 2025, and in June 2026 for the remaining sections (of 20 km). The Verona-Brenner adduction works (of 15 km), related to the Trento bypass, are in design phase with completion expected in June 2026.

Target population: users of the indicated railway lines.

Timeline: by 2026.

State aid: the existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU and the paragraph 31 of the Guiding Template related to “Other low emission transport modes – rail and inland waterway”, taking into account that measures have no discernible effect on trade between the Member States and there is no distortion of competition.

Investment 1.3: Diagonal connections

Challenges: In the center-south of the country there is the need to improve the connectivity to the High speed railway network through diagonal lines.

Objectives: the objective of the proposed interventions is to reduce the time required to travel by rail and to transport freight from the Adriatic and Ionian seas to the Tyrrhenian Sea, through an improvement of the speed, frequency and capacity of existing diagonal railway lines. In particular, the envisaged upgrading interventions are expected to allow a reduction in travel times and increases in capacity that can be summarized as follows:

- *Rome-Pescara*: upon completion of the entire project there will be a time saving of 80 minutes on the Rome-Pescara stretch and an increase in capacity from 4 to 10 trains/hour on the doubled stretches (with the possibility to set up metropolitan services between Chieti and Pescara); in addition, the performance of the line will be adjusted to allow for the development of freight traffic;
- *Strengthening Orte-Falconara*: upon completion of the entire project there will be a reduction in travel times of 15 minutes on the Rome-Ancona section and of 10 minutes on the Rome-

Perugia section, an increase in capacity from 4 to 10 trains/hour on the sections subject to doubling of the tracks, and a performance adjustment to allow the transit of freight trains;

- *Taranto-Metaponto-Potenza-Battipaglia*: upon completion of the entire project, journey times will be reduced by 30 minutes on the Naples-Taranto section (via Battipaglia) compared with the current time required of 4 hours, capacity will be increased from 4 to 10 trains per hour on the sections being upgraded, and the railway line will be adjusted to allow the passage of freight trains.

Implementation:

The implementing entity is RFI. The selected interventions are in project design phase, with expected completion by end 2026: Rome-Pescara (about 32 km), the Orte-Falconara upgrading (about 20 km), and the priority lot of the Potenza-Metaponto section (around 35 km) of the Taranto-Metaponto-Potenza-Battipaglia line.

Target population: users of the indicated railway lines.

Timeline: by 2026.

State aid: the existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU and the paragraph 31 of the Guiding Template related to “Other low emission transport modes – rail and inland waterway”, taking into account that measures have no discernible effect on trade between the Member States and there is no distortion of competition.

Investment 1.4: Introducing the European Rail Transport Management System (ERTMS)

Challenges: At present the coverage of the ERTMS, which allows interoperability between European railway networks and an improvement of the performance of the railway systems in terms of safety, capacity and maintenance, is limited to a few railway sections.

Objectives:

- Upgrade of the existing safety and signalling systems to the European ERTMS standard;
- Guarantee of full interoperability with European railway networks;
- Increase and optimization of network capacity and performance;
- Higher efficiency of maintenance operations;
- Improvement of safety standards.

Implementation: RFI will proceed with the roll-out of ERTMS mainly in stand-alone mode, starting with the passenger transport sections, in order to allow freight operators time to adapt to the new standard. In particular, from 2022 to 2026 the ERTMS coverage is expected to be extended over 3,400 km of the RFI network. RFI has defined an accelerated plan for the extension of ERTMS, which envisages equipping the core trans-European railway network by 2030, anticipating the time objectives set by EU Regulation no. 1315/2013.

Target population: users of lines with ERTMS and related traffic catchment areas.

Timeline: by 2026.

State aid: the existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU and the paragraph 31 of the Guiding Template related to “Other low emission transport modes – rail and inland waterway”, taking into account that measures have no discernible effect on trade between the Member States and there is no distortion of competition.

Investment 1.5: Strengthening metropolitan nodes and key national links

Challenges: Besides developing new railway sections (see investments 1.1-1.3 above), RFI also carries out a nationwide investment programme to upgrade its key railway nodes and national links. The railway nodes at 12 metropolitan cities require an increase of capacity to handle the connections between the national and the regional networks. In addition, existing key national railway links are also in need of upgrading, since they exhibit bottlenecks and low performance, due to reduced capacity and the interference between passenger and freight traffic.

Objectives: RFI envisages an investment programme regarding nodes and key links on the national territory with the following objectives:

- infrastructural development (doubling/quadrupling) and technological enhancement of key links of national interest, of connecting lines to the main freight terminals and of last mile connections to ports;
- adaptation of performance levels (module, gauge, axle weight) to allow the transit of higher freight volumes on the TEN-T corridors, on freight lines, and on the connecting lines with the main ports and intermodal terminals;
- mitigation of bottlenecks for the development of passenger and freight traffic, including punctual interventions to manage interferences between passenger and freight traffic flows;
- increases in capacity and reduction in journey times through the elimination of critical points; increases in the capacity of lines close to saturation;
- increase in the capacity of the suburban access lines to the nodes being doubled;
- renovation of stations.

As outlined in the national strategy in the document "Italia Veloce", the interventions on the nodes can be distinguished as follows:

- aim to enhance “metropolitan” or “suburban” connections, in order to guarantee capillary services with high frequencies, thereby supporting the demand for mobility expressed by large metropolitan cities (and also by medium-sized urban areas);
- focus on “fast regional” connections, capable to guarantee medium-range travel services, supporting the demand for mobility expressed by large diffuse urban areas, with competitive speed and comfort levels compared to the use of private cars;

- improve the accessibility and interchange between railway stations and other mobility systems.

The interventions foreseen on key national links concern the following geographic areas:

- Liguria-Alps link (strengthening of connections with the swiss border passes, speeding up of the line Turin/Milan-Genoa, infrastructural and technological upgrading of the lines Genoa-Ventimiglia and Genoa-La Spezia);
- Transversal link (infrastructural and technological upgrading of the line Turin-Venice);
- Bologna-Venice-Trieste/Udine link (connections to the eastern border crossings);
- Central and North Tyrrhenian link (infrastructural and technological upgrading of the Central Dorsale HS line and of access lines to the Tyrrhenian ports);
- Adriatic-Ionian link (doubling of Termoli-Lesina line, upgrading and speeding up of Bologna-Lecce, infrastructural and technological upgrading Adriatic link);
- Southern Tyrrhenian link (technological upgrading of the node of Naples);
- Sicilian network: upgrading of Caltagirone-Gela line and electrification of Palermo-Trapani line;
- Sardinian network (infrastructural and technological upgrading of Cagliari-Sassari/Olbia lines).

Implementation: The investment programme of RFI includes numerous works all over the country. RFI will closely follow the implementation of this national programme, including the phases of project design, works award and works supervision.

Target population: mainly users in the 12 metropolitan cities and users throughout the country affected by the upgrading of key links.

Timeline: by 2026.

State aid: the existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU and the paragraph 31 of the Guiding Template related to “Other low emission transport modes – rail and inland waterway”, taking into account that measures have no discernible effect on trade between the Member States and there is no distortion of competition.

Investment 1.6: Strengthening of regional lines

Challenges: There is a need to upgrade regional railway infrastructures in various areas of the country. Regional railway lines can be distinguished as follows: interconnected lines with the national network (as described in Annex 1 of Ministerial Decree dated 5 August 2016) and non-interconnected lines. The fragmented management of the regional rail networks has caused connection problems with the main national network. The separate management of the national and regional lines has led to the

adoption of different technological and operating systems; this has created overall safety problems of the railway network and a potential risk of accidents.

Objectives: The interventions foreseen on the regional lines have the following objectives:

- To strengthen the interconnected regional railway lines, in order to reach the safety levels, set by the National Agency for Railway Safety (ANSF);
- To support the connection of regional lines with the national high speed network.

As concerns the interconnected regional lines, which are expected to be transferred and managed by RFI, interventions are planned in the following regions:

Piedmont:

- upgrading and modernisation of the Torino Ceresse-Canavesana: improving the regularity of traffic flows;

Friuli Venezia Giulia:

- FUC railway: infrastructural and technological works on the Udine-Cividale line: improvement of the regularity of traffic flows;

Umbria:

- Umbrian Central Railway (FCU): infrastructural and technological interventions;

Campania

- (EAV): Strengthening and modernisation of the Cancello-Benevento line: improvement of safety standards for railway operations;

Puglia:

- Bari-Bitritto line: infrastructural upgrading: compliance with technical/regulatory standards of the National Railway Infrastructure;
- Ferrovie del Sud Est (FSE): infrastructural upgrading of the Bari-Taranto line: the intervention will allow the adaptation to the performance standards of RFI and to the technical specifications of interoperability;
- FSE: Completion of SCMT/ERTMS equipment on the network: improvement of traffic performance, optimisation of capacity, improvement of safety standards;
- FSE: Realisation of intermodal Hubs and upgrading of 20 stations: the intervention aims at improving the accessibility of the stations and creating areas for exchanges rail-bus, rail-private car and rail-bike;

Calabria:

- Rosarno-S. Ferdinando line: upgrading of the equipment of the Rosarno and San Ferdinando lines for connection to Gioia Tauro.

In general, the following interventions have been considered:

- necessary to improve the safety conditions of railway traffic, both through the installation of technological systems and through the adaptations of the existing infrastructure;
- useful for improving the transport system in terms of number of passengers transported, increasing commercial speed, interconnection between urban centers and other infrastructures, both by acting on the infrastructure and on the number of rolling stock that can be used;
- which considerably reduce polluting emissions into the atmosphere.

Implementation: In order to ensure the safety of the interconnected regional railway lines, regulatory provisions have identified RFI as the entity responsible for managing some of these lines and carrying out the technological interventions required to adapt these regional lines to the technological and safety standards of the national railway network.

So far, the FCU (Umbria) has been transferred to RFI and the FSE Ferrovie del Sud Est (Puglia) has been transferred to Gruppo Ferrovie dello Stato Italiane (FSI), while the other interconnected regional lines are still in the process of being transferred from the Regions to RFI.

Pending the formal transfer of the above-mentioned interconnected lines to RFI, the interventions will be carried out through specific agreements between RFI, the Regions and the current infrastructure managers, with the exception of the interventions related to the Bari-Bitritto and Rosarno-San Ferdinando lines, which will be included in the MIMS-RFI Contratto di Programma.

Target population: users of the lines indicated and their associated traffic areas.

Timeline: 2026

State aid: . The existence of State Aid can be excluded, in accordance with the paragraph 219 of the Notice on the notion of State aid and the paragraph 31 of the Guiding Template related to "Other low emission transport modes - rail and inland waterway", considering that, on one hand measures have no discernible effect on trade between the Member States and there is no distortion of competition and, on the other hand, there is no economic benefit or other advantage directly referable to the planned investments that an undertaking could not have obtained under normal market conditions. RFI and Regions operates it on the bases of a legal monopoly which excludes any possible competition to become the exclusive provider.

Article 47, paragraphs 4 and 5, of Legislative Decree 50/2017 (converted with Law 96/2017) provides that RFI (hereinafter also the incoming manager):

- a) can take over the management of the regional railway infrastructure subject to an agreement between the Region, the current manager and RFI;
- b) can take over the ownership of the infrastructure, among the lines identified as being of relevance to the national railway network, consequently becoming the manager, through a

procedural phase which first involves the transfer from the Region to the unavailable and available assets of the State and, subsequently, the free of charge handing over from the State to RFI.

There are two possible scenarios following the art. 47 of the decree 50/2017:

RFI takes over the management of the infrastructure according to an agreement with the involved Region and current manager. The relation among them is regulated by a contract ("contratto di programma") that has the same contents of the contract between RFI and the Ministry about the management of the national railway network and, with reference to operating and investment costs, is regulated by the Directive 2012/34/EU;

RFI became the owner of the infrastructure because it is considered as a part of the national railway network. In this perspective the State acquires the ownership of the infrastructure from the Region and then give it for free to RFI that also operates the infrastructure. It is appropriate to repeat that the ownership of regional networks, initially passed on free of charge from State to the Regions pursuant the legislative decree n. 422/1997, now can be only returned to the State in accordance with the article 47 of decree n. 50/2017.

In both cases RFI operates the network and is also responsible for the realization and development of the planned infrastructure.

With reference to regional railway lines that are managed separately from the national railway infrastructure manager RFI all the conditions underlined by the Commission can be confirmed. It is also appropriate to repeat to this purpose that all regional railway networks managed by other regional entities typically faces no direct competition by other railway lines managed by RFI with respect to which they complement each other. There is no private financing in the sector in Italy and the infrastructure is not designed to selectively favour a specific undertaking as far as it is managed in accordance with the Regulation 1370/2007. The funding provided for the construction of rail infrastructure cannot be used to cross-subsidize or indirectly subsidize other economic activities, as far as any manager is required to comply with the accounting separation principle provided by Directive 2012/34/EU and related National Transport Regulation Authority acts.

Investment 1.7: Upgrading, electrification and resilience of railways in the South

Challenges: Several railway lines in the South of Italy need upgrading and electrification, and present bottlenecks in their connection to the rest of the railway network and at key traffic nodes.

Objectives: Specific investments are foreseen to upgrade the railway network in various critical points in the South of Italy, to increase the competitiveness and connectivity of the intermodal logistic system (railways-airports-ports) and the connections with the major cities. In particular, investments are planned on the following lines:

- Molise region:
 - (i) Rome-Venafro-Campobasso-Teroli;
 - (ii) Electrification and speeding up Roccaravindola-Isernia-Campobasso
- Apulia region:

- (i) Upgrading of Bari – Lamasinata;
 - (ii) electrification Barletta – Canosa;
 - (iii) Pescara-Foggia
 - (iv) Modernization linea Potenza-Foggia
 - (v) Strengthening links Brindisi
 - (vi) Strengthening links Taranto
- Calabria region: Upgrading Ionian Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme
 - Basilicata region: completion of Ferrandina-Matera
 - Campania region: completion of Salerno Arechi – Aeroporto Pontecagnano
 - Sicily:
 - (i) Node of Catania
 - (ii) Upgrading Palermo - Agrigento - Porto Empedocle
 - (iii) Intermodality and accessibility to Trapani Birgi airport
 - (iv) Link to the port of Augusta
 - Sardinia:
 - (i) Olbia airport railway link
 - (ii) Track-doubling Decimomannu-Villamassargia.

Implementation: RFI will implement the above investment plan, following the various phases of project design, getting authorizations, tendering the works, awarding and supervising the works.

Target population: users of the upgraded railway lines.

Timeline: by 2026.

State aid: The existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU, considering that there is no economic benefit and/or other advantage.

Investment 1.8: Upgrading railway stations in the South

Challenges: Numerous railway stations in the South present problems in terms of accessibility and integration with the territory. Investments are needed to upgrade the stations, improve the functionality of their buildings, the quality of the services provided to users and the energy efficiency levels.

Objectives: The proposed investment programme includes the following types of interventions:

- Urban hubs and metropolitan lines (8 stations): interventions aim at the development, upgrading, accessibility and energy efficiency of individual stations and railway nodes, which act as mobility hubs (Messina, Villa S. Giovanni, Taranto, Salerno, Benevento, etc.) or metropolitan lines (e.g. the stations of the L2 metro line in Naples, etc.), which need to be upgraded/renovated in order to guarantee their centrality as a transport hub and service centres;
- Enhancing the accessibility, attractiveness and energy efficiency of medium-large sized stations with high traffic volumes (30 stations): interventions related to stations of strategic importance from a transport and/or touristic point of view, described as Easy&Smart circuit stations (including Chieti (Abruzzo), Potenza Centrale and Potenza Superiore (Basilicata), Lamezia Terme, Cosenza, Sibari and Catanzaro Lido (Calabria), Sapri, Scafati, Nocera Superiore, Torre del Greco and Sarno (Campania), Termoli (Molise); Foggia, Polignano a Mare, San Severo and Barletta (Puglia), Macomer and Oristano (Sardinia), Palermo Notarbartolo, Acireale and Marsala (Sicily));
- Functional requalification, improvement of accessibility and intermodality, and energy efficiency of small-medium sized stations (10 stations): all the interventions aim at improving the accessibility and attractiveness of the stations, as well as its energy efficiency and environmental sustainability.

Implementation: RFI will implement the above investment plan.

Target population: the users of the upgraded stations.

Timeline: by 2026.

State Aid: The existence of State Aid can be excluded, in accordance with the Commission Notice on the notion of State aid as referred to in Article 107 of the TFEU, considering that there is no economic benefit or other advantage (SGEI) neither any effect on trade between the Member States and/or distortion of competition (legal monopoly and open access to the facility).

2) Safe roads

Reform 2.2 Fulfilment of the recent “Simplification decree” (Law Decree no. 76 of 16 July 2020, converted into Law no. 120 of 11 September 2020) concerning the adoption of the “Guidelines for the classification and management of risk, safety assessment and monitoring of existing bridges”.

Reform 2.1: Transfer the ownership of the works of art (bridges, viaducts) related to lower type roads to the owners of higher type roads (motorways and main suburban roads), in particular from the Municipalities, Provinces and Regions to the State.

Challenges: in the absence of a binding standard for bridge safety assessments and classification, each operator applies non-homogeneous and non-standard criteria to classify the risk level of the bridges. A further issue is the unclear ownership of some overpasses of road infrastructures.

Objectives: The reform foresees:

- the adoption of "Guidelines", which will allow the application of common standards and methodologies on the entire national road network;
- the transfer of the ownership of the bridges, viaducts and overpasses from the lower type roads to the higher type roads (motorways and main suburban roads): this will allow an increase in the overall safety of the road network, as the bridges, viaducts and overpasses will be maintained by ANAS and/or the motorway concessionaires, who have better planning and maintenance capacities than the individual municipalities or provinces.

Implementation: the transfer of the ownership of the works of art will have to take place within six months of the entry into force of Law 120/20. It is expected to be completed in 2021, with a special "handover report" according to the rules of the Codice della Strada (Legislative Decree 285/1992) and its Regulations (Presidential Decree 495/92), which dictate provisions on the transfer of ownership between road-owning entities.

Target population: entire national territory.

Timeline: the transfer of ownership of bridges and overpasses from lower type roads to higher type roads will take place by 2021.

4. Open strategic autonomy and security issues

Investments and reforms included in M3C1 contribute to the diversification of key European supply chains. In particular, they will reinforce national transport networks, thereby improving the EU connectivity towards neighbouring and third countries, especially in the Mediterranean area. Furthermore, M3C1 will represent a key contribution to guarantee greater resilience of urban nodes and strategic infrastructures.

Investments and reforms focused on digital connectivity, for example the upgrade of ERTMS technology on the national infrastructure, will be developed in line with the relevant national and Union laws and policies, and they will respect the technical specifications in place.

5. Cross-border and multi-country projects

No cross-border links have been proposed for RRF financing.

6. Green dimension of the component

EU Regulation 2021/241 establishes that at least 37% of the total allocation of the PNRR must be allocated to the green transition.

This Action contributes significantly to the green transition, about 75% (see Table 1), by promoting a more efficient and sustainable use of transport and, in particular, of the railway mode. In particular, investments nr. 1.1, 1.2, 1.3 relating to the *High-speed railway network* and the intervention 1.5 *Strengthening metropolitan nodes and key national links* have a green impact (climate) of 100%, while the remaining railway investments have a green impact (climate) of 40%.

With reference to the climatic and environmental objectives, as defined in the EU Regulation 2020/852 (Taxonomy Regulation), this Action provides an important contribution on the prevention and reduction of pollution (in particular of atmospheric pollution, thanks to the important transfer of road traffic rail, both passengers and freight) and consequently on the mitigation of climate change.

Please, see Table 2.

7. Digital dimension of the component

The EU Regulation 2021/241 establishes, as a binding target, that at least 20% of the total PNRR allocation must be allocated to the digital transition.

This Action contributes to the achievement of the aforementioned target, with a digital impact of 16%.

In particular, in the railway sector, only the investment of 1.4 *Introducing the European Rail Transport Management System (ERTMS)* has a Digital impact of 100%.

All other investments have a digital impact of 0%.

Please, see Table 2.

8. Do no significant harm

Please refer to “DNSH Table”.

9. Milestones, targets and timeline

Please refer to Table T1. Milestones and targets

10. Financing and costs

Please refer to Table T2. Green Digital & Costs

In the selection of the candidate investments for the Recovery Fund, the 2020-2026 expenses that are associated with the EU funding of the 2014-2020 programming both Connecting Europe Facility and Structural Funds (National Operational Plan and Regional Operational Plan), as well as related sources of funding (Development and Cohesion Fund).

With reference to the loans under the PON FESR program, it should be noted that there are the following investments financed by both the PON FESR that have been candidates for the Recovery Fund:

- Naples-Bari itinerary;
- Palermo-Catania itinerary.

For these investments, the share relating to this type of source was subtracted from the total expenditure in the period 2020-2026 and therefore there are no overlaps of a financial nature.

The approach followed in identifying projects and the project controlling methodologies adopted ensure the necessary synergies and make it possible to avoid overlaps between the various financial instruments.

The company management systems and subsequent reporting of sources implemented and used by RFI make it possible to avoid the risk of double financing on the basis of allocation rules that take into account the relative constraints as defined by the regulations and the reference standards as well as the financial framework of every project. In addition, the expenses already reported and considered eligible by the providers are excluded by default from future reporting from the same source and/or other sources, thus ensuring the absence of overlapping between loans.

Estimates of investment costs are made by means of expeditious evaluations and / or metric estimates based on the in-depth design achieved.

There are three design levels:

- Technical and Economic Feasibility Projects (PFTE)
- Definitive Projects
- Executive Projects.

For projects in which funding from other Eu sources is also envisaged, additional information on the specific part of the project and on the type of cost that it is proposed to finance with the RRF (e.g. Palermo-Catania-Messina or Brenner rail link) are provided in Back-up sheets.

The list of projects that have benefited from the co-financing of various programs is provided:

- Line Battipaglia - Reggio Calabria + Naples-Bari + Messina-Catania-Palermo;
- Ring of Palermo;
- Palermo junction;
- Naples junction or Circumetnea;
- Apulo Lucane Railways;
- Ferrovie della Calabria;
- Ferrovie del Gargano;
- Vesuvian lines;
- Flegrean Lines or partly EAV network;
- Bari - Lamasinata line;
- Catania junction;
- Metaponto - Reggio Calabria line and Catanzaro Lido - Lamezia connection;
- Palermo-Agrigento line.

The proposals for infrastructural and technological interventions included within the Recovery Plan respond to the strategies inspired by the European Commission in terms of:

- contribute to the environmental transition;
- contribute to resilience and social sustainability;
- contribute to the digital transition, innovation and competitiveness.

The goal of having works to be activated for operation by 2026 characterized the selection of the intervention's candidates for funding. For the success of the Recovery Plan, first of all the initiatives that have a design maturity and consensus character were implemented, to which were added some investments of high strategic value which, although they constitute only a first stage (think of the new High Speed sections of Rete), are representative of a broader design of infrastructural development. The mission relating to the country's infrastructural development aims to complete by 2026, the final year of Next Generation EU, a first and significant step on an ambitious path towards the creation of a modern, digitized and sustainable mobility infrastructure system from environmental point of view. With the impetus of the Recovery Fund and the FSC 2021-2027 in synergy with state sources, a huge volume of investments estimated at over 130 billion can be launched, which must however be, for full realization, supported by additional state and EU funds.

By way of example, it is worth mentioning the possibility of applying for the next programming of the Connecting Europe Facility 2021-2027 the construction of the Fortezza-Ponte Gardena section, lot 1 of the quadrupling of the access line to the Brenner pass which:

- has a value of 1,523 million;
- has no Community co-financing;
- in 2020 it was the subject of a tender for the civil works.

Similarly, it is worth noting the possibility of applying for any funding from the European Regional Development Fund both the continuation of the HS/HC lines in the Southern Regions that still need resources, and investments of smaller economic dimensions already in the start-up phase and financed by state resources.

11. Loan request justification (if applicable)

Financial needs: Member States should explain the reasons for loan support, justified by higher financial needs linked to additional reforms and investments set out as regular components of the recovery and resilience plan. Additional reforms and investments: For each of the components supported by a loan, Member States should describe them including all elements mentioned in part 2 sections 1 to 9 of the guidance.

Annex II: M/Ts of Component 1 of Mission 3

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
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| Q4-2021 | <p>Milestone: Adopt a legislative amendment that reduces the time for the approval process of the <i>Contratti di Programma (CdP)</i></p> | <p>The legislative amendment is expected to address the following elements,</p> <p>The competent parliamentary commissions should express an opinion on the strategic guidelines of the CdP.</p> <p>The reform provides certain times for the approval process of the CdP</p> <p>The Court of Auditors may carry out in parallel concurrent checks on the CdP at the request of the Government or of the competent parliamentary commissions.</p> | | |
| Q4-2021 | <p>Milestone: Adopt a regulatory change that reduces the authorisation time of projects from 11 to 6 months</p> | <p>A legislative provision will make an important regulatory modification to allow the geographic location of the works to be anticipated in the “Technical and Economic Feasibility Study” (TEFS), instead of waiting for the definitive project design phase. The location will hence be included as a variation of the urban planning instruments, with a constraint linked to expropriation. The additional authorizations, which cannot be acquired on the TEFS, would be obtained in subsequent project design phases, without convening the “Conferenza dei Servizi”, as an exception to Law no. 241/1990.</p> <p>The following positive effects are expected from the proposed regulatory change:</p> | | <p>Publication in the Official Journal of the Italian Republic</p> |

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| | | <ul style="list-style-type: none"> - all the observations of the various administrations will be collected at the stage of the TEFS, allowing to incorporate them, with savings in terms of time and resources, in the subsequent phases of the project design process; - the land affected by the works will be reserved from the urban planning point of view, inhibiting building activities by third parties and allowing economic savings for future expropriations; - the overall time for the authorization process of projects would be reduced from currently 11 months to 6 months. | | |
| Q4-2022 | <p>Milestone: Award of the contract (s) to build/complete of high-speed railway in the lines Napoli-Bari, and Palermo-Catania in full compliance with the public procurement rules</p> | <p>The contract (s) will refer to the following parts of those lines: Napoli Bari: Orsara Bovino Palermo Catania: Catenanuova - Dittaino e Dittaino - Enna</p> <p>The tender (s) will set clear, non-discriminatory and transparent criteria for the eligibility and the selection of the proposals The public procurement rules are provided by the legally binding obligation according to art.2 of DL 120/2020 and in line with the Public Procurement Directives</p> | | |
| Q1 - 2024 | <p>Milestone: Award of the contract to build/complete of high-speed railway in the lines Salerno Reggio Calabria</p> | <p>The contract will refer to the following parts of this line: Battipaglia - Romagnano</p> <p>The tender (s) will set clear, non-discriminatory and transparent criteria for the eligibility and the selection of the proposals</p> | | |

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| | | The public procurement rules are provided by the legally binding obligation according to art.2 of DL 120/2020 and in line with the Public Procurement Directives | | |
| Q2-2024 | Target: 69 km of high-speed rail for both passengers and freight in the lines Napoli-Bari and Palermo-Catania built, ready for authorisation and operational phases | <p>The 69 km will be built in the following segments</p> <p>Bicocca Catenanuova (Palermo Catania) 37 km Cancello Frasso (Napoli Bari) 16 km Napoli Cancello (Napoli Bari) 16 km</p> | | |
| Q2-2026 | Target: 274 km of high-speed rail for both passengers and freight in the lines Napoli-Bari, Salerno-Reggio Calabria, Palermo-Catania built, ready for authorisation and operational phases | <p>The indicative breakdown is the following,</p> <ul style="list-style-type: none"> - 93 km in the line Napoli-Bari - 33 km in the line Salerno-Reggio Calabria - 148 km in the line Palermo-Catania <p>The 274 km will be built in the following segments Napoli Bari: Napoli - Cancello, Cancello-Frasso, Frasso -Telese, Telese-Vitulano, Apice-Irpinia, Orsara- Bovino; Salerno Reggio: Battipaglia – Romagnano; Palermo Catania: Bicocca-Catenanuova, Catenanuova-Dittaino, Dittaino-Enna, Caltanissetta Xirbi-Lercara, Enna - Caltanissetta Xirbi.</p> <p>The High-speed network actions planned in the South will make it possible to reduce journey times and increase capacity, as illustrated below:</p> <ul style="list-style-type: none"> - Naples-Bari: upon completion of the project the Naples-Bari section will be covered in 2 hours, instead of the current | | |

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| | | <p>3hours 30 minutes; there will be an increase in capacity from 4 to 10 trains/hour on the sections with double tracks, and an adjustment of the performance to allow the transit of freight trains;</p> <ul style="list-style-type: none"> - Palermo-Catania: upon completion of the entire project there will be a reduction in the journey time of 60 minutes on the Palermo-Catania section, and an increase in capacity from 4 to 10 trains/hour on the sections being doubled; - Salerno-Reggio Calabria: upon completion of the entire project, the journey time will be reduced by 60 minutes on the Rome-Reggio Calabria section, with a recovery of up to 40 minutes on the priority lots of the Salerno-Battipaglia-Paola section; in addition, there will be a performance upgrade to allow the transit of freight trains, in particular for the port of Gioia Tauro. The Salerno Reggio Calabria project involves the construction of a new HS standard line that can be implemented in functional phases, which minimizes the impact on the territory and is consistent with the ongoing and planned investments. The intervention included in the PNRR is Battipaglia – Romagnano. | | |
| Q1-2024 | Milestone: Award of the contract to build/complete of high-speed railway in the line Verona-Brennero | The contract will refer to the following parts of this line: Circonvallazione di Trento (Trento bypass) | | |

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| | | <p>The tender (s) will set clear, non-discriminatory and transparent criteria for the eligibility and the selection of the proposals</p> <p>The public procurement rules are provided by the legally binding obligation according to art.2 of DL 120/2020</p> | | |
| Q4-2025 | <p>Target: 53 km of high-speed rail for both passengers and freight in the line Liguria-Alpi built, ready for authorisation and operational phases</p> | <p>The 53 km will be built in the following segments:</p> <p>Liguria Alpi: Genoa Node and Third Giovi Crossing section</p> | | |
| Q2-2026 | <p>Target: 180 km of high-speed rail for both passengers and freight in the lines Brescia-Verona-VicenzaPadova; Liguria-Alpi and Verona-Brennero built, ready for authorisation and operational phases</p> | <p>The 180 km will be built in the following segments</p> <p>Brescia-Verona 48 km Verona-Bivio-Vicenza 44 km Genoa Node and Third Giovi Crossing 53 km Rho-Parabiago 9km Pavia-Milano-Rogoredo 11 km Trento bypass 15 km</p> <p>The planned High-speed actions allow the reduction of travel times and the increase of capacity, as indicated below:</p> <ul style="list-style-type: none"> - Brescia-Verona-Vicenza-Padua: the proposed actions refer to the Brescia-Verona section (of 48 km) and the Verona-Bivio Vicenza section (of 44 km). Upon completion of the entire project up to Padua, the journey time on the Milan-Venice section will fall by 15 minutes. The main benefits will be an increase in capacity and in the regularity of traffic due to a specialisation of the services (traditional vs. HS), a significant improvement in the regional transport system due to | | |

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| | | <p>the higher capacity on the historic line, and a better accessibility of the new station at Vicenza Fiera;</p> <ul style="list-style-type: none"> - Liguria-Alpi: the intervention will allow the transit of freight trains with as length up to 750 meters. Upon completion of the entire project, journey times will be reduced by 60 minutes on the Genoa-Milan section (compared with the current time required of 1h 30 minutes) and on the Genoa-Turin section (compared with the current time required of 1h 35 minutes). In addition, capacity will be increased from 10 to 24 trains/hour on the sections subject to quadrupling close to the node of Milan (Rho-Parabiago and Pavia-Milano-Rogoredo). The proposed intervention will allow the elimination of bottlenecks at the node, due to the separation of long-distance passenger and freight traffic flows from metropolitan-regional flows, and due to the increase in the transport offer and of the frequency of regional and metropolitan trains (from 10 to 12 trains/hour on the Voltri-Brignole link); <p>Verona-Brennero - adduction works: the section that will be built is the Trento bypass. It is part of the project which includes the quadrupling of the Fortezza-Verona line, the bypass of Bolzano and Rovereto city centers and the rationalization of flows from the north</p> | | |
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| | | entering the node of Verona. Upon completion of the entire project there will be a significant increase in the capacity of trains in transit at the Brenner connection (target 400 trains/day) | | |
| Q1-2024 | Milestone: Award of the contract (s) to build/complete the connections in the lines Roma-Pescara and Orte-Falconara | <p>The contract (s) will refer to the following parts of those lines: Roma-Pescara Orte Falconara</p> <p>The tender (s) will set clear, non-discriminatory and transparent criteria for the eligibility and the selection of the proposals</p> <p>The public procurement rules are provided by the legally binding obligation according to art.2 of DL 120/2020</p> | | |
| Q2-2026 | Target: 87 km of high-speed rail for both passengers and rail in the line Roma-Pescara, Orte-Falconara e Taranto -Metaponto-Potenza-Battipaglia built, ready for authorisation and operational phases | <p>The 87 km will be built in the following segments: Roma-Pescara 32 km Orte-Falconara 20 km Taranto – Metaponto – Potenza – Battipaglia 35 km</p> <p>In particular, the envisaged upgrading actions are expected to allow a reduction in travel times and increases in capacity that can be summarized as follows:</p> <ul style="list-style-type: none"> - Rome-Pescara: upon completion of the entire project there will be a time saving of 80 minutes on the Rome-Pescara stretch and an increase in capacity from 4 to 10 trains/hour on the doubled stretches (with the possibility to set up metropolitan services between Chieti and Pescara); in | | |

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| | | <p>addition, the performance of the line will be adjusted to allow for the development of freight traffic;</p> <ul style="list-style-type: none"> - Strengthening Orte-Falconara: upon completion of the entire project there will be a reduction in travel times of 15 minutes on the Rome-Ancona section and of 10 minutes on the Rome-Perugia section, an increase in capacity from 4 to 10 trains/hour on the sections subject to doubling of the tracks, and a performance adjustment to allow the transit of freight trains; <p>Taranto-Metaponto-Potenza-Battipaglia: upon completion of the entire project, journey times will be reduced by 30 minutes on the Naples-Taranto section (via Battipaglia) compared with the current time required of 4 hours, capacity will be increased from 4 to 10 trains per hour on the sections being upgraded, and the railway line will be adjusted to allow the passage of freight trains</p> | | |
| Q4-2022 | <p>Milestone: Award of the contract (s) to introduce the European Rail Transport Management System (ERTMS)</p> | <p>The contract (s) will refer to the following lines.</p> <p>The tender (s) will set clear, non-discriminatory and transparent criteria for the eligibility and the selection of the proposals</p> | | |
| Q4-2024 | <p>Target: 1400 km of rail lines equipped with the European Rail Transport Management System in line with the ERTMS European Deployment Plan, ready for authorisation and operational phases</p> | <p>The 1400 km will include the completion of the "Rhine Alpine" Corridor from Chiasso to Milan and from Milan to the port of Genoa via Tortona; of the "Mediterranean" Corridor from Novara to Trieste / Villa Opicina via Milan - Venice Mestre and Vicenza - Castelfranco Veneto - Portogruaro and the Brennero - Verona</p> | | |

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| | | <p>section on the "Scandinavian-Mediterranean" Corridor and new realizations on other lines of the core, comprehensive and off-ten network (Roccasecca – Avezzano, Canicattì – Siracusa, Cagliari</p> <p>– Oristano - Chilivani, Decimomannu – Carbonia/Iglesias, Linee Castelli Romani, Caltanissetta – Aragona Caldare, Lercara – Agrigento – Porto Empedocle, Bolzano – Merano, Alcamo – Trapani, Campoleone – Nettuno, Lamezia Terme – Catanzaro Lido, Barletta – Spinazzola, Monza – Molteno – Lecco, Fortezza – S.Candido, Terni – Sulmona, Novara – Biella – Santhià). The final objective is to expand the implementation of ERTMS as the single signalling system to the entire Italian railway infrastructure (16,800 km against the 10,400</p> <p>required by law: TEN-T network with Core Network at 2030) and to significantly speed up ERTMS implementation times to complete the equipping of the entire network by 2036.</p> | | |
| Q2-2026 | <p>Target: 3400 km of rail lines equipped with the European Rail Transport Management System in line with the ERTMS European Deployment Plan, ready for authorisation and operational phases</p> | <p>The 3 400 kms include the line mentioned above and new realizations on other lines of the core, comprehensive and off-ten network. Deployment will involve the completion of the western section of the CNC Mediterranean (Modane-Torino-Novara),</p> <p>the cross border connections to Switzerland via Domodossola (Domodossola – Arona - Rho / Novara) and Luino (Luino – Oleggio and Laveno Mombello – Gallarate) on the CNC Rhine-Alpine together with the Novara-Alessandria section, the line Firenze-Pisa-Livorno/la</p> <p>Spezia on the CNC ScanMed. A number of other lines belonging to the TEN an off TENT network will also be equipped,</p> | | |

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| | | including Milano – Piacenza, Firenze – Roma (LL), Prato – Firenze, Bologna – S.Giorgio di Piano, Caserta – Napoli (linea Cassino), Salerno – Arechi, Gallarate - Varese – Stabio / Porto Ceresio, Voghera – Piacenza, Chilivani – Golfo Aranci / Porto Torres, Venezia – Portogruaro, Roma – Fiumicino, Roma – Colferro, Roma – Civitavecchia – Grosseto. | | |
| Q4-2024 | Target: 700 km of upgraded line sections built on metropolitan nodes and key national links , ready for authorisation and operational phases | 47 upgrading actions will take place along the following indicative routes and nodes: <ul style="list-style-type: none"> - Adriatic-Ionian (8) - Bologna-Venice-Trieste/Udine (3) - Central and North Tyrrhenian link (7) - Liguria-Alps (5) - Turin-Venice (2) - Urban nodes & regional lines (0) - Urban nodes & regional lines – center (7) - Urban nodes & regional lines - north east (6) - Urban nodes & regional lines - north west (6) - Urban nodes & regional lines – south (3) - | | |
| Q2-2026 | Target: 1280 km of upgraded line sections built on metropolitan nodes and key national links , ready for authorisation and operational phases | 94 upgrading actions will take place along the following indicative routes and nodes: <ul style="list-style-type: none"> - Adriatic-Ionian (12) - Bologna-Venice-Trieste/Udine (6) - Central and North Tyrrhenian link (9) - Liguria-Alps (9) - Turin-Venice (5) - Urban nodes & regional lines (2) - Urban nodes & regional lines – center (10) | | |

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| | | <ul style="list-style-type: none"> - Urban nodes & regional lines - north east (12) - Urban nodes & regional lines - north west (20) - Urban nodes & regional lines – south (9) <p>The proposed programme regards nodes and key links on the national territory with the following objectives:</p> <ul style="list-style-type: none"> - infrastructural development (doubling/quadrupling) and technological enhancement of key links of national interest, of connecting lines to the main freight terminals and of last mile connections to ports; - adaptation of performance levels (module, gauge, axle weight) to allow the transit of higher freight volumes on the TEN-T corridors, on freight lines, and on the connecting lines with the main ports and intermodal terminals; - mitigation of bottlenecks for the development of passenger and freight traffic, including punctual actions to manage interferences between passenger and freight traffic flows; - increases in capacity and reduction in journey times through the elimination of critical points; increases in the capacity of lines close to saturation; - increase in the capacity of the suburban access lines to the nodes being doubled; - renovation of stations. | | |
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| | | <p>As outlined in the national strategy in the document "Italia Veloce", the actions on the nodes can be distinguished as follows:</p> <ul style="list-style-type: none"> - aim to enhance "metropolitan" or "suburban" connections, in order to guarantee capillary services with high frequencies, thereby supporting the demand for mobility expressed by large metropolitan cities (and also by medium-sized urban areas); - focus on "fast regional" connections, capable to guarantee medium-range travel services, supporting the demand for mobility expressed by large diffuse urban areas, with competitive speed and comfort levels compared to the use of private cars; - improve the accessibility and interchange between railway stations and other mobility systems. | | |
| Q4-2023 | <p>Milestone: Award of the contract (s) for the upgrading, electrification and resilience of railways South</p> | <ul style="list-style-type: none"> - The contract (s) will refer to the following parts of those lines: - Collegamento ferroviario aeroporto di Olbia - Collegamento porto di Augusta - Raddoppio Decimomannu-Villamassargia 1^ fase - Bari Lamasinata 1^ fase - Linea ferroviaria Potenza - Foggia - ammodernamento - Nodo intermodale di Brindisi - Elettificazione Barletta - Canosa - - The tender (s) will set clear, non-discriminatory and transparent | | |

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| | | <p>criteria for the eligibility and the selection of the proposals</p> <p>The public procurement rules are provided by the legally binding obligation according to art.2 of DL 120/2020</p> | | |
| Q2-2026 | <p>Target: 680 km of upgraded regional lines , ready for authorisation and operational phases</p> | <p>The actions consist in the infrastructural and technological upgrading of the regional lines.</p> <p>In order to ensure the safety of the interconnected regional railway lines, regulatory provisions have identified RFI as the entity responsible for managing some of these lines and carrying out the technological actions required to adapt these regional lines to the technological and safety standards of the national railway network.</p> <p>So far, the FCU (Umbria) has been transferred to RFI and the FSE Ferrovie del Sud Est (Puglia) has been transferred to Gruppo Ferrovie dello Stato Italiane (FSI), while the other interconnected regional lines are still in the process of being transferred from the Regions to RFI. Pending the formal transfer of the above-mentioned interconnected lines to RFI, the actions will be carried out through specific agreements between RFI, the Regions and the current infrastructure managers, with the exception of the actions related to the Bari-Bitritto and Rosarno-San Ferdinando lines, which will be included in the MIMS-RFI Contratto di Programma.</p> <p>The regional lines subject to actions are already electrified or electrification is planned in the short term</p> <p>The actions will take place in the regions of Piemonte, Friuli Venezia Giulia, Umbria, Campania, Calabria, Puglia.</p> | | |

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| Q4-2024 | <p>Target: 10 railway stations are upgraded and accessible in line with Directive 1300/2014 and EU railway safety regulations</p> | <p>The upgrade will involve internal and external stations areas and will consist as a minimum of,</p> <ul style="list-style-type: none"> - Enhancing the accessibility of the stations in line with Directive 1300/2014 (“PRM TSI”) - Increasing the quality of the services provided to users - Improve the comfort, safety and quality of the public areas (internal and external) <p>The actions will take place in the regions of Abruzzo (1), Campania (1), Calabria (1), Sicilia (2), Puglia (3) and Sardegna (2).</p> <p>The indicative list of railway stations that will benefit is the following,</p> <p>Vasto San Salvo, Lamezia Terme, Sapri, Polignano a Mare, Barletta, Giovinazzo, Macomer, Oristano, Palermo Notarbartolo, Milazzo</p> | | |
| Q2-2026 | <p>Target: 38 railway stations are upgraded and accessible in line with Directive 1300/2014 and EU railway safety regulations</p> | <p>The upgrade will involve internal and external stations areas and will consist as a minimum of:</p> <ul style="list-style-type: none"> - Enhancing the accessibility of the stations - Increasing the quality of the services provided to users - Improve the comfort, safety and quality of the public areas (internal and external). <p>The actions will take place in the regions of Abruzzo, Molise, Campania, Calabria, Sicilia, Puglia, Basilicata and Sardegna.</p> <p>The indicative list of 30 railway stations that will benefit is the following,</p> | | |

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| | | <p>Vasto San Salvo, Chieti, Pescara, Giulianova, Potenza, Potenza Superiore, Lamezia Terme, Cosenza, Crotona, Scalea-S.Domenica Talao, Vibo Valentia-Pizzo, Reggio di Calabria Lido, Sapri, Falciano-Mondragone-Carinola, Maddaloni Inferiore, Pozzuoli Solfatara, Termoli, Polignano a Mare, San Severo, Barletta, Giovinazzo, Brindisi, Foggia, Macomer, Oristano, Palermo Notarbartolo, Milazzo, Acireale, Marsala, Siracusa.</p> <p>In addition, a set of 8 station and one city-line will be upgrade as metropolitan hubs, with larger actions that will involve also local stakeholders and include improvement of the energy efficiency of the stations.</p> <p>The metropolitan hubs will be: Messina Centrale e Marittima, Villa San Giovanni, Benevento, Caserta, L2 Line in Naples, Bari, Lecce, Taranto, Settimo Rende (new station).</p> | | |
| Q4-2021 | Ref. 2.1 Milestone: adoption of “Guidelines for the classification and management of risks, the evaluation of security and the monitoring of existing bridges” | <p>The adoption of "Guidelines", which will allow the application of common standards and methodologies on the entire national road network.</p> <p>-</p> | | |
| Q4-2021 | Ref. 2.2 - Transfer the property of the bridges and viaducts from the lower level ranking roads to the higher ranking ones (highways and main national roads) | <p>The transfer of the ownership of the works of art will have to take place within six months of the entry into force of Law 120/20. It is expected to be completed in 2021, with a special "handover report" according to the rules of the Codice della Strada (Legislative Decree 285/1992) and its Regulations (Presidential Decree 495/92), which dictate provisions on the transfer of ownership between road-owning entities.</p> | | |

Linee ERTMS da completare orizzonte 2024 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|---|------------------------|-----------------|
| BIVIO P.C. FENILONE - DIRAMAZIONE VR SC - VR PN | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| VERONA PORTA NUOVA SCALO - DEV. ESTREMO VR | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| BIVIO P.C. S.MASSIMO - VERONA QUADRANTE EUROPA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | Livello 1 | 3 |
| BIVIO P.C. S.MASSIMO - VERONA PORTA NUOVA SCALO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | Livello 1 | 3 |
| BIVIO P.C. FENILONE - VERONA QUADRANTE EUROPA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Scandinavia – Mediterraneo (RFC 3) | Livello 1 | 3 |
| DIRAMAZIONE VR SC - VR PN - VERONA PORTA NUOVA | "Tratto di linea di collegamento" | Non applicabile | Livello 1 | 3 |
| CHIASO SMISTAMENTO - BIVIO PC ROSALES (MO1) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MONZA - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO GRECO PIRELLI - MILANO CENTRALE (CHIASO) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| PIOLTELLO - BRESCIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| BIVIO MELLA - BRESCIA SCALO | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| BRESCIA SCALO - BRESCIA | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO P.C. TURRO - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| PORTOGRUARO - CERVIGNANO - TRIESTE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| TRIESTE C.LE GR SC. BARCOLA - TRIESTE C.LE GR SC. ROIANO | "Tratto di linea di collegamento" | Non applicabile | Livello 1 | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| TRIESTE C.LE GR SC. ROIANO - TRIESTE CAMPO MARZIO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| BIVIO D'AURISINA - VILLA OPICINA - CONFINE DI STATO ITA-SLO (LATO SEZANA) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| MILANO LAMBRATE - TREVIGLIO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO CERTOSA - BIVIO MUSOCCO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO MUSOCCO - TRIPLO BIVIO P.C. SEVESO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| TRIPLO BIVIO P.C. SEVESO - BIVIO TURRO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| TRIPLO BIVIO P.C. SEVESO - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - FIRENZE SMN | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (AV) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE SMN - FI. STATUTO (DD) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE STATUTO - FIRENZE CAMPO DI MARTE (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE CAMPO DI MARTE - P.M. ROVEZZANO D.D. (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE CAMPO DI MARTE - FIRENZE ROVEZZANO (LL) | TEN-T Centrale Merci;TEN-T | Corridoio Scandinavia – Mediterraneo (RFC | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| | Centrale Passeggeri | 3) | | |
| FIRENZE SMN - FIRENZE RIFREDI (PISA) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - DEV.EST. FIRENZE STATUTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - FIRENZE SANTA MARIA NOVELLA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA OSTIENSE - ROMA TUSCOLANA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE SANTA MARIA NOVELLA - FIRENZE CAMPO DI MARTE (LL) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA S.PIETRO - ROMA TUSCOLANA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| RONCHI DEI LEGIONARI SUD - RONCHI DEI LEGIONARI NORD | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | Livello 1 | 3 |
| MILANO LAMBRATE - TREVIGLIO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - QUADRIVIO P.C. TURRO (MERC) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| PADOVA - VENEZIA MESTRE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - BIVIO LAMBRO - PIOLTELLO (VENEZIA LL) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - MILANO ROGOREDO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - MILANO SMISTAMENTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - QUADRIVIO P.C. | TEN-T Centrale Passeggeri;TEN-T | Non applicabile | L2 sovrapposto | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|---|------------------------|----------|
| TURRO (Venezia) | Globale | | SCMT | |
| PADOVA - VENEZIA S.L. | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| BRENNERO - VERONA PORTA NUOVA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| PADOVA FASCIO SECONDARIO - PADOVA INTERPORTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| VENEZIA MESTRE - VENEZIA MARGHERA SCALO | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO ROGOREDO - VOGHERA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| VOGHERA - TORTONA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO GRECO PIRELLI - BIVIO P.C. MIRABELLO | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO P.C. MIRABELLO - MILANO PORTA GARIBALDI | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO P.C. TURRO - BIVIO P.C. MIRABELLO | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO P.C. FEGINO - BIVIO SUCCURSALE | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| GENOVA VOLTRI - GENOVA SESTRI PONENTE AEREOPORTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| GENOVA SESTRI PONENTE AEREOPORTO - GENOVA SAMPIERDARENA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO POLCEVERA - QUADRIVIO TORBELLA | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO TORBELLA - GENOVA SAMPIERDARENA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO SUCCURSALE - GENOVA CAMPASSO (*) | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| GE SAMPIERDARENA SMIST.TO - DEV.I.GE SAMP.SMIST.TO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|-------------------------------|---------------------|----------|
| BIVIO CASTELLUCCIO - GENOVA VOLTRI (BINARIO CASTELLUCCIO) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| TORTONA - GENOVA PIAZZA PRINCIPE (esclusa la tratta Bivio Fegino - Genova Piazza Principe) | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO SUCCURSALE - BIVIO POLCEVERA | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |

Nuove realizzazioni linee ERTMS orizzonte 2024 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| MILANO CERTOSA - TRIPLO BIVIO P.C. SEVESO (VIAGGIATORI) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO CENTRALE - MILANO GRECO PIRELLI (CIRCOLAZIONE) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (LL) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROCCASECCA - AVEZZANO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CANICATTI' - SIRACUSA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MILANO SMISTAMENTO - PIOLTELLO-LIMITO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO SMISTAMENTO - MILANO ROGOREDO (Merci) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|-------------------------------|---------------------|----------|
| MILANO LAMBRATE - MILANO ROGOREDO (Cintura) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| RHO - MILANO CERTOSA (Varese) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA TIBURTINA - ROMA TUSCOLANA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| DECIMOMANNU - CARBONIA STATO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| VILLAMASSARGIA-DOMUSNOVAS - IGLESIAS | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| CAGLIARI - ORISTANO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - FRASCATI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - ALBANO LAZIALE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - VELLETRI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CALTANISSETTA XIRBI - ARAGONA-CALDARE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LERCARA DIRAMAZIONE - AGRIGENTO CENTRALE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| AGRIGENTO BASSA - PORTO EMPEDOCLE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MERANO - DEV. ESTREMO BOLZANO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| ALCAMO DIRAMAZIONE - TRAPANI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CAMPOLEONE - NETTUNO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MILANO CENTRALE(e) - MILANO LAMBRATE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|-----------------------------------|-----------------|---------------------|----------|
| MILANO ROGOREDO DEV. I. - MILANO ROGOREDO DEV. U. | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| LAMEZIA TERME CENTRALE - CATANZARO LIDO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BARLETTA - SPINAZZOLA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MONZA - MOLTEÑO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LECCO - MOLTEÑO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MERCATO S.SEVERINO - SALERNO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| S.CANDIDO - FORTEZZA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| TERNI - SULMONA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| SANTHIA' - BIELLA S. PAOLO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| BIELLA S. PAOLO - NOVARA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| ORISTANO - CHILIVANI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |

Nuove realizzazioni linee ERTMS 2024-2026 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|----------------------------------|---------------------------------------|-----------------------------------|----------------|----------|
| CHILIVANI - OLBIA - GOLFO ARANCI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| TORINO (e) - SETTIMO - NOVARA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|-----------------|
| DEV.CHIL.LATO MACOM.(BRETELLA) - DEV.CHIL.LATO P.T.(BRETELLA) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| PISA CENTRALE - LIVORNO CENTRALE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| EMPOLI - PISA CENTRALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PISA CENTRALE - PISA DEV. TAGLIAFERRO | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| PISA DEV. TAGLIAFERRO - BIVIO MORTELLINI | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PADOVA - PADOVA CAMPO MARTE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| PADOVA CAMPO MARTE - GS MONTA' | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| MILANO ROGOREDO - TAVAZZANO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| MILANO CENTRALE - P.M. PIACENZA OVEST | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| FIRENZE ROVEZZANO - TERONTOLA | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------------------------|----------|
| BIVIO S.DONATO - DOPPIO BIVIO RIMESSE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PRATO CENTRALE - FIRENZE CASTELLO (DD) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| S.GIORGIO DI PIANO - BOLOGNA INTERPORTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | L2 Stand Alone L2 sovrapposto | 3 |
| BOLOGNA INTERPORTO - CASTELMAGGIORE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |
| CASTELMAGGIORE - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO BERTALIA - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOPPIO BIVIO P.C. BEVERARA - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| CASERTA - NAPOLI CENTRALE (Cassino) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|---|----------------------------------|----------|
| DEV. (EX P.M. RHO FIERA) - DEV. (EX P.M. RHO FIERA AV) BRETELLA AV/LS | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| CONFLUENZA UD-TS - G.S. MESTRE | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ARONA - RHO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| LAVENO-MOMBELLO - GALLARATE | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| LUINO - OLEGGIO | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| PRATO CENTRALE - FIRENZE CASTELLO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO MAROCCO - BIVIO PC SPINEA | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | L2 Stand Alone | 3 |
| P.M. BEVERA - STABIO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LIVORNO CALAMBRONE - LIVORNO CENTRALE | Off TEN | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| LIVORNO CALAMBRONE - LIVORNO DARSENA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| P.M. SALARIO ROMA SMISTAMENTO - ROMA SMISTAMENTO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| SALERNO - ARECHI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| FIRENZE RIFREDI - EMPOLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |
| BIVIO P.C. RENAI - BIVIO P.C. SAMMINIATELLO | TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|----------|
| VARESE - PORTO CERESIO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TERMINI - COLLEFERRRO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| VOGHERA - PIACENZA | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| CIVITAVECCHIA - ROMA S.PIETRO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| TERONTOLA - 1° BIVIO ORTE SUD (LL E INTERC.) | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| OZIERI-CHILIVANI - PORTO TORRES MARITTIMA | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| FIUMETORTO - CALTANISSETTA XIRBI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOMODOSSOLA - ARONA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| ARONA - VIGNALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| MODANE FOURNEAUX - QUADRIVIO ZAPPATA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| LA SPEZIA CENTRALE - PISA CENTRALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PISA DEV. TAGLIAFERRO - PISA DEV. NAVICELLI | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|---|----------------|-----------------|
| LA SPEZIA MIGLIARINA - VEZZANO LIGURE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 Stand Alone | 3 |
| LA SPEZIA MIGLIARINA - LA SPEZIA MARITTIMA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| LA SPEZIA MARITTIMA - VEZZANO LIGURE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| NOVARA - PONTE TANARO ALESSANDRIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| PORTOGRUARO - VENEZIA MESTRE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| DEV.ESTR.VENEZIA - VENEZIA MARITTIMA | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ROMA OSTIENSE - FIUMICINO AEROPORTO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TERMINI - ROMA PRENESTINA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - DIRAMAZIONE VR SC - VR PN | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - BIVIO P.C. FENILONE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - BIVIO P.C. S.MASSIMO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO P.C. FENILONE - BIVIO P.C. S.MASSIMO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|---|---|----------------|-----------------|
| P.M. CAB. C ROMA SMISTAMENTO - ROMA SMISTAMENTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| P.M. NORD ROMA SMISTAMENTO - ROMA SMISTAMENTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO CALDERARA - BIVIO BERTALIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOPPIO BIVIO RIMESSE - BIVIO CROCIALI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO TAVERNELLE - BIVIO CALDERARA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO CROCETTA - TORINO S. PAOLO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| TORINO ORBASSANO FASCIO ARRIVI - TORINO ORBASSANO MODALHOR | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| BIVIO PRONDA - DEV.ESTR. TO ORBASSANO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| QUADRIVIO ZAPPATA - TORINO SMISTAMENTO NORD | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| VENEZIA MESTRE - LIMITE FS (LINEA ADRIA) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ROMA TIBURTINA - ROMA CASILINA (INDIPENDENTE) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|----------|
| NOVARA - NOVARA BOSCHETTO (TORINO) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. TOCE - BIVIO P.C. VALLE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| COLLEFERRO - CASSINO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| ROMA TUSCOLANA - ROMA TERMINI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. LAMBRO - MILANO CERTOSA | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TUSCOLANA - ROMA CASILINA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| ALESSANDRIA - ALESSANDRIA SMIST.TO (PONTE TANARO) | Off TEN | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| MILANO ROGOREDO - MILANO S.CRISTOFORO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| VARESE - GALLARATE | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| GROSSETO - CIVITAVECCHIA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| MACCARESE-FREGENE - PONTE GALERIA | Off TEN | Non applicabile | L2 Stand Alone | 3 |

| Mission | Component | Id |
|----------------|------------------|-----------|
| M3 | C1 | R1.1 |
| M3 | C1 | R1.2 |
| M3 | C1 | |
| M3 | C1 | I1.1.a |
| M3 | C1 | I1.1.b |
| M3 | C1 | I1.1.a |
| M3 | C1 | |
| M3 | C1 | I1.2.a |
| M3 | C1 | I1.2.b |
| M3 | C1 | I1.2.a |
| M3 | C1 | |
| M3 | C1 | I1.3.a |
| M3 | C1 | I1.3.b |
| M3 | C1 | I1.3.a |
| M3 | C1 | I1.4 |
| M3 | C1 | I1.5 |
| M3 | C1 | I1.6 |
| M3 | C1 | I1.7 |
| M3 | C1 | I1.8 |
| | | |
| M3 | C1 | Ref2.1 |
| M3 | C1 | Ref2.2 |

Name

Acceleration of the approval process of the Contract between the MIT and RFI

Acceleration of the authorization process of projects

High-speed railway connections to the South for passengers and freight

High-speed railway connections to the South for passengers and freight (Napoli - Bari)

High-speed railway connections to the South for passengers and freight (Palermo-Catania)

High-speed railway connections to the South for passengers and freight (Salerno-Reggio Calabria)

High-speed lines in the North connecting to Europe

High-speed lines in the North connecting to Europe (Brescia-Verona-Padova)

High-speed lines in the North connecting to Europe (Liguria-Alpi)

High-speed lines in the North connecting to Europe (Verona-Brennero - opere di adduzione)

Diagonal connections

Diagonal connections (Roma-Pescara)

Diagonal connections (Orte-Falconara)

Diagonal connections (Taranto-Metaponto-Potenza-Battipaglia)

Introducing the European Rail Transport Management System (ERTMS)

Strengthening metropolitan nodes and key national links

Strengthening regional lines - Upgrading of regional railways (management RFI)

Upgrading, electrification and resilience of railways South

Upgrading railway stations (RFI management; in South)

Implementation of the recent "Decree Simplification" (converted into Law n.120 dated 11 September 2020) by issuing a decree concerning the adoption of "Guidelines for the classification and management of risks, the evaluation of security and the monitoring of existing bridges"

Transfer the property of the bridges and viaducts from the lower level ranking roads to the higher ranking ones

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DNSH assessment

| | |
|---|--|
| Division | NS |
| Cluster | C1 |
| Related Measure (Reform or Investment) | 2.3 Implementation of the recent "Decree Simplification" (converted into Law n.120 dated 15 September 2020) by issuing a decree concerning the adoption of "guidelines for the responsibility for reporting and implementation". |
| Line | 124/000000 |

| Environmental objective | Step 1 | | Question | Step 2 | |
|---|--|--|--|--------|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective regarding the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Explanations that derive from adapting the methodologies proposed in the recent guidelines as they concern the high technological content, the monitoring of the bridge and viaduct, optimising the components, and the use of engineering works as planned but these strictly necessary to install the sensors when the level of sensors requires it. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | C. The measure "contributes substantially" to environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | Adopting the guidelines on the new maintenance use can ensure an efficient monitoring system setup, programming to climate change, as sensors also record movements and/or any other action induced by the anthropogenic variability (i.e. rail, landslides and water recession under foundation piles phenomena due to surface resulting from heavy rain) | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective regarding the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Installing monitoring systems that report on inland waters and marine resources | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of inland waters, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | B. No, the measure requires a substantial DNSH assessment | Installing monitoring systems does not involve activities capable of generating pollution conditions on the environmental metrics, or otherwise works on the environment as neutral for this purpose, and so the related impact. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage in its life cycle which are not eliminated by adequate measures; or (iii) cause significant pollution harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | Systems, when they are installed, do not have an impact on the environment. The equipment used will comply with the requirements of the Taxonomy Regulation (Article 20(2)(a)-(c)). Technical equipment purchased will not contain the restricted substances listed in Annex IV to Directive 2002/95/EC (RoHS) or any concentration of cadmium, mercury, hexavalent chromium exceeding the maximum value listed in |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective regarding the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Installing monitoring systems does not involve activities capable of generating pollution conditions on the environmental metrics, or otherwise works on the environment as neutral for this purpose, and so the related impact. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective regarding the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure will not lead to generation of emissions, structures and material or engineering works, or any other action likely to be detrimental to the adoption of data aggregation gateway for each bridge. In fact, information, the information flow for the control | Is the measure expected to: (i) significantly deteriorate the good condition and resilience of ecosystems; or (ii) be detrimental to the conservation status of habitats and species, including those of Union concern? | | |

DNSH assessment

| | |
|--|--|
| Situation | NS |
| Cluster | C1 |
| Related Measure (Reform or Investment) | NS.2 Transfer the property of the bridges and viaducts from the lower level railway track to the higher railway line |
| Responsibility for reporting and implementation | Ing. Giuliano Colaneri |
| Date | 15/04/2021 |

| Environmental objectives | Step 1 | | Questions | Step 2 | |
|---|--|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | A. the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | B. the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | C. the measure expected to be detrimental to the good status or the good ecological potential of rivers of water, including surface water and groundwater; or (3) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | D. the measure expected to: (a) lead to a significant increase in the generation, accumulation or disposal of waste, with the exception of the incineration of non-hazardous waste; or (b) lead to significant deficiencies in the direct or indirect use of any natural resource at any stage in its life cycle which are not prevented by adequate measures; or (c) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | E. the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective identified in the direct and primary indirect effects of the measure across its life-cycle, given its nature, and as such is considered compliant with S101 for the relevant objective | The impact of the reform on this component is not significant. Indeed, the mere change of infrastructure manager does not change frequencies, methods and technologies of any necessary maintenance work | F. the measure expected to: (i) significantly deteriorate the good condition and resilience of ecosystems; or (ii) be detrimental to the conservation status of habitats and species, including those of Union concern? | | |

National Recovery and Resilience Plan

Mission 3 - Infrastructures for sustainable mobility

Component 1 - Investments on the railway network



Do No Significant Harm

Update: 29 April 2021



Summary

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1 The National Recovery and Resilience Plan

Next Generation EU (NGEU), established by Regulation (EU) 2020/2094, represents the new European Union instrument for recovery, which will complement the Multi-annual Financial Framework for the period 2021-2027. On the basis of the NGEU, the European Commission will be authorised to borrow, on behalf of the Union, on capital markets up to an amount of € 750 billion (at 2018 prices).

With 672.5 billion Euro (360 in loans and 312.5 in grants), the **Recovery and Resilience Facility** (RRF) represents the most important instrument foreseen under Next Generation EU (almost 90% of the total endowment), which will support Member States' investments and reforms.

To obtain the resources allocated to them, Member States will have to prepare **National Recovery and Resilience Plans** defining the reform and investment program for the period 2021-2026 to be evaluated by the European Commission and approved by the Council of the EU.

Financial support from the Recovery and Resilience Facility:

- it cannot replace recurring national budgetary expenditure, except in duly justified cases;
- it must meet the principle of supplementation to Union funding, i.e. it can be added to the support provided by other Union funds and programs provided it does not cover the same cost;
- it must support measures that meet the Union's "**do no significant harm**" environmental target principle.

On January 15, 2021, the Government transmitted the proposal for a National Recovery and Resilience Plan (NRRP) to Parliament to address the economic and social impact of the pandemic crisis caused by Covid-19. The objective of the Plan is to make Italy a more sustainable and inclusive country, with a more advanced and dynamic economy.

It is a *Resilience Plan*, because the pandemic and the ecological emergency focus our attention to the extreme current and future events. Resilience is the preparation to face them by the state, businesses and all social players. It is the adaptation required of our production chains within the changes of globalisation and new technological frontiers. It is the ability to prepare for the future, to govern transformations without suffering from them.

It is also a *Reform Plan*, because the investment lines are accompanied by the adoption of a reform strategy, as an "enabling" and catalyst element, in line with the European Commission's Country Specific Recommendations (CSR) and the National Reform Programmes (NRP) adopted by the Government.

The NRRP is divided into 6 Missions, which in turn group together 16 Components functional to achieving the economic and social objectives defined in the Government strategy.

The reforms required to ensure more effective completion, linked to the implementation of one or more Components are indicated for each Mission. The individual investment projects were selected according to criteria aimed at concentrating interventions on transformational ones, with the greatest impact on the economy and on labour.

On April 27, 2021, the Government presented the final review of the National Recovery and Resilience Plan (NRRP) to Parliament.

Basically, the structure of the plan is confirmed with some changes.

The new resource allocation is shown below.



TAVOLA 1.1: COMPOSIZIONE DEL PNRR PER MISSIONI E COMPONENTI (MILIARDI DI EURO)

|  M1. DIGITALIZZAZIONE, INNOVAZIONE, COMPETITIVITÀ E CULTURA | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
|--|---------------|--------------|-------------------------|------------------------|
| M1C1 - DIGITALIZZAZIONE, INNOVAZIONE E SICUREZZA NELLA PA | 9,75 | 0,00 | 1,20 | 10,95 |
| M1C2 - DIGITALIZZAZIONE, INNOVAZIONE E COMPETITIVITÀ NEL SISTEMA PRODUTTIVO | 24,30 | 0,80 | 5,88 | 30,98 |
| M1C3 - TURISMO E CULTURA 4.0 | 6,68 | 0,00 | 1,46 | 8,13 |
| Totale Missione 1 | 40,73 | 0,80 | 8,54 | 50,07 |
|  M2. RIVOLUZIONE VERDE E TRANSIZIONE ECOLOGICA | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
| M2C1 - AGRICOLTURA SOSTENIBILE ED ECONOMIA CIRCOLARE | 5,27 | 0,50 | 1,20 | 6,97 |
| M2C2 - TRANSIZIONE ENERGETICA E MOBILITÀ SOSTENIBILE | 23,78 | 0,16 | 1,40 | 25,36 |
| M2C3 - EFFICIENZA ENERGETICA E RIQUALIFICAZIONE DEGLI EDIFICI | 15,22 | 0,32 | 6,72 | 22,26 |
| M2C4 - TUTELA DEL TERRITORIO E DELLA RISORSA IDRICA | 15,06 | 0,31 | 0,00 | 15,37 |
| Totale Missione 2 | 59,33 | 1,31 | 9,32 | 69,96 |
|  M3. INFRASTRUTTURE PER UNA MOBILITÀ SOSTENIBILE | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
| M3C1 - RETE FERROVIARIA AD ALTA VELOCITÀ/CAPACITÀ E STRADE SICURE | 24,77 | 0,00 | 3,20 | 27,97 |
| M3C2 - INTERMODALITÀ E LOGISTICA INTEGRATA | 0,36 | 0,00 | 3,13 | 3,49 |
| Totale Missione 3 | 25,13 | 0,00 | 6,33 | 31,46 |
|  M4. ISTRUZIONE E RICERCA | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
| M4C1 - POTENZIAMENTO DELL'OFFERTA DEI SERVIZI DI ISTRUZIONE DAGLI AGLI NIDO ALLE UNIVERSITÀ | 19,44 | 1,45 | 0,00 | 20,89 |
| M4C2 - DALLA RICERCA ALL'IMPRESA | 11,44 | 0,48 | 1,00 | 12,92 |
| Totale Missione 4 | 30,88 | 1,93 | 1,00 | 33,81 |
|  M5. INCLUSIONE E COESIONE | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
| M5C1 - POLITICHE PER IL LAVORO | 6,66 | 5,97 | 0,00 | 12,63 |
| M5C2 - INFRASTRUTTURE SOCIALI, FAMIGLIE, COMUNITÀ E TERZO SETTORE | 11,17 | 1,28 | 0,13 | 12,58 |
| M5C3 - INTERVENTI SPECIALI PER LA COESIONE TERRITORIALE | 1,98 | 0,00 | 2,43 | 4,41 |
| Totale Missione 5 | 19,81 | 7,25 | 2,56 | 29,62 |
|  M6. SALUTE | PNRR (a) | React EU (b) | Fondo complementare (c) | Totale (d)=(a)+(b)+(c) |
| M6C1 - RETI DI PROSSIMITÀ, STRUTTURE E TELMEDICINA PER L'ASSISTENZA SANITARIA TERRITORIALE | 7,00 | 1,50 | 0,50 | 9,00 |
| M6C2 - INNOVAZIONE, RICERCA E DIGITALIZZAZIONE DEL SERVIZIO SANITARIO NAZIONALE | 8,63 | 0,21 | 2,39 | 11,22 |
| Totale Missione 6 | 15,63 | 1,71 | 2,89 | 20,22 |
| TOTALE | 191,50 | 13,00 | 30,64 | 235,14 |



2 Mission 3 – Infrastructures for sustainable mobility

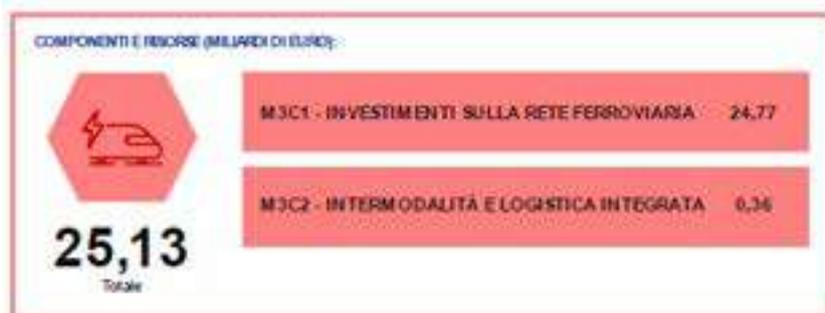
2.1 Mission and Components

Mission 3 - Infrastructures for sustainable mobility - aims to complete by 2026, a first and significant step in a longer-term journey towards the creation of a modern, digitised and environmentally sustainable infrastructure system, taking into account the specificity of the orography of the Italian territory. By adding resources to existing projects and accelerating them, as well as introducing new ones, the aim will be to create and complete works that are part of European infrastructure projects or that fill gaps that have hitherto penalised the economic development of the country and, in particular, of the South and the Islands.

For the implementation of this strategy on the infrastructural system of Italian mobility, NGEU resources, ordinary budget resources and the other European resources available for this purpose will contribute and will be synchronised. In line with the strategic design of the Recovery Plan, additional interventions have been included which are financed with state funds.

The Infrastructures for sustainable mobility mission takes the form of 2 components for a total amount of resources equal to 25,13 billion Euro, broken down as follows:

MISSIONE 3: INFRASTRUTTURE PER UNA MOBILITÀ SOSTENIBILE



The mission aims to make, by 2026, the most modern, digital and sustainable infrastructure system, capable of responding to the challenge of decarbonisation indicated by the European Union with the strategies connected to the European Green Deal (in particular the "strategy for mobility intelligent and sustainable ", published on 9 December 2020) and to achieve the sustainable development goals identified by the United Nations 2030 agenda.

The planned investments are in line with the provisions of the current National Integrated Energy and Climate Plan (Piano Nazionale Integrato per l'Energia e il Clima - PNIEC), which provides that "For transport, priority is given to policies for increasing collective mobility , in particular by rail, including the shift of freight transport from road to rail ".

Furthermore, as indicated by the Commission in the Country Specific Recommendations (CSR) 2020 and 2019 for Italy, "Investing in sustainable transport and infrastructure is also a way to address environmental challenges. Substantial green investments are needed to achieve the EU's ambitious energy and climate targets for 2030 ".



QUADRO DELLE MISURE E RISORSE (MILIARDI DI EURO):

24,77

Mld

Totale

| Ambiti di Intervento/Misure | Totale |
|--|--------|
| 1. Investimenti sulla rete ferroviaria | 24,77 |
| Riforma 1.1: Accelerazione dell'iter di approvazione del contratto tra MIMS e RFI | - |
| Riforma 1.2: Accelerazione dell'iter di approvazione dei progetti | - |
| Investimento 1.1: Collegamenti ferroviari ad Alta Velocità verso il Sud per passeggeri e merci | 4,64 |
| Investimento 1.2: Linee ad Alta Velocità nel Nord che collegano all'Europa | 8,57 |
| Investimento 1.3: Connessioni diagonali | 1,58 |
| Investimento 1.4: Sviluppo del sistema europeo di gestione del trasporto ferroviario (ERTMS) | 2,97 |
| Investimento 1.5: Rafforzamento dei nodi ferroviari metropolitani e dei collegamenti nazionali chiave | 2,97 |
| Investimento 1.6: Potenziamento delle linee regionali | 0,94 |
| Investimento 1.7: Potenziamento, elettrificazione e aumento della resilienza delle ferrovie nel Sud | 2,40 |
| Investimento 1.8: Miglioramento delle stazioni ferroviarie nel Sud | 0,70 |
| 2. Sicurezza stradale 4.0 | - |
| Riforma 2.1: Trasferimento della titolarità delle opere d'arte (ponti, viadotti e cavalcavia) relative alle strade di secondo livello ai titolari delle strade di primo livello (autostrade e strade extraurbane principali) | - |
| Riforma 2.2: Attuazione delle Linee guida per la classificazione e gestione del rischio, la valutazione della sicurezza e il monitoraggio dei ponti esistenti (D.M. 578 del 17 dicembre 2020) | - |

2.2 The Measures

Only investments belonging to the following classification will be considered in this document:

- Mission 3 - Infrastructures for sustainable mobility,
 - Component 1 - Investments on the railway network,

This Component includes interventions to implement the strategic and programmatic indications of the annex to the DEF #italia fast, approved by the Council of Ministers on 6 July 2020.

These are investments relating to the railway infrastructure sector, both belonging to the National Railway Infrastructure under concession to RFI SpA, and regional lines under concession to the Regions.

The main investments for HS concern the construction of some fundamental sections: Naples-Bari, Brescia-Verona-Vicenza-Padova and Salerno-Reggio Calabria.

Investments are planned to speed up and increase the capacity of 6 further sections: Rome-Pescara, Orte-Falconara, Palermo-Catania-Messina, Liguria-Alps, Taranto-Metaponto-Potenza-Battipaglia and Verona-Brennero (adduction works).

Technological updating of the railway lines and nodes through the start of the implementation of the European Rail Traffic Management System (ERTMS) on the entire national network.

The technological upgrade of traffic management systems improves traffic regularity and solves reduced capacity issues on some railway lines.



Investments relating only to the regional lines interconnected to the national network (Turin Ceresse-Canavesana, FUC Ferrovia Udine-Cividale, Bari-Bitritto line, Rosarno-S. Ferdinando line, FCU Centrale Umbra railway, EAV, FSE Ferrovie del Sud Est).

Specific investments in upgrading, electrification and resilience in the south are foreseen (among the lines specifically concerned we can mention Ionica Sibari-Catanzaro Lido-Reggio Calabria, Venafrò - Campobasso - Termoli, Catania node, Decimomannu-Villamassargia doubling, Olbia airport railway connection, and others).

Finally, the program envisages a specific line of intervention for the stations in the south (Southern Station Plan).

The Measures referred to the railway infrastructure both in terms of Reforms and Investments are the following.

| M3C1 | Reform/ Investment | Measure |
|-------------------------------------|-----------------------|---|
| Railway works (HS/HC railway) | Reform | 1. Acceleration of the approval process of the Contract between the MIT and RFI |
| | | 2. Acceleration of the authorization process of projects |
| | Investment | 3. High-speed railway connections to the South for passengers and freight (Napoli - Bari) |
| | | 4. High-speed railway connections to the South for passengers and freight (Palermo-Catania) |
| | | 5. High-speed railway connections to the South for passengers and freight (Salerno-Reggio Calabria) |
| | | 6. High-speed lines in the North connecting to Europe (Brescia-Verona-Padova) |
| | | 7. High-speed lines in the North connecting to Europe (Liguria-Alps) |
| | | 8. High-speed lines in the North connecting to Europe (Verona-Brennero - adduction works) |
| | | 9. Diagonal connections (Roma-Pescara) |
| | | 10. Diagonal connections (Orte-Falconara) |
| | | 11. Diagonal connections (Taranto-Metaponto-Potenza-Battipaglia) |
| | | 12. Introducing the European Rail Transport Management System (ERTMS) |
| | | 13. Strengthening metropolitan nodes and key national links |
| | | 14. Strengthening regional lines - Upgrading of regional railways (management RFI) |
| | | 15. Upgrading, electrification and resilience of railways South |
| | | 16. Upgrading railway stations in the South |



3 Do No Significant Harm

3.1 The principle

The **Do No Significant Harm** (DNSH) principle is defined by EU regulation 2020/852 concerning the establishment of a framework that promotes sustainable investments.

EU regulation 2020/852 is referred to as the "Taxonomy regulation" as it has provided for the definition of a classification system ("taxonomy") of eco-sustainable economic activities. The Regulation establishes, in fact, the conception of the first system in the world for the classification of sustainable economic activities, capable of creating a common language that investors can use everywhere when they invest in projects and economic activities that have significant positive effects on the climate and the environment. By enabling investors to redirect investments towards more sustainable technologies and businesses, this piece of legislation will be instrumental in achieving climate neutrality for the EU by 2050.

Art. 9 of the taxonomy regulation has defined the following 6 environmental targets:

- a) climate change mitigation;
- b) adaptation to climate change;
- c) the sustainable use and protection of water and marine resources;
- d) the transition to a circular economy;
- e) the prevention and reduction of pollution;
- f) the protection and restoration of biodiversity and ecosystems.

Article 17 of the Taxonomy Regulation defines the concept of "significant damage" for six environmental targets. In detail, an activity can cause significant damage:

- a) the mitigation of climate change, if the activity leads to significant emissions of greenhouse gases;
- b) adaptation to climate change, if the activity leads to a worsening of the negative effects of the current climate and the anticipated future climate on itself or on people, nature or assets;
- c) the sustainable use and protection of water and marine resources, if the activity harms:
 - i) the good status or ecological potential of water bodies, including surface and groundwater;
 - ii) the good ecological status of marine waters;
- d) the circular economy, including waste prevention and recycling, if:
 - i) the activity leads to significant inefficiencies in the use of materials or in the direct or indirect use of natural resources such as non-renewable energy sources, raw materials, water resources and soil, in one or more phases of the life of products, including in terms of durability, possibility of improving, repairing, reusing or recycling products;
 - ii) the activity involves a significant increase in the production, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste;
 - iii) long-term disposal of waste could cause significant and long-term damage to the environment;
- e) the prevention and reduction of pollution, if the activity involves a significant increase in emissions of pollutants into the air, water or soil compared to the situation before its start;
- f) the protection and restoration of biodiversity and ecosystems, if the activity:
 - i) significantly harms the good condition and resilience of ecosystems;
 - ii) harms the conservation status of habitats and species, including those of interest to the Union.

When assessing an economic activity on the basis of the do no significant harm criteria, the environmental impact of the activity itself and the environmental impact of the products and services provided by it during their entire life cycle are taken into account, in particular taking into account the production, use and end of life of these products and services.



3.2 Application of the principle

The emergence of the COVID-19 pandemic in early 2020 has changed the economic, social and budgetary outlook in the Union and the world, requiring an urgent and coordinated response at both Union and national levels to address the enormous economic and social consequences as well as asymmetrical effects for Member States. In the context of the COVID-19 crisis, the need to strengthen the existing framework for supporting Member States by providing them with direct financial support through an innovative tool has become apparent. To this end, a Recovery and Resilience Facility (RRF) has been designed to provide effective and meaningful financial support to accelerate the implementation of sustainable reforms and related public investment in Member States.

EU regulation 2021/241 of 12 February 2021 established the Recovery and Resilience Facility, aimed at promoting the economic, social and territorial cohesion of the Union by improving resilience, crisis preparedness, adjustment capacity and growth potential of the Member States.

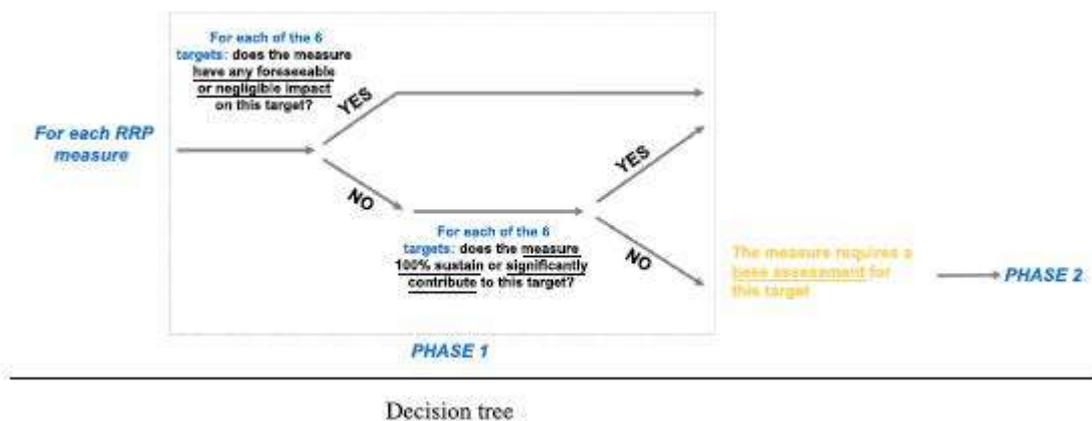
Regulation point 25 establishes that: "Member States should ensure that the measures included in their recovery and resilience plans comply with the 'do not cause significant harm' principle under Article 17 of Regulation (EU) 2020/852."

On 12 February 2021, under the Regulation on the mechanism for recovery and resilience, the Commission published **technical guidelines** on the application of the "do no significant harm" principle.

The technical guidelines, while confirming that all measures require a DNSH assessment, indicate that a simplified approach can be adopted for those which have no foreseeable impacts or which have a negligible foreseeable impact on all or some of the 6 environmental targets.

To facilitate Member States in the assessment and presentation of the DNSH principle in their Recovery and Resilience Plan (RRP), the Commission has prepared a check-list to be used to support their analysis of the link between each measure and the DNSH principle.

The check-list is based on the following decision tree, which should be used for each measure of the RRP.



As a first step, Member States are invited to complete part 1 of the check-list, to identify which of the six environmental targets requires a background assessment of the measure in light of the DNSH principle.

These are the possible answers to the checks on the 6 targets.

- The measure has **no or negligible foreseeable impact** on the environmental targets related to the direct effects and primary indirect effects of the measure over its life cycle, given its nature, and as such is considered compliant with the DNSH principle for the relevant target;
- the measure has a **100% support** ratio for a climate change or environment-related target, and as such is considered to comply with the DNSH principle for the relevant target;



- c. The measure **substantially contributes** to an environmental target, pursuant to the Taxonomy Regulation, and as such is considered to comply with the DNSH principle for the relevant target.

In case the measure has no or negligible impact on the target considered (option A of the response) or is considered compliant with the DNSH principle for that target (options B and C), the DNSH assessment can take a simplified form. In this case, a short justification for each environmental target must also be provided.

If the answer to the checks is as follows, the second phase of the assessment must be started:

- d. **None of the above:** the measure requires a background assessment for this target.

Member States are invited to use part 2 of the check-list to carry out a background assessment in light of the DNSH principle for environmental targets.



4 Approach in the development of the assessment

4.1 Adopted criteria

With reference to the 18 measures of the NRRP in the context of Mission 3 Component 1, in coordination with the MIMS, 10 homogeneous clusters by type of investment/impact generated were identified for which the aforementioned Phase 1 was developed.

Below is the association between the Measurements and the do no significant harm assessment reports that have been developed by RFI.

| Reform/ Investment | Measure | RFI sheets for DNSH assessment |
|-----------------------|---|---|
| Reform | 1. Acceleration of the approval process of the Contract between the MIT and RFI | 1. Acceleration of the approval process of the Contract between the MIMS and RFI |
| | 2. Acceleration of the authorization process of projects | 2. Acceleration of the authorization process of projects |
| Investment | 3. High-speed railway connections to the South for passengers and freight (Napoli - Bari) | 3. High-speed railway connections to the South for passengers and freight |
| | 4. High-speed railway connections to the South for passengers and freight (Palermo-Catania) | |
| | 5. High-speed railway connections to the South for passengers and freight (Salerno-Reggio Calabria) | |
| | 6. High-speed lines in the North connecting to Europe (Brescia-Verona-Padova) | 4. High-speed lines in the North connecting to Europe |
| | 7. High-speed lines in the North connecting to Europe (Liguria-Alps) | |
| | 8. High-speed lines in the North connecting to Europe (Verona-Brennero - adduction works) | |
| | 9. Diagonal connections (Roma-Pescara) | 5. Diagonal connections |
| | 10. Diagonal connections (Orte-Falconara) | |
| | 11. Diagonal connections (Taranto-Metaponto-Potenza-Battipaglia) | |
| | 12. Introducing the European Rail Transport Management System (ERTMS) | 6. Introducing the European Rail Transport Management System (ERTMS) |
| | 13. Strengthening metropolitan nodes and key national links | 7. Strengthening metropolitan nodes and key national links |
| | 14. Strengthening regional lines - Upgrading of regional railways (management RFI) | 8. Strengthening regional lines - Upgrading of regional railways (management RFI) |
| | 15. Upgrading, electrification and resilience of railways South | 9. Upgrading, electrification and resilience of railways South |
| | 16. Upgrading railway stations in the South | 10. Upgrading railway stations in the South |

Some Measures consist of a multiplicity of interventions that pursue the same objectives, but which are characterized by the diversity of types of work, the distribution in the territory in different locations and different environmental situations.

In particular, the interventions of the following Measures are particularly numerous:

13. Strengthening metropolitan nodes and key national links;



14. Strengthening regional lines - Upgrading of regional railways (management RFI);
15. Upgrading, electrification and resilience of railways South;
16. Upgrading railway stations in the South.

A brief description of these Measures is considered appropriate.

13. Strengthening metropolitan nodes and key national links

Investment programme regarding nodes and key links on the national territory with the following objectives:

- infrastructural development (doubling/quadrupling) and technological enhancement of key links of national interest, of connecting lines to the main freight terminals and of last mile connections to ports;
- adaptation of performance levels (module, gauge, axle weight) to allow the transit of higher freight volumes on the TEN-T corridors, on freight lines, and on the connecting lines with the main ports and intermodal terminals;
- mitigation of bottlenecks for the development of passenger and freight traffic, including punctual interventions to manage interferences between passenger and freight traffic flows;
- increases in capacity and reduction in journey times through the elimination of critical points; increases in the capacity of lines close to saturation;
- increase in the capacity of the suburban access lines to the nodes being doubled;
- renovation of stations.

The interventions foreseen on key national links concern the following geographic areas:

- Liguria-Alps link (strengthening of connections with the swiss border passes, speeding up of the line Turin/Milan-Genoa, infrastructural and technological upgrading of the lines Genoa-Ventimiglia and Genoa-La Spezia);
- Transversal link (infrastructural and technological upgrading of the line Turin-Venice);
- Bologna-Venice-Trieste/Udine link (connections to the eastern border crossings);
- Central and North Tyrrhenian link (infrastructural and technological upgrading of the Central Dorsale HS line and of access lines to the Tyrrhenian ports);
- Adriatic-Ionian link (doubling of Termoli-Lesina line, upgrading and speeding up of Bologna-Lecce, infrastructural and technological upgrading Adriatic link);
- Southern Tyrrhenian link (technological upgrading of the node of Naples);
- Sicilian network: upgrading of Caltagirone-Gela line and electrification of Palermo-Trapani line;
- Sardinian network (infrastructural and technological upgrading of Cagliari-Sassari/Olbia lines).

14. Strengthening regional lines - Upgrading of regional railways (management RFI)

The interventions foreseen on the regional lines have the following objectives:

- To strengthen the interconnected regional railway lines, in order to reach the safety levels, set by the National Agency for Railway Safety (ANSF);
- To support the connection of regional lines with the national high speed network.

As concerns the interconnected regional lines, which are expected to be transferred and managed by RFI, interventions are planned in the following regions:



Piedmont: upgrading and modernisation of the Torino Cerese-Canavesana: improving the regularity of traffic flows;

Friuli Venezia Giulia: FUC railway: infrastructural and technological works on the Udine-Cividale line: improvement of the regularity of traffic flows;

Umbria: Umbrian Central Railway (FCU): infrastructural and technological interventions;

Campania (EAV): Strengthening and modernisation of the Canello-Benevento line: improvement of safety standards for railway operations;

Puglia:

(i) Bari-Bitritto line: infrastructural upgrading: compliance with technical/regulatory standards of the National Railway Infrastructure;

(ii) Ferrovie del Sud Est (FSE): infrastructural upgrading of the Bari-Taranto line: the intervention will allow the adaptation to the performance standards of RFI and to the technical specifications of interoperability;

(iii) FSE: Completion of SCMT/ERTMS equipment on the network: improvement of traffic performance, optimisation of capacity, improvement of safety standards;

(iv) FSE: Realisation of intermodal Hubs and upgrading of 20 stations: the intervention aims at improving the accessibility of the stations and creating areas for exchanges rail-bus, rail-private car and rail-bike;

Calabria: Rosarno-S. Ferdinando line: upgrading of the equipment of the Rosarno and San Ferdinando lines for connection to Gioia Tauro.

15. Upgrading, electrification and resilience of railways South

Specific investments are foreseen to upgrade the railway network in various critical points in the South of Italy, to increase the competitiveness and connectivity of the intermodal logistic system (railways-airports-ports) and the connections with the major cities.

In particular, investments are planned on the following lines:

- Molise region:

(i) Rome-Venafro-Campobasso-Teroli;

(ii) Electrification and speeding up Roccaravindola-Isernia-Campobasso

- Apulia region:

(i) Upgrading of Bari – Lamasinata;

(ii) electrification Barletta – Canosa;

(iii) Pescara-Foggia

(iv) Modernization linea Potenza-Foggia

(v) Strengthening links Brindisi

(vi) Strengthening links Taranto

- Calabria region: Upgrading Ionian Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme

- Basilicata region: completion of Ferrandina-Matera

- Campania region: completion of Salerno Arechi – Aeroporto Pontecagnano

- Sicily:



- (i) Node of Catania
- (ii) Upgrading Palermo - Agrigento - Porto Empedocle
- (iii) Intermodality and accessibility to Trapani Birgi airport
- (iv) Link to the port of Augusta
 - Sardinia:
 - (i) Olbia airport railway link
 - (ii) Track-doubling Decimomannu-Villamassargia.

16. Upgrading railway stations in the South.

The upgrade will involve internal and external stations areas and will consist as a minimum of:

- Enhancing the accessibility of the stations
- Increasing the quality of the services provided to users
- Improve the comfort, safety and quality of the public areas (internal and external).

The interventions will take place in the regions of Abruzzo, Molise, Campania, Calabria, Sicilia, Puglia, Basilicata and Sardegna.

The indicative list of 30 railway stations that will benefit is the following: Vasto San Salvo, Chieti, Pescara, Giulianova Potenza Centrale, Potenza Superiore, Lamezia Terme, Cosenza, Scalea-S.Domenica Talao, Vibo Valentia-Pizzo, Reggio di Calabria Lido, Sibari, Sapri, Falciano-Mondragone-Carinola, Maddaloni Inferiore, Pozzuoli Solfatara, Termoli, Polignano a Mare, San Severo, Barletta, Giovinazzo, Brindisi, Foggia, Macomer, Oristano, Palermo Notarbartolo, Milazzo, Acireale, Marsala, Siracusa.

In addition, a set of 8 station and one city -line will be upgrade as metropolitan hubs, with larger interventions that will involve also local stakeholders and include improvement of the energy efficiency of the stations.

The metropolitan hubs will be: Messina Centrale e Marittima, Villa San Giovanni, Benevento, Caserta, L2 Line in Naples, Bari, Lecce, Taranto, Settimo Rende (new station).

Another issue that assumes relevance for the purposes of the assessment is that, in the National Recovery and Resilience Plan there are investments characterized by a different state of progress. There are interventions that are underway, interventions in the tender phase, interventions for which authorizations have already been acquired, interventions in the design phase. This implies that in some cases environmental authorizations have already been acquired (eg Environmental Impact Assessment). Furthermore, the application of particular criteria for the choice of contractors or the adoption of additional mitigating measures to those required by current legislation is closely related to the progress of the interventions and any contractual changes would lead to cost increases.

It should also be noted that, as regards the target relating to climate change, where applicable, reference was made to Regulation (EU) 2021/241 of the European parliament and of the council of 12 February 2021 which establishes the mechanism for recovery and resilience which, in Annex VI - Climate control methodology Dimensions and codes of the types of intervention for the device for recovery and resilience.

Still on the subject of climate change, where applicable, reference was made to EU regulation 2020/852, known as the "Taxonomy regulation", which in Article 10 provides that the increase in clean or climate-neutral mobility is considered an economic activity that makes a substantial contribution to the mitigation of climate change.



5 Do No Significant Harm assessment sheets for the railway infrastructure sector

5.1 Acceleration of the approval process of the Contract between the MIMS and RFI

| DNSH assessment | |
|---|---|
| Mission | Mission 3 "Sustainable mobility infrastructures" |
| Cluster | High speed/capacity railway network |
| Related Measure (Reform or Investment) | Reform 1. Acceleration of the approval process of the Contract between the MIMS and RFI |
| Responsibility for reporting and implementation | RFI/MIMS |
| Date | 29/04/2021 |

| | Step 1 | |
|---------------------------------|---|--|
| Environmental objectives | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Through the proposed reform, the approval process of the 5-year CdP (Contratto di Programma) between MIMS and RFI and of the annual variations will be accelerated, allowing to speed up the planning and implementation of the works. The acceleration of the process does not affect the ability of RFI to select, plan and implement investment neither the quality of works which by nature (mainly electrified railways) can contribute to a switch towards a low carbon transport system |



| | | |
|---|---|--|
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed+ reform does not affect the ability of RFI to plan investment which can ensure a higher degree of attention on current and expected future climate risks. At the same time, the reform does not limit investment to improve the resilience of railways infrastructure to climate change |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of sustainable use and protection of water |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of circular economy. |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of environmental negative impacts, including pollution, control to air, water or land |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of protection of biodiversity and ecosystems |



5.2 Acceleration of the authorization process of projects

| DNSH assessment | |
|---|---|
| Mission | Mission 3 "Sustainable mobility infrastructures" |
| Cluster | High speed/capacity railway network |
| Related Measure (Reform or Investment) | Reform 2. Acceleration of the authorization process of projects |
| Responsibility for reporting and implementation | RFI/MIMS |
| Date | 29/04/2021 |

| Step 1 | | |
|---------------------------------|---|---|
| Environmental objectives | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The MIMS will propose a regulatory change, in order to allow to anticipate the geographic location of the works at the time of the "Economic Technical Feasibility Project" (PFTE), instead of waiting for the definitive project design phase. The location will hence be included as a variation of the urban planning instruments, with a constraint linked to expropriation. The additional authorizations, which cannot be acquired on the PFTE, would be obtained in subsequent project design phases, without convening the "Conferenza dei Servizi", as an exception to Law no. 241/1990. |



| | | |
|---|---|--|
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of sustainable use and protection of water |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of sustainable use and protection of water |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of circular economy. |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of environmental negative impacts, including pollution, control to air, water or land |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The proposed reform does not affect both national regulation and RFI's internal investment policies in the field of protection of biodiversity and ecosystems |



5.3 High-speed railway connections to the South for passengers and freight

DNSH ASSESSMENT

| | |
|----------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 3. High-speed rail and road maintenance 4.0 |
| Project/Reform | High speed railway connections to the South for passengers and freight |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



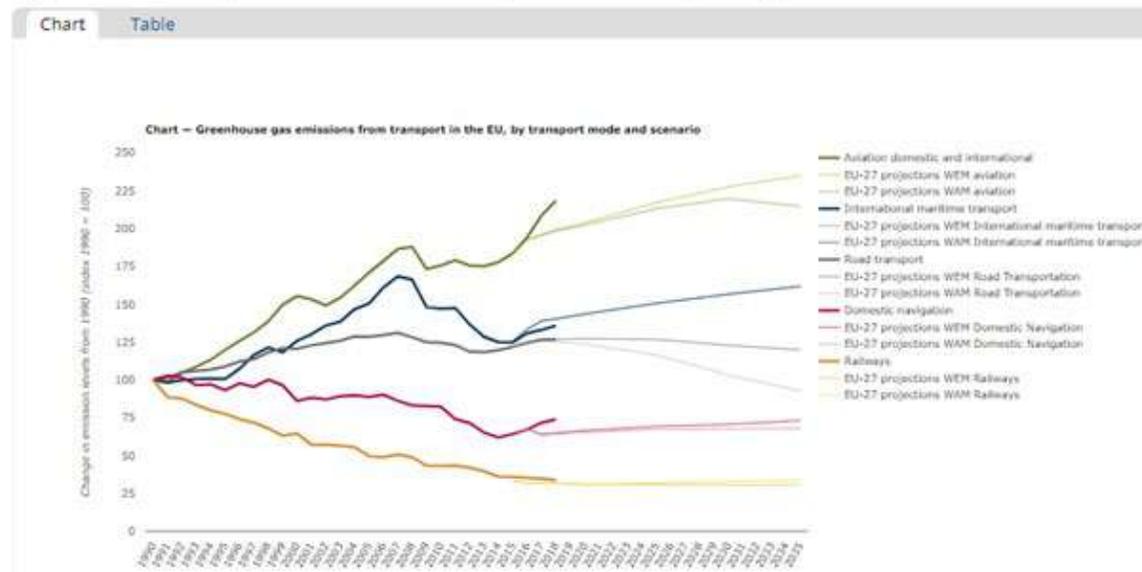
| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU Regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network -T "(code 064) have a "Coefficient for calculating support for climate change targets" equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <ul style="list-style-type: none"> a) ... (omission) b) ... (omission) c) the increase in clean or climate-neutral mobility; d) ... (omission)". <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



| | | |
|--|--|---|
| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <ul style="list-style-type: none">• by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;• by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users. <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
|--|--|---|



Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.

The Italian railway lines are 72% electrified and, for these, the GHG emission is indirect, as it is connected to the production of electricity.

The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen traction.

In terms of CO₂ emissions, various scientific studies have compared the different modes of transport.



Below is an effective representation of the lower impact in terms of CO2 emissions by the railway carrier compared to other modes of transport.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: BDIS/Delft Greenhouse Gas Conversion Factors 2019

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| Passenger car - petrol | 32.02 | 1.22 | 1.97 |
| Passenger car - diesel | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |



| | | |
|--|--|--|
| | | <p>As an example, the following average values were compared:</p> <ul style="list-style-type: none">- passenger car (petrol) = 1.22 €-cent/pkm- passenger train diesel = 0.34 €-cent/pkm <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> |
|--|--|--|



| | <p><u>Passenger transport</u></p> <p>In 2019, limited to land transport only (road + rail), equal to 938 billion pax.km, the modal split was:</p> <table border="1"><thead><tr><th>Transport mode</th><th>Modal share</th></tr></thead><tbody><tr><td>Railway transport</td><td>6%</td></tr><tr><td>Extra-urban public transport</td><td>10%</td></tr><tr><td>Urban public transport</td><td>2%</td></tr><tr><td>Private road transport</td><td>82%</td></tr></tbody></table> <p><i>Source: CNIT 2018-2019</i></p> <p>At 2030, with the entry into operation of the investments presented in the Recovery Fund, the modal share is estimated to be:</p> <table border="1"><thead><tr><th>Transport mode</th><th>Modal share</th></tr></thead><tbody><tr><td>Railway transport</td><td>10%</td></tr><tr><td>Extra-urban public transport</td><td>11%</td></tr><tr><td>Urban public transport</td><td>2%</td></tr><tr><td>Private road transport</td><td>77%</td></tr></tbody></table> <p>This modal shift is reflected in terms of CO2 saved by passenger road vehicles for a value of approximately 2.3 million tonnes per year.</p> <p><u>Freight Transport</u></p> <p>In the case of freight transport, the traffic data for 2019 were considered, which indicate the total value and the following modal breakdown at approximately 200 billion tonnes km</p> | Transport mode | Modal share | Railway transport | 6% | Extra-urban public transport | 10% | Urban public transport | 2% | Private road transport | 82% | Transport mode | Modal share | Railway transport | 10% | Extra-urban public transport | 11% | Urban public transport | 2% | Private road transport | 77% |
|------------------------------|---|----------------|-------------|-------------------|----|------------------------------|-----|------------------------|----|------------------------|-----|----------------|-------------|-------------------|-----|------------------------------|-----|------------------------|----|------------------------|-----|
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 6% | | | | | | | | | | | | | | | | | | | | |
| Extra-urban public transport | 10% | | | | | | | | | | | | | | | | | | | | |
| Urban public transport | 2% | | | | | | | | | | | | | | | | | | | | |
| Private road transport | 82% | | | | | | | | | | | | | | | | | | | | |
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 10% | | | | | | | | | | | | | | | | | | | | |
| Extra-urban public transport | 11% | | | | | | | | | | | | | | | | | | | | |
| Urban public transport | 2% | | | | | | | | | | | | | | | | | | | | |
| Private road transport | 77% | | | | | | | | | | | | | | | | | | | | |



| | | <table border="1"><thead><tr><th>Transport mode</th><th>Modal share</th></tr></thead><tbody><tr><td>Railway transport</td><td>10.7%</td></tr><tr><td>Coastal maritime navigation</td><td>29.3%</td></tr><tr><td>Inland waterways</td><td>0.0%</td></tr><tr><td>Air navigation</td><td>0.6%</td></tr><tr><td>Road transport (> 50km)</td><td>54.5%</td></tr><tr><td>Oil pipelines (> 50km)</td><td>4.8%</td></tr><tr><td colspan="2"><i>Source: CNIT 2018-2019</i></td></tr><tr><td colspan="2">By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated:</td></tr><tr><th>Transport mode</th><th>Modal share</th></tr><tr><td>Railway transport</td><td>16.5%</td></tr><tr><td>Coastal maritime navigation</td><td>30%</td></tr><tr><td>Inland waterways</td><td>0.1%</td></tr><tr><td>Air navigation</td><td>0.6%</td></tr><tr><td>Road transport (> 50km)</td><td>47.7%</td></tr><tr><td>Oil pipelines (> 50km)</td><td>5.1%</td></tr></tbody></table> | Transport mode | Modal share | Railway transport | 10.7% | Coastal maritime navigation | 29.3% | Inland waterways | 0.0% | Air navigation | 0.6% | Road transport (> 50km) | 54.5% | Oil pipelines (> 50km) | 4.8% | <i>Source: CNIT 2018-2019</i> | | By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated: | | Transport mode | Modal share | Railway transport | 16.5% | Coastal maritime navigation | 30% | Inland waterways | 0.1% | Air navigation | 0.6% | Road transport (> 50km) | 47.7% | Oil pipelines (> 50km) | 5.1% |
|--|-------------|---|----------------|-------------|-------------------|-------|-----------------------------|-------|------------------|------|----------------|------|-------------------------|-------|------------------------|------|-------------------------------|--|--|--|----------------|-------------|-------------------|-------|-----------------------------|-----|------------------|------|----------------|------|-------------------------|-------|------------------------|------|
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 10.7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal maritime navigation | 29.3% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inland waterways | 0.0% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air navigation | 0.6% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road transport (> 50km) | 54.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oil pipelines (> 50km) | 4.8% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Source: CNIT 2018-2019</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 16.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coastal maritime navigation | 30% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inland waterways | 0.1% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air navigation | 0.6% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road transport (> 50km) | 47.7% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oil pipelines (> 50km) | 5.1% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| | | <p>This breakdown makes it possible to quantify the CO2 savings from heavy road vehicles from 2030 equal to approximately 400,000 tonnes per year.</p> <p>Overall, therefore, starting from 2030 it is reasonable to assume that the eligible investments in the Recovery Fund will contribute to the achievement of the long-term targets both in terms of modal share and in terms of CO2 savings (approximately 2.8 million tonnes of CO2 from transport passenger and freight road).</p> <p>These forecasts have been developed considering all the investments envisaged in the NNRP and constitute a challenging target but which is deemed achievable, if the hypotheses relating to the response of the Railway Companies for the services offered, to the demand for railway mobility and to the situation are also confirmed with specific regard to economic conditions, transport policies, technological innovations and transformations in progress (energy mix, electric mobility, hydrogen mobility).</p> <p>The cluster of investments relating to the <i>High-speed railway connections to the South for passengers and freight</i> area includes intervention programs for the enhancement of the Naples-Bari, Salerno-Reggio Calabria and Palermo-Catania connections. These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network. In particular, benefits are expected for the passenger segment due to the increase in the speed of the new railway lines and the elimination of the subjection to the formation of the timetable connected to the presence of the single track in most of the Caserta-Foggia lines (current Naples-Bari connection axis) and Palermo-Catania. Added to these are the foreseeable benefits associated with improving the accessibility of areas that are not currently served by the railway carrier. As regards the freight segment, the investments of the cluster envisage intervening on the infrastructural performances to which freight transport is most sensitive: possibility of running longer trains (module), heavier (axial weight) and with greater transversal dimensions (shape).</p> <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GHG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (<i>Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014</i>).</p> |
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The Cost Benefit Analysis of the program of interventions on the Naples-Bari route is available as part of the *High-speed railway connections to the South for passengers and freight* investment cluster. The Cost Benefit Analysis of the new Palermo-Catania connection and of the new Salerno-Battipaglia-Reggio C line are in progress.

Starting from the multi-modal traffic study, the following avoided emissions were assessed in the Cost-Benefit Analysis of the investment program on the Naples-Bari route:

“Avoided” GHG emissions

| Vehicle type | Years | CO ₂ emissions (tonnes) |
|------------------------------------|------------------------------|------------------------------------|
| Car | 2026 | -145,610 |
| | 2035 | -105,979 |
| | 2047 | -99,792 |
| | Accumulated 2023-2047 | -2,515,196 |
| Heavy freight vehicles | 2026 | -31,912 |
| | 2035 | -29,769 |
| | 2047 | -28,031 |
| | Accumulated 2023-2047 | -652,274 |
| Total Accumulated 2023-2047 | | - 3.167,470 |

It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional High-Speed sections planned in the South of the country during project development and therefore provide evidence of the further expected benefits in relation to the "climate change mitigation" environmental target.



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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>In case of new project, a specific vulnerability and climate risk assessment, related to flooding, snow, arising sea level, rainfalls, etc. will be performed in order to identify, to select and to implement the relevant adaptation measures, accordingly to the EU framework.</p> <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport.</p> <p>In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy systems, which</p> |
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| | | <p>limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none">- hydraulic verification of river crossing works;- hydraulic verification of the drainage systems of the railway and road platform. <p>RFI is among the main beneficiaries of the National Operational Program financed by the ERDF. As part of the National Operational Program (NOP), the systematic completion of "Form A" - Indicator 6 "Studies/Works of adaptation to climate change" is envisaged, in which some "Soft", Green", Gray" actions in the design or used in the context of sharing design choices with the territory are identified.</p> <p>As part of the participation in the "Infrastructures and Networks" NOP (2014-2020), a first application of identification in the design of the actions defined in the National Strategy for Adaptation to Climate Change (NSAC) of the MATTM was also carried out for the "Bicocca-Catenanuova" railway section project, included in Mission 3 Component 1 of the NRRP.</p> <p>The cluster of investments relating to the high-speed lines in the south of the country includes intervention programs for the enhancement of the Naples- Bari, Salerno-Reggio Calabria and Palermo-Catania connections. These are investments that involve the construction of new railway lines according to the best technical standards.</p> <p>As regards the upgrading of the Naples-Bari route, it is noted that the existing line was affected by major landslides (Monte Aguto) which led to prolonged closures of the railway operation. The new infrastructure, which replaces the existing one in the variant sections, has avoided areas with high geological risk.</p> <p>Furthermore, for the "Naples-Bari Route" investment program, RFI has adopted the «Envision»TM Sustainability Protocol, a rating system for objectively measuring the environmental, economic and social sustainability of the works.</p> <p>This Protocol provides for an assessment based on 60 sustainability criteria, divided into 5 categories:</p> <ul style="list-style-type: none">• Quality of life: Purpose, Wellbeing, Community;• Leadership: Collaboration, Management, Planning;• Resource Allocation: Materials, Energy, Water;• Natural World: Siting, Land-water, Biodiversity;• Climate and Resilience: Emissions, Resilience. |
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| | | <p>The Envision system provides four levels of certification, based on the percentage of achievement of the maximum applicable score for the work (respectively 20% for the "Verified" level, 30% for the "Silver" level, 40% for the "Gold" level and 50% for the "Platinum" level).</p> <p>With reference to the Naples-Bari investment program, the Frasso Telesino - San Lorenzo Maggiore section design achieved the Envision certification with a maximum "platinum" level in 2019, becoming the first design in Europe to obtain this certification.</p> <p>In particular, the excellent result achieved in the "Climate and Resilience" category highlights that the design solutions chosen for the construction of the infrastructure are generally characterised by effective climate change mitigation and adaptation measures.</p> <p>The set of planned interventions, which can be counted among those called upon to provide an adequate response to changed conditions and/or changes in the long-term scenario, consists of the extensive network of protection works and hydraulic arrangement of the surface network, from the hydraulic manholes. (transparency, aimed at guaranteeing the continuity of the natural water run-off, currently existing on the ground level), compliance with hydraulic clearances for works, implementation of the rules on hydraulic invariance, all interventions allow to strengthen the "adaptation" and protection strategies, being also dimensioned (and hydraulically verified) for a 300-year return time of flood events (in accordance with the Railway Design Manual), therefore with a margin of caution in addition to the local and national reference standards (i.e. 100 years, according to the Technical Implementation Standards of the PAI or PSDA, and 200 years, according to the NTC2008).</p> |
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| <p>3. Sustainable use and protection of water and marine resources</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For the new infrastructure projects promoted by RFI, the Environmental Impact Study and the Environmental Project of the Construction Site represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The Environmental Monitoring Project is also drafted from the design phase to identify the points to be monitored on potentially critical factors as resulting from the results of the Environmental Impact Study.</p> <p>In fact, said Monitoring verifies and controls the impact of the construction of the work also on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |
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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble. The treatment and management of excavated earth and rocks has been subject, over the last few years, to various regulatory changes, up to the implementation of article 5 of Directive 98/2008/EC, implemented with the introduction of art. 184-bis in the Consolidated Environmental Law. The Directive governs measures and criteria to be met to establish whether specific substances or objects can be considered by-products or waste. The implementation of the principle outlined in article 184-bis has therefore given rise to Ministerial Decree 161/2012 which then evolved into the current Presidential Decree 120/2017 containing the simplified</p> |
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| | | <p>regulation of the management of excavated earth and rocks. This regulation establishes that earth and rocks coming from excavations in the construction sector can sometimes present themselves as materials to be considered as real "products" to be reused to replace the natural resources deriving from quarry "exploitation". RFI therefore proceeded to adapt its procedures (design manuals and tender specifications) to proactively respond to EU principles, achieving very high standards in the European construction landscape. As part of the RFI Civil Works Design Manual, the procedural system to be adopted both in the design phase and in the execution phase of the interventions aimed at maximising the reuse of excavated earth and rocks in the same works of origin or, alternatively, in other works or industrial processes was defined so as to reduce, on the one hand, the production of special waste and, on the other, the need to procure virgin quarry material, promoting the transition towards the circular economy.</p> <p>Only in the event that the material does not meet the environmental characteristics or performance criteria, RFI admits its management as waste. Also in this case the procedural system is such as to promote the delivery of waste for recovery rather than disposal with the aim of promoting its circularity in order to guarantee its re-entry into the product cycle.</p> <p>By-products not intended for re-use in railway works are instead intended for environmental redevelopment and restoration interventions identified in synergy with local administrations, in order to identify degraded or abandoned areas or interventions of public interest and of priority importance in the areas impacted/affected by the Design.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

The cluster of investments relating to the high-speed lines in the south of the country includes intervention programs for the enhancement of the Naples- Bari, Salerno-Reggio Calabria and Palermo-Catania connections. These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.

As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of pollutant emissions.

For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (*Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014*).



Starting from the multi-modal traffic study, the following avoided emissions were assessed in the Cost-Benefit Analysis of the investment program on the Naples-Bari route:

"Avoided" pollutant emissions

| Vehicle type | Period | Total tonnes for the period | | | |
|------------------------|------------------------------|-----------------------------|------------------|----------------|----------------|
| | | SO2 | NOx | COVNM | PM2.5 |
| Car | 2026 | -0.6 | -320.4 | -29.5 | 11.8 |
| | 2035 | -0.6 | -265.0 | -25.4 | -7.2 |
| | 2047 | -0.6 | -191.2 | -19.9 | -1.1 |
| | Accumulated 2023-2047 | -12.4 | - 5,683.4 | - 548.4 | - 144.3 |
| Heavy freight vehicles | 2026 | -0.1 | -143.4 | -5.3 | -3.1 |
| | 2035 | -0.1 | -113.0 | -4.3 | -2.4 |
| | 2047 | -0.1 | -72.3 | -3.0 | -1.4 |

| Vehicle type | Period | Total tonnes for the period | | | |
|------------------------------------|------------------------------|-----------------------------|-----------------|----------------|----------------|
| | | SO2 | NOx | COVNM | PM2.5 |
| | Accumulated 2023-2047 | -3.0 | -2,372.7 | -91.4 | -49.5 |
| Total Accumulated 2023-2047 | | -15.4 | -8,056.1 | - 639.8 | - 193.8 |

It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional High-Speed sections planned in the South of the country during project development and therefore provide evidence of the further expected benefits in relation to this environmental target.

As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:

- Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some



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| | | <p>research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector).</p> <ul style="list-style-type: none">• Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low.• Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water. <p>The investment programme related to the Napoli-Bari itinerary has obtained positive results by the Environmental Impact Assessment (EIA).</p> <p>The investment programme related to the Palermo-Catania connection has obtained positive results on specific sections. The evaluation of the remaining sections is currently ongoing.</p> <p>As for the investment programme concerning the Salerno-Reggio Calabria itinerary, the Environmental Impact Assessment authorization has not yet started due to the Technical Economic Feasibility Project still ongoing.</p> <p>As part of the design of new railway infrastructures and in particular those to be subjected to Environmental Impact Assessment (EIA), all the necessary studies are carried out to verify the conditions of minimum interference with the components defined by the EIA regulations, including air , water, soil, biodiversity, raw materials, acoustic and vibrational climate, etc. The environmental studies for the interventions subjected to EIA are completed by the Environmental Design of the Construction Site and by the Environmental Monitoring Plan.</p> <p>The studies also include the identification of the possible presence of contaminated sites in order to guide the route choices, limit interference and, if possible, redevelop and reclaim the areas.</p> <p>The Environmental Design of the Construction Site aims to identify, describe and assess the significance of the direct and indirect environmental problems that can be generated and define mitigation measures and operational procedures to contain the environmental impacts connected to the construction phase of the work.</p> <p>The measures essentially consist of direct and indirect interventions in the construction site areas, on the roads used for the construction of the work (movements between the construction site areas, roads to/from quarries and landfills, storage sites, etc.), in land storage areas, contributing to the protection of surface and deep waters, soil, biodiversity, the need for raw</p> |
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| | | <p>materials, the acoustic climate, vibrations, air quality, waste and waste materials, water discharges, harmful substances and the landscape.</p> <p>The attention to the environment, which characterises the model for the construction of sustainable railway infrastructures, is also concretely applied in the adoption, in the contract assignment phase, of specific contractual clauses which provide for the obligation for the companies carrying out the works to ensure constant and timely supervision of the environmental aspects of the construction site also through the implementation of specific environmental management systems that comply with the requirements of the international standard by the contractor.</p> <p>The Environmental Monitoring Design is drawn up in accordance with the current legislation on environmental matters, and in compliance with the guidelines in force and in compliance with the provisions of the pertinent bodies for the supervision of the various environmental components. It defines the objectives, requirements, methodological criteria, methods and timing for Before - During - After Work Monitoring, taking into account the territorial and environmental reality in which the design of the work is inserted and the potential impacts it determines both in positive and negative terms, as a result of the assessments that emerged in the analyses carried out on environmental factors as part of the drafting of the Environmental Impact Study.</p> <p>The proponent, through Environmental Monitoring activities, verifies the impact of the work on the environmental matrices by carrying out measurement campaigns in the ante-construction phase (for the characterisation of the site), during work (for the construction phase) and after (for the operating phase).</p> <p>The campaigns include investigations on the components of surface and groundwater, soil and subsoil, acoustic and vibrational climate, air quality, social environment and vegetation, flora, fauna and ecosystems.</p> <p>Monitoring data are entered and organised through a geographic information database, which constantly provides updates on the environmental status of the areas affected by the works, to the bodies responsible for the control and validation process of the environmental data, through specific alerting tools.</p> <p>As regards the verification of the acoustic and vibrational impact, specific forecast studies are drawn up in which the receptors present in the design's range or influence are identified and the post-work climate is characterised by means of simulations conducted with specific specialised software that take into account the characteristics of the design, territory, infrastructure and traffic planned both during the day and night. Downstream of this activity, the post-construction emission scenario is compared with the limits imposed by current legislation, in order to dimension the mitigation measures necessary to bring the acoustic climate and any vibration emissions within the standard deadlines. For vibrations, in particular, reference is made to the standard indications (UNI standards) concerning the disturbance to people.</p> |
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| <p>6. Protection and restoration of biodiversity and ecosystems</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Transport infrastructures have different effects on nature, landscape and natural habitats.</p> <p>The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.</p> <p>In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.</p> <p>The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en Ecoplan, 2018.</p> <p>For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:</p> <ul style="list-style-type: none"> - 93,500 for motorway infrastructures - 84,500 for high-speed railway infrastructures. <p>Table 58 – Cost factors for costs of habitat damage EU28</p> <table border="1"> <thead> <tr> <th rowspan="2">Cost in €₂₀₁₆ per km and year</th> <th colspan="2">Road €/((km *a)</th> <th colspan="2">Rail €/((km*a)</th> <th rowspan="2">Aviation €/((km² *a)</th> <th rowspan="2">Inland waterways €/((km *a)</th> </tr> <tr> <th>Motorways</th> <th>Other roads</th> <th>High-speed</th> <th>Other railways</th> </tr> </thead> <tbody> <tr> <td>Habitat loss</td> <td>78,900</td> <td>1,900</td> <td>57,500</td> <td>8,200</td> <td>437,500</td> <td>6,600</td> </tr> <tr> <td>Habitat fragmentation</td> <td>14,600</td> <td>2,200</td> <td>27,000</td> <td>5,900</td> <td>0</td> <td>0</td> </tr> <tr> <td>Total habitat damage</td> <td>93,500</td> <td>4,100</td> <td>84,500</td> <td>14,100</td> <td>437,500</td> <td>6,600</td> </tr> </tbody> </table> <p>Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).</p> | Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | Rail €/((km*a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) | Motorways | Other roads | High-speed | Other railways | Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |
|--|---|--|---|--------------------|----------------|-------------------------------------|--------------------------------|-------------------------------------|--------------------------------|-----------|-------------|------------|----------------|--------------|--------|-------|--------|-------|---------|-------|-----------------------|--------|-------|--------|-------|---|---|-----------------------------|---------------|--------------|---------------|---------------|----------------|--------------|
| Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | | Rail €/((km*a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Motorways | Other roads | High-speed | Other railways | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| | | <p>According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:</p> <ul style="list-style-type: none">• ensure that at least 30% of the EU territory is made up of natural areas• restore at least 30% of damaged ecosystems• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>For the new infrastructure designed promoted by RFI, the analysis of the reference context in terms of biodiversity is one of the main tools for the prevention of potential significant impacts on the environment, already in the phase of choosing the corridor and the route.</p> <p>In fact, starting from a study of a large area, and in the context of route choices that respect the geometric and functional constraints of the work, the solution is identified that has the greatest characteristics of sustainability also minimising interference with parks, protected areas and Natura 2000 sites.</p> <p>Evidence of this design focus and of all the actions aimed at mitigating the construction and operation phase of the infrastructure, is provided in the Environmental Impact Study and, if necessary, in the Incidence Report.</p> <p>With regard to Natura 2000 sites, if the design solution as selected above in any case directly or indirectly (5 km range) concerns a Site of Community Interest/Special Conservation Areas and/or a Special Protection Area, the Impact Assessment procedure Environmental is integrated by the Environmental Impact Assessment Procedure.</p> <p>The Incidence Report examines all possible alterations on the habitats and on the protected animal and plant species, also by means of precise surveys in the field.</p> |
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5.4 High-speed lines in the North connecting to Europe

| DNSH ASSESSMENT | |
|------------------------|---|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 4. High-speed lines in the North connecting to Europe |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



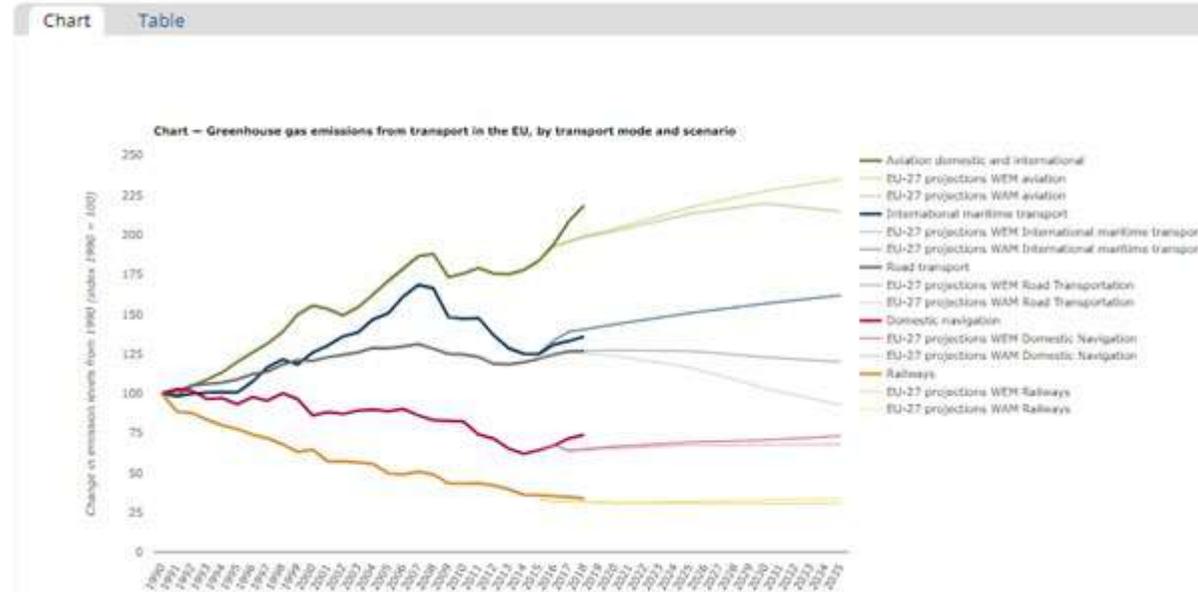
| Phase 1 | | |
|-------------------------------------|--|---|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU Regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network -T "(code 064) have a "Coefficient for calculating support for climate change targets" equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <p><i>a) ... (omission)</i> <i>b) ... (omission)</i> <i>c) the increase in clean or climate-neutral mobility;</i> <i>d) ... (omission)".</i></p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



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| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <ul style="list-style-type: none">• by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;• by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users. <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
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Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.

The Italian railway lines are 72% electrified and, for these, the GHG emission is indirect, as it is connected to the production of electricity.

The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen drive

In terms of CO₂ emissions, various scientific studies have compared the different modes of transport.



Below is an effective representation of the lower impact in terms of CO2 emissions by the railway carrier compared to other modes of transport.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: EDES/Delta Greenhouse Gas Conversion Factors 2019

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| Passenger car - petrol | 32.02 | 1.22 | 1.97 |
| Passenger car - diesel | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |

As an example, the following average values were compared:



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| | | <ul style="list-style-type: none">- passenger car (petrol) = 1.22 €-cent/pkm- passenger train diesel = 0.34 €-cent/pkm <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> |
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Passenger transport

In 2019, limited to land transport only (road + rail), equal to 938 billion pax.km, the modal split was:

| Transport mode | Modal share |
|------------------------------|-------------|
| Railway transport | 6% |
| Extra-urban public transport | 10% |
| Urban public transport | 2% |
| Private road transport | 82% |

Source: CNIT 2018-2019

At 2030, with the entry into operation of the investments presented in the Recovery Fund, the modal share is estimated to be:

| Transport mode | Modal share |
|------------------------------|-------------|
| Railway transport | 10% |
| Extra-urban public transport | 11% |
| Urban public transport | 2% |
| Private road transport | 77% |

This modal shift is reflected in terms of CO2 saved by passenger road vehicles for a value of approximately **2.3 million tonnes per year**.



Freight Transport

In the case of freight transport, the traffic data for 2019 were considered, which indicate the total value and the following modal breakdown at approximately 200 billion tonnes km

| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 10.7% |
| Coastal maritime navigation | 29.3% |
| Inland waterways | 0.0% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 54.5% |
| Oil pipelines (> 50km) | 4.8% |

Source: CNIT 2018-2019

By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated:

| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 16.5% |
| Coastal maritime navigation | 30% |
| Inland waterways | 0.1% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 47.7% |
| Oil pipelines (> 50km) | 5.1% |



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| | | <p>This breakdown makes it possible to quantify the CO2 savings from heavy road vehicles from 2030 equal to approximately 400,000 tonnes per year.</p> <p>Overall, therefore, starting from 2030 it is reasonable to assume that the eligible investments in the Recovery Fund will contribute to the achievement of the long-term targets both in terms of modal share and in terms of CO2 savings (approximately 2.8 million tonnes of CO2 from transport passenger and freight road).</p> <p>These forecasts have been developed considering all the investments envisaged in the NNRP and constitute a challenging target but which is deemed achievable, if the hypotheses relating to the response of the Railway Companies for the services offered, to the demand for railway mobility and to the situation are also confirmed with specific regard to economic conditions, transport policies, technological innovations and transformations in progress (energy mix, electric mobility, hydrogen mobility).</p> <p>The cluster of investments relating to the <i>High-speed lines in the North connecting to Europe</i> sector includes interventions programs for the strengthening of the Brescia-Verona-Padova, Liguria-Alps and Verona-Brenner connections. These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network. In particular, the Milan- (Brescia) -Verona-Padova line is one of the most important lines at national level and acts as a distributor of freight traffic arriving from Northern Europe through Austria and Switzerland to the rest of the country. At the same time, it is characterised by the presence of a high number of passenger trains during the day, to which is added a substantial amount of freight trains, especially at night.</p> <p>The completion of the HS/HC horizontal axis is therefore of strategic importance both to overcome the capacity and performance constraints of the existing infrastructure and to seize the opportunities for developing traffic along the TEN-T Mediterranean corridor. In fact, the line is an integral part of the infrastructural corridor that connects the Iberian Peninsula with the border between Hungary and Ukraine passing south of the Alps.</p> <p>As regards the freight segment, the investments of the cluster envisage intervening on the infrastructural performances to which freight transport is most sensitive: possibility of running longer trains (module), heavier (axial weight) and with greater transversal dimensions (shape). In particular, the Liguria-Alps connection is configured as a new high-capacity fast line which aims to strengthen the railway connections between the Ligurian port system and the upper Tyrrhenian with the north of the country and the north centre of Europe (Rotterdam and Antwerp). The line, in fact, as part of the High Speed/High Capacity</p> |
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| | | <p>system along the Milan-Genoa axis, is part of the Reno-Alps Core Network Corridor which connects the most densely populated European regions with the greatest industrial vocation.</p> <p>As regards the Verona-Brenner upgrading project, the increase in freight traffic given by the opening of the Brenner tunnel highlighted the existence of critical issues along the current access line, which can be summarised as follows:</p> <ul style="list-style-type: none">• point limitations due to route constraints (longitudinal slope);• crossing of urban centres (with operating restrictions resulting from noise);• non-functional connections with the existing network (with consequent operating limitations such as in the Verona node). <p>Therefore it was decided to quadruple the adduction line through the construction of a new line.</p> <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GhG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).</p> |
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Starting from the multi-modal traffic study, the following avoided emissions were assessed in the Cost-Benefit Analysis of the investment program on the Brescia-Verona-Padova route:

| Vehicle type | Years | CO2 emissions (tonnes) |
|------------------------|------------------------------|------------------------|
| Car | 2028 | -91,496 |
| | 2035 | -88,293 |
| | 2050 | -84,402 |
| | Accumulated 2028-2050 | -1,918,299 |
| Heavy freight vehicles | 2028 | -502,349 |
| | 2035 | -485,484 |
| | 2050 | -464,090 |
| | Accumulated 2028-2050 | -9,521,108 |

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| Total Accumulated 2028-2050 | 11,439,407 |
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It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional High-Speed sections planned in the North of the country during project development and therefore provide evidence of the further expected benefits in relation to the "climate change mitigation" environmental target.



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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>In case of new project, a specific vulnerability and climate risk assessment, related to flooding, snow, arising sea level, rainfalls, etc. will be performed in order to identify, to select and to implement the relevant adaptation measures, accordingly to the EU framework.</p> <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport.</p> <p>In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> |
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| | | <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy systems, which limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none">- hydraulic verification of river crossing works;- hydraulic verification of the drainage systems of the railway and road platform. <p>RFI is among the main beneficiaries of the National Operational Program financed by the ERDF. As part of the National Operational Program (NOP), the systematic completion of "Form A" - Indicator 6 "Studies/Works of adaptation to climate change" is envisaged, in which some "Soft", Green", Gray" actions in the design or used in the context of sharing design choices with the territory are identified.</p> <p>The cluster of investments relating to high-speed lines in the north of the country includes interventions programs for the strengthening of the Brescia-Verona-Padova, Liguria-Alps connections and Verona-Brenner adduction works. These are investments that involve the construction of new railway lines according to the best technical standards.</p> <p>As regards the enhancement of the Brescia-Verona-Padova route, for example, the previous design of the 2nd "Crossing of Vicenza" functional lot, which initially also extended to the east of the Vicenza station, involved the need to redo/raise the railway bridges on the Retrone and Bacchiglione rivers to adapt them to the technical standards for construction.</p> <p>For this reason, the route of the 2nd lot has been modified, providing for its end at the eastern root of Vicenza, while the 3rd Vicenza-Padova lot extends east of Vicenza after the area where the two bridges stand.</p> <p>The construction of a new pair of tracks has not been planned in the short stretch east of Vicenza where there are the two bridges over the Retrone and Bacchiglione but the current layout has been maintained by allocating two tracks for high-speed and the other two to the historic Verona-Padova and Schio-Treviso lines.</p> |
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| <p>3. Sustainable use and protection of water and marine resources</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For the new infrastructure projects promoted by RFI, the Environmental Impact Study and the Environmental Project of the Construction Site represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The Environmental Monitoring Project is also drafted from the design phase to identify the points to be monitored on potentially critical factors as resulting from the results of the Environmental Impact Study.</p> <p>In fact, said Monitoring verifies and controls the impact of the construction of the work also on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |
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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble. The treatment and management of excavated earth and rocks has been subject, over the last few years, to various regulatory changes, up to the implementation of article 5 of Directive 98/2008/EC, implemented with the introduction of art. 184-bis in the Consolidated Environmental Law. The Directive governs measures and criteria to be met to establish whether specific substances or objects can be considered by-products or waste. The implementation of the principle outlined in article 184-bis has therefore given rise to Ministerial Decree 161/2012 which then evolved into the current Presidential Decree 120/2017 containing the simplified regulation of the</p> |
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| | | <p>management of excavated earth and rocks. This regulation establishes that earth and rocks coming from excavations in the construction sector can sometimes present themselves as materials to be considered as real "products" to be reused to replace the natural resources deriving from quarry "exploitation". RFI therefore proceeded to adapt its procedures (design manuals and tender specifications) to proactively respond to EU principles, achieving very high standards in the European construction landscape. As part of the RFI Civil Works Design Manual, the procedural system to be adopted both in the design phase and in the execution phase of the interventions aimed at maximising the reuse of excavated earth and rocks in the same works of origin or, alternatively, in other works or industrial processes was defined so as to reduce, on the one hand, the production of special waste and, on the other, the need to procure virgin quarry material, promoting the transition towards the circular economy.</p> <p>Only in the event that the material does not meet the environmental characteristics or performance criteria, RFI admits its management as waste. Also in this case the procedural system is such as to promote the delivery of waste for recovery rather than disposal with the aim of promoting its circularity in order to guarantee its re-entry into the product cycle.</p> <p>By-products not intended for re-use in railway works are instead intended for environmental redevelopment and restoration interventions identified in synergy with local administrations, in order to identify degraded or abandoned areas or interventions of public interest and of priority importance in the areas impacted/affected by the Design.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

The cluster of investments relating to high-speed lines in the north of the country includes interventions programs for the strengthening of the Brescia-Verona-Padova, Liguria-Alps connections and Verona-Brenner adduction works. These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.

As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of pollutant emissions.

For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode, as required by European regulations for the preparation of Cost-benefit Analysis (*Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014*).

Starting from the multi-modal traffic study, the following avoided emissions were assessed in the Cost-Benefit Analysis of the investment program on the Brescia-Verona-Padova route:



| | | TOTAL TONNES | | | |
|------------------------------------|------------------------------|--------------|------------------|-----------------|---------------|
| Vehicle type | Years | SO2 | Nox | COVNM | PM2.5 |
| Car | 2028 | -1.1 | -216.8 | -40.2 | -4.9 |
| | 2035 | -1.1 | -213.2 | -39.3 | -4.5 |
| | 2050 | -1.1 | -205.4 | -37.4 | -3.6 |
| | Accumulated 2028-2050 | -24.6 | -4,638.8 | -559.5 | -92.5 |
| Heavy freight vehicles | 2028 | -1.5 | -1,734.2 | -30.4 | -18.1 |
| | 2035 | -1.6 | -1,860.6 | -31.1 | -18.5 |
| | 2050 | -1.6 | -2,125.4 | -31.8 | -18.8 |
| | Accumulated 2028-2050 | -34.5 | -42,665.8 | -688.3 | -408.5 |
| Total Accumulated 2028-2050 | | -59.2 | -47,304.7 | -1,247.9 | -501.0 |

It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional High-Speed sections planned in the South of the country during project development and therefore provide evidence of the further expected benefits in relation to this environmental target.

As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:

- Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector).
- Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low.



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| | | <ul style="list-style-type: none">• Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water. <p>As far as the investment programs of the Brescia-Verona-Vicenza-Padua and Liguria -Alpi itineraries are concerned, positive results have been acquired by the Environmental Impact Assessment for almost all the sections.</p> <p>The Environmental Impact Assessment authorization of the investment program “Trento bypass and upgrading of the access lines to the Brenner tunnel” is ongoing.</p> <p>As part of the design of new railway infrastructures and in particular those to be subjected to Environmental Impact Assessment (EIA), all the necessary studies are carried out to verify the conditions of minimum interference with the components defined by the EIA regulations, including air , water, soil, biodiversity, raw materials, acoustic and vibrational climate, etc. The environmental studies for the interventions subjected to EIA are completed by the Environmental Design of the Construction Site and by the Environmental Monitoring Plan.</p> <p>The studies also include the identification of the possible presence of contaminated sites in order to guide the route choices, limit interference and, if possible, redevelop and reclaim the areas.</p> <p>The Environmental Design of the Construction Site aims to identify, describe and assess the significance of the direct and indirect environmental problems that can be generated and define mitigation measures and operational procedures to contain the environmental impacts connected to the construction phase of the work.</p> <p>The measures essentially consist of direct and indirect interventions in the construction site areas, on the roads used for the construction of the work (movements between the construction site areas, roads to/from quarries and landfills, storage sites, etc.), in land storage areas, contributing to the protection of surface and deep waters, soil, biodiversity, the need for raw materials, the acoustic climate, vibrations, air quality, waste and waste materials, water discharges, harmful substances and the landscape.</p> <p>The attention to the environment, which characterises the model for the construction of sustainable railway infrastructures, is also concretely applied in the adoption, in the contract assignment phase, of specific contractual clauses which provide for the obligation for the companies carrying out the works to ensure constant and timely supervision of the environmental aspects of the construction site also through the implementation of specific environmental management systems that comply with the requirements of the international standard by the contractor.</p> |
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| | | <p>The Environmental Monitoring Design is drawn up in accordance with the current legislation on environmental matters, and in compliance with the guidelines in force and in compliance with the provisions of the pertinent bodies for the supervision of the various environmental components. It defines the objectives, requirements, methodological criteria, methods and timing for Before - During - After Work Monitoring, taking into account the territorial and environmental reality in which the design of the work is inserted and the potential impacts it determines both in positive and negative terms, as a result of the assessments that emerged in the analyses carried out on environmental factors as part of the drafting of the Environmental Impact Study.</p> <p>The proponent, through Environmental Monitoring activities, verifies the impact of the work on the environmental matrices by carrying out measurement campaigns in the ante-construction phase (for the characterisation of the site), during work (for the construction phase) and after (for the operating phase).</p> <p>The campaigns include investigations on the components of surface and groundwater, soil and subsoil, acoustic and vibrational climate, air quality, social environment and vegetation, flora, fauna and ecosystems.</p> <p>Monitoring data are entered and organised through a geographic information database, which constantly provides updates on the environmental status of the areas affected by the works, to the bodies responsible for the control and validation process of the environmental data, through specific alerting tools.</p> <p>The cluster of investments relating to high-speed lines in the north of the country includes interventions programs for the strengthening of the Brescia-Verona-Padova, Liguria-Alps connections and Verona-Brenner adduction works. These are investments that involve the construction of new railway lines according to the best technical standards.</p> <p>In particular, Third Pass tunnel excavations concern rock that may contain natural asbestos. Considering the possibility of excavating in the presence of natural asbestos, in order to protect health and the environment by avoiding the dispersion of asbestos dust in the air outside the tunnel, environmental protection and mitigation standards have been applied and some sites are also equipped with systems and equipment useful for managing the asbestos risk. The "Asbestos Risk Management Working Group", set up within the Environmental Observatory, has adopted the asbestos management protocol which defines specific methods of control, sampling and analysis for "Green Stone" excavation with the primary asbestos risk management aim of safety of the population and the protection of the territory crossed by the work.</p> <p>In particular, the document defines:</p> <ul style="list-style-type: none">· the geological model of the work as a function of the Probability of Occurrence of Asbestos Minerals (POMA); |
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| | | <ul style="list-style-type: none">· The protocols to be implemented for the characterisation of excavated materials in order to ascertain the presence of asbestos in the stone;· The protocols to be adopted for the monitoring of airborne asbestos in the living environment at the production and storage sites of excavation materials containing asbestos under the threshold;· The mitigation measures to be adopted in the management of excavation materials containing asbestos under the threshold, in order to prevent the dispersion of asbestos fibres into the air. <p>The presence of asbestos fibres in the air is checked both inside and outside the site in each operating site and storage site for excavated material containing asbestos. The analyses performed provided values substantially below the reference limit defined by the asbestos protocol for the living environment (equal to 1 fibre/litre), confirming the absence of health and environmental hazards.</p> <p>As regards the verification of the acoustic and vibrational impact, specific forecast studies are drawn up in which the receptors present in the design's range or influence are identified and the post-work climate is characterised by means of simulations conducted with specific specialised software that take into account the characteristics of the design, territory, infrastructure and traffic planned both during the day and night. Downstream of this activity, the post-construction emission scenario is compared with the limits imposed by current legislation, in order to dimension the mitigation measures necessary to bring the acoustic climate and any vibration emissions within the standard deadlines. For vibrations, in particular, reference is made to the standard indications (UNI standards) concerning the disturbance to people.</p> |
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| <p>6. Protection and restoration of biodiversity and ecosystems</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Transport infrastructures have different effects on nature, landscape and natural habitats.</p> <p>The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.</p> <p>In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.</p> <p>The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en Ecoplan, 2018.</p> <p>For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:</p> <ul style="list-style-type: none"> - 93,500 for motorway infrastructures - 84,500 for high-speed railway infrastructures. <p>Table 58 – Cost factors for costs of habitat damage EU28</p> <table border="1"> <thead> <tr> <th rowspan="2">Cost in €₂₀₁₆ per km and year</th> <th colspan="2">Road €/(km *a)</th> <th colspan="2">Rail €/(km*a)</th> <th rowspan="2">Aviation €/(km² *a)</th> <th rowspan="2">Inland waterways €/(km *a)</th> </tr> <tr> <th>Motorways</th> <th>Other roads</th> <th>High-speed</th> <th>Other railways</th> </tr> </thead> <tbody> <tr> <td>Habitat loss</td> <td>78,900</td> <td>1,900</td> <td>57,500</td> <td>8,200</td> <td>437,500</td> <td>6,600</td> </tr> <tr> <td>Habitat fragmentation</td> <td>14,600</td> <td>2,200</td> <td>27,000</td> <td>5,900</td> <td>0</td> <td>0</td> </tr> <tr> <td>Total habitat damage</td> <td>93,500</td> <td>4,100</td> <td>84,500</td> <td>14,100</td> <td>437,500</td> <td>6,600</td> </tr> </tbody> </table> <p>Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).</p> <p>According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:</p> <ul style="list-style-type: none"> • ensure that at least 30% of the EU territory is made up of natural areas | Cost in € ₂₀₁₆ per km and year | Road €/(km *a) | | Rail €/(km*a) | | Aviation €/(km ² *a) | Inland waterways €/(km *a) | Motorways | Other roads | High-speed | Other railways | Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |
|--|---|---|---|-------------------|----------------|------------------------------------|-------------------------------|------------------------------------|-------------------------------|-----------|-------------|------------|----------------|--------------|--------|-------|--------|-------|---------|-------|-----------------------|--------|-------|--------|-------|---|---|-----------------------------|---------------|--------------|---------------|---------------|----------------|--------------|
| Cost in € ₂₀₁₆ per km and year | Road €/(km *a) | | | Rail €/(km*a) | | Aviation €/(km ² *a) | Inland waterways €/(km *a) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Motorways | Other roads | High-speed | Other railways | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| | | <ul style="list-style-type: none">• restore at least 30% of damaged ecosystems• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>For the new infrastructure designed promoted by RFI, the analysis of the reference context in terms of biodiversity is one of the main tools for the prevention of potential significant impacts on the environment, already in the phase of choosing the corridor and the route.</p> <p>In fact, starting from a study of a large area, and in the context of route choices that respect the geometric and functional constraints of the work, the solution is identified that has the greatest characteristics of sustainability also minimising interference with parks, protected areas and Natura 2000 sites.</p> <p>Evidence of this design focus and of all the actions aimed at mitigating the construction and operation phase of the infrastructure, is provided in the Environmental Impact Study and, if necessary, in the Incidence Report.</p> <p>With regard to Natura 2000 sites, if the design solution as selected above in any case directly or indirectly (5 km range) concerns a Site of Community Interest/Special Conservation Areas and/or a Special Protection Area, the Impact Assessment procedure Environmental is integrated by the Environmental Impact Assessment Procedure.</p> <p>The Incidence Report examines all possible alterations on the habitats and on the protected animal and plant species, also by means of precise surveys in the field.</p> |
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5.5 Diagonal connections

| DNSH ASSESSMENT | |
|------------------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 5. Diagonal connections |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



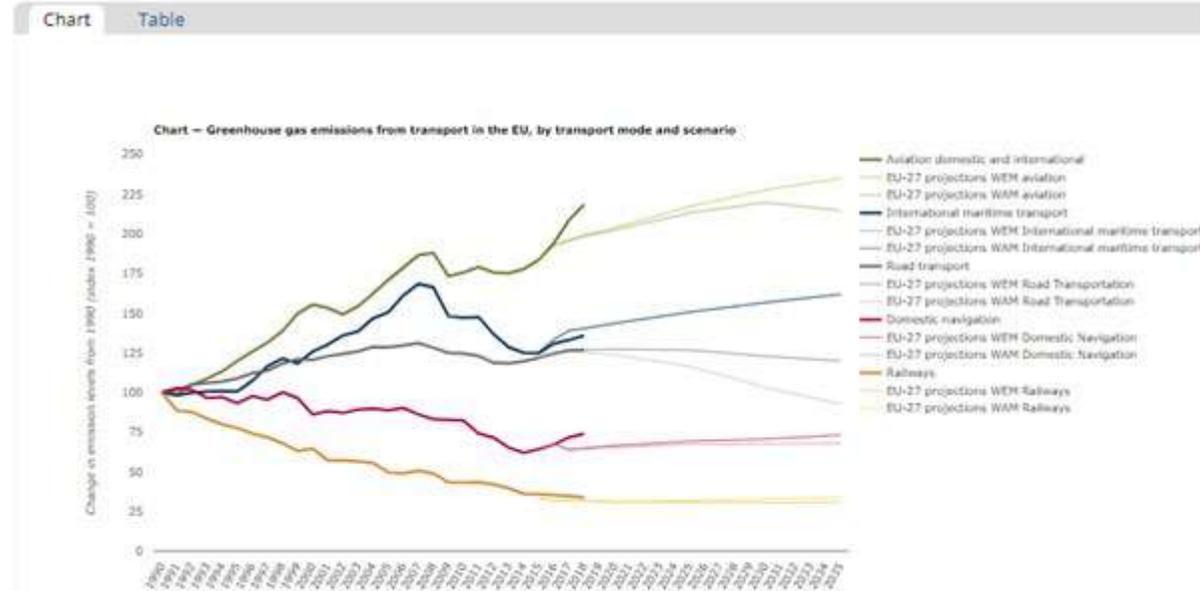
| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network - T "(code 065) have a Coefficient for calculating support for climate change targets equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <p><i>a) ... (omission)</i></p> <p><i>b) ... (omission)</i></p> <p><i>c) the increase in clean or climate-neutral mobility;</i></p> <p><i>d) ... (omission)".</i></p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



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| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <p>by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;</p> <p>by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users.</p> <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
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Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

Italian railway lines are 72% electrified. The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen traction.

In terms of CO₂ emissions, various scientific studies have compared the different modes of transport.

Below is an effective representation of the lower impact in terms of CO₂ emissions by the railway carrier compared to other modes of transport.



Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO₂ emissions ■ Secondary effects from high altitude, non-CO₂ emissions



Note: Car refers to average diesel car

Source: BDIS/Delft Greenhouse Gas Conversion Factors 2019

0308

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| Passenger car - petrol | 32.02 | 1.22 | 1.97 |
| Passenger car - diesel | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |

As an example, the following average values were compared:

- passenger car (petrol) = 1.22 €-cent/pkm

- passenger train diesel = 0.34 €-cent/pkm



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| | | <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> |
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Passenger transport

In 2019, limited to land transport only (road + rail), equal to 938 billion pax.km, the modal split was:

| Transport mode | Modal share |
|------------------------------|-------------|
| Railway transport | 6% |
| Extra-urban public transport | 10% |
| Urban public transport | 2% |
| Private road transport | 82% |

Source: CNIT 2018-2019

At 2030, with the entry into operation of the investments presented in the Recovery Fund, the modal share is estimated to be:

| Transport mode | Modal share |
|------------------------------|-------------|
| Railway transport | 10% |
| Extra-urban public transport | 11% |
| Urban public transport | 2% |
| Private road transport | 77% |

This modal shift is reflected in terms of CO2 saved by passenger road vehicles for a value of approximately **2.3 million tonnes per year**.



Freight Transport

In the case of freight transport, the traffic data for 2019 were considered, which indicate the total value and the following modal breakdown at approximately 200 billion tonnes km

| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 10.7% |
| Coastal maritime navigation | 29.3% |
| Inland waterways | 0.0% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 54.5% |
| Oil pipelines (> 50km) | 4.8% |

Source: CNIT 2018-2019

By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated:

| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 16.5% |
| Coastal maritime navigation | 30% |
| Inland waterways | 0.1% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 47.7% |
| Oil pipelines (> 50km) | 5.1% |



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| | | <p>This breakdown makes it possible to quantify the CO2 savings from heavy road vehicles from 2030 equal to approximately 400,000 tonnes per year.</p> <p>Overall, therefore, starting from 2030 it is reasonable to assume that the eligible investments in the Recovery Fund will contribute to the achievement of the long-term targets both in terms of modal share and in terms of CO2 savings (approximately 2.8 million tonnes of CO2 from transport passenger and freight road).</p> <p>These forecasts have been developed considering all the investments envisaged in the NNRP and constitute a challenging target but which is deemed achievable, if the hypotheses relating to the response of the Railway Companies for the services offered, to the demand for railway mobility and to the situation are also confirmed with specific regard to economic conditions, transport policies, technological innovations and transformations in progress (energy mix, electric mobility, hydrogen mobility).</p> <p>The cluster of investments relating to <i>Diagonal Connections</i> includes interventions programs for the strengthening of the Rome-Pescara, Orte-Falconara and Taranto-Metaponto-Potenza-Battipaglia connections.</p> <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.</p> <p>In particular, the strengthening of the Rome-Pescara itinerary represents a strategic intervention that aims to create a real metropolitan and capillary system in the territory with travel times between the two cities that would go from the current 3h 20' to about 2h.</p> <p>In this way, the railway system would be very competitive with respect to the current services insured by road (private and public) with undoubted environmental advantages in terms of saving on polluting emissions.</p> <p>In the same way, the strengthening of the Orte-Falconara route has the aim of both improving passenger connections between the Tyrrhenian regions and those on the Adriatic side and creating an alternative freight route for north-south connections.</p> <p>Finally, the upgrading works along the Taranto-Metaponto-Potenza-Battipaglia line will ensure a reduction in travel times along the Naples-Taranto route from the current 4h to about 3h 30' with an increase in the competitiveness of the railway sector compared to the road sector.</p> |
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| | | <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GhG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).</p> <p>It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional sections planned in the <i>Diagonal Connections</i> area during project development and therefore provide evidence of the further expected benefits in relation to this environmental target.</p> |
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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>In case of new project, a specific vulnerability and climate risk assessment, related to flooding, snow, arising sea level, rainfalls, etc. will be performed in order to identify, to select and to implement the relevant adaptation measures, accordingly to the EU framework.</p> <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport. In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy</p> |
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| | | <p>systems, which limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none">- hydraulic verification of river crossing works;- hydraulic verification of the drainage systems of the railway and road platform. <p>RFI is among the main beneficiaries of the National Operational Program financed by the ERDF.</p> <p>As part of the National Operational Program (NOP), the systematic completion of "Form A" - Indicator 6 "Studies/Works of adaptation to climate change" is envisaged, in which some "Soft", Green", Gray" actions in the design or used in the context of sharing design choices with the territory are identified.</p> |
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| 3. Sustainable use and protection of water and marine resources | D. None of the above: the measure requires a background assessment for this target | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For the new infrastructure projects promoted by RFI, the Environmental Impact Study and the Environmental Project of the Construction Site represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The Environmental Monitoring Project is also drafted from the design phase to identify the points to be monitored on potentially critical factors as resulting from the results of the Environmental Impact Study.</p> <p>In fact, said Monitoring verifies and controls the impact of the construction of the work also on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |
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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with the highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble. The treatment and management of excavated earth and rocks has been subject, over the last few years, to various regulatory changes, up to the implementation of article 5 of Directive 98/2008/EC, implemented with the introduction of art. 184-bis in the Consolidated Environmental Law. The Directive governs measures and criteria to be met to establish whether specific substances or objects can be considered by-products or waste. The implementation of the principle outlined in article</p> |
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| | | <p>184-bis has therefore given rise to Ministerial Decree 161/2012 which then evolved into the current Presidential Decree 120/2017 containing the simplified regulation of the management of excavated earth and rocks. This regulation establishes that earth and rocks coming from excavations in the construction sector can sometimes present themselves as materials to be considered as real "products" to be reused to replace the natural resources deriving from quarry "exploitation". RFI therefore proceeded to adapt its procedures (design manuals and tender specifications) to proactively respond to EU principles, achieving very high standards in the European construction landscape. As part of the RFI Civil Works Design Manual, the procedural system to be adopted both in the design phase and in the execution phase of the interventions aimed at maximising the reuse of excavated earth and rocks in the same works of origin or, alternatively, in other works or industrial processes was defined so as to reduce, on the one hand, the production of special waste and, on the other, the need to procure virgin quarry material, promoting the transition towards the circular economy.</p> <p>Only in the event that the material does not meet the environmental characteristics or performance criteria, RFI admits its management as waste. Also in this case the procedural system is such as to promote the delivery of waste for recovery rather than disposal with the aim of promoting its circularity in order to guarantee its re-entry into the product cycle.</p> <p>By-products not intended for re-use in railway works are instead intended for environmental redevelopment and restoration interventions identified in synergy with local administrations, in order to identify degraded or abandoned areas or interventions of public interest and of priority importance in the areas impacted/affected by the Design.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

It will be possible to draw up and complete the traffic studies and the Cost Benefit Analysis of the additional sections planned in the *Diagonal Connections* area during project development and therefore provide evidence of the further expected benefits in relation to this environmental target.

As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:

- Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector).
- Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low.
- Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water.



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| | | <p>Since the intervention planning concerning the “Diagonals Connections” cluster is ongoing, the Environmental Impact Assessment authorization has not yet started.</p> <p>As part of the design of new railway infrastructures and in particular those to be subjected to Environmental Impact Assessment (EIA), all the necessary studies are carried out to verify the conditions of minimum interference with the components defined by the EIA regulations, including air , water, soil, biodiversity, raw materials, acoustic and vibrational climate, etc. The environmental studies for the interventions subjected to EIA are completed by the Environmental Design of the Construction Site and by the Environmental Monitoring Plan.</p> <p>The studies also include the identification of the possible presence of contaminated sites in order to guide the route choices, limit interference and, if possible, redevelop and reclaim the areas.</p> <p>The Environmental Design of the Construction Site aims to identify, describe and assess the significance of the direct and indirect environmental problems that can be generated and define mitigation measures and operational procedures to contain the environmental impacts connected to the construction phase of the work.</p> <p>The measures essentially consist of direct and indirect interventions in the construction site areas, on the roads used for the construction of the work (movements between the construction site areas, roads to/from quarries and landfills, storage sites, etc.), in land storage areas, contributing to the protection of surface and deep waters, soil, biodiversity, the need for raw materials, the acoustic climate, vibrations, air quality, waste and waste materials, water discharges, harmful substances and the landscape.</p> <p>The attention to the environment, which characterises the model for the construction of sustainable railway infrastructures, is also concretely applied in the adoption, in the contract assignment phase, of specific contractual clauses which provide for the obligation for the companies carrying out the works to ensure constant and timely supervision of the environmental aspects of the construction site also through the implementation of specific environmental management systems that comply with the requirements of the international standard by the contractor.</p> <p>The Environmental Monitoring Design is drawn up in accordance with the current legislation on environmental matters, and in compliance with the guidelines in force and in compliance with the provisions of the pertinent bodies for the supervision of the various environmental components. It defines the objectives, requirements, methodological criteria, methods and timing for Before - During - After Work Monitoring, taking into account the territorial and environmental</p> |
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| | | <p>reality in which the design of the work is inserted and the potential impacts it determines both in positive and negative terms, as a result of the assessments that emerged in the analyses carried out on environmental factors as part of the drafting of the Environmental Impact Study.</p> <p>The proponent, through Environmental Monitoring activities, verifies the impact of the work on the environmental matrices by carrying out measurement campaigns in the ante-construction phase (for the characterisation of the site), during work (for the construction phase) and after (for the operating phase).</p> <p>The campaigns include investigations on the components of surface and groundwater, soil and subsoil, acoustic and vibrational climate, air quality, social environment and vegetation, flora, fauna and ecosystems.</p> <p>Monitoring data are entered and organised through a geographic information database, which constantly provides updates on the environmental status of the areas affected by the works, to the bodies responsible for the control and validation process of the environmental data, through specific alerting tools.</p> <p>As regards the verification of the acoustic and vibrational impact, specific forecast studies are drawn up in which the receptors present in the design's range or influence are identified and the post-work climate is characterised by means of simulations conducted with specific specialised software that take into account the characteristics of the design, territory, infrastructure and traffic planned both during the day and night. Downstream of this activity, the post-construction emission scenario is compared with the limits imposed by current legislation, in order to dimension the mitigation measures necessary to bring the acoustic climate and any vibration emissions within the standard deadlines. For vibrations, in particular, reference is made to the standard indications (UNI standards) concerning the disturbance to people.</p> |
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| <p>6. Protection and restoration of biodiversity and ecosystems</p> | <p>D. None of the above: the measure requires a background assessment for this target</p> | <p>Transport infrastructures have different effects on nature, landscape and natural habitats.</p> <p>The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.</p> <p>In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.</p> <p>The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en EcoPlan, 2018.</p> <p>For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:</p> <ul style="list-style-type: none"> - 93,500 for motorway infrastructures - 84,500 for high-speed railway infrastructures. <p>Table 58 – Cost factors for costs of habitat damage EU28</p> <table border="1"> <thead> <tr> <th rowspan="2">Cost in €₂₀₁₆ per km and year</th> <th colspan="2">Road €/(km *a)</th> <th colspan="2">Rail €/(km*a)</th> <th rowspan="2">Aviation €/(km² * a)</th> <th rowspan="2">Inland waterways €/(km *a)</th> </tr> <tr> <th>Motorways</th> <th>Other roads</th> <th>High-speed</th> <th>Other railways</th> </tr> </thead> <tbody> <tr> <td>Habitat loss</td> <td>78,900</td> <td>1,900</td> <td>57,500</td> <td>8,200</td> <td>437,500</td> <td>6,600</td> </tr> <tr> <td>Habitat fragmentation</td> <td>14,600</td> <td>2,200</td> <td>27,000</td> <td>5,900</td> <td>0</td> <td>0</td> </tr> <tr> <td>Total habitat damage</td> <td>93,500</td> <td>4,100</td> <td>84,500</td> <td>14,100</td> <td>437,500</td> <td>6,600</td> </tr> </tbody> </table> <p>Source: Own calculations based on INFRAS, EcoPlan 2018 (External effects of transport in Switzerland 2015).</p> <p>According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:</p> <ul style="list-style-type: none"> • ensure that at least 30% of the EU territory is made up of natural areas | Cost in € ₂₀₁₆ per km and year | Road €/(km *a) | | Rail €/(km*a) | | Aviation €/(km ² * a) | Inland waterways €/(km *a) | Motorways | Other roads | High-speed | Other railways | Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |
|--|---|--|---|-------------------|----------------|-------------------------------------|-------------------------------|-------------------------------------|-------------------------------|-----------|-------------|------------|----------------|--------------|--------|-------|--------|-------|---------|-------|-----------------------|--------|-------|--------|-------|---|---|-----------------------------|---------------|--------------|---------------|---------------|----------------|--------------|
| Cost in € ₂₀₁₆ per km and year | Road €/(km *a) | | | Rail €/(km*a) | | Aviation €/(km ² * a) | Inland waterways €/(km *a) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Motorways | Other roads | High-speed | Other railways | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| | | <ul style="list-style-type: none">• restore at least 30% of damaged ecosystems• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>For the new infrastructure designed promoted by RFI, the analysis of the reference context in terms of biodiversity is one of the main tools for the prevention of potential significant impacts on the environment, already in the phase of choosing the corridor and the route.</p> <p>In fact, starting from a study of a large area, and in the context of route choices that respect the geometric and functional constraints of the work, the solution is identified that has the greatest characteristics of sustainability also minimising interference with parks, protected areas and Natura 2000 sites.</p> <p>Evidence of this design focus and of all the actions aimed at mitigating the construction and operation phase of the infrastructure, is provided in the Environmental Impact Study and, if necessary, in the Incidence Report.</p> <p>With regard to Natura 2000 sites, if the design solution as selected above in any case directly or indirectly (5 km range) concerns a Site of Community Interest/Special Conservation Areas and/or a Special Protection Area, the Impact Assessment procedure Environmental is integrated by the Environmental Impact Assessment Procedure.</p> <p>The Incidence Report examines all possible alterations on the habitats and on the protected animal and plant species, also by means of precise surveys in the field.</p> |
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5.6 Introducing the European Rail Transport Management System (ERTMS)

| DNSH ASSESSMENT | |
|------------------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.o |
| Project/Reform | 6. Introducing the European Rail Transport Management System (ERTMS) |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | A. The measure has no or negligible impact on this target | <p>EU regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "European rail traffic management system (ERTMS)" (code 071) have a Coefficient for calculating support for climate change targets equal to 40%.</p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The European Rail Traffic Management System (ERTMS) is the traffic management and train running protection system chosen by the European Commission to implement the single transport market in the Union, so as to promote the interoperability of national railway networks and cross-border rail transport.</p> <p>The Italian railways have adopted, among the first in Europe, the Level 2 ERTMS System on the new High Speed/High Capacity network lines.</p> <p>The strategic objectives of long-term planning for the development of the European railway sector are defined by Regulation (EU) No. 1315/2013. The guidelines established by this regulation for the development of a trans-European transport network (TEN-T) set, for the infrastructure, ERTMS among the requirements for the development of a "Comprehensive network" to be completed by 2050 and a "core network" to be created by 2030.</p> <p>Italy, to comply with the priority program contained in Reg. UE 2017/6, is implementing ERTMS, in superimposed mode on the national system for train speed control, on the priority sections of the core network corridors (Breakthrough Program).</p> <p>The analyses and experiences carried out so far have highlighted all the advantages associated with the use of ERTMS which, in addition to the interoperability of European networks, also makes it possible to achieve an improvement in</p> |



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| | | <p>the performance of the railway system in terms of safety, capacity and maintainability. This led to the definition of an Accelerated ERTMS implementation plan extended to the entire railway infrastructure which anticipates the time objectives set by the European Commission.</p> <p>The Accelerated Plan aims to extend the implementation of ERTMS to the entire Italian railway infrastructure (16,800 km against the 10,400 required by law: TEN-T network) and significantly accelerate the ERTMS implementation times to complete the equipping of the entire network by 2036 (instead of only the TEN-T network by 2050), while simultaneously and consistently envisaging the decommissioning of the national system starting from 2022 and therefore the progressive and coherent equipping of the trains (about 5000 those in circulation today), providing for the necessary resources to be made available to the Railway Companies, which have expressed their favourable opinion on the proposed plan, through various sources of financing.</p> <p>The ERTMS system improves the performance of the railway infrastructure, ensuring numerous benefits in terms of safety, efficiency, transport capacity, interoperability, etc.</p> <p>ERTMS contributes in two ways to the reduction of GHG emissions:</p> <p>a) The large metropolitan nodes constitute the elements of the railway network which, before any other component, reach conditions of saturation of the transport capacity. In these highly urbanized realities, it is difficult to foresee and build new railway lines or quadruple them. The implementation of the ERTMS High Density system is envisaged on the large metropolitan nodes, which allows an increase in train frequencies and therefore in the transport capacity of the infrastructure, without occupying new land, with extremely low costs if compared with those of a new railway infrastructure and much shorter construction times. With these interventions it is possible to give a prompt response to the growing demand for rail transport for the main nodes of the network and thus to support the modal diversion from road to rail. Very briefly, it should be remembered that in terms of CO₂ emissions, various scientific studies have compared the different modes of transport, highlighting the reduced CO₂ emissions of the railway carrier on electrified lines. These considerations are the basis of the strategy of the European Commission which set the following targets already in 2011 with the White Paper on transport: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050. More recently, the goals of the New Green Deal foresee the reduction of CO₂ and climate-altering gas emissions by at least 55% by 2030 (compared to the 1990 level), and climate neutrality by 2050. The 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> |
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Below is an effective representation of the competitiveness of the railway carrier in terms of GHG emissions.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: BEIS/Defra: Greenhouse Gas Conversion Factors 2019



- b) ERTMS constitutes the technological substrate for the future development of Automatic Train Operation (ATO). The ATO system allows the functions of management, supervision and optimisation of the circulation, for train speed regulation. The ATO system makes it possible to optimise train speed regulation with an average energy saving estimated at around 10%. This energy saving results in lower GHG emissions into the atmosphere.

| Electricity consumption | Net spending |
|-------------------------|--------------|
| GWh | € |
| 5,680 | 157,000,000 |

Source: FS Group "Sustainability Report"

Assuming an energy saving of about 10%, it can be seen that in the case of operation carried out with ERTMS + ATO, there is an energy saving of 568 GWh which is associated with a potential reduction in CO2 emissions equal to 179,710 tonnes CO2/year. As previously indicated, this reduction is not only due to the ERTMS system.



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| <p>2. Adaptation to climate change</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport. In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The investment plan for the accelerated implementation of the ERTMS system on the entire national railway network contributes to the construction of a more resilient transport infrastructure.</p> <p>In fact, the ERTMS traffic management system is composed of fewer components than the current national systems.</p> |
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| | | <p>This entails both a lower vulnerability with respect to the risks deriving from extreme weather events, and a greater ability of the system to respond to exceptional stresses: in conclusion, fewer failures and interruptions. Furthermore, the reduced number of components allows for greater ease of recovery in the event of failure and therefore shorter duration of outages.</p> <p>The quantification of shorter delays for greater reliability of the ERTMS system compared to current traffic technologies was estimated by comparing the number of failures relating to faults in the spacing system attributable to infrastructure management in the case of lines equipped with ERTMS to different technological equipment, in particular: Automatic Block + Train Speed Control System, Axle Counter Block + Train Speed Control System.</p> <p>The lines analysed were:</p> <ol style="list-style-type: none">1. Rome – Florence DD (AB +TSCS);2. Ferrara – Rimini (ACB + TSCS);3. Milan – Bologna HS (ERTMS). <p>The analysis, which concerned delays on approximately 1,500 trains, led to the following results:</p> <table border="1"><thead><tr><th>Line</th><th>Faults/km</th><th>Trend/fault</th><th>Delay in minutes</th></tr></thead><tbody><tr><td>TSCS + AB</td><td>0.62</td><td>6</td><td>11</td></tr><tr><td>TSCS + ACB</td><td>0.35</td><td>3</td><td>21</td></tr><tr><td>ERTMS</td><td>0.22</td><td>9</td><td>8</td></tr></tbody></table> <p>It follows that the implementation of the ERTMS system leads to a significant reduction in breakdowns and therefore to a greater resilience of the railway infrastructure.</p> | Line | Faults/km | Trend/fault | Delay in minutes | TSCS + AB | 0.62 | 6 | 11 | TSCS + ACB | 0.35 | 3 | 21 | ERTMS | 0.22 | 9 | 8 |
|------------|-----------|--|------------------|-----------|-------------|------------------|-----------|------|---|----|------------|------|---|----|-------|------|---|---|
| Line | Faults/km | Trend/fault | Delay in minutes | | | | | | | | | | | | | | | |
| TSCS + AB | 0.62 | 6 | 11 | | | | | | | | | | | | | | | |
| TSCS + ACB | 0.35 | 3 | 21 | | | | | | | | | | | | | | | |
| ERTMS | 0.22 | 9 | 8 | | | | | | | | | | | | | | | |



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| 3. Sustainable use and protection of water and marine resources | A. The measure has no or negligible impact on this target | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>The accelerated implementation of the ERTMS system on the entire national railway network can be classified in the context of investments of a technological nature that do not produce impacts on water resources.</p> |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or negligible impact on this target | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with the highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> |



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| | | <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble.</p> <p>The accelerated plan for equipping the entire Italian railway network with the ERTMS system involves the gradual abandonment of the current implementation strategy which provides for the addition of the ERTMS system to the existing ground traffic management systems and therefore imposes the need that the rolling stock is equipped for both systems: existing and ERTMS (dual on board logic). The accelerated plan focuses on the progressive replacement of the ground traffic management systems (dual on track logic).</p> <p>The implementation of the ERTMS system involves the upgrade/installation of the following technological components:</p> <ul style="list-style-type: none">• eurobalise, to transmit information to the train;• RBC (Radio Block Centre), to acquire the status of the line (free/occupied sections, routes), calculate train spacing, send the Travel Authorisations to the train via the GSM-Railways network, set slowdowns, send emergencies, etc.;• BTS (Base Transceiver Station): radio signal transceiver subsystem, equipped with antenna, to manage communications between the train and the Radio Block Centre;• audio frequency track circuits;• interfacing with the Station Equipment (Central Equipment): components capable of managing the exchange of commands and controls of the line and yard bodies (switches, level crossings, Bushing Thermal Detection, Axis Counter Block or track circuits). <p>These are technological components that will replace the current components of the spacing and traffic management system made up of more important technologies in terms of components. Consider the presence of lateral signalling which is no longer necessary with the ERTMS system.</p> <p>It follows that the transition to the digital ERTMS system determines a reduction in the components of the railway infrastructure and a lower commitment of resources in its implementation.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

Consistent with what has already been illustrated, ERTMS contributes to the reduction of pollutant emissions in two respects:

- a) Through the implementation of the ERTMS High Density system in large urban nodes which supports the objective of modal diversion from road to rail.
- b) Through the possibility that, once the ERTMS system has been built, the development of Automatic Train Operation (ATO) can be envisaged, which allows an average energy saving estimated at around 10%. This energy saving results in lower pollutant emissions into the atmosphere.

There is no impact of the investment on other environmental systems: soil and water.



6. Protection and restoration of biodiversity and ecosystems

A. The measure has no or negligible impact on this target

Transport infrastructures have different effects on nature, landscape and natural habitats.

The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.

In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.

The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en Ecoplan, 2018.

For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:

- 93,500 for motorway infrastructures
- 84,500 for high-speed railway infrastructures.

Table 58 – Cost factors for costs of habitat damage EU28

| Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | Rail €/((km *a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) |
|---|--------------------|--------------|--------------------|----------------|-------------------------------------|--------------------------------|
| | Motorways | Other roads | High-speed | Other railways | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |

Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).

According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:

- ensure that at least 30% of the EU territory is made up of natural areas
- restore at least 30% of damaged ecosystems



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| | | <ul style="list-style-type: none">• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>The investment program relating to the accelerated ERTMS plan is a substantially technological program that is installed on the existing railway infrastructure. Therefore it does not produce impacts on biodiversity and ecosystems in terms of disturbance to ecological permeability or on the presence of fauna.</p> <p>The devices, mainly digital technology, comply with European regulations and therefore produce limited effects on the habitat.</p> |
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5.7 Strengthening metropolitan nodes and key national links

| DNSH ASSESSMENT | |
|------------------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 7. Strengthening metropolitan nodes and key national links |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



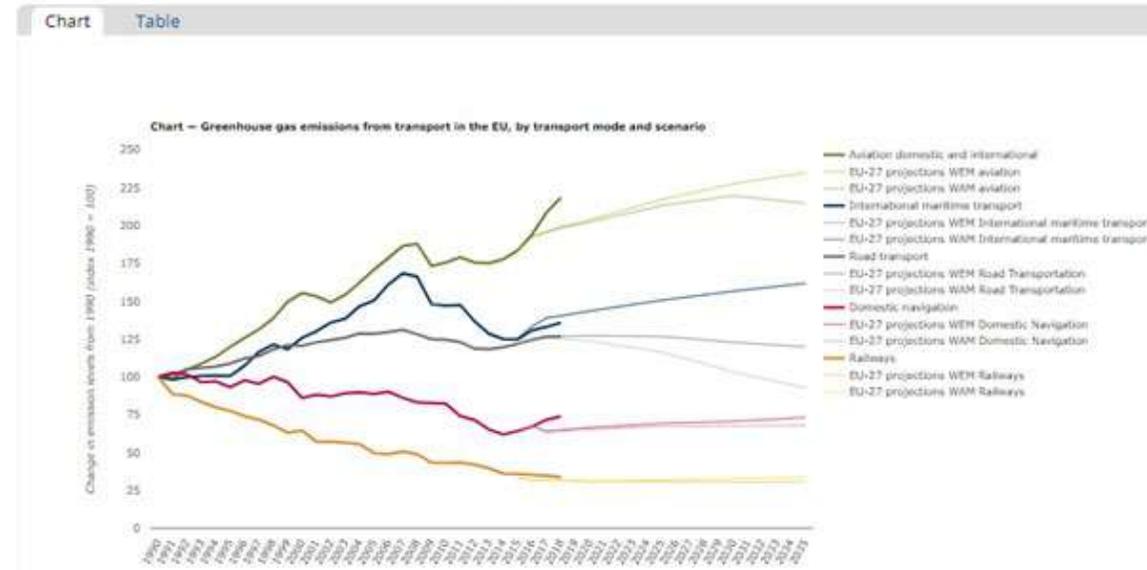
| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network - T "(code 065) have a Coefficient for calculating support for climate change targets equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <p><i>a) ... (omission)</i></p> <p><i>b) ... (omission)</i></p> <p><i>c) the increase in clean or climate-neutral mobility;</i></p> <p><i>d) ... (omission)".</i></p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



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| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <ul style="list-style-type: none">• by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;• by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users. <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
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Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.

The Italian railway lines are 72% electrified and, for these, the GHG emission is indirect, as it is connected to the production of electricity.

The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen traction.

In terms of CO2 emissions, various scientific studies have compared the different modes of transport.



Below is an effective representation of the lower impact in terms of CO2 emissions by the railway carrier compared to other modes of transport.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: BDIS/Delft Greenhouse Gas Conversion Factors 2019

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| <i>Passenger car - petrol</i> | 32.02 | 1.22 | 1.97 |
| <i>Passenger car - diesel</i> | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |

As an example, the following average values were compared:

- passenger car (petrol) = 1.22 €-cent/pkm



| | | |
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| | | <p>- passenger train diesel = 0.34 €-cent/pkm</p> <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> <p><u>Passenger transport</u></p> <p>In 2019, limited to land transport only (road + rail), equal to 938 billion pax.km, the modal split was:</p> |
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| | | <table border="1"><thead><tr><th>Transport mode</th><th>Modal share</th></tr></thead><tbody><tr><td>Railway transport</td><td>6%</td></tr><tr><td>Extra-urban public transport</td><td>10%</td></tr><tr><td>Urban public transport</td><td>2%</td></tr><tr><td>Private road transport</td><td>82%</td></tr></tbody></table> <p><i>Source: CNIT 2018-2019</i></p> <p>At 2030, with the entry into operation of the investments presented in the Recovery Fund, the modal share is estimated to be:</p> <table border="1"><thead><tr><th>Transport mode</th><th>Modal share</th></tr></thead><tbody><tr><td>Railway transport</td><td>10%</td></tr><tr><td>Extra-urban public transport</td><td>11%</td></tr><tr><td>Urban public transport</td><td>2%</td></tr><tr><td>Private road transport</td><td>77%</td></tr></tbody></table> <p>This modal shift is reflected in terms of CO2 saved by passenger road vehicles for a value of approximately 2.3 million tonnes per year.</p> <p><u>Freight Transport</u></p> <p>In the case of freight transport, the traffic data for 2019 were considered, which indicate the total value and the following modal breakdown at approximately 200 billion tonnes km</p> | Transport mode | Modal share | Railway transport | 6% | Extra-urban public transport | 10% | Urban public transport | 2% | Private road transport | 82% | Transport mode | Modal share | Railway transport | 10% | Extra-urban public transport | 11% | Urban public transport | 2% | Private road transport | 77% |
|------------------------------|-------------|---|----------------|-------------|-------------------|----|------------------------------|-----|------------------------|----|------------------------|-----|----------------|-------------|-------------------|-----|------------------------------|-----|------------------------|----|------------------------|-----|
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 6% | | | | | | | | | | | | | | | | | | | | | |
| Extra-urban public transport | 10% | | | | | | | | | | | | | | | | | | | | | |
| Urban public transport | 2% | | | | | | | | | | | | | | | | | | | | | |
| Private road transport | 82% | | | | | | | | | | | | | | | | | | | | | |
| Transport mode | Modal share | | | | | | | | | | | | | | | | | | | | | |
| Railway transport | 10% | | | | | | | | | | | | | | | | | | | | | |
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| Urban public transport | 2% | | | | | | | | | | | | | | | | | | | | | |
| Private road transport | 77% | | | | | | | | | | | | | | | | | | | | | |



| Transport mode | Modal share |
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| Railway transport | 10.7% |
| Coastal maritime navigation | 29.3% |
| Inland waterways | 0.0% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 54.5% |
| Oil pipelines (> 50km) | 4.8% |
| <i>Source: CNIT 2018-2019</i> | |
| By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated: | |
| Transport mode | Modal share |
| Railway transport | 16.5% |
| Coastal maritime navigation | 30% |
| Inland waterways | 0.1% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 47.7% |
| Oil pipelines (> 50km) | 5.1% |
| This breakdown makes it possible to quantify the CO2 savings from heavy road vehicles from 2030 equal to approximately 400,000 tonnes per year. | |



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| | | <p>Overall, therefore, starting from 2030 it is reasonable to assume that the eligible investments in the Recovery Fund will contribute to the achievement of the long-term targets both in terms of modal share and in terms of CO2 savings (approximately 2.8 million tonnes of CO2 from transport passenger and freight road).</p> <p>These forecasts have been developed considering all the investments envisaged in the NNRP and constitute a challenging target but which is deemed achievable, if the hypotheses relating to the response of the Railway Companies for the services offered, to the demand for railway mobility and to the situation are also confirmed with specific regard to economic conditions, transport policies, technological innovations and transformations in progress (energy mix, electric mobility, hydrogen mobility).</p> <p>In the cluster of investments related to <i>Strengthening metropolitan nodes and key national links</i>, the interventions to upgrade existing lines are included, which can be grouped into the following categories:</p> <ul style="list-style-type: none">a) Electrification (i.e. Civitanova-Macerata-Albacina electrification, Como - Molteno - Lecco electrification, Cinisi-Alcamo Dir- Trapani electrification, Ivrea-Aosta electrification, Veneto lines electrification, Belluno ring electrification, Casarsa - Portogruaro electrification)b) Infrastructural and technological upgrading (i.e. Bologna - Padova technological upgrade, technological upgrade of the Florence node, technological upgrade of the Rome - Naples line, completion of the technological upgrade of the Adriatic line, technological upgrade of the DD Florence - Rome line, upgrading of the Ovada line, upgrading of the Pontremolese line, technological and infrastructural upgrading of the Genoa-Ventimiglia line, technological upgrading of the Rome node, ACC Milano c.le and Milano Certosa, General Regulatory Plan and new technological device of Venice Santa Lucia, technological upgrade of the Turin node and related lines, modernisation of the Sardinian network, Traffic Technologies (ACC), Udine node)c) Variants/Doubling/Acceleration (i.e. Riga Variant, Bolzano Node: Virgolo Tunnel, Falconara Variant Doubling Length-Guidonia, Doubling Ogliastrillo-Castelbuono, Doubling Campoleone-Aprilia, Doubling Adriatica: Termoli-Ripalta-Lesina, 1st phase Genoa-Turin acceleration, Genoa-Milan acceleration, Tortona-Voghera quadrupling priority works, Bari Sud node)d) Railway connections with airports (i.e. Venice airport railway connection, Bergamo airport railway connection, Catania Fontanarossa airport new stop, first phase)e) Connection with ports and terminals (i.e. adaptation and upgrading of the Vado Ligure industrial area, Port of Ravenna, Port of Trieste: railway interventions for the upgrading of the Trieste Campo Marzio station) |
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| | | <p>f) Improvement of accessibility (i.e. Accessibility to the new Belfiore HS station and new Belfiore - Florence SMN connection, Foggia Cervaro HS station, Montemarciano stop)</p> <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier compared to other modes of transport, through:</p> <ul style="list-style-type: none">• Improvement of traffic regularity;• increase in capacity from 4 to 10 trains/h on the suburban sections of access to the nodes being doubled;• improvement of accessibility and interchange• improvement of the last mile connections to the main ports and inter-modal terminals of the network with the aim of increasing the capacity of the plants and making shunting operations more efficient and promoting self-production;• strengthening of existing connections and creation of new connections to the main airports in the network;• creation of the conditions for speeding up services on the catchment lines;• performance adjustment (module, shape, axial weight);• increase in capacity and reduction of travel times;• elimination of interference between passenger traffic and freight traffic thanks to the specialisation of the flows on the lines;• increase in the capacity of lines close to saturation. <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GHG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).</p> |
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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport. In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy systems, which limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> |
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| | | <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none">- hydraulic verification of river crossing works;- hydraulic verification of the drainage systems of the railway and road platform. <p>RFI is among the main beneficiaries of the National Operational Program financed by the ERDF. As part of the National Operational Program (NOP), the systematic completion of "Form A" - Indicator 6 "Studies/Works of adaptation to climate change" is envisaged, in which some "Soft", Green", Gray" actions in the design or used in the context of sharing design choices with the territory are identified.</p> <p>In the cluster of investments related to Strengthening metropolitan nodes and key national links, the interventions to upgrade existing lines are included, which can be grouped into the following categories:</p> <ul style="list-style-type: none">• Electrification (i.e. Civitanova-Macerata-Albacina electrification, Como - Molteno - Lecco electrification, Cinisi-Alcamo Dir- Trapani electrification, Ivrea-Aosta electrification, Veneto lines electrification, Belluno ring electrification, Casarsa - Portogruaro electrification)• Infrastructural and technological upgrading (i.e. Bologna - Padova technological upgrade, technological upgrade of the Florence node, technological upgrade of the Rome - Naples line, completion of the technological upgrade of the Adriatic line, technological upgrade of the DD Florence - Rome line, upgrading of the Ovada line, upgrading of the Pontremolese line, technological and infrastructural upgrading of the Genoa-Ventimiglia line, technological upgrading of the Rome node, ACC Milano c.le and Milano Certosa, General Regulatory Plan and new technological device of Venice Santa Lucia, technological upgrade of the Turin node and related lines, modernisation of the Sardinian network, Traffic Technologies (ACC), Udine node)• Variants/Doubling/Acceleration (i.e. Riga Variant, Bolzano Node: Virgolo Tunnel, Falconara Variant Doubling Length-Guidonia, Doubling Ogliastrillo-Castelbuono, Doubling Campoleone-Aprilia, Doubling Adriatica: Termoli-Ripalta-Lesina, 1st phase Genoa-Turin acceleration, Genoa-Milan acceleration, Tortona-Voghera quadrupling priority works, Bari Sud node)• Railway connections with airports (i.e. Venice airport railway connection, Bergamo airport railway connection, Catania Fontanarossa airport new stop, first phase) |
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| | | <ul style="list-style-type: none">• Connection with ports and terminals (i.e. adaptation and upgrading of the Vado Ligure industrial area, Port of Ravenna, Port of Trieste: railway interventions for the upgrading of the Trieste Campo Marzio station)• Improvement of accessibility (i.e. Accessibility to the new Belfiore HS station and new Belfiore - Florence SMN connection, Foggia Cervaro HS station, Montemarciano stop) <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier compared to other modes of transport, through:</p> <ul style="list-style-type: none">• Improvement of traffic regularity;• increase in capacity from 4 to 10 trains/h on the suburban sections of access to the nodes being doubled;• improvement of accessibility and interchange• improvement of the last mile connections to the main ports and inter-modal terminals of the network with the aim of increasing the capacity of the plants and making shunting operations more efficient and promoting self-production;• strengthening of existing connections and creation of new connections to the main airports in the network;• of the conditions for speeding up services on the catchment lines;• adjustment (module, shape, axial weight);• increase in capacity and reduction of travel times;• elimination of interference between passenger traffic and freight traffic thanks to the specialisation of the flows on the lines;• increase in the capacity of lines close to saturation. |
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| 3. Sustainable use and protection of water and marine resources | A. The measure has no or negligible impact on this target | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For the new infrastructure projects promoted by RFI, the Environmental Impact Study and the Environmental Project of the Construction Site represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The Environmental Monitoring Project is also drafted from the design phase to identify the points to be monitored on potentially critical factors as resulting from the results of the Environmental Impact Study.</p> <p>In fact, said Monitoring verifies and controls the impact of the construction of the work also on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |
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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with the highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble. The treatment and management of excavated earth and rocks has been subject, over the last few years, to various regulatory changes, up to the implementation of article 5 of Directive 98/2008/EC, implemented with the introduction of art. 184-bis in the Consolidated Environmental Law. The Directive governs measures and criteria to be met to establish whether specific substances or objects can be considered by-products or waste. The implementation of the principle outlined in article</p> |
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| | | <p>184-bis has therefore given rise to Ministerial Decree 161/2012 which then evolved into the current Presidential Decree 120/2017 containing the simplified regulation of the management of excavated earth and rocks. This regulation establishes that earth and rocks coming from excavations in the construction sector can sometimes present themselves as materials to be considered as real "products" to be reused to replace the natural resources deriving from quarry "exploitation". RFI therefore proceeded to adapt its procedures (design manuals and tender specifications) to proactively respond to EU principles, achieving very high standards in the European construction landscape. As part of the RFI Civil Works Design Manual, the procedural system to be adopted both in the design phase and in the execution phase of the interventions aimed at maximising the reuse of excavated earth and rocks in the same works of origin or, alternatively, in other works or industrial processes was defined so as to reduce, on the one hand, the production of special waste and, on the other, the need to procure virgin quarry material, promoting the transition towards the circular economy.</p> <p>Only in the event that the material does not meet the environmental characteristics or performance criteria, RFI admits its management as waste. Also in this case the procedural system is such as to promote the delivery of waste for recovery rather than disposal with the aim of promoting its circularity in order to guarantee its re-entry into the product cycle.</p> <p>By-products not intended for re-use in railway works are instead intended for environmental redevelopment and restoration interventions identified in synergy with local administrations, in order to identify degraded or abandoned areas or interventions of public interest and of priority importance in the areas impacted/affected by the Design.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

In the cluster of investments related to Upgrading, electrification and resilience of railways South the interventions to upgrade existing lines in the south are included, which can be grouped into the following categories:

- a) Electrification (i.e. Electrification and modernisation of the Barletta-Canosa line, Electrification and acceleration of Roccaravindola-Isernia-Campobasso, Electrification of the Ionian line, Catanzaro Lido - Crotona - Sibari line, Potenza - Foggia railway line - modernisation and electrification)
- b) Infrastructural and technological upgrading (i.e. Venafro upgrade - Campobasso - Termoli, Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme upgrade, Pescara-Foggia upgrade, Palermo - Agrigento - Porto Empedocle lower upgrade, Taranto-Brindisi technological upgrade)
- c) Variants/Doubling/Acceleration (i.e. Doubling Codogno-Cremona-Mantova 1st phase, Doubling Decimomannu-Villamassargia 1st phase, New Ferrandina-Matera La Martella Line)
- d) Railway connections with airports (i.e. Arechi-Pontecagnano Airport section, Brindisi airport railway connection, Olbia airport railway connection)



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| | | <p>e) Connection with ports and terminals (i.e. New Cagioni station and connection with new Logistic Plate, Bari Lamasinata freight terminal, Brindisi inter-modal hub, Trapani Birgi inter-modality and accessibility, Port connection and Augusta bypass)</p> <p>f) Improvement of accessibility (i.e. Taranto station underpass)</p> <p>g) South line resilience plan.</p> <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.</p> <p>As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:</p> <ul style="list-style-type: none">• Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector).• Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low.• Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water. <p>As part of the design of new railway infrastructures and in particular those to be subjected to Environmental Impact Assessment (EIA), all the necessary studies are carried out to verify the conditions of minimum interference with the components defined by the EIA regulations, including air , water, soil, biodiversity, raw materials, acoustic and vibrational climate, etc. The environmental studies for the interventions subjected to EIA are completed by the Environmental Design of the Construction Site and by the Environmental Monitoring Plan.</p> |
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| | | <p>The studies also include the identification of the possible presence of contaminated sites in order to guide the route choices, limit interference and, if possible, redevelop and reclaim the areas.</p> <p>The Environmental Design of the Construction Site aims to identify, describe and assess the significance of the direct and indirect environmental problems that can be generated and define mitigation measures and operational procedures to contain the environmental impacts connected to the construction phase of the work.</p> <p>The measures essentially consist of direct and indirect interventions in the construction site areas, on the roads used for the construction of the work (movements between the construction site areas, roads to/from quarries and landfills, storage sites, etc.), in land storage areas, contributing to the protection of surface and deep waters, soil, biodiversity, the need for raw materials, the acoustic climate, vibrations, air quality, waste and waste materials, water discharges, harmful substances and the landscape.</p> <p>The attention to the environment, which characterises the model for the construction of sustainable railway infrastructures, is also concretely applied in the adoption, in the contract assignment phase, of specific contractual clauses which provide for the obligation for the companies carrying out the works to ensure constant and timely supervision of the environmental aspects of the construction site also through the implementation of specific environmental management systems that comply with the requirements of the international standard by the contractor.</p> <p>The Environmental Monitoring Design is drawn up in accordance with the current legislation on environmental matters, and in compliance with the guidelines in force and in compliance with the provisions of the pertinent bodies for the supervision of the various environmental components. It defines the objectives, requirements, methodological criteria, methods and timing for Before - During - After Work Monitoring, taking into account the territorial and environmental reality in which the design of the work is inserted and the potential impacts it determines both in positive and negative terms, as a result of the assessments that emerged in the analyses carried out on environmental factors as part of the drafting of the Environmental Impact Study.</p> <p>The proponent, through Environmental Monitoring activities, verifies the impact of the work on the environmental matrices by carrying out measurement campaigns in the ante-construction phase (for the characterisation of the site), during work (for the construction phase) and after (for the operating phase).</p> <p>The campaigns include investigations on the components of surface and groundwater, soil and subsoil, acoustic and vibrational climate, air quality, social environment and vegetation, flora, fauna and ecosystems.</p> |
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| | | <p>Monitoring data are entered and organised through a geographic information database, which constantly provides updates on the environmental status of the areas affected by the works, to the bodies responsible for the control and validation process of the environmental data, through specific alerting tools.</p> <p>As regards the verification of the acoustic and vibrational impact, specific forecast studies are drawn up in which the receptors present in the design's range or influence are identified and the post-work climate is characterised by means of simulations conducted with specific specialised software that take into account the characteristics of the design, territory, infrastructure and traffic planned both during the day and night. Downstream of this activity, the post-construction emission scenario is compared with the limits imposed by current legislation, in order to dimension the mitigation measures necessary to bring the acoustic climate and any vibration emissions within the standard deadlines. For vibrations, in particular, reference is made to the standard indications (UNI standards) concerning the disturbance to people.</p> |
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6. Protection and restoration of biodiversity and ecosystems

A. The measure has no or negligible impact on this target

Transport infrastructures have different effects on nature, landscape and natural habitats.

The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.

In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.

The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en Ecoplan, 2018.

For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:

- 93,500 for motorway infrastructures
- 84,500 for high-speed railway infrastructures. I

Table 58 – Cost factors for costs of habitat damage EU28

| Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | Rail €/((km *a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) |
|---|--------------------|--------------|--------------------|----------------|-------------------------------------|--------------------------------|
| | Motorways | Other roads | High-speed | Other railways | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |

Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).

According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:

- ensure that at least 30% of the EU territory is made up of natural areas
- restore at least 30% of damaged ecosystems



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| | | <ul style="list-style-type: none">• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>For the new infrastructure designed promoted by RFI, the analysis of the reference context in terms of biodiversity is one of the main tools for the prevention of potential significant impacts on the environment, already in the phase of choosing the corridor and the route.</p> <p>In fact, starting from a study of a large area, and in the context of route choices that respect the geometric and functional constraints of the work, the solution is identified that has the greatest characteristics of sustainability also minimising interference with parks, protected areas and Natura 2000 sites.</p> <p>Evidence of this design focus and of all the actions aimed at mitigating the construction and operation phase of the infrastructure, is provided in the Environmental Impact Study and, if necessary, in the Incidence Report.</p> <p>With regard to Natura 2000 sites, if the design solution as selected above in any case directly or indirectly (5 km range) concerns a Site of Community Interest/Special Conservation Areas and/or a Special Protection Area, the Impact Assessment procedure Environmental is integrated by the Environmental Impact Assessment Procedure.</p> <p>The Incidence Report examines all possible alterations on the habitats and on the protected animal and plant species, also by means of precise surveys in the field.</p> |
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5.8 Strengthening regional lines - Upgrading of regional railways (management RFI)

| DNSH ASSESSMENT | |
|------------------------|---|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 8. Strengthening regional lines - Upgrading of regional railways (management RFI) |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



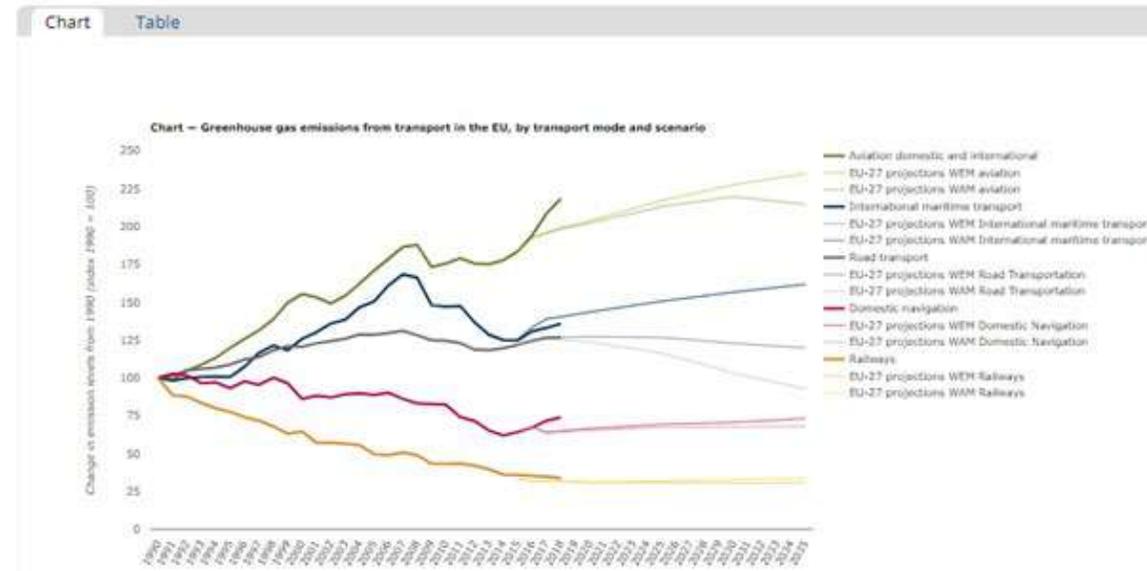
| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network - T "(code 065) have a Coefficient for calculating support for climate change targets equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <p><i>a) ... (omission)</i></p> <p><i>b) ... (omission)</i></p> <p><i>c) the increase in clean or climate-neutral mobility;</i></p> <p><i>d) ... (omission)".</i></p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



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| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <ul style="list-style-type: none">• by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;• by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users. <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
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Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.

Regional railway lines are 43% electrified and, for these, the GHG emission is indirect, as it is connected to the production of electricity.

The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen traction.

In terms of CO₂ emissions, various scientific studies have compared the different modes of transport.

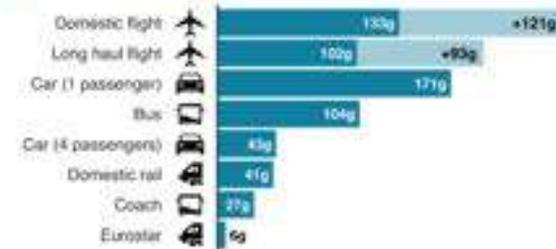


Below is an effective representation of the lower impact in terms of CO2 emissions by the railway carrier compared to other modes of transport.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: BGS/Delft Greenhouse Gas Conversion Factors 2019

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| Passenger car - petrol | 32.02 | 1.22 | 1.97 |
| Passenger car - diesel | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |

As an example, the following average values were compared:

- passenger car (petrol) = 1.22 €-cent/pkm



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| | | <p>- passenger train diesel = 0.34 €-cent/pkm</p> <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> <p>The cluster of investments relating to Strengthening regional lines includes interventions for the infrastructural and technological upgrading of existing lines (i.e. electrification). These investments are all aimed at increasing safety levels and significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network. In particular, benefits are expected for the passenger segment due to the increase in the speed of</p> |
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| | | <p>the new railway lines and the elimination of the subjection to the formation of the timetable connected to the presence of the limitations on line speed Added to these are the foreseeable benefits associated with improving the accessibility of areas that are not currently served by the railway carrier.</p> <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GHG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).</p> |
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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport. In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy systems, which limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> |
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| | | <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none"> - hydraulic verification of river crossing works; - hydraulic verification of the drainage systems of the railway and road platform. <p>The cluster of investments relating to Strengthening regional lines includes interventions for the infrastructural and technological upgrading of existing lines (i.e. electrification). These are investments that involve the construction of railway lines according to the best technical standards. Consider of the verification and adjustment of the free railway bridge sides over rivers with changed hydraulic regime.</p> |
| <p>3. Sustainable use and protection of water and marine resources</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For work on regional railway lines, where necessary, the Environmental Impact Study and the Environmental Project of the Construction Site will be drafted to represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The components in question are usually subjected to Environmental Monitoring in order to verify that, as planned, they are adequate for the protection of the resource itself. In fact, the Environmental Monitoring Plan verifies and controls the impact of the construction of the work on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |



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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with the highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>With the aim of maximising the resources already available, the hypothesis is being studied of reusing the armament material dismissed by the National Railway Infrastructure (off-site) in the regional lines that are less stressed in terms of traffic and speed while safeguarding safety standards.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

The cluster of investments relating to Strengthening regional lines includes interventions for the infrastructural and technological upgrading of existing lines (i.e. electrification). These investments are all aimed at increasing safety levels and significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.

As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of pollutant emissions.

For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode, as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).

As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:



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| | | <ul style="list-style-type: none"> • Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector). • Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low. • Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water. |
| <p>6. Protection and restoration of biodiversity and ecosystems</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Transport infrastructures have different effects on nature, landscape and natural habitats.</p> <p>The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.</p> <p>In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.</p> <p>The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en EcoPlan, 2018.</p> <p>For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:</p> <ul style="list-style-type: none"> - 93,500 for motorway infrastructures - 84,500 for high-speed railway infrastructures. I |



Table 58 – Cost factors for costs of habitat damage EU28

| Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | Rail €/((km *a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) |
|---|--------------------|--------------|--------------------|----------------|-------------------------------------|-----------------------------------|
| | Motorways | Other roads | High-speed | Other railways | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |

Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).

According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:

- ensure that at least 30% of the EU territory is made up of natural areas
- restore at least 30% of damaged ecosystems
- further integrate biodiversity into all policies
- set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10%

Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.



5.9 Upgrading, electrification and resilience of railways South

| DNSH ASSESSMENT | |
|------------------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 9. Upgrading, electrification and resilience of railways South |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



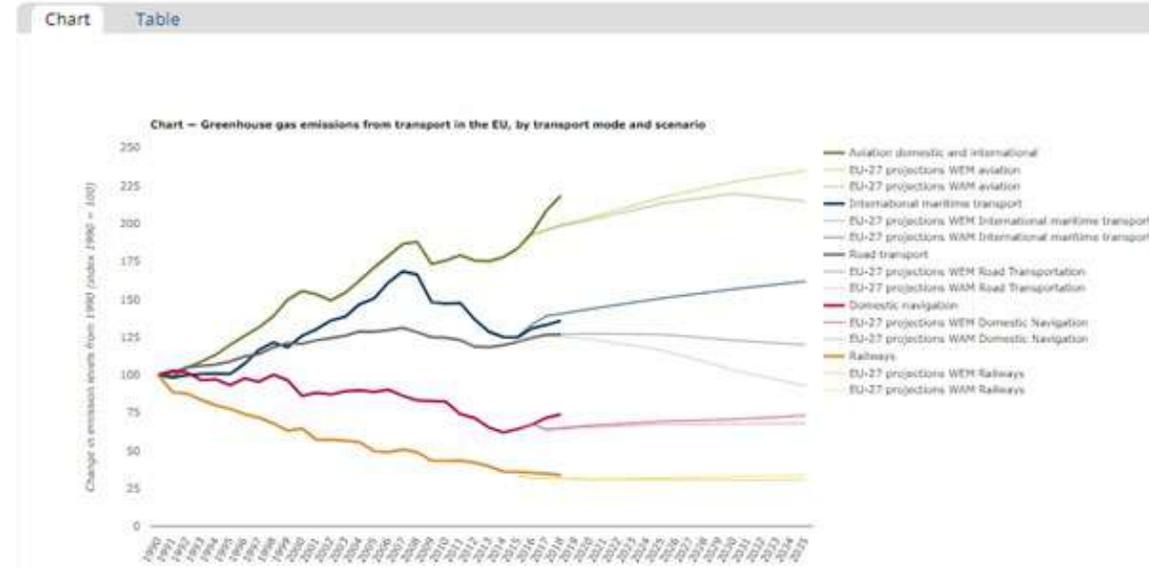
| Phase 1 | | |
|-------------------------------------|--|--|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | B. The measure appears to support this target 100% | <p>EU regulation 2021/241 of 12 February 2021, which established the Recovery and Resilience Facility, establishes in Annex VI "Climate control methodology" that the interventions relating to "Newly built or refurbished railway lines - TEN core network - T "(code 065) have a Coefficient for calculating support for climate change targets equal to 100%.</p> <p>Article 10 of EU regulation 2020/852, known as the "Taxonomy regulation" provides that:</p> <p>"An economic activity is considered to make a substantial contribution to climate change mitigation if it substantially contributes to stabilising greenhouse gas concentrations in the atmosphere to the level that prevents dangerous anthropogenic interference with the climate system in line with the long-term temperature target of the Paris Agreement by avoiding or reducing greenhouse gas emissions or increasing the absorption of greenhouse gases, including through innovative products or processes by:</p> <p><i>a) ... (omission)</i></p> <p><i>b) ... (omission)</i></p> <p><i>c) the increase in clean or climate-neutral mobility;</i></p> <p><i>d) ... (omission)".</i></p> <p>Green House Gases (GHG) are those gases that are transparent to solar radiation entering the Earth, but are able to consistently retain the infrared radiation emitted by the Earth's surface, the atmosphere and clouds. The most impacting GHGs for the increase in the greenhouse effect are: CO₂, N₂O, CH₄ and emissions from the aviation sector.</p> <p>The green transition and sustainability are the cornerstones for Europe's recovery towards a zero-emissions society.</p> <p>In 2011, the White Paper on transport set the following targets: by 2030, rail, together with waterways, will have to attract 30% of road freight transport on distances over 300 km and 50% by 2050.</p> |



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| | | <p>As part of the European Green Deal, with reference to Climate Actions, the European Commission in September 2020 proposed to raise the goal of reducing CO₂ and climate-altering gas emissions from 40% to 55% by 2030 (compared to 1990 levels), and climate neutrality by 2050.</p> <p>Furthermore, the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final], an integral part of the Green Deal agenda, published by the EC in December 2020, requires the transport sector to transform towards a net 90% drop in emissions by 2050.</p> <p>The targets of the SSMS are particularly challenging:</p> <ul style="list-style-type: none">• by 2030, collective line transport of less than 500 km must be zero-emission, inter-modal transport by rail and inland waterway must be able to compete with road transport in the EU, rail freight traffic must increase by 50% while high-speed traffic will have to double across Europe;• by 2050: high-speed rail traffic must triple, rail freight traffic must double, the multi-modal trans-European transport network (TEN-T) will be fully operational for sustainable and intelligent transport with high-speed connectivity, all external intra-EU transport costs must be covered by transport users. <p>At the basis of the Commission's attention to the development of rail transport is the recognition that the development of the railway mode contributes to the reduction of Green House Gas (GHG) emissions and that CO₂, N₂O, CH₄ are among the most impacting for the increase of the greenhouse effect.</p> <p>In fact, according to the Commission's estimates, rail transport produces only 0.5% of the overall GHG emissions emitted by the European transport sector (EU-28, 2017 data).</p> <p>In fact, as stated by The European Environment Agency, railway emissions (albeit calculated for diesel trains only), constitute only a small percentage of total transport emissions.</p> |
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Fig. 2: Greenhouse gas emissions from transport in the EU, by transport mode and scenario



Source: (<https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>)

The National Recovery and Resilience Plan foresees huge investments for the railway sector aimed at the design and construction of new infrastructures within the core and global TEN-T network that will contribute to improving the efficiency and competitiveness of the railway carrier and promote the shift from other modalities that produce higher amounts of GHG.

The Italian railway lines are 72% electrified and, for these, the GHG emission is indirect, as it is connected to the production of electricity.

The investments envisaged in the NRRP concern: upgrading of already electrified lines, electrification of diesel traction lines, upgrading of lines for the planned transition to hydrogen traction.

In terms of CO₂ emissions, various scientific studies have compared the different modes of transport.

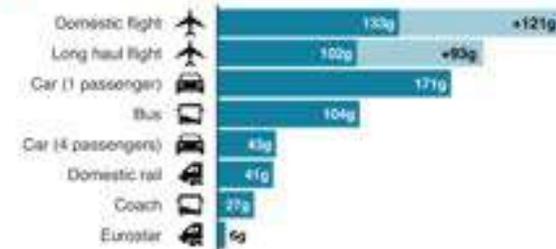


Below is an effective representation of the lower impact in terms of CO2 emissions by the railway carrier compared to other modes of transport.

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions



Note: Car refers to average diesel car

Source: BGS/Delft Greenhouse Gas Conversion Factors 2019

The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for land transport (EU28 average).

| Passenger transport | Total costs EU28 | Average costs | |
|----------------------------------|------------------|----------------|----------------|
| | Billion € | €-cent per pkm | €-cent per vkm |
| Passenger car | 55.56 | 1.18 | 1.90 |
| Passenger car - petrol | 32.02 | 1.22 | 1.97 |
| Passenger car - diesel | 23.54 | 1.12 | 1.80 |
| Motorcycle | 1.47 | 0.89 | 0.94 |
| Bus | 0.84 | 0.47 | 8.83 |
| Coach | 1.61 | 0.44 | 8.66 |
| Total passenger road | 59.49 | | |
| Passenger train diesel | 0.22 | 0.34 | 20.1 |
| Total passenger transport | 59.71 | | |

As an example, the following average values were compared:

- passenger car (petrol) = 1.22 €-cent/pkm



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| | | <p>- passenger train diesel = 0.34 €-cent/pkm</p> <p>The costs of climate change for electric trains are only attributable to emissions from the production of electricity from non-renewable sources.</p> <p>The commitment of the Ferrovie dello Stato Italiane Group (FS Group), of which RFI is a part, for the fight against climate change has always characterised the modus operandi of the Group itself and, in 2019, led to the definition of the target of achieving carbon neutrality by 2050.</p> <p>In 2020, the FS Group's correct management of climate issues was formally recognised by the Carbon Disclosure Project (CDP- a non-profit organisation that is responsible for evaluating the environmental performance of the largest industrial groups) by obtaining an "A-" rating. ("Leadership" range) and being above the average of the global, European and sector level companies analysed by the organisation. The FS Group, in particular, was recognised for the implementation of current best practices in the fight against climate change, positively evaluating the completeness of the information, the awareness and management of environmental risks and the activation of the associated best practices. environmental leadership, which includes setting ambitious goals.</p> <p>The achievement of the targets set by the European Commission requires a great commitment for the transport sector and in particular the railway sector if we consider that, according to the National Account of Infrastructures and Transport (CNIT), passenger traffic in Italy is 91.5 % on road (882 billion passenger-kilometres in terms of private road transport, extra-urban public transport and public urban transport), while rail represents about 6% of passengers against 7.8% in Europe (COM (2021) 5 final , EU).</p> <p>At the same time, 54.5% of goods travel by road (about 100 billion tonne-km) and about 11% by rail compared to 18.7% in Europe (COM (2021) 5 final, EU).</p> <p>The railway investments eligible for the Recovery Fund will contribute significantly in terms of modal shift from road transport to rail transport and consequently will produce a reduction in CO2 emissions.</p> <p><u>Passenger transport</u></p> <p>In 2019, limited to land transport only (road + rail), equal to 938 billion pax.km, the modal split was:</p> |
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| | | Transport mode | Modal share |
|------------------------------|-------------|--|-------------|
| | | Railway transport | 6% |
| | | Extra-urban public transport | 10% |
| | | Urban public transport | 2% |
| | | Private road transport | 82% |
| | | <i>Source: CNIT 2018-2019</i> | |
| | | At 2030, with the entry into operation of the investments presented in the Recovery Fund, the modal share is estimated to be: | |
| Transport mode | Modal share | | |
| Railway transport | 10% | | |
| Extra-urban public transport | 11% | | |
| Urban public transport | 2% | | |
| Private road transport | 77% | | |
| | | This modal shift is reflected in terms of CO2 saved by passenger road vehicles for a value of approximately 2.3 million tonnes per year . | |
| | | <u>Freight Transport</u> | |
| | | In the case of freight transport, the traffic data for 2019 were considered, which indicate the total value and the following modal breakdown at approximately 200 billion tonnes km | |



| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 10.7% |
| Coastal maritime navigation | 29.3% |
| Inland waterways | 0.0% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 54.5% |
| Oil pipelines (> 50km) | 4.8% |

Source: CNIT 2018-2019

By applying a prudential shift of about 10% from road to rail by 2030 (the long-term targets include 50% road transport, 50% rail transport by 2050 excluding transport by sea and air and excluding transport on routes shorter than 300km), the following modal share was estimated:

| Transport mode | Modal share |
|-----------------------------|-------------|
| Railway transport | 16.5% |
| Coastal maritime navigation | 30% |
| Inland waterways | 0.1% |
| Air navigation | 0.6% |
| Road transport (> 50km) | 47.7% |
| Oil pipelines (> 50km) | 5.1% |

This breakdown makes it possible to quantify the CO2 savings from heavy road vehicles from 2030 equal to approximately **400,000 tonnes per year**.



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| | | <p>Overall, therefore, starting from 2030 it is reasonable to assume that the eligible investments in the Recovery Fund will contribute to the achievement of the long-term targets both in terms of modal share and in terms of CO2 savings (approximately 2.8 million tonnes of CO2 from transport passenger and freight road).</p> <p>These forecasts have been developed considering all the investments envisaged in the NNRP and constitute a challenging target but which is deemed achievable, if the hypotheses relating to the response of the Railway Companies for the services offered, to the demand for railway mobility and to the situation are also confirmed with specific regard to economic conditions, transport policies, technological innovations and transformations in progress (energy mix, electric mobility, hydrogen mobility).</p> <p>In the cluster of investments related to <i>Upgrading, electrification and resilience of railways South</i> the interventions to upgrade existing lines in the south are included, which can be grouped into the following categories:</p> <ul style="list-style-type: none">a) Electrification (i.e. Electrification and modernisation of the Barletta-Canosa line, Electrification and acceleration of Roccaravindola-Isernia-Campobasso, Electrification of the Ionian line, Catanzaro Lido - Crotona - Sibari line, Potenza - Foggia railway line - modernisation and electrification)b) Infrastructural and technological upgrading (i.e. Venafro upgrade - Campobasso - Termoli, Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme upgrade, Pescara-Foggia upgrade, Palermo - Agrigento - Porto Empedocle lower upgrade, Taranto-Brindisi technological upgrade)c) Variants/Doubling/Acceleration (i.e. Doubling Codogno-Cremona-Mantova 1st phase, Doubling Decimomannu-Villamassargia 1st phase, New Ferrandina-Matera La Martella Line)d) Railway connections with airports (i.e. Arechi-Pontecagnano Airport section, Brindisi airport railway connection, Olbia airport railway connection)e) Connection with ports and terminals (i.e. New Cagioni station and connection with new Logistic Plate, Bari Lamasinata freight terminal, Brindisi inter-modal hub, Trapani Birgi inter-modality and accessibility, Port connection and Augusta bypass)f) Improvement of accessibility (i.e. Taranto station underpass)g) South line resilience plan. |
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| | | <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.</p> <p>As a result of the greater competitiveness of the railway carrier, a shift from other methods is expected, which are more impacting in terms of GHG emissions.</p> <p>For more precise assessments relating to individual investments, it is necessary to develop a multi-modal traffic analysis that compares the "project situation" with the "reference situation" and arrive at a quantification of the new modal distribution and the foreseeable shift towards the railway mode , as required by European regulations for the preparation of Cost-benefit Analysis (Guide to Cost-benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020 - December 2014).</p> |
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| <p>2. Adaptation to climate change</p> | <p>B. The measure appears to support this target 100%</p> | <p>The adoption of the "European Strategy for Adaptation to Climate Change" in 2013 aimed at making Europe more resilient, promoting greater awareness on the issue, for example through the implementation of the Climate-Adapt platform and supporting the actions taken by member States on adaptation.</p> <p>The target of improving the ability to react to the impacts of climate change at EU level requires the progressive integration of adaptation to climate change into EU policies, especially in priority sectors such as energy and transport. In 2015, the Ministry of the Environment and Land and Sea Protection (MATTM) defined the "National Strategy for Adaptation to Climate Change" (NSAC) to be implemented through the adoption of an action plan/sectoral action plans that define the schedules and methods of implementation.</p> <p>In this sense, in 2016, the Ministry of the Environment commissioned the Euro-Mediterranean Centre on Climate Change (CMCC) to draft the National Plan for Adaptation to Climate Change (NPACC), in order to contain the vulnerability of natural, social and economic systems, increase their adaptability and resilience and promote the coordination of actions at different levels of government. In particular, the NPACC, currently being approved, provides for a process of integration (mainstreaming) on the issues of adaptation (and therefore also in transport) organised over several levels in an attempt to translate the more general objectives of climate policies into operational guidelines and actions on the territory, also through the involvement of RFI and ANAS.</p> <p>With specific reference to transport infrastructures, adaptation strategies take the form of measures aimed at reducing vulnerabilities, increasing their resilience and consequently reducing the number and frequency of inefficiencies, repair and maintenance costs.</p> <p>In response to the Next Generation EU (NGEU) initiative, on 12 January, the Government presented the National Recovery and Resilience Plan (NRRP) which sets the fight against and adaptation to climate change among its objectives. In particular, for Mission 3 the NRRP provides:</p> <p><i>"A better and more extensive railway network and a smart road network, safer thanks to the control and management of traffic flows and more resilient in the face of climate change and its ageing, are essential to help increase the competitiveness of the country, fill the gap between north and south, guaranteeing rapid and efficient connections between the east and west of the peninsula and standardising the quality of transport services throughout the national territory."</i></p> <p>The new railway works are designed to maximise the useful life of the infrastructure. In design terms, this is implemented with choices aimed at guaranteeing the durability of the expected performance, also through redundancy systems, which limit the need for extraordinary maintenance work. These principles are combined with criteria of resilience to climate change in order to reduce the risks related to them.</p> |
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| | | <p>An "adaptation" approach of the design of railway infrastructures to climate change involves the use of the outputs produced by the weather-climatic models developed by the Intergovernmental Panel for Climate Change (IPCC), reported in the document "The future climate in Italy: analysis of the regional models "drawn up by the Higher Institute for Environmental Protection and Research (ISPRA) in 2015, in relation to climate change and extreme weather events in:</p> <ul style="list-style-type: none"> - hydraulic verification of river crossing works; - hydraulic verification of the drainage systems of the railway and road platform. <p>RFI is among the main beneficiaries of the National Operational Program financed by the ERDF. As part of the National Operational Program (NOP), the systematic completion of "Form A" - Indicator 6 "Studies/Works of adaptation to climate change" is envisaged, in which some "Soft", "Green", "Gray" actions in the design or used in the context of sharing design choices with the territory are identified.</p> <p>In the cluster of investments related to Upgrading, electrification and resilience of railways South the interventions to upgrade existing lines in the south are included, which can be grouped into the following categories:</p> <ol style="list-style-type: none"> a) Electrification (i.e. Electrification and modernisation of the Barletta-Canosa line, Electrification and acceleration of Roccaravindola-Isernia-Campobasso, Electrification of the Ionian line, Catanzaro Lido - Crotona - Sibari line, Potenza - Foggia railway line - modernisation and electrification) b) Infrastructural and technological upgrading (i.e. Venafrò upgrade - Campobasso - Termoli, Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme upgrade, Pescara-Foggia upgrade, Palermo - Agrigento - Porto Empedocle lower upgrade, Taranto-Brindisi technological upgrade) c) Variants/Doubling/Acceleration (i.e. Doubling Codogno-Cremona-Mantova 1st phase, Doubling Decimomannu-Villamassargia 1st phase, New Ferrandina-Matera La Martella Line) d) Railway connections with airports (i.e. Arechi-Pontecagnano Airport section, Brindisi airport railway connection, Olbia airport railway connection) e) Connection with ports and terminals (i.e. New Cagioni station and connection with new Logistic Plate, Bari Lamasinata freight terminal, Brindisi inter-modal hub, Trapani Birgi inter-modality and accessibility, Port connection and Augusta bypass) f) Improvement of accessibility (i.e. Taranto station underpass) g) South line resilience plan. <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network</p> |
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| 3. Sustainable use and protection of water and marine resources | A. The measure has no or negligible impact on this target | <p>The use of water resources generally involves - or could lead to - negative impacts (i.e. negative externalities) on other potential users. The main negative externalities are linked to the impairment of the quality of the water contained in the water bodies from which it is withdrawn, due to polluting activities.</p> <p>For the new infrastructure projects promoted by RFI, the Environmental Impact Study and the Environmental Project of the Construction Site represent the main tool for the identification, prevention, evaluation and identification of management and mitigation measures of potential impacts on the environment. related to the construction phase of the works, contributing to the principle of sustainable use, reuse and protection of the water resource. The Environmental Monitoring Project is also drafted from the design phase to identify the points to be monitored on potentially critical factors as resulting from the results of the Environmental Impact Study.</p> <p>In fact, said Monitoring verifies and controls the impact of the construction of the work also on the superficial and deep hydro-geological system, in order to prevent alterations and possibly plan effective containment and mitigation interventions.</p> <p>The risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into consideration in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive).</p> |
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| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>In the National Recovery and Resilience Plan (NRRP) it is recalled that investments in the Circular Economy intervene on a process aimed at producing secondary raw materials from waste materials to make Italy less dependent on the supply of raw materials and consequently stronger and competitive on international markets.</p> <p>The NRRP also foresees a regulatory reform intervention, called “Circularity and traceability” aimed at promoting administrative simplification in the field of circular economy and the implementation of the European action plan for the circular economy. The latter will aim to improve the organisation and operation of the waste control and traceability system, to strengthen eco-design and industrial symbiosis, reducing waste production upstream and to strengthen Italy's position as a country with</p> <p>the highest circular reuse rates in Europe.</p> <p>The circular economy envisages reducing the consumption of resources and raw materials and is therefore also connected to the design principles of the railway infrastructure which, by maximising durability and useful life, reduce extraordinary maintenance interventions. The main environmental problems related to the waste sector are attributable to the consequences caused by the different types of disposal or recovery adopted: polluting emissions from landfills or incinerators, soil contamination, negative perceptual effects, pollution problems potentially associated with recycling or recovery, etc.</p> <p>As a European reference, we recall the "Waste Strategy Review", in which waste management is placed in descending order of preference: Reduction at source; Reuse; Recovery; Incineration with energy recovery; Disposal in controlled landfills.</p> <p>Rete Ferroviaria Italiana, operates in a sector oriented towards the sustainable development of the country and every day works for the construction of a new scenario of mobility and progress focused on people and the environment. In this context, RFI has cultivated an important tradition in favour of the development of policies and practices of circular economy and energy transition, capable on the one hand of minimising the impacts of production activities and on the other of maximising the utility and value of railway assets.</p> <p>In the construction and maintenance of the infrastructure, RFI produces a large quantity of construction and demolition materials, mainly consisting of excavated earth and rocks and excavated railway rubble. The treatment and management of excavated earth and rocks has been subject, over the last few years, to various regulatory changes, up to the implementation of article 5 of Directive 98/2008/EC, implemented with the introduction of art. 184-bis in the Consolidated Environmental Law. The Directive governs measures and criteria to be met to establish whether specific</p> |
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| | | <p>substances or objects can be considered by-products or waste. The implementation of the principle outlined in article 184-bis has therefore given rise to Ministerial Decree 161/2012 which then evolved into the current Presidential Decree 120/2017 containing the simplified regulation of the management of excavated earth and rocks. This regulation establishes that earth and rocks coming from excavations in the construction sector can sometimes present themselves as materials to be considered as real "products" to be reused to replace the natural resources deriving from quarry "exploitation". RFI therefore proceeded to adapt its procedures (design manuals and tender specifications) to proactively respond to EU principles, achieving very high standards in the European construction landscape. As part of the RFI Civil Works Design Manual, the procedural system to be adopted both in the design phase and in the execution phase of the interventions aimed at maximising the reuse of excavated earth and rocks in the same works of origin or, alternatively, in other works or industrial processes was defined so as to reduce, on the one hand, the production of special waste and, on the other, the need to procure virgin quarry material, promoting the transition towards the circular economy.</p> <p>Only in the event that the material does not meet the environmental characteristics or performance criteria, RFI admits its management as waste. Also in this case the procedural system is such as to promote the delivery of waste for recovery rather than disposal with the aim of promoting its circularity in order to guarantee its re-entry into the product cycle.</p> <p>By-products not intended for re-use in railway works are instead intended for environmental redevelopment and restoration interventions identified in synergy with local administrations, in order to identify degraded or abandoned areas or interventions of public interest and of priority importance in the areas impacted/affected by the Design.</p> |
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| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Emissions of air pollutants such as nitrogen oxides, sulphur dioxide or particulate matter, etc. have negative impacts on human health, generate material damage and losses in crops and adversely affect ecosystems.</p> <p>Investments in transport can significantly affect air quality, affecting the decrease or increase in the level of emissions of air pollutants.</p> <p>Activities that generate emissions of pollutants into the atmosphere (i.e. NO_x, SO_x, COVNM, PM_{tot}) first of all have an impact in local terms, i.e. where the transport system being assessed is produced and managed.</p> <p>There are mainly four types of impacts in terms of local emissions into the atmosphere related to the transport sector:</p> <ol style="list-style-type: none"> 1. Effects on health: due to the risk of increased respiratory and cardiovascular diseases and the relative increase in the costs of medical treatment, loss of working hours due to illness and greater risk of death; 2. Damage to agriculture: due to potential damage to agricultural products by some pollutants (i.e. NO_x, VOC, SO_x) and the relative decrease in agricultural yields; 3. Damage to materials and buildings: due to damage to buildings and façades produced by dust or corrosion processes triggered by some polluting substances, this effect in our territory is considered insignificant; 4. Loss of biodiversity: due to damage to ecosystems due to some pollutants that could alter the balance of fauna and flora, this effect in our territory is considered insignificant. <p>In the EC Delft document "Handbook on External costs of transport" the main available studies have been collected and processed to evaluate these impacts and thus provide the two main input values for estimating the externalities connected to local emissions:</p> <ul style="list-style-type: none"> • cost factors, which express health and non-health costs in terms of €/ton of substance considered; • emission factors, which express the unit values in terms of tonnes of substance considered for p-km or for v-km, or for t-km. <p>The EC Delft document - "Handbook on external costs of transport", January 2019, provides the total and unitary costs of emissions with effects on climate change for passenger ground transport (EU28 average). For the sake of brevity, only the following average values are reported:</p> <ul style="list-style-type: none"> - passenger car (petrol) = 0.33 €-cent/pkm - high speed passenger train = 0.002 €-cent/pkm <p>The competitive advantage in terms of air pollution of the railway mode compared to the road mode is evident.</p> |
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| Transport mode | Total costs EU28 Billion € | Average costs | |
|----------------------------------|-------------------------------|---------------|------------|
| | | €-cent/pkm | €-cent/vkm |
| Passenger transport | | | |
| Passenger car | 33.36 | 0.71 | 1.14 |
| <i>Passenger car - petrol</i> | 8.58 | 0.33 | 0.53 |
| <i>Passenger car - diesel</i> | 24.79 | 1.18 | 1.90 |
| Motorcycle | 1.84 | 1.12 | 1.17 |
| Bus | 1.35 | 0.76 | 14.19 |
| Coach | 2.67 | 0.73 | 14.34 |
| Total passenger road | 39.23 | | |
| High speed passenger train | 0.002 | 0.002 | 0.66 |
| Passenger train electric | 0.03* | 0.01 | 1.14 |
| Passenger train diesel | 0.52 | 0.80 | 47.0 |
| Total passenger rail | 0.55 | | |
| Total passenger transport | 39.78 | | |

In the cluster of investments related to Upgrading, electrification and resilience of railways South the interventions to upgrade existing lines in the south are included, which can be grouped into the following categories:

- a) Electrification (i.e. Electrification and modernisation of the Barletta-Canosa line, Electrification and acceleration of Roccaravindola-Isernia-Campobasso, Electrification of the Ionian line, Catanzaro Lido - Crotona - Sibari line, Potenza - Foggia railway line - modernisation and electrification)
- b) Infrastructural and technological upgrading (i.e. Venafro upgrade - Campobasso - Termoli, Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme upgrade, Pescara-Foggia upgrade, Palermo - Agrigento - Porto Empedocle lower upgrade, Taranto-Brindisi technological upgrade)
- c) Variants/Doubling/Acceleration (i.e. Doubling Codogno-Cremona-Mantova 1st phase, Doubling Decimomannu-Villamassargia 1st phase, New Ferrandina-Matera La Martella Line)
- d) Railway connections with airports (i.e. Arechi-Pontecagnano Airport section, Brindisi airport railway connection, Olbia airport railway connection)



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| | | <p>e) Connection with ports and terminals (i.e. New Cagioni station and connection with new Logistic Plate, Bari Lamasinata freight terminal, Brindisi inter-modal hub, Trapani Birgi inter-modality and accessibility, Port connection and Augusta bypass)</p> <p>f) Improvement of accessibility (i.e. Taranto station underpass)</p> <p>g) South line resilience plan.</p> <p>These investments are all aimed at significantly improving the competitiveness of the railway carrier with respect to other modes of transport, by increasing the performance of the current railway infrastructure and improving the accessibility of transport demand to the railway network.</p> <p>As reported by the "Handbook on the external costs of transport", the various negative effects that transport activities can cause in terms of soil and water pollution are considered to be, for example, those due to:</p> <ul style="list-style-type: none">• Heavy metals. There are several transport-related processes that involve the emission of heavy metals, for example, brake abrasion (both for rail and road transport), track abrasion and fuel combustion residues. To date, there are limited studies that estimate the impacts deriving from the emission of heavy metals in transport in monetary terms. However, some research has shown that these can be considered as negligible (i.e. less than 1% of the total costs of externalities related to the transport sector).• Toxic organic substances. Another consequence related to fuel combustion is the emission of toxic organic substances. However, their impact in terms of environmental pollution is relatively low.• Poor waste water management. In the context of the activities carried out in the transport sector, in the infrastructure sector and in the real estate services sector, another form of potential pollution is represented by the discharge of waste water. <p>As part of the design of new railway infrastructures and in particular those to be subjected to Environmental Impact Assessment (EIA), all the necessary studies are carried out to verify the conditions of minimum interference with the components defined by the EIA regulations, including air , water, soil, biodiversity, raw materials, acoustic and vibrational climate, etc. The environmental studies for the interventions subjected to EIA are completed by the Environmental Design of the Construction Site and by the Environmental Monitoring Plan.</p> |
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| | | <p>The studies also include the identification of the possible presence of contaminated sites in order to guide the route choices, limit interference and, if possible, redevelop and reclaim the areas.</p> <p>The Environmental Design of the Construction Site aims to identify, describe and assess the significance of the direct and indirect environmental problems that can be generated and define mitigation measures and operational procedures to contain the environmental impacts connected to the construction phase of the work.</p> <p>The measures essentially consist of direct and indirect interventions in the construction site areas, on the roads used for the construction of the work (movements between the construction site areas, roads to/from quarries and landfills, storage sites, etc.), in land storage areas, contributing to the protection of surface and deep waters, soil, biodiversity, the need for raw materials, the acoustic climate, vibrations, air quality, waste and waste materials, water discharges, harmful substances and the landscape.</p> <p>The attention to the environment, which characterises the model for the construction of sustainable railway infrastructures, is also concretely applied in the adoption, in the contract assignment phase, of specific contractual clauses which provide for the obligation for the companies carrying out the works to ensure constant and timely supervision of the environmental aspects of the construction site also through the implementation of specific environmental management systems that comply with the requirements of the international standard by the contractor.</p> <p>The Environmental Monitoring Design is drawn up in accordance with the current legislation on environmental matters, and in compliance with the guidelines in force and in compliance with the provisions of the pertinent bodies for the supervision of the various environmental components. It defines the objectives, requirements, methodological criteria, methods and timing for Before - During - After Work Monitoring, taking into account the territorial and environmental reality in which the design of the work is inserted and the potential impacts it determines both in positive and negative terms, as a result of the assessments that emerged in the analyses carried out on environmental factors as part of the drafting of the Environmental Impact Study.</p> <p>The proponent, through Environmental Monitoring activities, verifies the impact of the work on the environmental matrices by carrying out measurement campaigns in the ante-construction phase (for the characterisation of the site), during work (for the construction phase) and after (for the operating phase).</p> <p>The campaigns include investigations on the components of surface and groundwater, soil and subsoil, acoustic and vibrational climate, air quality, social environment and vegetation, flora, fauna and ecosystems.</p> |
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| | | <p>Monitoring data are entered and organised through a geographic information database, which constantly provides updates on the environmental status of the areas affected by the works, to the bodies responsible for the control and validation process of the environmental data, through specific alerting tools.</p> <p>As regards the verification of the acoustic and vibrational impact, specific forecast studies are drawn up in which the receptors present in the design's range or influence are identified and the post-work climate is characterised by means of simulations conducted with specific specialised software that take into account the characteristics of the design, territory, infrastructure and traffic planned both during the day and night. Downstream of this activity, the post-construction emission scenario is compared with the limits imposed by current legislation, in order to dimension the mitigation measures necessary to bring the acoustic climate and any vibration emissions within the standard deadlines. For vibrations, in particular, reference is made to the standard indications (UNI standards) concerning the disturbance to people.</p> |
|--|--|---|



| <p>6. Protection and restoration of biodiversity and ecosystems</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>Transport infrastructures have different effects on nature, landscape and natural habitats.</p> <p>The main effects reported in the literature are habitat fragmentation and disturbance of ecological permeability, habitat loss (loss of biocoenoses), negative effects on ecosystems due to the presence and operation of infrastructures and, finally, to the emission of atmospheric pollutants.</p> <p>In the EC Delft document “Handbook on External costs of transport” the main studies available in literature have been collected and processed to evaluate these impacts.</p> <p>The document sets out the cost factors for habitat loss and habitat fragmentation for the EU28 average. The cost factors derive from the Swiss study on the external costs of transport INFRAS en Ecoplan, 2018.</p> <p>For example, the "Total habitat damage" expressed in costs € 2016 per km and year is equal to:</p> <ul style="list-style-type: none"> - 93,500 for motorway infrastructures - 84,500 for high-speed railway infrastructures. I <p>Table 58 – Cost factors for costs of habitat damage EU28</p> <table border="1"> <thead> <tr> <th rowspan="2">Cost in €₂₀₁₆ per km and year</th> <th colspan="2">Road €/((km *a)</th> <th colspan="2">Rail €/((km *a)</th> <th rowspan="2">Aviation €/((km² *a)</th> <th rowspan="2">Inland waterways €/((km *a)</th> </tr> <tr> <th>Motorways</th> <th>Other roads</th> <th>High-speed</th> <th>Other railways</th> </tr> </thead> <tbody> <tr> <td>Habitat loss</td> <td>78,900</td> <td>1,900</td> <td>57,500</td> <td>8,200</td> <td>437,500</td> <td>6,600</td> </tr> <tr> <td>Habitat fragmentation</td> <td>14,600</td> <td>2,200</td> <td>27,000</td> <td>5,900</td> <td>0</td> <td>0</td> </tr> <tr> <td>Total habitat damage</td> <td>93,500</td> <td>4,100</td> <td>84,500</td> <td>14,100</td> <td>437,500</td> <td>6,600</td> </tr> </tbody> </table> <p>Source: Own calculations based on INFRAS, Ecoplan 2018 (External effects of transport in Switzerland 2015).</p> <p>According to the Biodiversity Strategies for 2030 foreseen for the United Nations Conference on Biodiversity 2020 (COP15), the European Parliament in terms of Biodiversity has defined the following objectives:</p> <ul style="list-style-type: none"> • ensure that at least 30% of the EU territory is made up of natural areas • restore at least 30% of damaged ecosystems | Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | Rail €/((km *a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) | Motorways | Other roads | High-speed | Other railways | Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 |
|--|--|--|---|--------------------|----------------|-------------------------------------|--------------------------------|-------------------------------------|--------------------------------|-----------|-------------|------------|----------------|--------------|--------|-------|--------|-------|---------|-------|-----------------------|--------|-------|--------|-------|---|---|-----------------------------|---------------|--------------|---------------|---------------|----------------|--------------|
| Cost in € ₂₀₁₆ per km and year | Road €/((km *a) | | | Rail €/((km *a) | | Aviation €/((km ² *a) | Inland waterways €/((km *a) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Motorways | Other roads | High-speed | Other railways | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat loss | 78,900 | 1,900 | 57,500 | 8,200 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Habitat fragmentation | 14,600 | 2,200 | 27,000 | 5,900 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total habitat damage | 93,500 | 4,100 | 84,500 | 14,100 | 437,500 | 6,600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



| | | |
|--|--|--|
| | | <ul style="list-style-type: none">• further integrate biodiversity into all policies• set up a clear spending target for biodiversity integration in the 2021-2027 long-term budget of a minimum of 10% <p>Railway infrastructures also offer the opportunity to intervene on some of these points, for example the redevelopment of damaged ecosystems, through environmental mitigation and compensation, and the restitution of natural areas, for example, following the decommissioning of railway lines.</p> <p>For the new infrastructure designed promoted by RFI, the analysis of the reference context in terms of biodiversity is one of the main tools for the prevention of potential significant impacts on the environment, already in the phase of choosing the corridor and the route.</p> <p>In fact, starting from a study of a large area, and in the context of route choices that respect the geometric and functional constraints of the work, the solution is identified that has the greatest characteristics of sustainability also minimising interference with parks, protected areas and Natura 2000 sites.</p> <p>Evidence of this design focus and of all the actions aimed at mitigating the construction and operation phase of the infrastructure, is provided in the Environmental Impact Study and, if necessary, in the Incidence Report.</p> <p>With regard to Natura 2000 sites, if the design solution as selected above in any case directly or indirectly (5 km range) concerns a Site of Community Interest/Special Conservation Areas and/or a Special Protection Area, the Impact Assessment procedure Environmental is integrated by the Environmental Impact Assessment Procedure.</p> <p>The Incidence Report examines all possible alterations on the habitats and on the protected animal and plant species, also by means of precise surveys in the field.</p> |
|--|--|--|



5.10 Upgrading railway stations in the South

| DNSH ASSESSMENT | |
|------------------------|--|
| Mission | 3 - Infrastructures for sustainable mobility |
| Cluster | 1. High-speed rail and road maintenance 4.0 |
| Project/Reform | 10. Upgrading railway stations in the South |
| Contact | MIMS/RFI |
| Date completed | 29 April 2021 |



| Phase 1 | | |
|--|---|---|
| Environmental target | Does the measure have no or negligible impact on the target or is it considered compliant with the DNSH principle for the relevant target? | Motivation if indicated A, B, C |
| 1. Climate change mitigation | A. The measure has no or negligible impact on this target | <p>In accordance with the 'Sustainable and Smart Mobility Strategy' (SSMS) [COM (2020) 789 final]] proposed by the EC in December 2020, which defines the objectives to be achieved to contribute to the reduction of emissions by 90% by 2050, as envisaged by the European Green Deal, the Measure promotes the modal rebalancing of rail transport compared to private road transport.</p> <p>The enhancement of accessibility, the smart integration between the territorial system and the railway network and the electrical upgrade of the station buildings guarantee a substantial contribution to the reduction of air pollution and road congestion in general, contributing to sustainable development.</p> |
| 2. Adaptation to climate change | B. The measure appears to support this target 100% | <p>The Measure sets out the individual interventions taking into consideration the potential threats due to climate change and responding adequately, with design and management actions of the construction and operating phases, both on the individual intervention sites and on the neighbouring areas, in coherence with the EU Strategy for Adaptation to Climate Change and in relation to the needs of the different territories involved.</p> <p>Also thanks to the use of the National System for the Collection, Processing and Dissemination of Climatological Data of Environmental Interest (SCIA), drawn up by ISPRA, the interventions define the responses to be implemented with respect to potential threats according to an informed decision-making process.</p> |



| | | |
|---|--|---|
| <p>3. Sustainable use and protection of water and marine resources</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>The foreseeable impact of the activity supported by the measure on this environmental objective is insignificant, given both the direct and primary indirect effects across the life cycle. No environmental degradation risks related to preserving water quality and water stress are identified. The investment does not affect water bodies or protected habitats and species</p> <p>For new water utilities all relevant water appliances (shower solutions, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) must be in the top 2 classes for water consumption of the EU Water Label.</p> <p>The Measure provides for the management of water resources in compliance with the requirements of Directive 2000/60/EC (Water Framework Directive) and the Plan for the Protection of European Water Resources, a strategy aimed at ensuring adequate supply in the phases of construction and management of interventions and sustainable water management, oriented to the reuse and optimisation of networks and plants.</p> |
| <p>4. The circular economy, including waste prevention and recycling</p> | <p>B. The measure appears to support this target 100%</p> | <p>With regard to new construction and demolition wastes (excluding the material in its natural state referred to the item 17 05 04 of the European List of Wastes established by Decision 2000/532 / EC) produced on the construction site, RFI undertakes to introduce selection and award criteria in the tender specifications to ensure maximum reuse, recycling and recovery of non-hazardous construction and demolition waste, including through selective demolition .</p> <p>The interventions of the Measure provide for adherence to the Certification Protocols of the Sustainability of Buildings (LEED protocol) and of Infrastructures (ENVISION protocol). On this basis, the interventions are oriented towards a perspective of "by-product synergy", both in the design phases and in those of implementation and operational management. With this approach, all excess resources or services are considered as potentially aimed at local use, outlining interconnected and more resilient systems and reducing waste and dependence on external sources.</p> <p>Operators will limit the generation of waste during construction, in accordance with the EU protocol for the management of construction and demolition waste, taking into account best available techniques to facilitate high-quality reuse and recycling through selective removal of materials, using the sorting systems available for construction waste.</p> |



| | | |
|--|--|--|
| | | <p>The procurement of construction materials according to the principles of "sustainable procurement" will constitute an incentive for the dissemination and strengthening of the principles of the circular economy.</p> <p>During the operation phase, also thanks to an organisation of the physical spaces functional to the objective, the differentiation of waste produced by operators and users will be encouraged to promote its recovery and recycling.</p> |
| <p>5. Prevention and limitation of impacts on air, water and soil quality</p> | <p>A. The measure has no or negligible impact on this target</p> | <p>The Measure promotes the modal rebalancing of rail transport compared to private road transport, thus contributing to the reduction of air pollution and road congestion in general.</p> <p>In particular, the application of the Certification Protocols for the Sustainability of Buildings (LEED protocol) and Infrastructures (ENVISION protocol) and adherence to the Minimum Environmental Criteria (CAM) defined by art. 34 of Legislative Decree 50/2016 and subsequent amendments, direct interventions towards sustainable urban development and increase connectivity and integration of the public transport network, increasing the attractiveness and accessibility of the station spaces, both internal and external, and contributing to increase in the total number of users of the railway system.</p> <p>Furthermore, the Sustainability Certification Protocols and the CAMs direct the Measure towards a significant increase in the energy efficiency of station buildings, also through the intensive use of renewable sources, and a sustainable supply of building materials, determining a substantial contribution to safeguarding of the air, water and soil matrices in the areas of intervention.</p> <p>The measure complies with existing national and regional pollution reduction plans. Furthermore, it is expected that the measure won't lead to a significant increase in emissions of pollutants to air, water or soil because:</p> <ul style="list-style-type: none"> - the operators entrusted with the construction of the building will be required to use components and building materials that do not contain asbestos or substances of very high concern included in the list of substances subject to authorization in Annex XIV of Regulation (EC) no. 1907/2006; - the ground area of the new building is located within an area already built and therefore, presumably, free of potentially contaminating substances; - measures will be taken to reduce noise emissions and emissions of dust and pollutants during construction works. <p>It is also guaranteed that:</p> <ul style="list-style-type: none"> - the components and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the European REACH regulation; - there will be taken in place, as far as possible, actions aimed at using of materials and products characterized by a low environmental impact evaluated in terms of analysis of the whole life cycle (LCA) as certified by declarations |



| | | |
|---|---|--|
| | | made by credible and recognized independent bodies (EU Ecolabel or other type I environmental labels, EPD or other type III environmental labels). |
| 6. Protection and restoration of biodiversity and ecosystems | A. The measure has no or negligible impact on this target | <p>The Measure provides for the upgrading of existing railway stations, in terms of accessibility, energy efficiency, architectural quality and user comfort. As they fall into urban areas, the interventions are not localised in sites identified as areas of high ecological value. The Measure therefore does not directly interfere with biodiversity and ecosystems, maintaining an effective buffer zone around areas of high ecological value.</p> <p>The interventions, albeit in an urban setting, will in any case be oriented towards the safeguarding and implementation of existing green areas and the creation of new green areas both outside and, where possible, inside the buildings.</p> |

Sistemi ferroviari ad Alta Velocità

Marzo 2021



Origine del sistema AV in Italia

Il sistema Alta Velocità Italiano nasce come concezione nei primi anni 90 e viene realizzato interamente nel primo decennio del nuovo secolo.

Nella prima idea l'Alta Velocità avrebbe dovuto interessare sia l'asse dorsale del paese (Milano – Napoli) sia l'asse trasversale (Torino – Venezia), costituendo una "T" di connessione tra i principali centri italiani.

Sul finire degli anni 90, il progetto fu sottoposto ad una verifica parlamentare da parte di una commissione di esperti che approvò sostanzialmente le impostazioni proposte per la tratta Torino – Milano – Napoli e chiese di rivedere la tratta Milano – Venezia con caratteristiche più improntate alla capacità piuttosto che alla velocità in ragione del fatto che sulla tratta esistevano località intermedie quali Brescia, Verona, Vicenza e Padova a breve distanza tra di loro e notevole domanda di trasporto e anche per tener conto della forte valenza del trasporto merci nel territorio attraversato.

L'impiego della dorsale, pur strettamente interconnessa con il territorio e idonea anche al traffico merci, è stato prevalentemente orientato dalle esigenze di mercato verso un esercizio dedicato ai servizi passeggeri veloci.



Evoluzione del sistema AV in Italia

AV/AC

- **Capacità**
- **Integrazione territoriale**

Milano-Venezia

I bacini intermedi tra Milano e Venezia esprimono una forte domanda di trasporto che sembra essere distribuita lungo tutta la direttrice piuttosto che tra le città estreme.

L'intera direttrice presenterà pendenze limitate, anche in ragione dell'orografia favorevole, e sagome ampie per poter consentire il transito a tutte le tipologie di traffico merci. Inoltre essendo l'estesa ridotta delle singole tratte (in media 40 km) è stata adottata una soluzione progettuale che prevede una velocità di esercizio non superiore ai 250 km/h (ad eccezione del tratto Treviglio-Brescia).

Si è dunque progressivamente passati ad un progetto della nuova linea con affiancamento all'esistente per larghi tratti e con il suo ingresso all'interno delle stazioni attuali.



Terzo Valico dei Giovi

La nuova linea di ca 50 km di cui 37 in galleria avrà una duplice valenza passeggeri e merci. Per il traffico merci, grazie ai migliori standard prestazionali e geometrici, permetterà il trasporto dei semirimorchi nonché di treni più lunghi da/per il sistema portuale ligure. Per il traffico viaggiatori sarà innalzata la qualità dei servizi LP con Milano e Torino.

Napoli-Bari

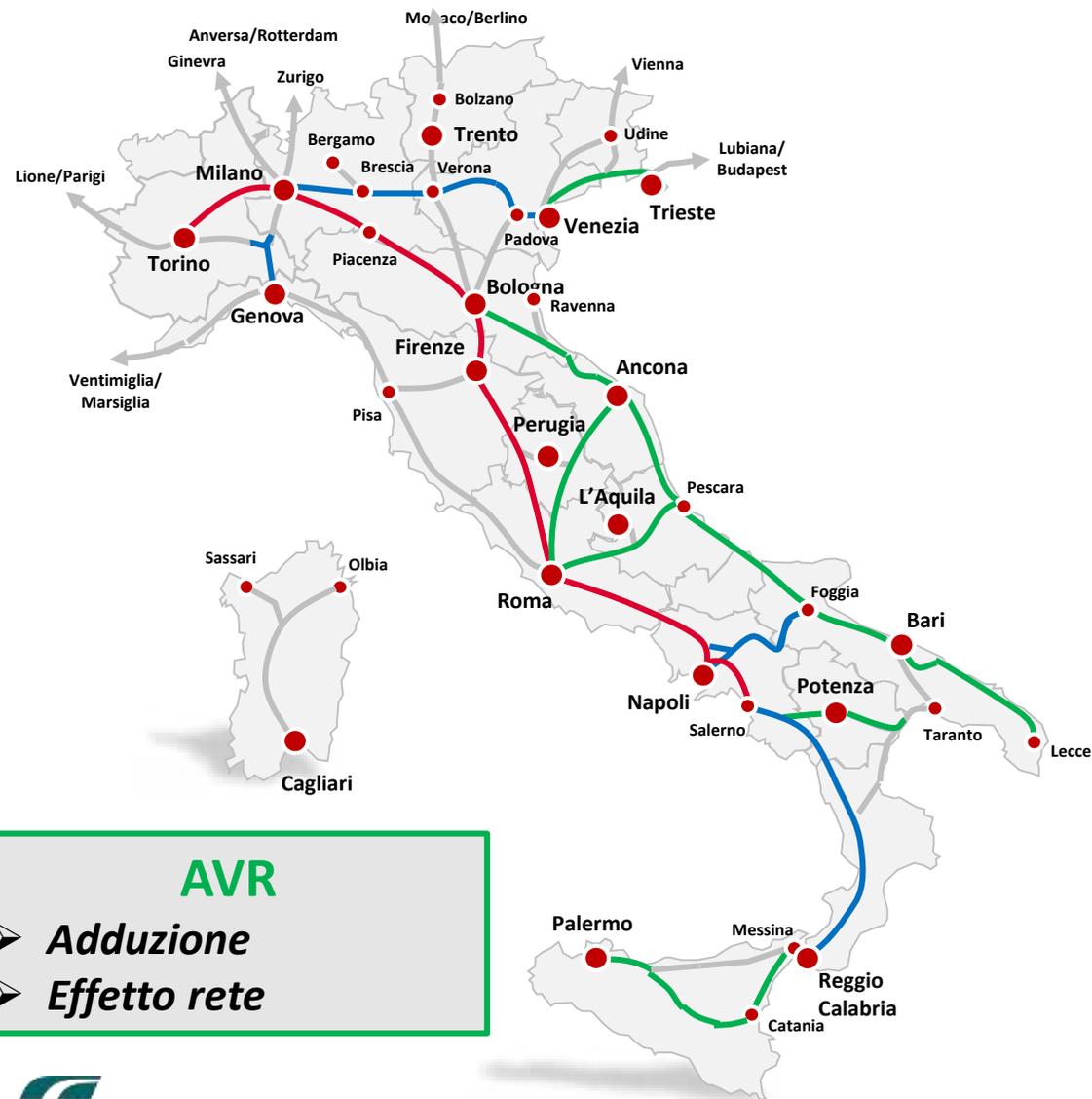
La nuova infrastruttura, permetterà un miglioramento della competitività del trasporto su ferro rispondendo alle esigenze di mobilità dei viaggiatori e, grazie anche a standard geometrici più performanti, anche delle merci.

Una delle caratteristiche principali della nuova linea sarà quella di garantire anche una perfetta integrazione con il territorio interessato attraverso la realizzazione di nuove località di servizio lungo l'itinerario (es: stazione Hirpinia).

Salerno-Reggio C.

La nuova linea AV/AC Salerno – Reggio Calabria costituisce la continuità di un itinerario strategico passeggeri e merci. Il corridoio dovrà avere una forte connotazione di accessibilità, permettendo il miglioramento dei collegamenti di rete e creando le condizioni per nuove opportunità di servizi commerciali passeggeri e merci.

Evoluzione del sistema AV in Italia



AVR

- **Adduzione**
- **Effetto rete**

Venezia – Trieste

Il progetto di potenziamento della linea Venezia – Trieste prevede, con l'eliminazione di punti singoli che oggi condizionano la velocità di tracciato, un incremento della Vmax fino a 200 km/h e riduzione del tempo di accesso al sistema AV/AC.

Orte – Falconara

Il progetto ha lo scopo di migliorare i collegamenti passeggeri tra il versante adriatico e la dorsale centrale nonché con l'Umbria e creare un itinerario merci alternativo per i collegamenti nord-sud.

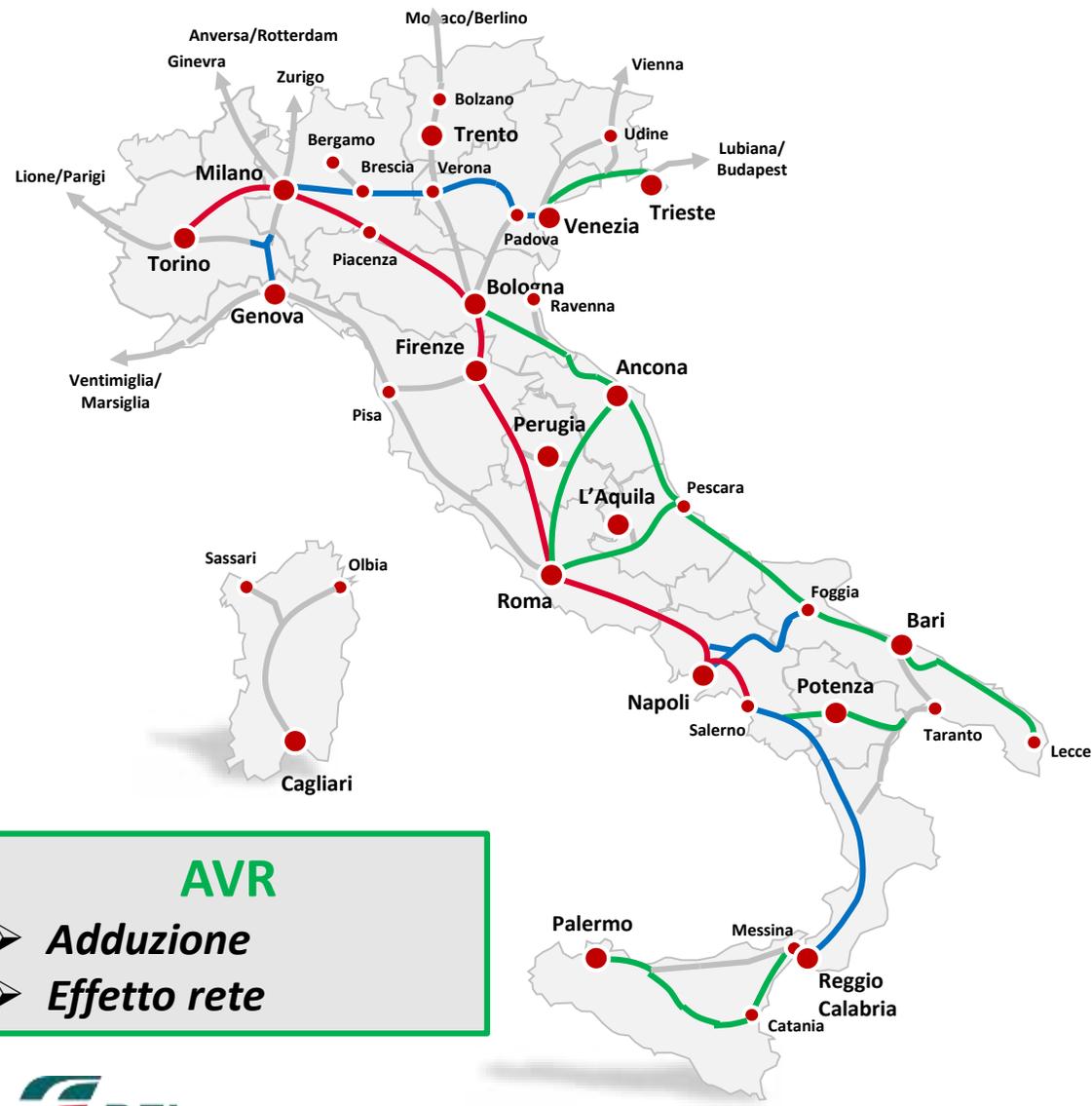
Direttrice Adriatica

Sulla Direttrice Adriatica sono previsti una serie di interventi infrastrutturali e tecnologici finalizzati alla velocizzazione della linea (tratte Bologna-Ancona, Pescara-Bari, Foggia-Bari e Brindisi-Lecce) che permetteranno un innalzamento della Vmax fino a 200 km/h. Gli interventi, per fasi funzionali, consentiranno di portare progressivi benefici sui tempi di percorrenza e sulle prestazioni della linea (sicurezza, regolarità e qualità dell'esercizio ferroviario).

Messina-Catania-Palermo

Il principale processo di potenziamento della rete ferroviaria siciliana passa attraverso l'idea di connessione tra le tre città metropolitane della Sicilia (Palermo, Catania e Messina) e le aree interne del territorio. La realizzazione di tali interventi consentirà l'adeguamento della rete esistente in linea con il processo di potenziamento che si sta predisponendo sulla rete continentale (riduzione dei tempi di percorrenza e incremento della capacità teorica)

Evoluzione del sistema AV in Italia



AVR

- Adduzione
- Effetto rete

Roma - Pescara

La soluzione infrastrutturale individuata per la Roma-Pescara, con standard tali da consentire lo sviluppo del traffico viaggiatori e merci, prevede:

- una nuova linea con velocità 200 km/h, che sfiocca dalla linea AV/AC Roma-Napoli e giunge fino a Sulmona con fermate a Mandela, Carsoli, Tagliacozzo, Avezzano;
- il raddoppio quasi integrale della linea Pescara-Sulmona, in parte su tracciato esistente, in parte in variante, come prosecuzione del raddoppio Pescara-Chieti-Interporto d'Abruzzo

L'insieme degli interventi individuati risponde a diversi obiettivi:

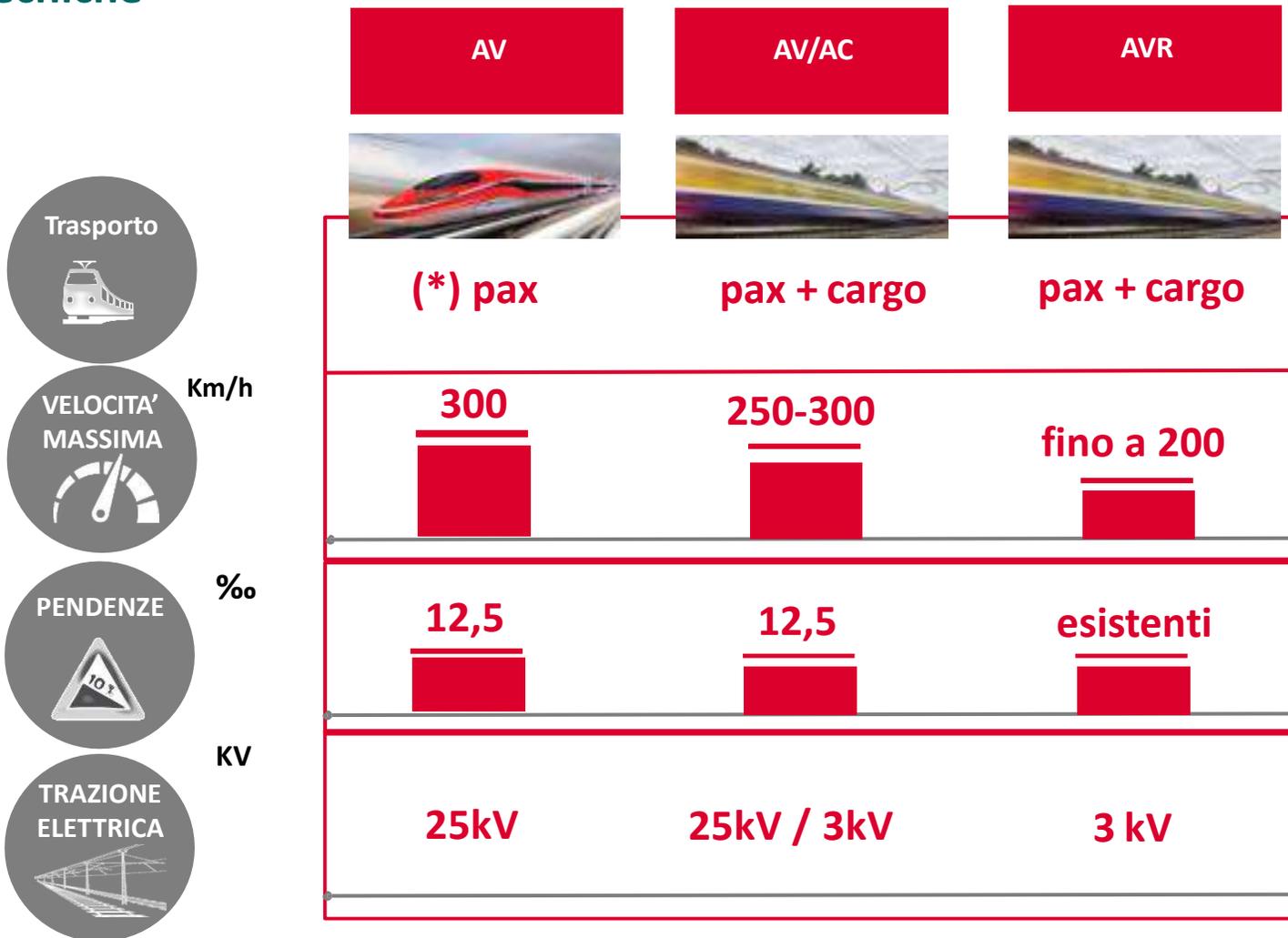
- velocizzare il collegamento lungo l'intero asse transappenninico, con tempi di percorrenza Pescara-Roma nell'ordine delle due ore
- velocizzare e sistematizzare i collegamenti Pescara-L'Aquila, con un servizio veloce all'ora per direzione
- creare un sistema metropolitano a frequenza 30', con servizio capillare al territorio, nella bassa valle del fiume Pescara
- liberare la tratta Roma-Tivoli, interessata da significative potenzialità di domanda suburbana, dalla presenza dei treni di più largo raggio

Battipaglia - Potenza - Metaponto

La linea Battipaglia - Potenza - Metaponto si estende per circa 200 km attraversando in senso longitudinale la parte centrale della Basilicata e connettendo il bacino campano di Salerno e Napoli con quello pugliese di Taranto e Brindisi. E' prevista la velocizzazione della linea con interventi di adeguamento in sede ed in variante ed hanno lo scopo di incrementare la velocità e le prestazioni sulla relazione Battipaglia - Potenza - Metaponto con recuperi di percorrenza fino a circa 30'. Saranno inoltre realizzati interventi per la razionalizzazione degli impianti di stazione con contemporaneo up-grading tecnologico e nella rimodulazione del passo tra i punti di incrocio, nonché la soppressione dei Passaggi a Livello presenti lungo la linea.

Principali differenze tra sistemi ferroviari ad Alta Velocità

Caratteristiche tecniche



(* Tipologia di servizio prevalente. In relazione alle richieste del mercato e al modello di esercizio della linea sarà possibile l'inserimento di alcune tracce merci.

Alcuni limiti sono superabili in tratti puntuali e sono possibili integrazioni tra i diversi sistemi AV.

Principali differenze tra sistemi ferroviari ad Alta Velocità

Considerazioni

- La concezione, il progetto e la realizzazione di un sistema o linea AV implica un consistente utilizzo di risorse
- Le risorse spese e il ciclo di vita utile della infrastruttura orientano a conferire alla nuova opera caratteristiche e prestazioni elevate
- Non esistono linee o reti specializzate per determinate funzioni ma le nuove opere devono assorbire sia il traffico passeggeri che merci conseguendo gli obiettivi specifici
- La configurazione finale dell'opera è l'esito conclusivo del processo di inserimento della stessa nel territorio e quindi risente di una concertazione con le Parti coinvolte volta ad ottenere una sostenibilità complessiva della nuova infrastruttura
- Tutte le tratte AV realizzate in Italia rende possibile una accessibilità al territorio attraversato

Asse AV Torino-Milano-Napoli

**Investimento di 32 miliardi di euro
(compresa realizzazione nodi AV)**



| TO-MI-NA* | |
|---------------|-----------------|
| Lunghezza | 915 km |
| Velocità max | 300 km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 5.000 m |
| Alimentazione | 25 kV ac 50 Hz |
| Segnalamento | ERTMS Livello 2 |

661 km nuove linee in esercizio

(Torino-Milano, Milano-Bologna, Bologna-Firenze, Roma-Napoli, Napoli-Salerno)
Nodo di Firenze in corso di realizzazione

| | |
|--------|---|
| 77 km | nuove interconnessioni con le linee esistenti |
| 145 km | nuove gallerie |
| 516 km | viadotti, ponti, trincee e rilevati |
| 7 | nuove stazioni |

254 km linee esistenti adeguate

(Firenze-Roma in esercizio dal 1978)

il territorio e l'ambiente

| | |
|-----|----------|
| 6 | regioni |
| 17 | province |
| 161 | comuni |

230 km (circa) di barriere antirumore
780 km (circa) di nuova viabilità e varianti viarie
1.670 ettari (circa) di interventi a verde

- tratto FI-RM (Linea DD) con standard tecnici differenti e in corso di adeguamento

Itinerario AV/AC Milano – Venezia: caratteristiche tecniche generali



Nuova linea in realizzazione. In PNRR

| Tratta AV/AC Verona-Bivio Vicenza | |
|-----------------------------------|------------|
| Lunghezza | 44,25 km |
| Velocità max | 250 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 640 m |
| Alimentazione | 3 kV cc |
| Segnalamento | ERTMS – L2 |

| Tratta AV/AC Vicenza-Padova | |
|-----------------------------|------------|
| Lunghezza | 26 km |
| Velocità max | 250 Km/h |
| Alimentazione | 3 kV cc |
| Segnalamento | ERTMS – L2 |

Nuova linea da riattivare progettazione



| Tratta AV/AC Treviglio-Brescia | |
|--------------------------------|------------|
| Lunghezza | 58,20 km |
| Velocità max | 300 Km/h |
| Pendenza max | 15 ‰ |
| Categoria | D4 |
| Raggio minimo | 5.450 m |
| Alimentazione | 2x25 kV ca |
| Segnalamento | ERTMS – L2 |

| Tratta AV/AC Brescia est-Verona | |
|---------------------------------|------------|
| Lunghezza | 47,60 km |
| Velocità max | 250 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 5.450 m |
| Alimentazione | 3 kV cc |
| Segnalamento | ERTMS – L2 |

— Rete ferroviaria — Rete stradale — Tratte/Località oggetto di intervento * Interventi diffusi

Nuova linea in realizzazione. In PNRR

Nuova linea Attivata



Itinerario Napoli- Bari



Itinerario AV/AC Napoli-Bari: caratteristiche tecniche generali

Raddoppio e velocizzazione tratta Frasso Telesino – Vitulano

| | |
|---------------|---|
| Lunghezza | 30 km |
| Velocità max | 200 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 1550 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ACCM + bab emulato 2/2 e successivo ERTMS |

Raddoppio Orsara - Bovino

| | |
|---------------|---|
| Lunghezza | 11,8 km |
| Velocità max | 250 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 3300 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ACCM + bab emulato 2/2 e successivo ERTMS |

Raddoppio Bovino - Cervaro

| | |
|---------------|----------|
| Lunghezza | 23 km |
| Velocità max | 200 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 2000 m |
| Alimentazione | 3 kv cc |
| Segnalamento | ERTMS/L2 |

Raddoppio tratta Apice –Orsara

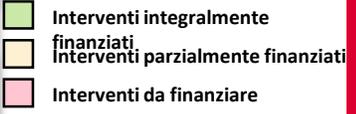
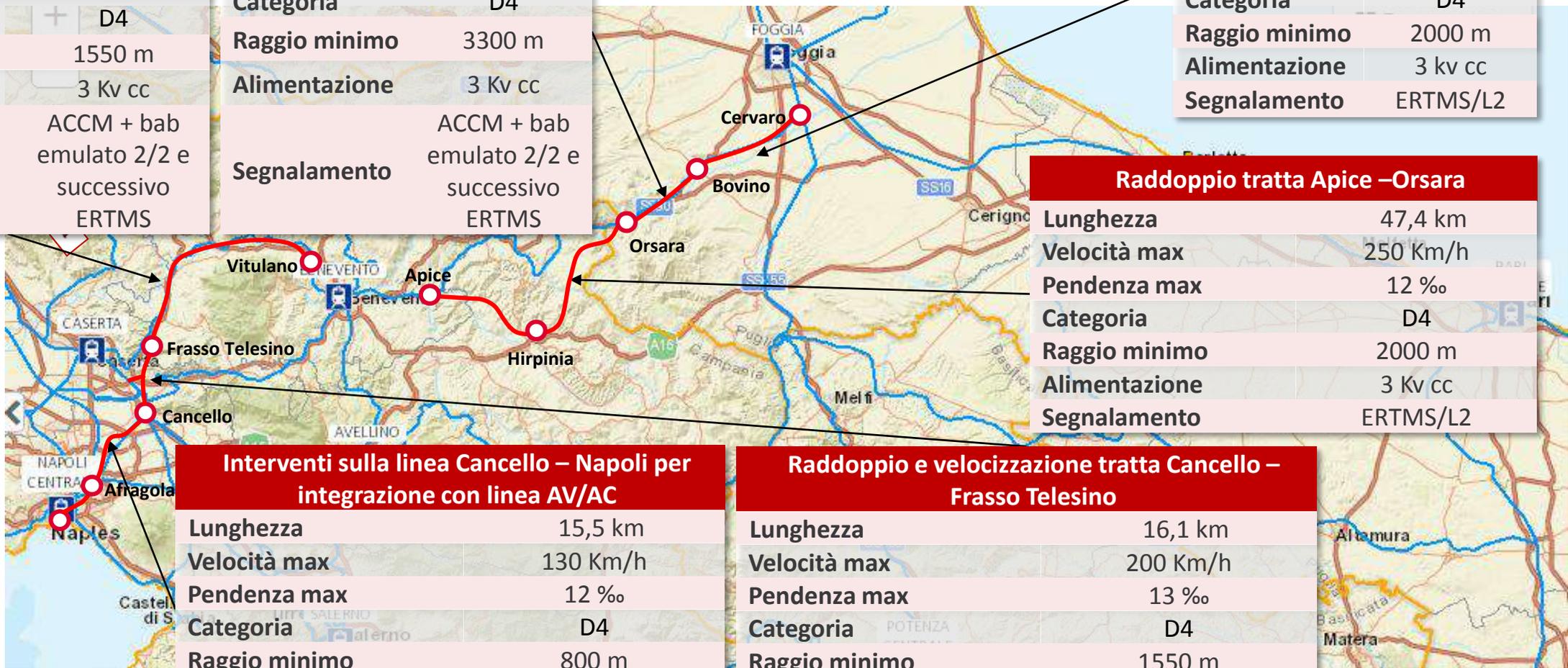
| | |
|---------------|----------|
| Lunghezza | 47,4 km |
| Velocità max | 250 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 2000 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ERTMS/L2 |

Interventi sulla linea Canello – Napoli per integrazione con linea AV/AC

| | |
|---------------|---|
| Lunghezza | 15,5 km |
| Velocità max | 130 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Raggio minimo | 800 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ACCM + bab emulato 2/2 e successivo ERTMS |

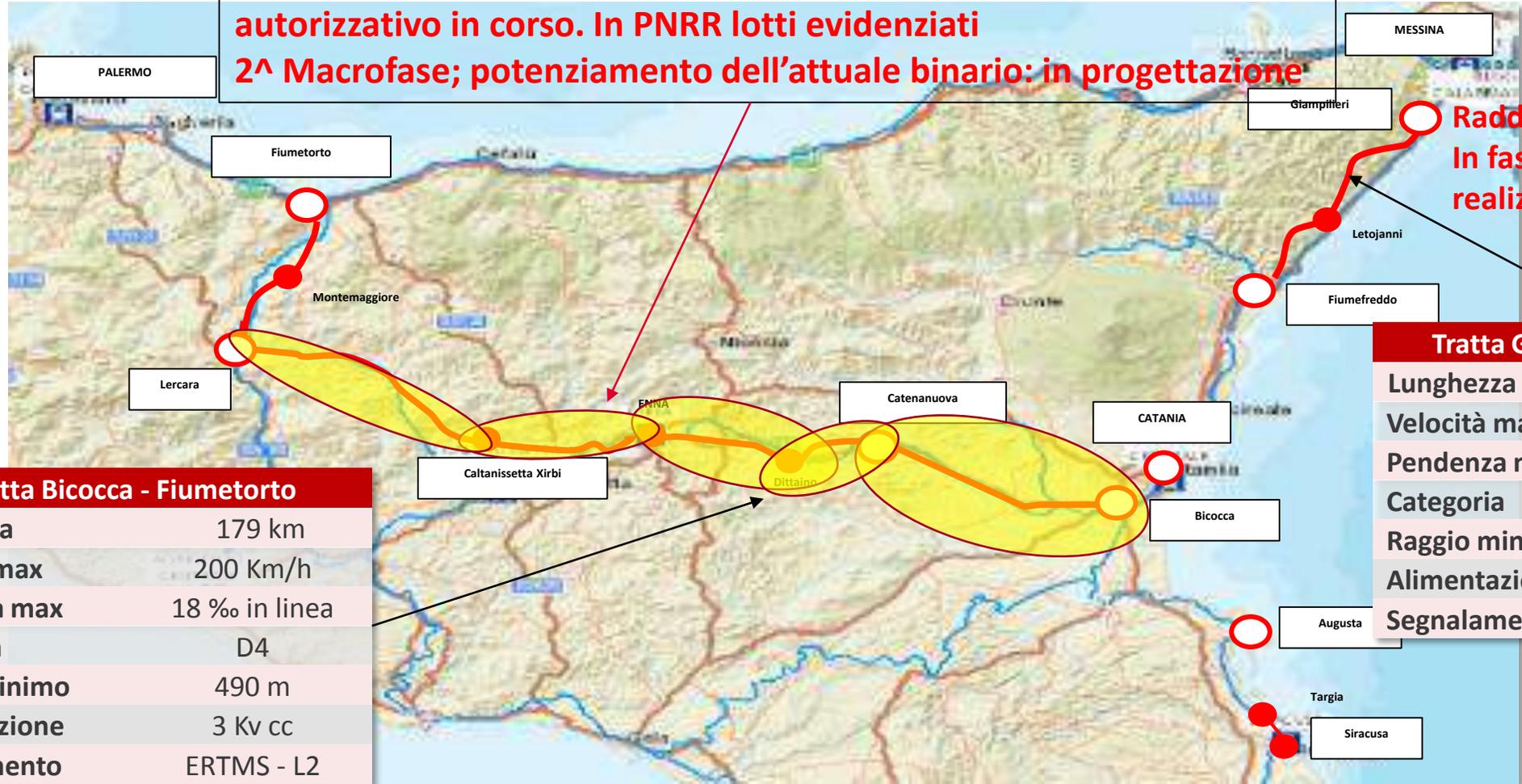
Raddoppio e velocizzazione tratta Canello – Frasso Telesino

| | |
|---------------|---|
| Lunghezza | 16,1 km |
| Velocità max | 200 Km/h |
| Pendenza max | 13 ‰ |
| Categoria | D4 |
| Raggio minimo | 1550 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ACCM + bab emulato 2/2 e successivo ERTMS |



Itinerario Messina-Catania-Palermo: caratteristiche tecniche generali

Nuovo collegamento Palermo-Catania:
1^ Macrofase: realizzazione di un nuovo binario veloce, iter autorizzativo in corso. In PNRR lotti evidenziati
2^ Macrofase; potenziamento dell'attuale binario: in progettazione



Raddoppio in variante.
In fase di affidamento
realizzazione opere

| Tratta Bicocca - Fiumetorto | |
|-----------------------------|---------------|
| Lunghezza | 179 km |
| Velocità max | 200 Km/h |
| Pendenza max | 18 ‰ in linea |
| Categoria | D4 |
| Raggio minimo | 490 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ERTMS - L2 |

| Tratta Giampileri - Fiumefreddo | |
|---------------------------------|---------------|
| Lunghezza | 42 km |
| Velocità max | 180 Km/h |
| Pendenza max | 12 ‰ in linea |
| Categoria | D4 |
| Raggio minimo | 1220 m |
| Alimentazione | 3 Kv cc |
| Segnalamento | ERTMS - L2 |



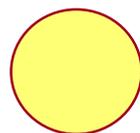
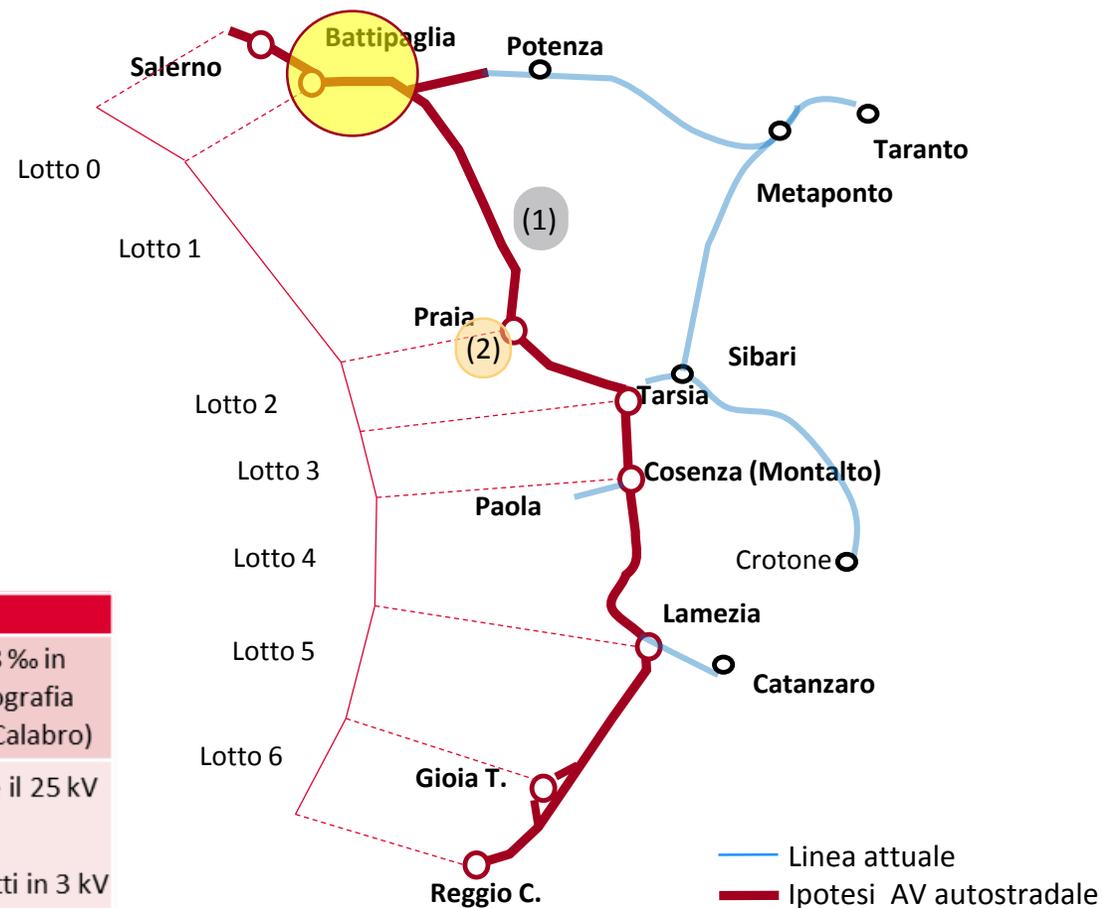
In PNRR

Nuova Linea AV/AC Salerno-Reggio C. (Nuova linea in progettazione)

Caratteristiche tecniche generali

| Caratteristiche | |
|-----------------|-------------------|
| Lunghezza | 445 km |
| Velocità max | 250/300 Km/h |
| Pendenza max | 12 ‰ |
| Categoria | D4 |
| Alimentazione | 25 kV ca/ 3 kV cc |
| Segnalamento | ERTMS Livello 2 |

| Note | | |
|-------------------------|-----------------|---|
| Pendenza massima | 12 ‰ | Possibilità di realizzare tratti al 18 ‰ in corrispondenza di territori con orografia complicata (tratto Basilicata – Alto Calabro) |
| Elettrificazione | 25 kV c.a./3 kV | Data l'orografica sarebbe preferibile il 25 kV c.a. Potrebbero essere previsti alcuni tratti in 3 kV c.c. |



Lotto prioritario Battipaglia-Romagnano in PNRR

(1) tratti con $p_{max} = 18 ‰$
(2) Velocità = 160 km/h

Asse Liguria-Alpi

PROGETTO UNICO | Nodo di Genova | Collegamenti ferroviari del Nodo di Genova (Nuova linea in realizzazione)

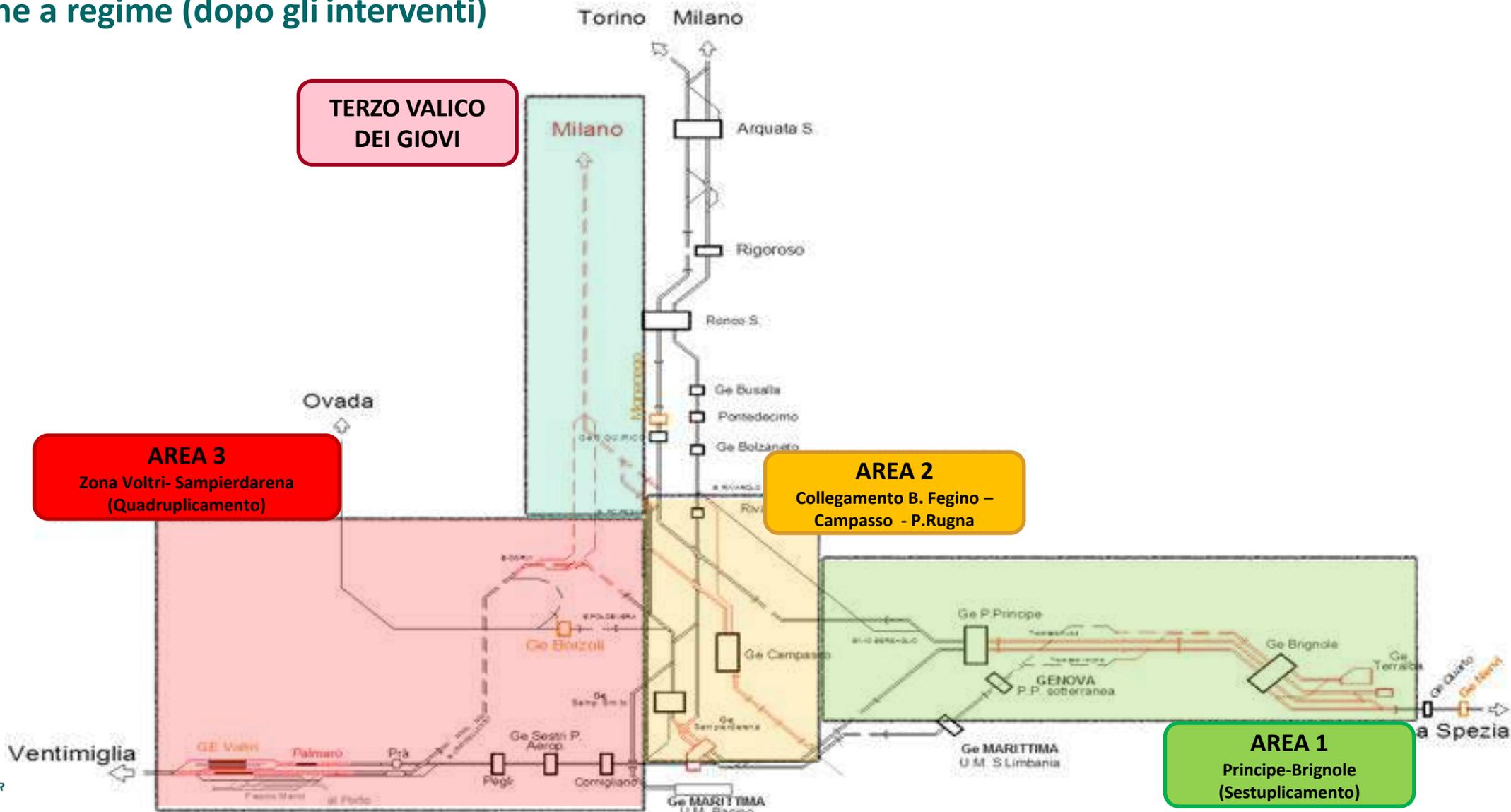
Situazione a regime (dopo gli interventi)

TERZO VALICO DEI GIOVI

AREA 3
Zona Voltri- Sampierdarena
(Quadruplicamento)

AREA 2
Collegamento B. Fegino -
Campasso - P.Rugna

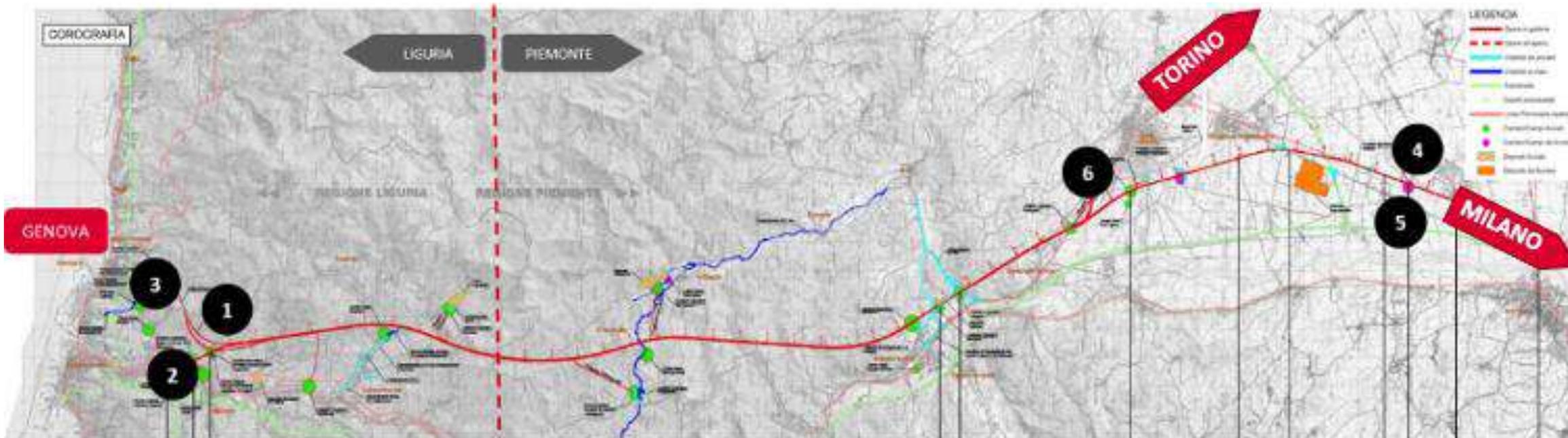
AREA 1
Principe-Brignole
(Sestuplicamento)



Terzo Valico dei Giovi

Inquadramento del progetto – Il tracciato

Scheda alternativa alla successiva



Specifiche Tecniche Generali III^ Valico

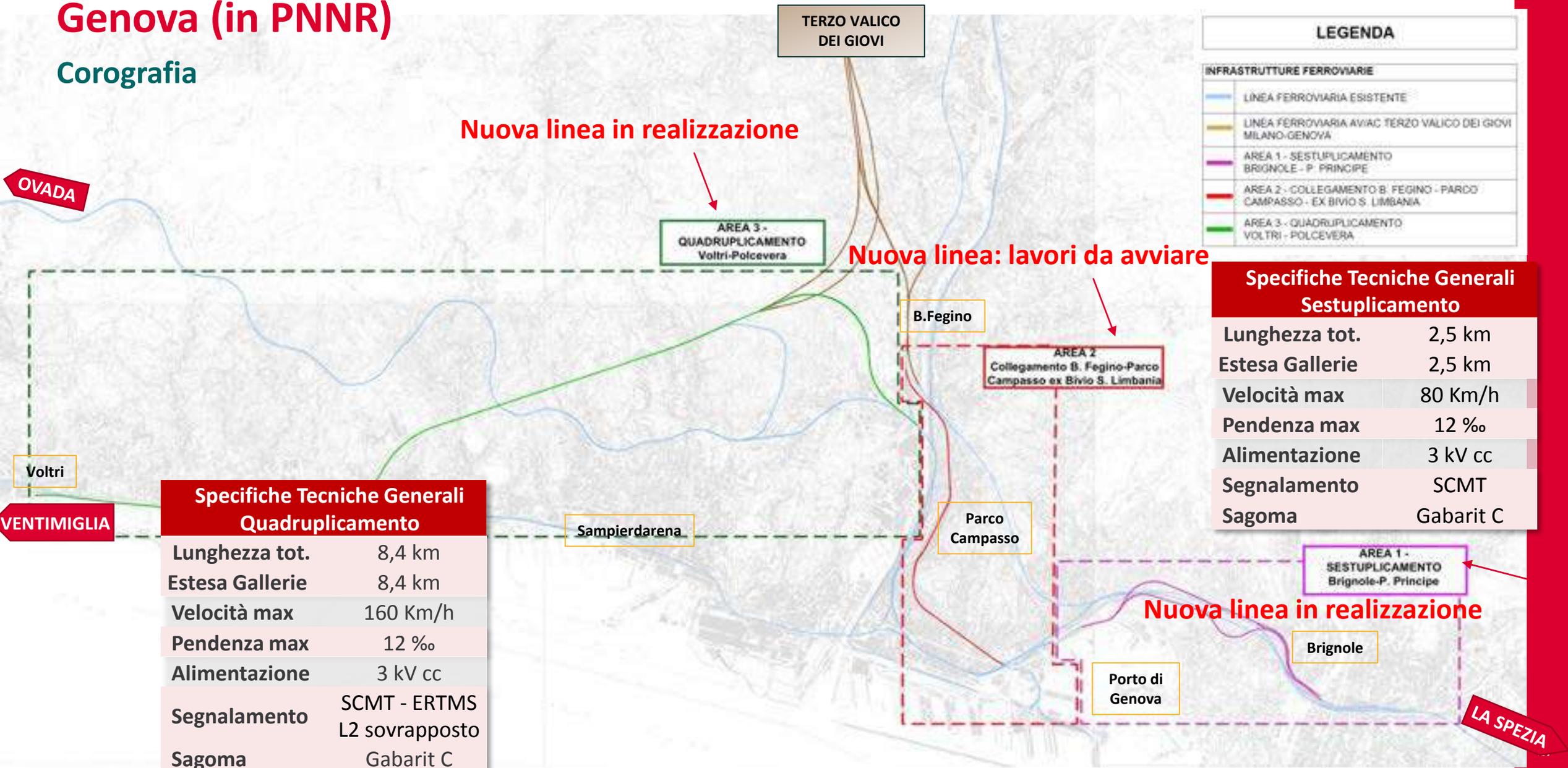
| | |
|-----------------|------------|
| Lunghezza tot. | 53 km |
| Estesa Gallerie | 37 km |
| Velocità max | 250 Km/h |
| Pendenza max | 12,5 ‰ |
| Alimentazione | 3 kV cc |
| Segnalamento | ERTMS – L2 |
| Sagoma | Gabarit C |

Nuova linea in realizzazione in PNRR

| LEGENDA | |
|---------|----------------------------|
| 1) | INTERCONNESSIONI DI VOLTRI |
| 2) | INNESTO BIVIO FEGINO |
| 3) | BRETELLA DI VOLTRI |
| 4) | SCALO MERCI DI RIVALTA |
| 5) | INNESTO TORTONA |
| 6) | INTERCONNESSIONE DI NOVI |

PROGETTO UNICO | Nodo di Genova | Collegamenti ferroviari del Nodo di Genova (in PNNR)

Corografia



| LEGENDA | |
|----------------------------|---|
| INFRASTRUTTURE FERROVIARIE | |
| | LINEA FERROVIARIA ESISTENTE |
| | LINEA FERROVIARIA AVIAC TERZO VALICO DEI GIOVI MILANO-GENOVA |
| | AREA 1 - SESTUPLICAMENTO BRIGNOLE - P. PRINCIPE |
| | AREA 2 - COLLEGAMENTO B. FEGINO - PARCO CAMPASSO - EX BIVIO S. LIMBANIA |
| | AREA 3 - QUADRUPPLICAMENTO VOLTRI - POLCEVERA |

| Specifiche Tecniche Generali Quadruplicamento | |
|---|-----------------------------|
| Lunghezza tot. | 8,4 km |
| Estesa Gallerie | 8,4 km |
| Velocità max | 160 Km/h |
| Pendenza max | 12 ‰ |
| Alimentazione | 3 kV cc |
| Segnalamento | SCMT - ERTMS L2 sovrapposto |
| Sagoma | Gabarit C |

| Specifiche Tecniche Generali Sestuplicamento | |
|--|-----------|
| Lunghezza tot. | 2,5 km |
| Estesa Gallerie | 2,5 km |
| Velocità max | 80 Km/h |
| Pendenza max | 12 ‰ |
| Alimentazione | 3 kV cc |
| Segnalamento | SCMT |
| Sagoma | Gabarit C |

Linea Gallarate - Rho. Quadruplicamento Rho-Parabiago e Raccordo Y (Nuova Linea in PNRR)



Nuova linea in iter autorizzativo

Quadruplicamento Milano Rogoredo – Pavia (Nuova linea in PNRR)

Nuova linea in iter autorizzativo

| CARATTERISTICHE DEL TRACCIATO | |
|-------------------------------|----------|
| Lunghezza complessiva | 29 km |
| Velocità max di tracciato | 180 km/h |
| Pendenza massima | <10 ‰ |
| Categoria | D4 |
| Raggio minimo | 955m |
| Alimentazione | 3KVcc |
| Segnalamento | ERTMS-L2 |



Asse del Brennero: Quadruplicamento Fortezza – Verona (Nuova linea)

Itinerario Brennero - Verona



Tunnel di base del Brennero (quota Italia)
Lavori in corso

Accesso al Brennero lotto 1: Fortezza-Ponte Gardena + sublotto
Lotto 1: Attività negoziale in corso
Sublotto: Attività in corso
Attivazione 2028

Lotti di completamento
Studio di fattibilità
Accesso al Brennero lotto 7: Ponte Gardena – Bolzano (Prato Isarco)

- Accesso al Brennero lotto 5: Bolzano (Bronzolo) – Trento (Roncafort)
- Accesso al Brennero lotto 6: Rovereto- Pescantina

Accesso al Brennero lotto 2: Circonvallazione di Bolzano
Costo: 852 M€, finanziamenti 8 mln
Intervento rientrante in Project Review (allegato al DEF 2017) sulla base del PP del 2003.

Accesso al Brennero lotto 3: Circonvallazione di Trento e Rovereto
In corso Project Review
Circonvallazione di Trento **IN PNRR**

Accesso al Brennero lotto 4: Ingresso nel nodo di Verona
In corso Project Review

* esclusi lotti di completamento

A Quadruplicamento Verona - Fortezza: caratteristiche tecniche generali



Lotti prioritari

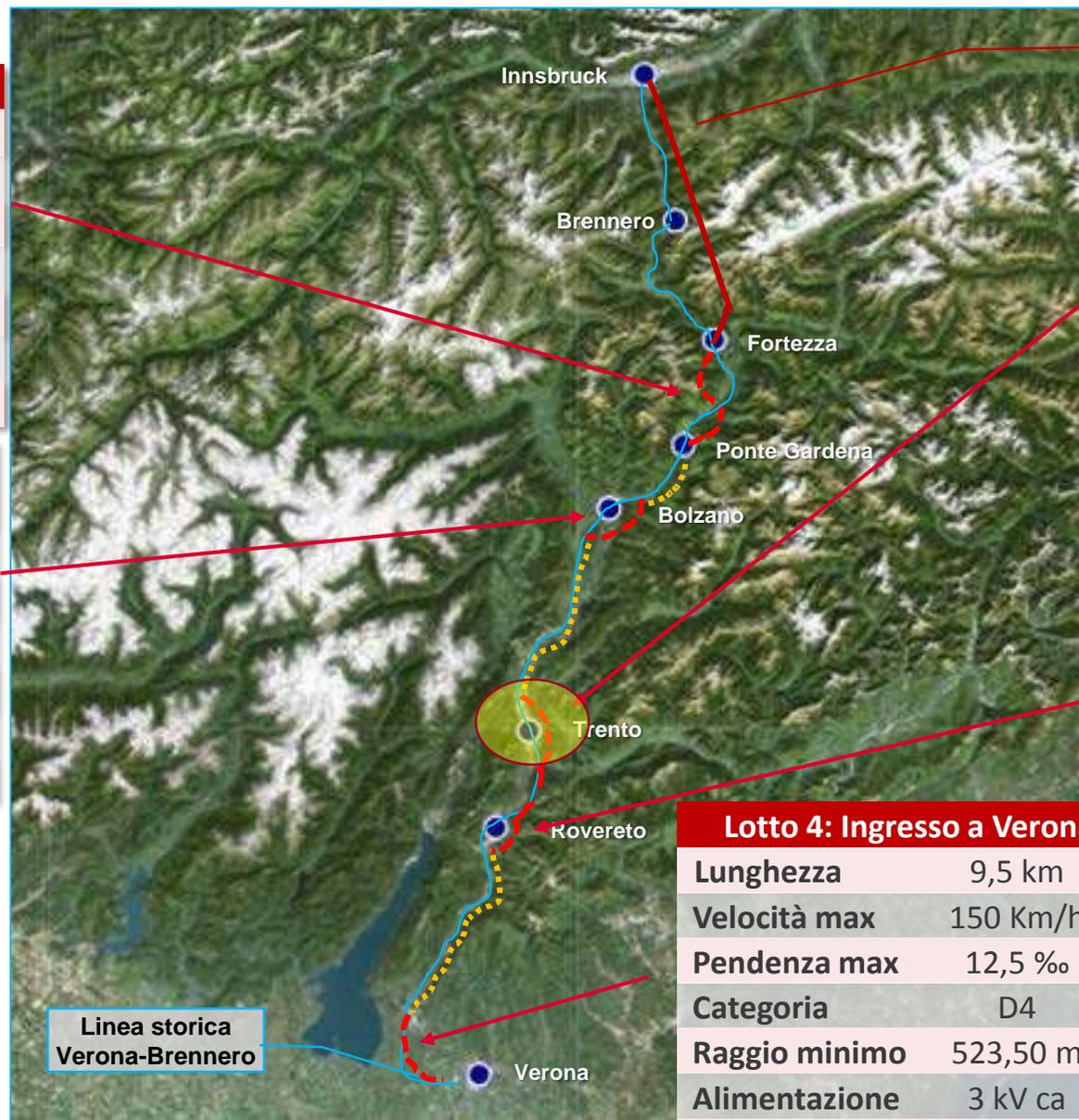
Lotto 1: Fortezza Ponte Gardena

| | |
|---------------|------------|
| Lunghezza | 22,5 km |
| Velocità max | 225 Km/h |
| Pendenza max | 12,5 ‰ |
| Categoria | D4 |
| Raggio minimo | 2500 m |
| Alimentazione | 25 kV ca |
| Segnalamento | ERTMS – L2 |

Lotto 2: Circonvall. Bolzano

| | |
|---------------|------------------|
| Lunghezza | 14 km |
| Velocità max | 225 Km/h |
| Pendenza max | 12,5 ‰ |
| Categoria | D4 |
| Raggio minimo | 3700 m |
| Alimentazione | 3 kVcc - 25 kVca |
| Segnalamento | ERTMS – L2 |

Lotto inserito in PNRR. Nuova linea in progettazione



Altri interventi

Tunnel di Base del Brennero
Lavori in corso

Lotto 3a: Circonvall. Trento

| | |
|---------------|------------------|
| Lunghezza | 14 km |
| Velocità max | 200 Km/h |
| Pendenza max | 12,5 ‰ |
| Categoria | D4 |
| Raggio minimo | 1114 m |
| Alimentazione | 3 kVcc - 25 kVca |
| Segnalamento | ERTMS – L2 |

Lotto 3b: Circonvall. Rovereto

| | |
|---------------|------------------|
| Lunghezza | 20 km |
| Velocità max | 200 Km/h |
| Pendenza max | 12,5 ‰ |
| Categoria | D4 |
| Raggio minimo | 1114 m |
| Alimentazione | 3 kVcc - 25 kVca |
| Segnalamento | ERTMS – L2 |

Lotto 4: Ingresso a Verona

| | |
|---------------|------------|
| Lunghezza | 9,5 km |
| Velocità max | 150 Km/h |
| Pendenza max | 12,5 ‰ |
| Categoria | D4 |
| Raggio minimo | 523,50 m |
| Alimentazione | 3 kV ca |
| Segnalamento | ERTMS – L2 |

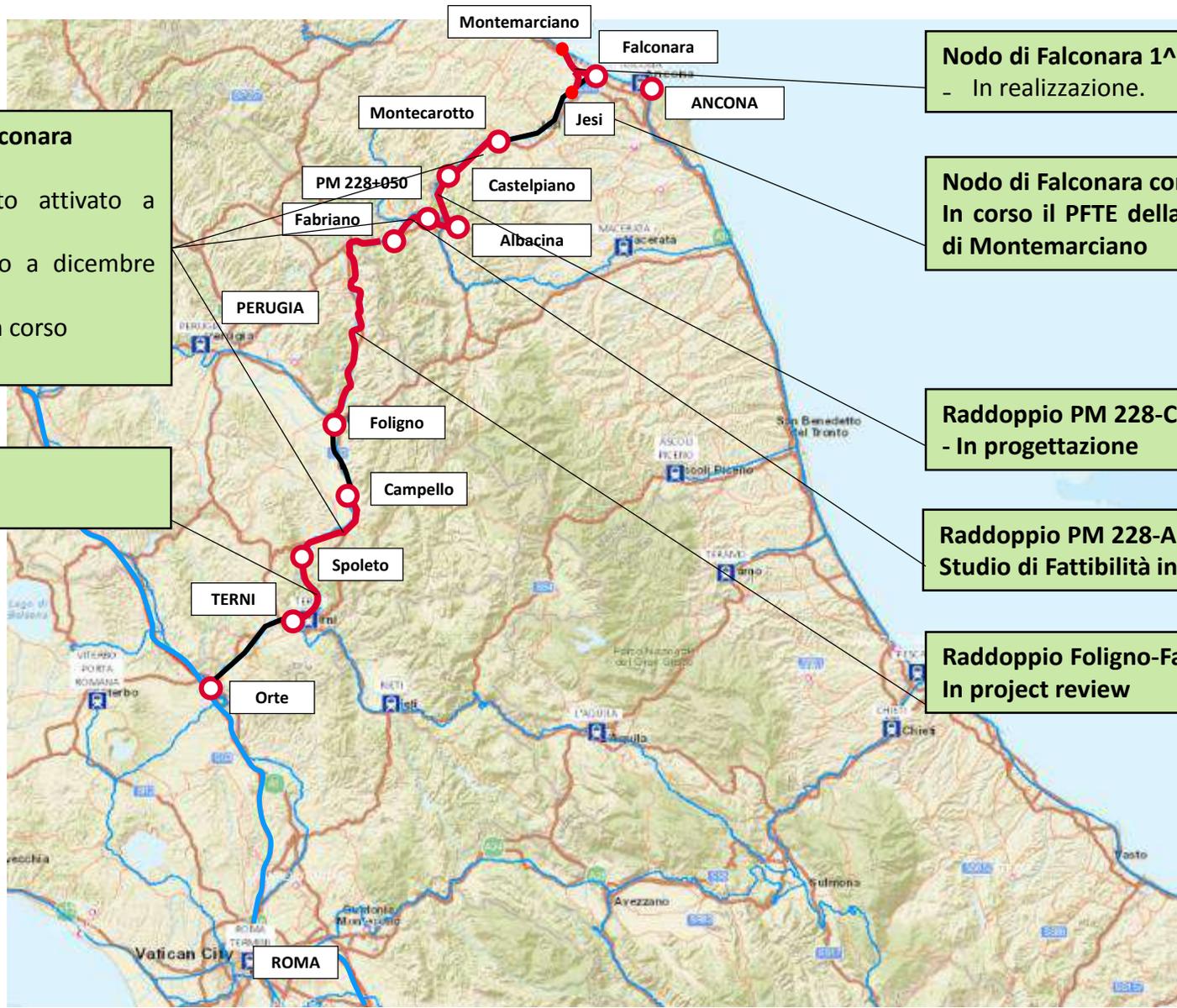
Diagonale Orte - Falconara



Potenziamento infrastrutturale Orte-Falconara
Costo: 369 M€, integralmente finanziati

- Raddoppio Castelplanio-Montecarotto attivato a giugno 2018;
- Raddoppio Fabriano-PM 228 attivato a dicembre 2009;
- Raddoppio Spoleto-Campello lavori in corso

Raddoppio Spoleto-Terni
In project review.



Nodo di Falconara 1^ fase
- In realizzazione.

Nodo di Falconara completamento
In corso il PFTE della nuova soluzione della stazione di Montemarciano

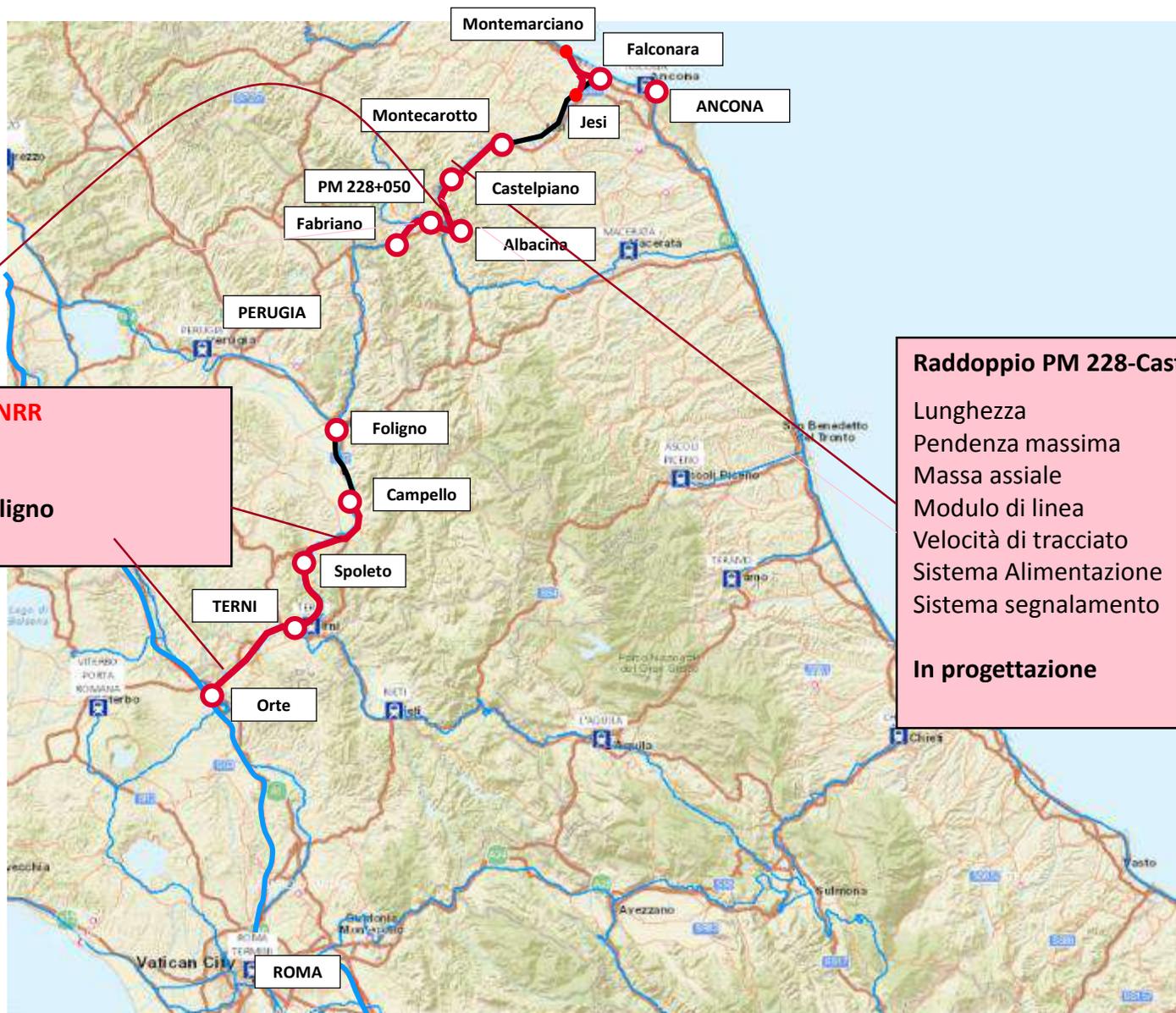
Raddoppio PM 228-Castelplanio
- In progettazione

Raddoppio PM 228-Albacina
Studio di Fattibilità in avvio.

Raddoppio Foligno-Fabriano
In project review



Potenziamento Orte – Falconara (Interventi in PNRR)



Velocizzazione Tratte esistenti in PNRR

- Raddoppio PM 228-Albacina
- Tecnologie Orte Terni
- Tecnologie Spoleto Campello Foligno

In Progettazione

Raddoppio PM 228-Castelplano (Nuova linea in PNRR)

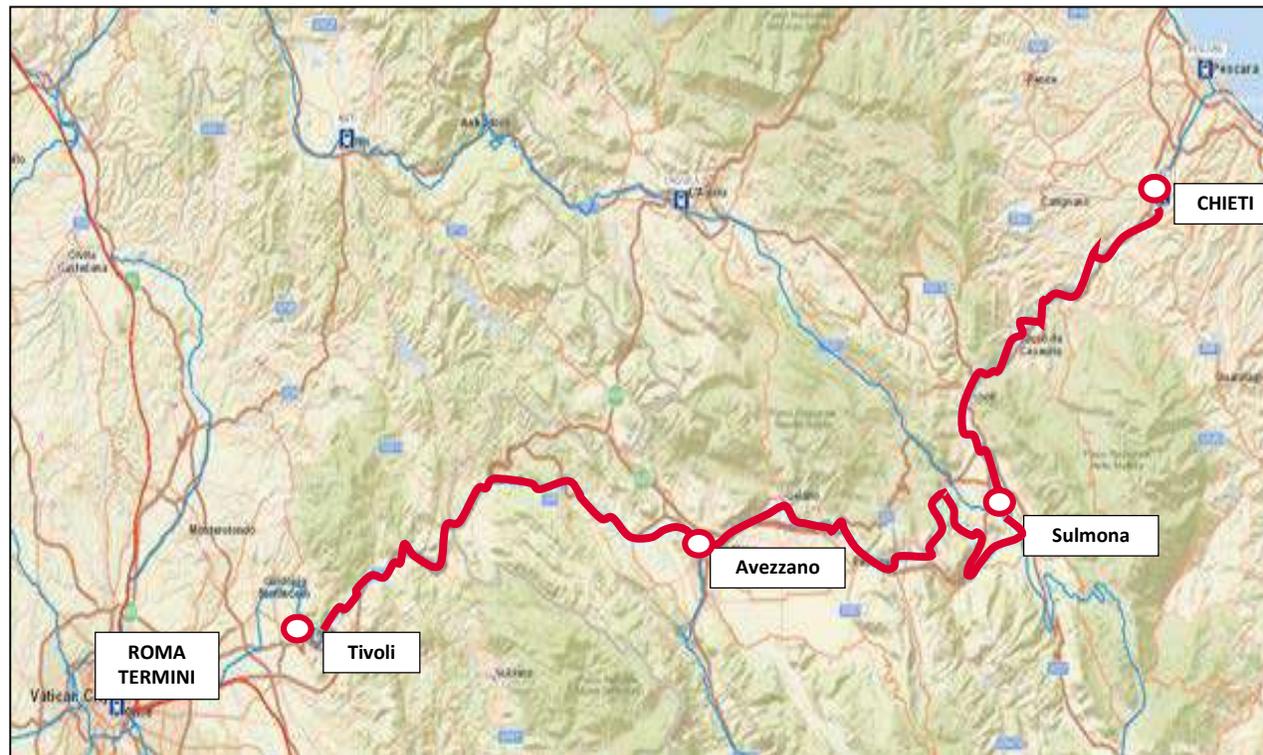
| | |
|-----------------------|------------------|
| Lunghezza | 24,5 km |
| Pendenza massima | 12 ‰ |
| Massa assiale | D4 |
| Modulo di linea | 550 m |
| Velocità di tracciato | 165 km/h |
| Sistema Alimentazione | 3KVcc |
| Sistema segnalamento | Bacc Banalizzato |

In progettazione

Diagonale Roma-Pescara

una nuova linea con velocità 200 km/h, prevalentemente a semplice binario, che sfiora dalla linea AV/AC Roma-Napoli e giunge fino a Sulmona con fermate a Mandela, Carsoli, Tagliacozzo, Avezzano (Studi di fattibilità sviluppato; in corso di avvio progettazione lotti prioritari)

raddoppio quasi integrale della linea Pescara-Sulmona, in parte su tracciato esistente, in parte in variante (studio di fattibilità sviluppato; in avvio progettazione lotti prioritari), come prosecuzione del raddoppio Pescara-Chieti-Interporto d'Abruzzo; (attualmente in avanzato stato autorizzativo)

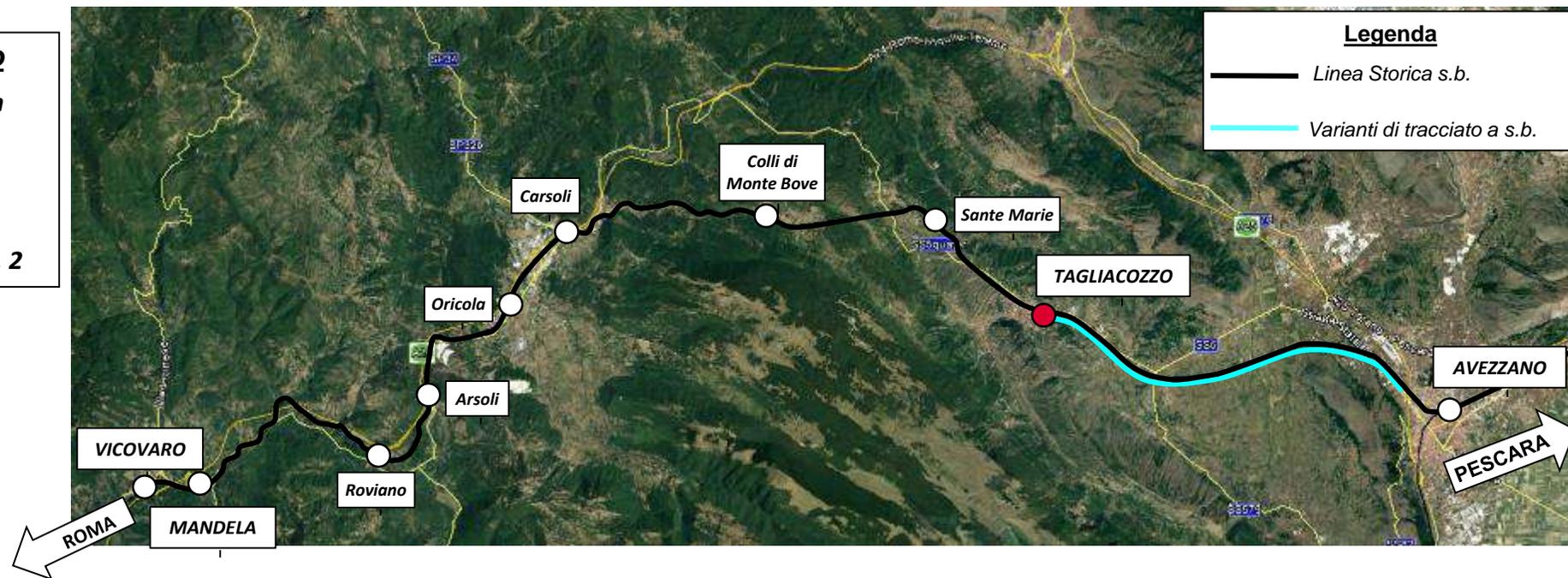


LINEA ROMA AVEZZANO - Potenziamento tratta Tagliacozzo-Avezzano

Intervento di raddoppio e velocizzazione (in PNRR)

Caratteristiche del raddoppio

| | |
|-------------------------|--------------|
| Estesa | ca. 14,4 km |
| Raggio minimo | 950 m |
| Velocità max (rango C) | 155 km/h |
| Massa assiale | D4 |
| Sistema trazione | 3 kV cc |
| Sistema di segnalamento | ERTMS Liv. 2 |



Potenziamento tratto Sulmona – Pratola Peligna



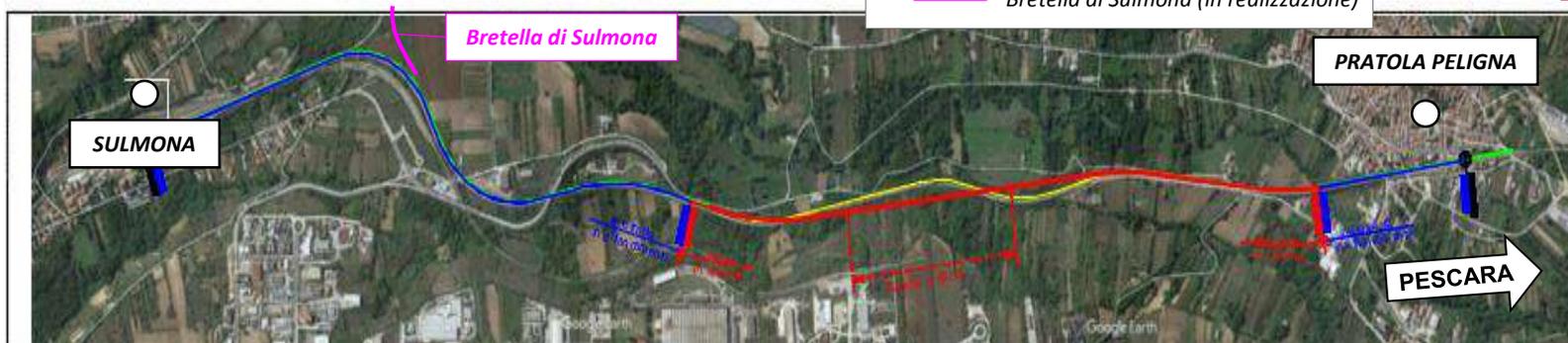
RADDOPPIO IN STRETTO AFFIANCAMENTO E IN VARIANTE (In PNRR)

Caratteristiche del tracciato

| | |
|--------------------------------|---------------------|
| Lunghezza complessiva DB | 5+386 km |
| Pendenza massima | 14,50 ‰ |
| Velocità di progetto (rango C) | 160 km/h |
| Massa assiale | D4 |
| Sistema trazione | 3 kV cc |
| Sistema di segnalamento | ERTMS Liv. 2 |

LEGENDA

-  Raddoppio in variante
-  Raddoppio in affiancamento
-  Linea attuale a semplice binario
-  Bretella di Sulmona (in realizzazione)



Potenziamento TRATTA SCAFA - MANOPELLO

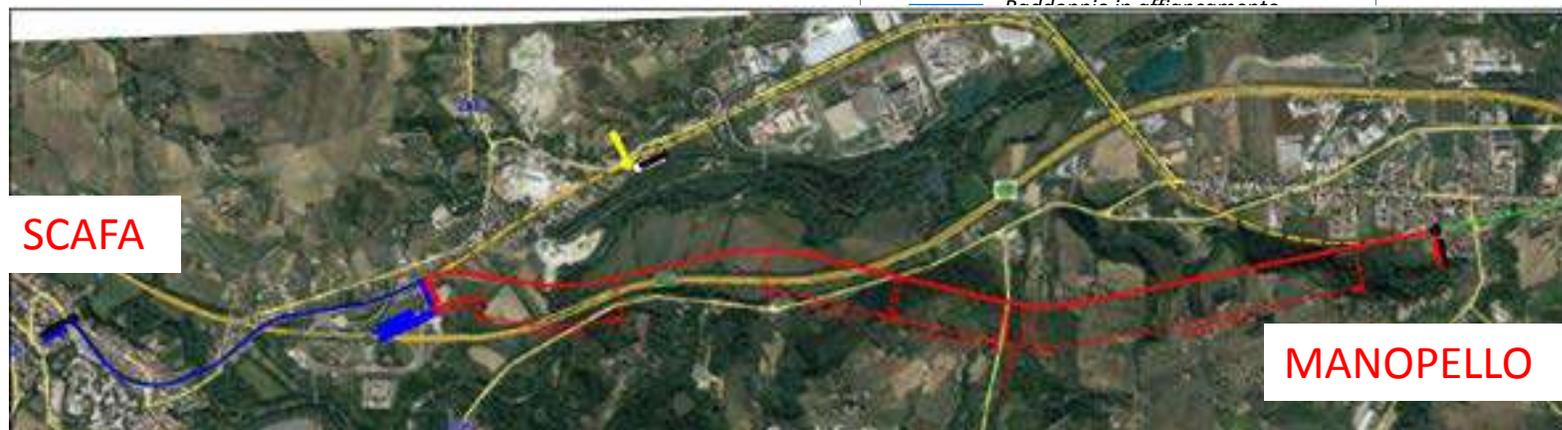
RADDOPPIO IN STRETTO AFFIANCAMENTO E IN VARIANTE (In PNRR)

LEGENDA

- Raddoppio in variante
- Raddoppio in affiancamento

Caratteristiche del raddoppio

| | |
|--------------------------------|---------------------|
| Lunghezza complessiva DB | 7+070 km |
| Pendenza massima | 13,00 ‰ |
| Velocità di progetto (rango C) | 160 km/h |
| Massa assiale | D4 |
| Sistema trazione | 3 kV cc |
| Sistema di segnalamento | ERTMS Liv. 2 |



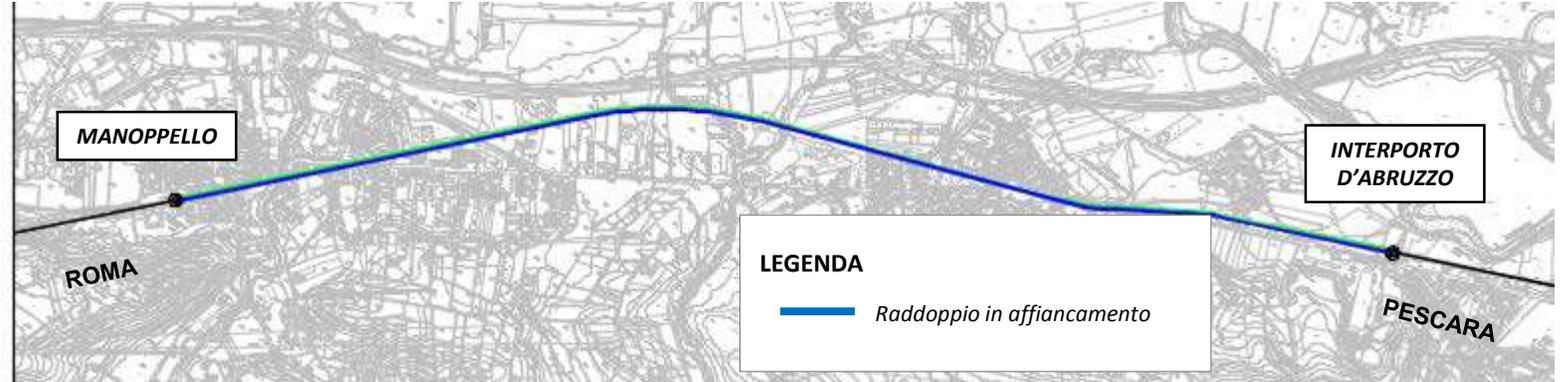
Potenziamento TRATTA MANOPPELLO – INTERPORTO D'ABRUZZO



RADDOPPIO IN STRETTO AFFIANCAMENTO (In PNRR)

Caratteristiche del raddoppio

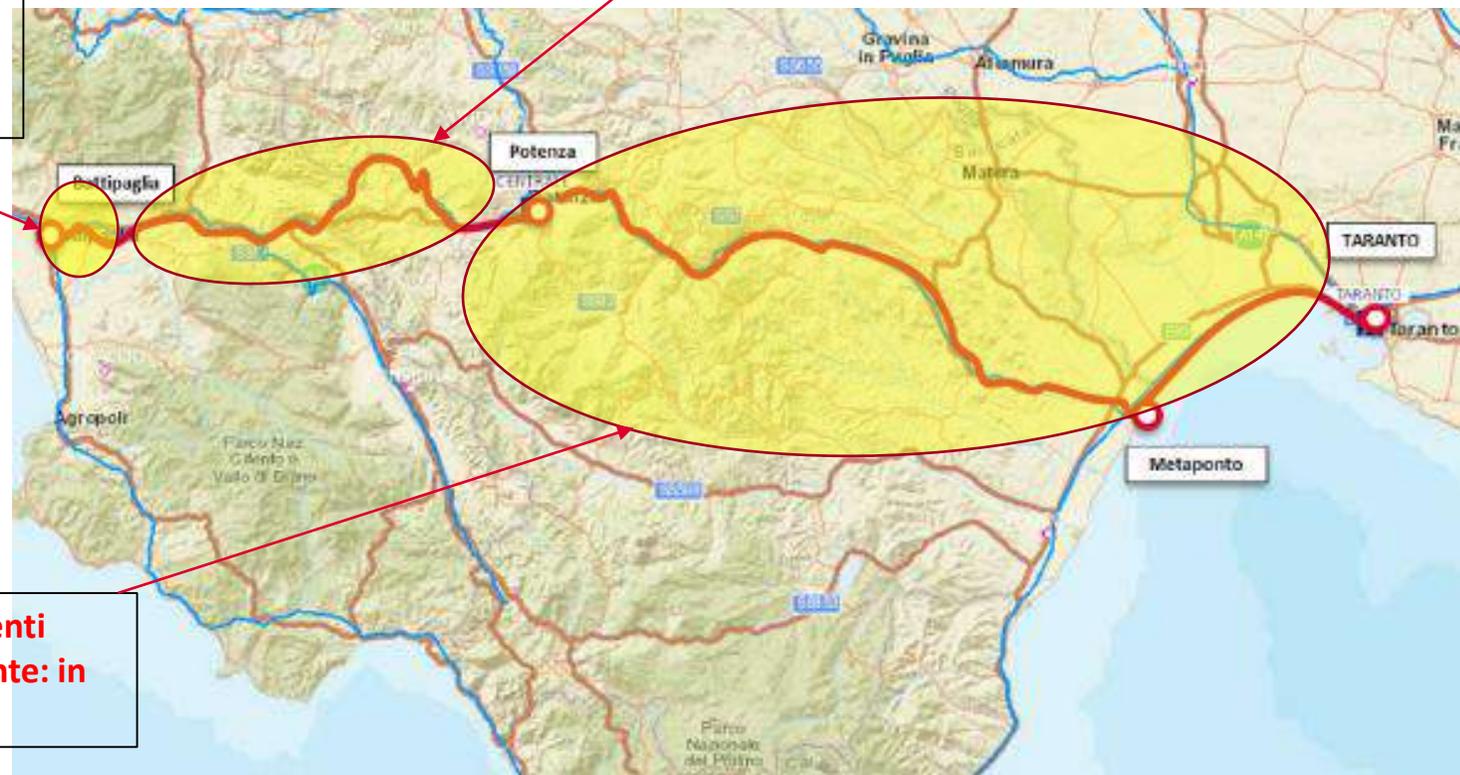
| | |
|--------------------------------|---------------------|
| Lunghezza complessiva DB | 5+183 km |
| Pendenza massima | 10,90 ‰ |
| Velocità di progetto (rango C) | 160 km/h |
| Massa assiale | D4 |
| Sistema trazione | 3 kV cc |
| Sistema di segnalamento | ERTMS Liv. 2 |



Diagonale Battipaglia-Potenza-Taranto

**Battipaglia-Potenza- velocizzazione impianti:
in realizzazione (In PNRR)**

**Bretella di collegamento Battipaglia-Potenza
con linea AV Salerno –Reggio Calabria:
nuova linea in progettazione (In PNRR)**



**Potenza-Metaponto- Taranto: interventi
diffusi di potenziamento linea esistente: in
progettazione (In PNRR)**

**Programma di Investimenti relativo
all' ITINERARIO NAPOLI-BARI**

ANALISI COSTI-BENEFICI

| Data | Il Responsabile <i>Investimenti e Contratto di Programma</i> | Data | Il Direttore <i>Pianificazione Strategica</i> |
|------------|---|------------|--|
| 10/04/2018 | <i>Enrico Cior</i> | 10/04/2018 | <i>[Signature]</i> |

Analisi Costi-Benefici

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Allegati

- **Analisi Finanziaria: Prospetto dei flussi di cassa previsionali**
- **Analisi Economica: Piano annuale dei costi e dei benefici**
- **Dettaglio oggetti di manutenzione dell'infrastruttura ferroviaria**
- **Dettaglio modalità di calcolo relativamente a traffico, ricavi ed esternalità**

Analisi Costi-Benefici

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1. Premessa

La presente relazione di Analisi Costi Benefici dell'Itinerario Napoli- Bari è stata redatta sulla base di quanto indicato nei regolamenti comunitari 1303/2013 e 207/2015 al fine di fornire le informazioni necessarie alla compilazione delle Schede Grande Progetto per accedere alle fonti di finanziamento PON 2014-2020 per i progetti:

- Variante alla linea Napoli – Canello
- Raddoppio e velocizzazione tratta Canello-Frasso Telesino.

I due interventi sopra citati costituiscono di fatto sezioni di un più ampio Programma di Investimenti, finalizzato complessivamente al potenziamento e alla riqualificazione dell'itinerario Napoli-Bari, che quindi viene *considerato nella sua interezza nella presente ACB*.

Gli interventi di tale Programma di Investimenti ed inclusi nel perimetro della presente valutazione sono di seguito sinteticamente indicati, secondo la dizione prevista nel vigente Contratto di Programma parte Investimenti, stipulato da RFI ed il Ministero delle Infrastrutture e dei Trasporti:

| Perimetro della Valutazione: il Programma di Investimenti sull' "Itinerario Napoli-Bari" | | |
|---|-----------------|---|
| | CUP | Progetto di Investimento |
| Interventi oggetto della Domanda al sostegno comunitario PON 2014-2020 | J61H94000000011 | Variante alla linea Napoli – Canello |
| | J41H01000080008 | Raddoppio tratta Canello – Benevento: lotto funzionale Canello – Dugenta Frasso Telesino |
| Altri Interventi sull'itinerario Napoli-Bari inclusi nel Programma di Investimenti oggetto della presente ACB | J41H01000080008 | Raddoppio tratta Canello – Benevento: raddoppio tratta Dugenta/ Frasso T. – Vitulano |
| | J77I04000000009 | Raddoppio della tratta Apice – Orsara di Puglia |
| | J41H92000000008 | "Potenziamento Infrastrutturale e Tecnologico Caserta-Foggia: raddoppio della tratta Orsara-Bovino" |

2. Metodologia

La presente analisi costi-benefici è stata condotta secondo l'approccio differenziale, pertanto la valutazione riguarda i flussi annuali relativi a costi-ricavi (analisi finanziaria) e costi-benefici (analisi economica), determinati dal confronto tra lo scenario "Con Intervento" (o "Scenario di Progetto") e lo Scenario "senza intervento" (c.d. "Scenario di Riferimento").

Si evidenzia che lo scenario "Senza intervento" non è caratterizzato da una generale situazione di "non fare" rispetto alla situazione attuale, ma considera un'evoluzione tendenziale dell'infrastruttura e dei flussi economici secondo le azioni già pianificate e avviate, diverse dall'intervento oggetto di valutazione.

La costruzione degli scenari, effettuata tenendo conto dell'ambito territoriale di influenza del progetto, consente di definire la dinamica dei flussi di traffico per merci e passeggeri in termini differenziali tra la situazione "senza progetto" (o "tendenziale") e la situazione "con progetto", con evidenza della loro evoluzione temporale e della loro ripartizione tra modalità ferroviaria e stradale

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Ai flussi di traffico differenziali sono quindi associati gli effetti in termini di costi-ricavi nell'Analisi finanziaria e costi-benefici nell'Analisi economica, che, insieme alla spesa per investimenti, permettono di valutare il grado di convenienza del progetto.

La tabella seguente fornisce un quadro di sintesi delle grandezze utilizzate nella presente Analisi per l'elaborazione degli Indicatori di valutazione:

| <u>ANALISI FINANZIARIA:</u> | <u>ANALISI ECONOMICA:</u> |
|--|---|
| <p><u>Indicatori:</u></p> <ul style="list-style-type: none"> - Redditività finanziaria dell'Investimento VANF e TIRF (VISTA GESTORE INFRASTRUTTURA) - Redditività del capitale nazionale - Verifica di sostenibilità finanziaria | <ul style="list-style-type: none"> - Indicatori di prestazione economica VANE e TIRE (VISTA COLLETTIVITA') |
| <ul style="list-style-type: none"> <input type="checkbox"/> Costi di investimento <input type="checkbox"/> Incremento di Costi per manutenzione straordinaria del gestore <input type="checkbox"/> Incremento dei Costi di manutenzione ordinaria per il gestore <input type="checkbox"/> Incremento di Ricavi da pedaggio per il gestore <input type="checkbox"/> Valore Residuo <p><i>Per Redditività del capitale nazionale e verifica sostenibilità finanziaria:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Fonti di finanziamento per la copertura del costo di investimento e per i costi di manutenzione | <ul style="list-style-type: none"> <input type="checkbox"/> Costi di investimento (a valori economici) <input type="checkbox"/> Costi di manutenzione straordinaria per il gestore (a valori economici) <input type="checkbox"/> Costi di manutenzione ordinaria del gestore (a valori economici) <input type="checkbox"/> Costi di esercizio emergenti per gli operatori che erogano servizi ferroviari Passeggeri e Merci (a valori economici) <input type="checkbox"/> Risparmi nei costi operativi dei veicoli stradali, a seguito della diversione modale strada-ferrovia (a valori economici) <input type="checkbox"/> Risparmi di tempo per i passeggeri dei servizi ferroviari <input type="checkbox"/> Esternalità, risparmi associati alla diversione modale strada-ferrovia inerenti costi di: inquinamento ambientale, effetto serra, inquinamento acustico, incidentalità, congestione <input type="checkbox"/> Valore Residuo |

Riferimenti metodologici

I principali riferimenti metodologici utilizzati nella elaborazione della presente analisi costi-benefici sono i seguenti:

- Regolamento (UE) n. 1303/2015 del Parlamento Europeo
- Regolamento di esecuzione (UE) 207/2015 della Commissione
- Regolamento delegato (UE) n.480/2014 della Commissione
- Linee Guida per la valutazione degli investimenti in opere pubbliche – MIT -2016
- "Guide to cost-benefit analysis of Investment Projects – Economic appraisal tool for Cohesion Policy 2014-2020" – European Commission DG Regional Policy, 2014 (in breve "Linee Guida UE")
- Ricardo-AEA "Update of the Handbook on external costs of transport" (IMPACT), European Commission DG MOVE – 2014
- Quaderni del PON Trasporti n° 02/2006 "I Grandi Progetti del PON Trasporti 2000–2006 Metodologie di analisi e casi di applicazione"

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- Quaderni del PON Trasporti n° 08/2008 “Linee guida per la misura dei Costi Esterni nell’ambito del PON Trasporti 2000 – 2006”
- CE Delft et Al “Handbook on estimation of external costs in the transport sector” (IMPACT) - European Commission DG TREN – 2008
- CE Delft, Infras, Fraunhofer Isi, “External Costs of Transport in Europe - Update Study for 2008”, pubblicato a ottobre 2011

Di seguito sono forniti elementi di dettaglio relativi alla metodologia utilizzata per l’Analisi finanziaria e l’Analisi economica.

2.1. Analisi Finanziaria

La metodologia applicata è quella dei Flussi di Cassa Attualizzati (Discounted Cash Flow - DCF), la quale prende in considerazione esclusivamente i flussi di cassa in entrata e in uscita; non entrano invece nell’analisi accantonamenti, ammortamenti e altre voci contabili che non corrispondono ad effettivi movimenti di cassa.

L’analisi è svolta dal punto di vista del Gestore dell’infrastruttura (RFI SpA) e quindi vengono considerati gli effetti economico-finanziari (in termini differenziali) che la realizzazione del Programma di Investimenti comporta sulla gestione aziendale, in particolare:

- i costi di investimento per la realizzazione del Programma di investimenti;
- variazioni nei costi di manutenzione straordinaria, finalizzati a mantenere l’infrastruttura ad un livello standard di funzionamento nell’arco temporale di previsione;
- variazioni nei costi di esercizio dell’infrastruttura;
- ricavi da pedaggio, percepiti per l’accesso all’infrastruttura da parte degli operatori dei servizi ferroviari;
- le fonti di finanziamento: il mix di fonti è utilizzato ai fini dell’elaborazione degli indicatori di redditività finanziaria del capitale nazionale impiegato (quindi escludendo la parte inerente il sostegno comunitario richiesto) e per la verifica di sostenibilità “bancaria” complessiva

I valori sono considerati al netto di IVA in quanto voce che può essere recuperata dal soggetto proponente.

L’analisi è svolta utilizzando prezzi reali costanti e quindi coerentemente è utilizzato un tasso di sconto espresso in termini reali.

Sulla base delle voci sopra specificate vengono costruiti i flussi di cassa annuali, utilizzati per il calcolo degli indicatori di valutazione previsti dal Regolamento (UE) 207/2015.

Indicatori di valutazione

La redditività finanziaria dell’investimento è valutata attraverso la stima dei seguenti indicatori:

- ➔ **Valore Attuale Netto Finanziario [VANF(C)]**, ovvero la sommatoria dei saldi annuali tra costi (inclusi costi per investimento) e ricavi generati dall’investimento, scontati ad un tasso predefinito (come detto espresso in termini reali);
- ➔ **Tasso di Rendimento Finanziario [TRF(C)]**, ovvero il valore del tasso che, applicato come sconto ai saldi annuali costi-ricavi, rende il valore del VANF pari a zero.

L’Analisi finanziaria include altresì:

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- la determinazione degli indicatori [**VANF(K)**] e [**TRF(K)**], finalizzati a valutare la redditività finanziaria del capitale nazionale, ossia delle risorse finanziarie messe a disposizione dai fondi nazionali (fonti sia pubbliche che private);
- la verifica della sostenibilità finanziaria del progetto, basata sulle proiezioni dei flussi finanziari non attualizzati, finalizzata a dimostrare che lungo l'intero orizzonte temporale, anno dopo anno, il progetto avrà risorse finanziarie sufficienti a coprire tutti gli esborsi connessi al progetto

Ai fini della determinazione del contributo comunitario viene utilizzato il Metodo delle entrate nette attualizzate, applicato secondo quanto previsto dal Regolamento Delegato (UE) n° 480/2014 della Commissione.

2.2. Analisi Economica

L'analisi economica prevede che ci si sposti da un'ottica puramente privatistico – aziendale e si prendano in considerazione gli effetti che l'investimento introduce per il benessere della collettività. Infatti, mentre l'analisi finanziaria consente di pervenire ad indicatori di convenienza sull'utilizzo di risorse da parte degli stakeholders, l'analisi economica consente di valutare l'effetto netto del progetto in termini di benessere sociale, ovvero se esso determina consumo o creazione di ricchezza per l'intera collettività.

Secondo tale ottica, anche investimenti che dal punto di vista finanziario non risultano vantaggiosi, potrebbero risultare sul piano sociale convenienti in quanto generatori di ricchezza per la collettività interessata dal progetto.

L'Analisi Costi-Benefici, attraverso l'opportuna rettifica dell'analisi finanziaria e tramite la quantificazione monetaria degli effetti ambientali e sociali generati dal progetto, consente di pervenire ad indicatori di convenienza economica dell'intervento dal punto di vista dell'interesse generale.

L'analisi economica ha l'obiettivo di valutare l'incremento del benessere della collettività indotto dalla realizzazione del progetto di investimento

Si deve, in pratica, verificare se l'investimento soddisfa o no interessi pubblici quali il miglioramento della qualità ambientale, della sicurezza del trasporto, ecc. Sulla scorta di tale analisi, si offrono elementi decisionali sull'opportunità dell'impegno di risorse pubbliche per la realizzazione dei progetti di investimento.

Come detto il beneficio apportato deve essere considerato in termini "netti", ovvero come incremento del saldo tra benefici e costi generato da un intervento rispetto ad una situazione cosiddetta "senza intervento".

Dal confronto tra la situazione "senza progetto" e la situazione "con progetto" è possibile ricavare i flussi differenziali di traffico associabili alla realizzazione del progetto, distinti tra modalità ferroviaria e altre modalità, per merci e per passeggeri.

I flussi differenziali così ottenuti sono alla base dell'individuazione e quantificazione monetaria degli effetti diretti e delle esternalità che, confrontati con i costi di costruzione e gestione dell'infrastruttura, consentono di determinare gli indicatori utili a valutare la convenienza economico-sociale del progetto.

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Costi di costruzione ed esercizio dell'infrastruttura

L'ACB è condotta a partire dalle ipotesi su costi di investimento e costi di esercizio contenute nell'analisi finanziaria.

Tuttavia, mentre nell'analisi finanziaria i beni e servizi prodotti e utilizzati nel progetto sono valutati ai prezzi di mercato effettivamente riscossi e pagati secondo un criterio di cassa, nell'analisi economica la valutazione deve avvenire secondo la logica del valore che tali beni e servizi hanno per la collettività e ad un costo opportunità che potrebbe non coincidere con i prezzi di mercato.

Alcune voci e prezzi che figurano tra le entrate e uscite nell'analisi finanziaria non rispecchiano un'effettiva utilizzazione di risorse, ma riflettono piuttosto trasferimenti di ricchezza da un gruppo all'altro nell'ambito della collettività.

In ottica di analisi economica è necessario quindi depurare i valori finanziari dei costi di investimento e di esercizio dagli elementi che costituiscono semplici trasferimenti (principalmente imposte, oneri sociali, sussidi ed altre forme di agevolazione), oltre che esprimere i valori in termini di prezzi ombra. A tale scopo si fa ricorso ad una serie di fattori di conversione che applicati a valori finanziari consentono di ottenere i corrispondenti valori economici.

Effetti diretti

Si tratta di costi e benefici rilevabili per quella parte di collettività che è direttamente interessata dal progetto.

Per progetti di investimento in ambito trasportistico il beneficio diretto è tipicamente rappresentato da risparmi in termini di:

- tempo, per cui un progetto di trasporto contribuisce al benessere degli utenti se è in grado di garantire una riduzione dei tempi medi di trasporto rispetto alla situazione "senza progetto";
- costi operativi, per cui il benessere collettivo risulta aumentato nella misura in cui il progetto consente di offrire una modalità di trasporto complessivamente più economica rispetto alla situazione "senza progetto". Come per i costi di costruzione ed esercizio dell'infrastruttura anche i costi operativi delle diverse modalità di trasporto sono espressi a valore economico, attraverso l'applicazione dei fattori di conversione.

Esternalità

Si tratta di effetti a carattere socio-ambientale che riguardano la collettività nel suo complesso.

La teoria economica definisce le esternalità come cambiamenti del livello di benessere generati da una determinata attività che non sono tuttavia riflessi nei prezzi di mercato. Le esternalità possono essere negative (costi esterni) o positive (benefici esterni).

Un costo esterno, o esternalità negativa, rappresenta uno svantaggio o una conseguenza negativa che l'attività di un agente economico (o di un gruppo d'agenti) determina nei confronti di un altro agente (o gruppo di agenti), qualora tale impatto non sia in qualche modo compensato in termini monetari dall'agente che lo ha causato. Analogamente, un beneficio esterno, o esternalità positiva, è il vantaggio o la conseguenza positiva che l'attività svolta da un agente (o gruppo) genera nella sfera di uno o più altri agenti, i quali però non versano alcun corrispettivo monetario per il beneficio ottenuto.

Nel settore dei trasporti, si concorda nel considerare che la maggior parte delle esternalità sono negative (costi esterni), mentre vi è un ampio consenso nel considerare che il valore degli eventuali

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benefici esterni è trascurabile al confronto con quello dei costi, e soprattutto che la maggior parte dei benefici generati dall'attività di trasporto sono internalizzati all'origine. Tipico è l'esempio della crescita economica (regionale, locale, nazionale) indotta dal potenziamento dell'offerta di trasporto: si tratta di un beneficio esplicitamente atteso dallo sviluppo infrastrutturale e dunque direttamente considerato nel processo decisionale.

In coerenza con quanto suggerito dal Regolamento (UE) 207/2015 e secondo quanto previsto dalla prassi per investimenti in infrastrutture di trasporto, ai fini della presente ACB sono valutate le seguenti esternalità: inquinamento atmosferico, inquinamento acustico, contributo all'effetto serra, incidentalità, congestione.

Indicatori di valutazione

Come per l'analisi finanziaria, il giudizio di convenienza o di apprezzamento economico-sociale dell'investimento viene sintetizzato nel calcolo di indici che, in questo caso, sono rappresentati da: **Valore Attuale Netto Economico (VANE)**, ovvero la sommatoria dei saldi annuali tra costi e benefici generati dall'investimento, scontati ad un tasso predefinito;

$$VANE = \sum_{t=0}^n \frac{(B_t - C_t)}{(1+r)^t}$$

in cui:

B_t = Benefici al tempo t

C_t = Costi al tempo t

t = varia da 0 (anno della valutazione) all'ultimo anno di previsione esplicita dei flussi annuali

r = tasso di attualizzazione dei flussi annuali

Tasso di Rendimento Economico (TRE), ovvero il valore del tasso che, applicato come sconto ai saldi annuali costi-benefici, rende il valore del VANE pari a zero.

B/C Ratio, ossia il rapporto tra Benefici attualizzati e Costi attualizzati.

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3. Contesto di progetto

Le Regioni interessate dal Programma di investimenti sono la Campania e la Puglia. Per fornire un sintetico inquadramento territoriale del progetto, si riportano di seguito alcune informazioni su aspetti socio-economici, sulla situazione attuale delle infrastrutture ferroviarie e stradali presenti nelle due regioni

3.1. Campania

3.1.1. Aspetti socio-economici

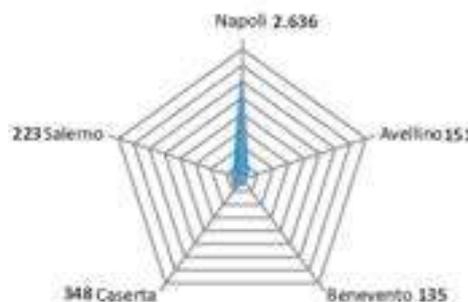
Il territorio della regione Campania, confinante con il Lazio, il Molise, la Puglia, la Basilicata e con il Mar Tirreno, è in prevalenza collinare (51%), montuoso per il 34% e pianeggiante al 15%. La regione ha un'estensione territoriale di circa 13.670 kmq ed una popolazione residente di circa 5.840.000 abitanti, presentando una densità media regionale di 427 abitanti/kmq. Capoluogo della regione è Napoli, terza città italiana, con oltre un milione di abitanti. Le altre province sono: Salerno, Caserta, Benevento ed Avellino. Nella tabella sottostante si riporta la distribuzione dei residenti e la superficie territoriale delle suddette province, sia in termini di valori numerici che in quelli percentuali. Si riporta, inoltre, il grafico relativo alla densità della popolazione su base provinciale (res/kmq).

Distribuzione residenti e superficie territoriale per Provincia, Campania

| Provincia | residenti settembre 2016 | % | superficie territorio (Kmq) | % |
|---------------------|--------------------------|--------------|-----------------------------|--------------|
| Napoli | 3.107.948 | 53,2 | 1.179 | 8,6 |
| Avellino | 423.655 | 7,3 | 2.806 | 20,5 |
| Benevento | 279.980 | 4,8 | 2.080 | 15,2 |
| Caserta | 923.568 | 15,8 | 2.651 | 19,4 |
| Salerno | 1.105.088 | 18,9 | 4.954 | 36,2 |
| tot. Regione | 5.840.219 | 100,0 | 13.670 | 100,0 |

fonte ISTAT

Densità della popolazione (res/kmq), Campania



Al di là della numerosità complessiva della popolazione residente, risulta particolarmente interessante l'indice di vecchiaia riportato dal Rapporto Campania 2016 di Unioncamere Campania che mette in luce la presenza di un'alta concentrazione di popolazione giovanile e in età attiva nella regione rispetto alla media nazionale e a quella del Mezzogiorno (l'indice di vecchiaia è pari a 113,4 a fronte di una media del Mezzogiorno di 139,3 e nazionale di 157,7), un aspetto capace di ripercuotersi su diversi fattori di carattere economico e sociale.

A livello provinciale si rilevano situazioni alquanto diverse, con un indice di vecchiaia particolarmente elevato a Benevento (169) e Avellino (160,1) che si caratterizzano, quindi, per una più alta concentrazione di anziani, rispetto a Salerno (137,9) e in particolare a Caserta e Napoli dove il numero degli under 15 equivale a quello degli over 64.

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Secondo il Rapporto Svimez¹ la Campania è la regione meridionale che ha registrato nel 2016 il più alto indice di sviluppo, con una crescita del 2,4% del prodotto: un ruolo trainante è stato svolto dall'industria, dal rafforzamento del terziario e dal positivo andamento del turismo.

In termini di valore aggiunto registrato nel 2015 (dati Unioncamere) dava una crescita dello 0,9%, un dato leggermente inferiore alla media nazionale (+1,3%). All'interno della regione la variazione più alta si registrava a Benevento (+1,7%), seguita da Salerno (+1,2%), Napoli (+0,8%), Avellino (+0,7%) e Caserta (+0,4%).

Per il 2016 secondo il Rapporto Svimez anche in termini di valore aggiunto la Regione Campania ha fatto registrare i migliori risultati rispetto alle altre regioni meridionali, con un +2,2% che risulta superiore altresì alla media nazionale (+1,7%).

Il tasso di disoccupazione è pari al 19,8%. Tale dato si colloca quasi in linea con il valore del Mezzogiorno (19,4%), ma ampiamente al di sopra della media nazionale (11,9%).

La ripresa dell'occupazione, a seguito dei pesanti effetti della crisi economica, è iniziata in ritardo nella Regione Campania e solo a partire dal 2015 l'incremento dei lavoratori impegnati ha registrato una variazione positiva dell'1%, con un andamento differenziato tra le varie Province: Benevento +7,8%, Salerno +2,6%, Napoli +0,9%, Caserta -1,5%, Avellino -1,8%.

La crescita dell'occupazione risulta confermata per il 2016 con un + 3,8%.

Nel complesso, i dati raccolti mettono in luce segnali di ripresa dell'economia regionale.

3.1.2. Infrastrutture di trasporto nel territorio

La Regione Campania risulta attraversata da reti di trasporto terrestre delle seguenti tipologie:

- linee ferroviarie per una consistenza complessiva di binario pari a 1.742 km (considerando la somma delle estese delle linee a semplice binario e del doppio calcolato due volte), di cui 1.095 km gestiti da RFI;
- autostrade per un'estesa complessiva di circa 500 km (valore all'anno 2015);
- strade statali, regionali e provinciali per uno sviluppo complessivo pari a circa 9.400 km (valore all'anno 2015).
- Strade comunali per circa 15.400 km (valore all'anno 2015)

Inoltre, nella regione sono localizzati i seguenti grandi terminali per l'intermodalità tra i diversi sistemi di trasporto:

- l'Aeroporto di Napoli Capodichino;
- i Porti di Napoli e Salerno
- i Terminali ferroviari Merci di Maddaloni-Marcianise e Nola Interporto

Capodichino è prevalentemente un aeroporto passeggeri.

Nel 2017, (fonte: Assaeroporti), l'Aeroporto di Napoli – Capodichino ha superato l'importante traguardo degli 8 milioni di passeggeri (tra arrivi e partenze) registrando quota 8 milioni e 557 mila passeggeri in transito, (di cui circa 3 milioni sulle tratte nazionali e 5,6 milioni su quelle internazionali) registrando un incremento molto positivo rispetto allo scorso anno di circa il 27%. Nel 2018, il network dell'aeroporto sarà ulteriormente ampliato con 99 destinazioni tra nazionali (15) e internazionali (84) collegate a Napoli con volo di linea diretto.

¹ "Rapporto SVIMEZ 2017 sull'economia del Mezzogiorno" - novembre 2017

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I passeggeri transitati nei porti di Napoli e Salerno nel 2016 sono stati circa 8,5 milioni in crescita del 3% rispetto al 2015 (fonte: Assoport). Rispetto al valore pre-crisi 2008, tuttavia, il sistema portuale campano ha perso circa il 10% del traffico, pari a quasi 1 milione di passeggeri.

Relativamente al settore delle merci e della logistica, si segnala che i porti campani hanno movimentato nel 2016 35,5 milioni di tonnellate con una crescita del 4,7% rispetto al 2015. In particolare, rapportando tale valore al 2007, si registra una crescita complessiva pari al 14%.

Mapa infrastrutture di trasporto, Campania



Rete ferroviaria

Rete Ferroviaria Italiana (RFI) gestisce nella Regione Campania 1.095 km di linee ferroviarie così classificate:

- 57% di linee fondamentali;
- 38% di linee complementari;
- 5% di linee di nodo.

Sono 124 le stazioni attive sul territorio dove si effettua servizio viaggiatori.

Il solo nodo di Napoli conta 19 stazioni nelle quali transitano oltre il 58% dei viaggiatori-anno che utilizzano la rete ferroviaria della Campania.

Tutte le linee sono attrezzate con tecnologia di protezione della marcia del treno ed il 72% circa della rete è gestita in telecomando con il Sistema di Comando e Controllo (SCC)/ Comando Centralizzato del Traffico (CTC) o con ERTMS.

Per quanto riguarda la densità della rete, questa presenta una buona capillarità, anche superiore alla media italiana, rispetto alla superficie totale delle Regione mentre appare inferiore alla media se confrontata alla popolazione della Regione.

Inoltre l'accessibilità globale della rete, calcolata come rapporto fra il numero di stazioni moltiplicato per l'area d'influenza di una stazione e la superficie totale della Regione, è tra le più alte d'Italia.

Nel complesso, l'offerta di trasporto ferroviario nella Regione Campania è pari a 620 treni/giorno con circa 63 milioni di passeggeri l'anno.

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Infrastruttura ferroviaria e tecnologie RFI, Campania (dati giugno 2016)

| LINEE FERROVIARIE IN ESERCIZIO | | 1.095 km | |
|----------------------------------|--|----------|--|
| CLASSIFICAZIONE | | | |
| Linee fondamentali | | 623 km | |
| Linee complementari | | 412 km | |
| Linee di nodo | | 60 km | |
| TIPOLOGIA | | | |
| Linee a doppio binario | | 648 km | |
| Linee a semplice binario | | 447 km | |
| ALIMENTAZIONE | | | |
| Linee elettrificate | | 855 km | |
| - Linee a doppio binario | | 647 km | |
| - Linee a semplice binario | | 207 km | |
| Linee non elettrificate (diesel) | | 240 km | |

| TECNOLOGIE PER IL TELECOMANDO E L'INTEROPERABILITÀ | |
|---|--------|
| Sistemi di telecomando della circolazione (SCC/CTC+DPC) | 807 km |
| ERTMS, per l'interoperabilità su rete AVIAC | 87 km |

Densità di rete rispetto all'area servita → 0,081 km/km²

Densità di rete rispetto alla popolazione → 186,6 km/10⁴ab

Indice di accessibilità globale → 0,11

L'accessibilità globale della rete è calcolata come il numero di stazioni per l'area d'influenza di una stazione rapportate alla superficie della Regione

Complessivamente, il sistema ferroviario campano è caratterizzato dalla presenza di:

- due direttrici nord – sud, di livello nazionale:
 - asse costiero Roma-Napoli-Salerno-Reggio Calabria;
 - asse interno Roma-Cassino-Caserta-Cancello-Nocera, che si ricollega alla prima;
- due direttrici trasversali:
 - asse Napoli-Caserta-Benevento-Foggia;
 - asse Battipaglia-Potenza-Taranto.

L'offerta di trasporto è concentrata sulla direttrice Roma- Napoli-Salerno-Reggio Calabria, sulla quale si addensano servizi locali, regionali ed a lungo percorso.

La concentrazione delle destinazioni su Napoli Centrale rende difficile una netta specializzazione dei servizi, che sono soggetti al pesante condizionamento dell'accesso alla stazione terminale.

Al Nodo di Napoli si aggancia, poi, una rete di linee minori, le quali collegano tra loro i principali centri regionali della costa tirrenica e dell'entroterra e si prolungano verso il Molise, la Puglia e la Basilicata. A nord di Napoli, la direttrice nord-sud è rappresentata dalle tre linee a doppio binario Roma-Napoli incluse nella "rete fondamentale":

1. la Roma-Napoli AV/AC;
2. la via Formia-Villa Literno-Aversa;
3. la via Cassino-Caserta-Cancello.

I tracciati della prima e della terza linea attraversano tutto l'entroterra campano e, dopo Caserta, entrano nel Nodo di Napoli convergendo anch'essi da nord-est su Napoli Centrale.

Il tracciato della seconda linea si svolge tutto in prossimità della costa tirrenica e solo all'ingresso del Nodo di Napoli si porta verso l'interno per poi giungere a Napoli Centrale da nord-est.

A sud di Napoli, la direttrice tirrenica nord-sud prosegue con la linea Napoli-Salerno-Battipaglia-Sapri-Reggio Calabria.

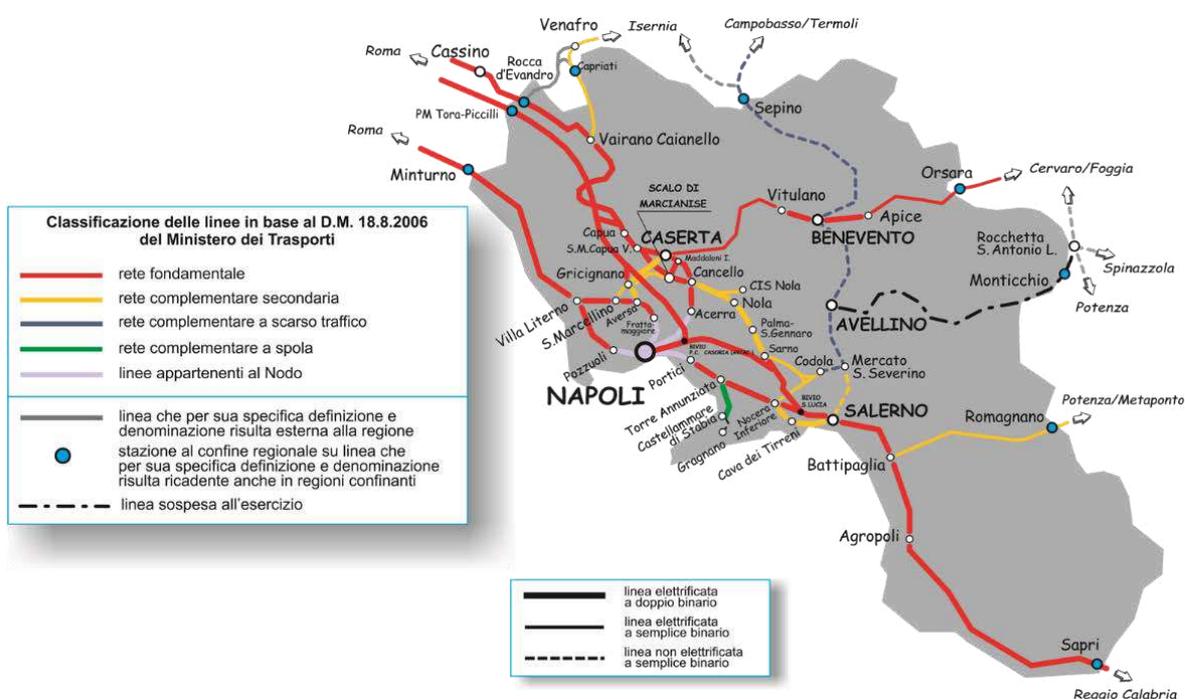
Sono da segnalare, inoltre, alcune linee minori "di bacino", trasversali rispetto a quelle funzionali ai collegamenti verso i principali centri dell'entroterra campano, nonché verso il Molise, la Puglia e la Basilicata:

- Vairano Caianello-Venafro, tratta campana della linea per Isernia-Campobasso, che si innesta nella stazione di Vairano sulla direttrice Cassino - Caserta - Napoli;

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- Battipaglia-Sicignano degli Alburni, tratta campana della linea Battipaglia-Potenza;
- Salerno - Mercato S. Severino - Avellino- Benevento - S. Croce del Sannio, tratta campana della linea Salerno - Campobasso;
- Avellino-Rocchetta S. Antonio Lacedonia, con proseguimenti a nord verso Cervaro-Foggia, e a sud verso Potenza.

Rete ferroviaria della Campania



Le linee ferroviarie mostrano diverse caratteristiche in termini di numero dei binari, sistema di trazione, sistema di esercizio e regimi di circolazione.

Nella tabella sottostante sono rappresentate, per le diverse province della regione (Napoli, Salerno, Caserta, Benevento ed Avellino), la distribuzione delle linee ferroviarie a semplice binario, di quelle a doppio binario e la consistenza totale, calcolata come somma del semplice e del doppio considerato due volte, in termini di percentuali delle estese chilometriche.

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Sviluppo della rete RFI a livello provinciale della Regione Campania

| Provincia | estesa rete S.B. | % | estesa rete D.B. | % | consistenza binario | % |
|---------------------|---------------------|--------------|---------------------|--------------|------------------------|--------------|
| Napoli | 7,5 | 1,7 | 176,0 | 27,2 | 359,4 | 20,6 |
| Avellino | 175,2 | 39,2 | 0,0 | 0,0 | 175,2 | 10,1 |
| Benevento | 120,2 | 26,9 | 19,1 | 3,0 | 158,5 | 9,1 |
| Caserta | 50,8 | 11,4 | 271,3 | 41,9 | 593,3 | 34,1 |
| Salerno | 93,6 | 20,9 | 180,9 | 27,9 | 455,4 | 26,1 |
| tot. Regione | 447,3 | 100,0 | 647,2 | 100,0 | 1.741,7 | 100,0 |

Nell'area metropolitana di Napoli sono inoltre presenti circa 270 km di linee ferroviarie in concessione.



Rete stradale

Per illustrare la dotazione di infrastrutture stradali e autostradali della Campania, si riporta un quadro sinottico della consistenza della rete, composta da circa 25.000 Km di infrastrutture, suddivise tra autostrade, strade statali, regionali, provinciali e comunali.

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Composizione della rete stradale della Campania

| Strade | Km |
|--------------------|---------------|
| Autostrade | 494 |
| Strade statali | 1.274 |
| Strade regionali | 1.599 |
| Strade provinciali | 6.480 |
| Strade comunali | 15.400 |
| TOTALE | 25.247 |

Tutti i capoluoghi di provincia della regione Campania sono tra loro collegati direttamente da assi autostradali, ad eccezione di Caserta e Benevento, che sono collegate dalla strada statale "SS 7 Appia".

Caratteristiche di singolarità sono da associare al tratto autostradale a pagamento della A3 "Napoli-Pompei-Salerno". Tale infrastruttura costituisce il raccordo tra l'autostrada A1 "Milano - Roma - Napoli" e il tratto dell'autostrada A3 "Salerno - Reggio Calabria" in gestione ANAS.

Oltre a tale funzione, la Napoli-Salerno rappresenta anche l'unica arteria di collegamento tra Napoli e la sua periferia orientale, che si estende verso la costiera Sorrentina e Amalfitana, risultando quindi interessata da flussi di traffico particolarmente intensi.

L'autostrada A3 Napoli - Salerno costituisce, inoltre, una delle arterie portanti a servizio dell'area Vesuviana, anche nel caso dell'eventuale necessità di esodo connesso al rischio Vesuvio.

| AUTOSTRADE e RACCORDI AUTOSTRADALI | | | |
|------------------------------------|--|--------------------|---------------------------------|
| N° | Denominazione | Estesa totale [km] | Estesa in ambito regionale [km] |
| A1 | Autostrada Milano - Roma - Napoli (del Sole) | 754,3 | 74,3 |
| A3 | Autostrada Napoli - Pompei - Salerno | 51,6 | 51,6 |
| A3 | Autostrada Salerno - Reggio Calabria | 443,4 | 119,0 |
| A16 | Autostrada Napoli - Avellino - Canosa | 172,3 | 115,0 |
| A30 | Autostrada Caserta Sud - Nola - Salerno | 55,3 | 55,3 |
| Tang. NA | Tangenziale Est - Ovest di Napoli | 20,2 | 20,2 |
| R.A. 02 | Raccordo autostradale Salerno - Avellino | 30,4 | 30,4 |
| R.A. 09 | Raccordo autostradale di Benevento | 12,8 | 12,8 |
| R.A. | Raccordo autostradale Sicignano - Potenza | 51,5 | 15,0 |
| | | Totale | 494 |

La viabilità statale, regionale e provinciale presenta criticità di varia natura, relative, in particolare, a problematiche di incidentalità, all'inadeguato livello di servizio su parte della rete e all'insufficiente grado di connessione della rete stessa. A queste si aggiungono criticità locali, quali la presenza di collegamenti interrotti da dissesti o ad alto rischio di instabilità per inadeguatezza del corpo stradale, o ancora itinerari con estremo degrado infrastrutturale e mancanza di percorsi alternativi.

Tali criticità determinano frequenti fenomeni di congestione, soprattutto intorno all'area metropolitana di Napoli e nelle strade in ingresso e in uscita delle altre grandi città.

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3.2. Puglia

3.2.1. Aspetti socio-economici

La Puglia è la regione più orientale d'Italia, bagnata da due mari, l'Adriatico e lo Ionio. Il territorio regionale è principalmente pianeggiante (54%) e collinare (44%), mentre le zone montuose risultano assai limitate (2%).

La regione Puglia ha un'estensione territoriale 19.450 di kmq ed una popolazione residente di circa 4 milioni di abitanti, presentando quindi una densità media regionale di 208 abitanti/kmq.

Nella regione figurano 6 province (Bari, Barletta, Brindisi, Foggia, Lecce, Taranto).

Bari è il capoluogo regionale, seguono in base al numero di abitanti i capoluoghi di Provincia di Taranto, Foggia, Lecce, Brindisi e Barletta- Andria – Trani.

Nella tabella sottostante si riporta la distribuzione dei residenti e la superficie territoriale delle suddette province, sia in termini di valori numerici che percentuali.

Si riporta, inoltre, il grafico a radar relativo alla densità della popolazione su base provinciale (res/kmq).

Distribuzione residenti e superficie territoriale per Provincia, Puglia

| Provincia | residenti settembre 2016 | % | superficie territorio (Kmq) | % |
|---------------------|--------------------------|--------------|-----------------------------|--------------|
| Bari | 1.260.800 | 31,0 | 3.863 | 19,8 |
| Barletta | 392.981 | 9,7 | 1.543 | 7,9 |
| Brindisi | 397.464 | 9,8 | 1.861 | 9,5 |
| Foggia | 628.979 | 15,5 | 7.007 | 35,9 |
| Lecce | 802.650 | 19,7 | 2.799 | 14,3 |
| Taranto | 583.945 | 14,4 | 2.467 | 12,6 |
| tot. Regione | 4.066.819 | 100,0 | 19.540 | 100,0 |

Densità della popolazione (res/kmq), Puglia



In base ai dati degli ultimi due Censimenti generali della popolazione e delle abitazioni condotti dall'Istat, tra il 2001 e il 2011 la popolazione in Puglia è aumentata in una misura pari a meno dell'1%, in modo differenziato rispetto al territorio: i sistemi locali del lavoro specializzati nel made in Italy, i cui poli principali sono Barletta, Putignano e Altamura, hanno registrato l'aumento medio della popolazione più elevato (2,1%) e il processo di invecchiamento meno rapido, viceversa la popolazione è diminuita in alcuni sistemi del sud del Salento, specializzati nel comparto del tessile e dell'abbigliamento. I sistemi manifatturieri non specializzati, soprattutto quelli del nord della regione, hanno registrato invece un calo della popolazione (-3,6% nella provincia di Foggia).

Gli andamenti demografici del decennio 2001-2011 sembrano riflettere una tendenza all'agglomerazione in alcune aree urbane (Bari, Taranto e Lecce) e nei sistemi ad alta densità di attività manifatturiere della fascia centrale della regione, viceversa lo sviluppo della popolazione è stato meno favorevole nelle aree più distanti dal centro della regione, caratterizzate dall'esistenza più marcata di attività agricole.

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Come conferma il Rapporto Svimez², nel 2016 complessivamente l'economia della Puglia ha rallentato (+0,7% di variazione del PIL) rispetto alla crescita dell'anno precedente (+2,1%), soprattutto a causa della negativa performance del comparto agricolo, che ha un peso notevole nell'economia regionale. Per quanto riguarda gli altri comparti: i servizi sono rimasti pressoché stazionari, le costruzioni sono cresciute poco, mentre per l'industria si rilevano segnali di leggera ripresa.

Il sistema produttivo regionale ha mostrato un'espansione degli addetti nel settore terziario, soprattutto nei comparti a bassa specializzazione, e una riduzione in alcuni settori caratteristici quali abbigliamento e mobile. Come nel resto del Paese, la dimensione media delle unità locali è rimasta invariata, per effetto netto di una traslazione della riduzione delle dimensioni nel manifatturiero a favore di un aumento nei servizi.

Il mercato del lavoro ha risentito pesantemente della debolezza del ciclo economico: tasso di disoccupazione salito al 19,8%, numero di occupati diminuito di 81.000 unità (pari al 6,6% - più che nella media nazionale e delle regioni meridionali, al -2,1 e -4,6 rispettivamente), ore lavorate ridotte complessivamente del 7,4%, sono i numeri che dimensionano la preoccupante situazione vissuta in Puglia nel passato recentissimo.

La regressione occupazionale è stata generalizzata in tutti i settori produttivi, più intensa nelle costruzioni (-18,9%) e nell'industria in senso stretto (-7,5%).

3.2.2. Infrastrutture di trasporto nel territorio

Il sistema di infrastrutture di trasporto della Regione Puglia è composto da:

- linea ferroviaria per una consistenza complessiva di binario pari a 1.260 km (dicembre 2016 - considerando la somma delle estese delle linee a semplice binario e del doppio calcolato due volte);
- Autostrade per un'estesa complessiva di circa 310 km;
- Strade statali, regionali e provinciali per uno sviluppo complessivo pari a circa 10.600 km.

Inoltre, nella regione sono localizzati i seguenti grandi terminali per l'intermodalità tra i diversi sistemi di trasporto:

- i quattro aeroporti localizzati nei comuni di Bari, Brindisi, Foggia e Grottaglie (aeroporto doganale)
- i porti di Bari, Brindisi e Taranto
- i terminali ferroviari Merci di Bari Lamasinata e Brindisi.

² "Rapporto SVIMEZ 2017 sull'economia del Mezzogiorno"- novembre 2017

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Mappa infrastrutture di trasporto, Puglia



Nel 2017 i passeggeri in arrivo e partenza dagli aeroporti di Bari e Brindisi sono stati, complessivamente, 6.991.415, il +5,3% rispetto al consuntivo del 2016; di questi 6.852.744, +5,1%, sono stati i passeggeri di linea e 130.981, +19,3%, quelli dei voli charter.

Dall'esame dettagliato dei dati emerge che il traffico di linea si apprezza del +5,1% rispetto al 2016, con un miglioramento più accentuato per la linea internazionale che con 2.243.204 passeggeri cresce, a livello di rete regionale, del 15,5% rispetto al 2016.

Sull'aeroporto di Bari è stato superato un nuovo traguardo, ossia quello dei 4,5 milioni di passeggeri: nell'anno appena terminato, infatti, il totale (arrivi + partenze) è stato di 4.673.652 passeggeri, il +8,4% rispetto al totale 2016. Di questi 4.571.537 (+7,8%) rappresentano il totale dei voli di linea, dato dai 2.829.525 passeggeri di linea nazionale (+2,1%) e da 1.742.012 passeggeri, +18,5%, della linea internazionale.

Stabile il dato dell'aeroporto del Salento di Brindisi dove nello scorso anno i passeggeri, totale tra arrivi e partenze, sono stati 2.317.763, in flessione dello 0,2% rispetto ai 2.323.275 passeggeri del 2016. Pressoché identico il consuntivo riferito ai passeggeri di linea, dove si è passati dai 2.277.732 passeggeri del 2016 ai 2.281.208 dello scorso anno. Se la linea nazionale, con 1.780.015 passeggeri, pari al -1,4% rispetto al dato 2016, sconta una serie di fattori esterni, tra i quali la riduzione delle frequenze autonomamente adottata da Ryanair a livello di network e dell'offerta Alitalia sui voli da/per Milano Linate, va evidenziato l'incremento del +6,05% registrato dalla linea internazionale i cui passeggeri sono passati dai 472.608 del 2016 ai 501.193 dell'anno scorso.

Il porto di Bari nel 2016, ha registrato un transito di oltre 1.550.000 passeggeri di cui circa 400.000 correlati alle navi da crociera ed il resto a quello dei traghetti. Per quanto attiene a questo ultimo segmento di traffico si segnala la buona performance dei collegamenti con l'Albania. Per quanto riguarda il traffico container, nello stesso anno, è stato movimentato un quantitativo pari a 72.000 TEUS. In crescita anche il traffico delle merci su rotabili che hanno raggiunto quasi i 2.800.000 tonnellate, frutto della movimentazione di circa 350.000 mezzi tra camion e rimorchi.

Dal porto di Brindisi, per l'anno 2016, sono transitati 505.000 passeggeri contro i 595.000 dello stesso periodo del 2015. Il calo del numero dei passeggeri riguarda le navi da crociera.

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Per le merci, invece, vero e proprio core dello scalo, il triennio 2014-2016 ha avuto un andamento altalenante. Nel 2014 si è registrato un traffico complessivo che ha sfiorato gli undici milioni di tonnellate movimentate (10.873.201), dato più alto degli ultimi sei anni, grazie ad una performance senza eguali da parte del comparto “merci varie in colli” dovuto al traffico Ro – Ro (+ 23,87% per un dato assoluto pari a circa 2,7 milioni di tonnellate) a fronte di una sostanziale conferma del comparto “rinfuse solide” (+0,10% per un dato assoluto pari a 5,6 milioni di ton) e del comparto “rinfuse liquide” (-2,5% per un dato assoluto pari a 2,6 milioni di tonnellate). Dopo un 2015 in sostanza stabile, e cioè circa 10,7 milioni di tonnellate, nel 2016 si è registrato un importante calo a circa 9,2 milioni di tonnellate. Su tale dato ha inciso il calo netto nella movimentazione del carbone, dovuto al regime di produzione mantenuto dalla centrale Enel di Cerano e dal fermo anche nel 2016 della centrale di Costa Morena.

Infine, il porto di Taranto, un hub di rilevanza strategica per il territorio pugliese, per il sistema nazionale ed europeo, infatti lo scalo jonico rappresenta il nodo terminale del segmento terrestre/ferroviario del Corridoio Scandinavo-Mediterraneo che parte da Helsinki per giungere fino a Malta e, contemporaneamente, nodo marittimo di collegamento del corridoio con La Valletta.

A causa del perdurare della crisi e, soprattutto, in connessione alla crisi del ciclo di produzione dell'acciaio nello stabilimento ILVA, le attività portuali relative al traffico merci del porto avevano conosciuto un andamento costantemente decrescente dal 2011 al 2015. In controtendenza, gli ultimi dati del 2016 registrano una netta ripresa. Come si evince dalla Relazione annuale del 2016 dell'Autorità del Sistema Portuale del Mar Ionio, il volume dei traffici del porto di Taranto, nell'anno 2016, è stato di circa 24,7 milioni di tonnellate, con un incremento pari al +9,3 % rispetto all'anno precedente (+2,1 milioni di tonnellate)

In particolare, le rinfuse sono state pari a 19,3 milioni di tonnellate, di cui 5,6 milioni rinfuse liquide (-8,3% rispetto al 2015) e 13,7 milioni rinfuse solide (+17,3%). Non sono state movimentate merci in container, ma, rispetto all'anno 2015 è ripartita la movimentazione Ro-ro per un traffico totale di 24.147 tonnellate. La movimentazione di altre merci residue è aumentata del 12,2% rispetto al 2015, per un valore assoluto di 5,4 milioni di tonnellate del 2016 contro i 4,7 milioni del 2015.

Tale ripresa si colloca in linea con la strategia dell'Autorità portuale del Mar Ionio che prevede importanti investimenti finalizzati a far divenire il Porto di Taranto un HUB Internazionale logistico/portuale e gateway europeo, ed in particolare uno scalo di "Terza Generazione", in grado di consentire l'ormeggio di navi porta containers di ultima generazione (fino a 18.000 TEUs).

Il disegno strategico sotteso è quello di creare intorno al porto di Taranto un sistema logistico integrato basato su una rete di strutture specializzate in grado di intercettare il traffico marittimo e di favorire, nel contempo, la crescita del territorio circostante.

Rete ferroviaria

Rete Ferroviaria Italiana (RFI) gestisce in Puglia 840 km di linee ferroviarie così classificate:

- 28% di linee fondamentali;
- 72% di linee complementari.

Le linee fondamentali sono le seguenti:

- Bari-Foggia: Linea a doppio binario ed elettrificata 3 kV cc.;
- Foggia-Ancona: Linea a doppio binario nella tratta Foggia- Lesina ed elettrificata 3 kV cc.;
- Foggia-Benevento/Napoli: Linea a doppio binario nella tratta Foggia-Cervaro ed elettrificata 3 kV cc.

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Sono 65 le stazioni attive sul territorio dove si effettua servizio viaggiatori e nella sola stazione di Bari Centrale transita quasi il 30% dei viaggiatori anno che utilizzano la rete ferroviaria della Puglia. Tutte le linee sono attrezzate con tecnologia di protezione della marcia del treno ed il 68% circa della rete è gestita in telecomando con il Sistema di Comando e Controllo (SCC)/ Comando Centralizzato del Traffico (CTC).

Il rapporto tra la lunghezza complessiva delle linee ferroviarie presenti in Puglia (gestite da RFI) e la superficie della Regione fornisce un basso valore di densità della rete se confrontato con le altre Regioni.

Anche l'accessibilità globale della rete, calcolata come il numero di stazioni per l'area d'influenza di una stazione rapportate alla superficie della Regione, è tra le più basse d'Italia.

Tuttavia il quadro infrastrutturale delineato è motivato dalla presenza di oltre 700 km di linee ferroviarie che non vengono presi in considerazione nel calcolo degli indicatori perché non gestite da RFI.

Infrastruttura ferroviaria e tecnologie RFI, Puglia (dati giugno 2016)

| LINEE FERROVIARIE IN ESERCIZIO | | TECNOLOGIE PER IL TELECOMANDO E L'INTEROPERABILITÀ | |
|----------------------------------|--------|---|--------|
| | 840 km | Sistemi di telecomando della circolazione (SCC/CTC+DPC) | 568 km |
| CLASSIFICAZIONE | | | |
| Linee fondamentali | 237 km | | |
| Linee complementari | 603 km | | |
| TIPOLOGIA | | | |
| Linee a doppio binario | 421 km | | |
| Linee a semplice binario | 419 km | | |
| ALIMENTAZIONE | | | |
| Linee elettrificate | 605 km | | |
| - Linee a doppio binario | 421 km | | |
| - Linee a semplice binario | 184 km | | |
| Linee non elettrificate (diesel) | 235 km | | |

| | |
|---|-----------------------------|
| Densità di rete rispetto all'area servita → | 0,043 km/km ² |
| Densità di rete rispetto alla popolazione → | 205,6 km/10 ⁶ ab |
| Indice di accessibilità globale → | 0,04 |

L'accessibilità globale della rete è calcolata come il numero di stazioni per l'area d'influenza di una stazione rapportate alla superficie della Regione

Nel suo complesso, la rete ferroviaria nella regione Puglia, in coerenza con la forma e l'estensione del territorio, ha come asse portante la parte più meridionale della Direttrice costiera "Adriatica", che collega tra loro i principali centri della regione con quelle confinanti e con l'Italia Centro-settentrionale.

Altre linee di minore importanza si dipartono dalla suddetta direttrice principale e costituiscono collegamenti con i centri abitati dell'entroterra regionale e, proseguendo oltre, con i centri e le varie linee presenti sui versanti jonico e tirrenico dell'Italia meridionale.

In particolare, si distinguono le linee della rete fondamentale:

- (Bologna-) Chieti-Foggia-Bari tratta della direttrice "adriatica", quasi interamente a doppio binario;
- Foggia-Cervaro-Orsara (-Napoli), a trazione elettrica, a doppio binario solo fino a Cervaro, che costituisce il principale collegamento trasversale verso la costa tirrenica.

Fanno parte della rete complementare secondaria le seguenti linee:

- Bari-Brindisi-Lecce, prosecuzione dell'itinerario della medesima direttrice;
- Bari- Taranto, a trazione elettrica, raddoppiata quasi interamente;
- Taranto-Brindisi, a semplice binario elettrificato;
- Cervaro-Rocchetta S.A.L., anch'essa a semplice binario elettrificato;
- Taranto-Ginosa (-Reggio Calabria), a semplice binario elettrificato.

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Fanno parte della rete complementare a scarso traffico:

- Barletta-Spinazzola, a trazione diesel ed a semplice binario;
- Spinazzola-Gioia del Colle, anch'essa diesel ed a semplice binario.

Infine, fa parte della rete complementare a spola la linea Foggia-Manfredonia, a semplice binario e trazione diesel.



Nella tabella sottostante sono rappresentate, per le diverse province della regione (Bari, Barletta, Brindisi, Foggia, Lecce e Taranto), la distribuzione delle linee ferroviarie a semplice binario, a doppio binario e la consistenza totale, calcolata come somma del semplice e del doppio considerato due volte, in termini di percentuali delle estese chilometriche.

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Sviluppo della rete a livello provinciale, Puglia

| Provincia | estesa rete S.B. | % | estesa rete D.B. | % | consistenza binario | % |
|---------------------|---------------------|--------------|---------------------|--------------|------------------------|--------------|
| Bari | 131,49 | 31,4 | 135,84 | 32,3 | 403,18 | 32,0 |
| Barietta | 49,88 | 11,9 | 36,84 | 8,8 | 123,56 | 9,8 |
| Brindisi | 44,90 | 10,7 | 80,31 | 19,1 | 206,53 | 16,3 |
| Foggia | 128,30 | 30,6 | 110,62 | 26,3 | 349,54 | 27,7 |
| Lecce | 3,90 | 0,9 | 14,60 | 3,5 | 33,10 | 2,6 |
| Taranto | 60,40 | 14,4 | 42,70 | 10,1 | 145,80 | 11,6 |
| tot. Regione | 418,87 | 100,0 | 420,92 | 100,0 | 1.260,71 | 100,0 |

Oltre a RFI vi sono altri gestori minori di infrastrutture ferroviarie: Ferrovie Appulo Lucane, Ferrovie del Gargano, Ferrovie del Sud Est e Ferrotramviaria.

Questa capillarità sul territorio fa sì che, se si considera che i comuni pugliesi più popolosi appartengono all'insieme dei 149 comuni con accesso diretto alla ferrovia, la maggior parte della popolazione regionale ha accesso "diretto" alla ferrovia. Infatti circa 3 milioni e duecento mila cittadini (pari all'81,4% della popolazione regionale) hanno accesso diretto alla ferrovia.

Rete stradale

La rete viaria pugliese è costituita da oltre 300 km di rete autostradale, da oltre 1.600 km di strade statali, da circa 1.400 km di strade ex-Statali trasferite da ANAS alla Regione e per suo tramite alle Province, e da circa 8.200 km di strade provinciali.

La rete SNIT (Sistema Nazionale Integrato dei Trasporti) di primo livello, formata dagli assi della rete portante del Paese, in Puglia, per la parte stradale, è costituita dalla rete autostradale e dai principali assi che integrano i collegamenti interprovinciali e interregionali.

La rete autostradale pugliese è costituita dal tratto Poggio Imperiale-Taranto della A14 Bologna-Taranto (Massafra) e dal tratto Lacedonia-Canosa della A16 Napoli-Canosa, connessi attraverso il raccordo di Canosa.

Complessivamente il territorio è servito da 17 caselli autostradali, 18 se si include anche quello di Lacedonia, posto al confine regionale con la Basilicata.

La rete autostradale è integrata longitudinalmente dall'itinerario Bari-Fasano-Brindisi-Lecce-Maglie-Otranto, formato dalla SS16 nel tratto tra Bari e Fasano, dalla SS379 nel tratto tra Fasano e Brindisi, dalla SS613 tra Brindisi e Lecce e di nuovo dalla SS16 nel tronco Lecce-Maglie-Otranto, oltre che dalle tangenziali di Bari, di Brindisi e di Lecce.

Su quest'asse longitudinale si innesta il collegamento tra Brindisi e Taranto realizzato attraverso la SS7 (tutta a due corsie per senso di marcia, tranne una tratta prossima alla tangenziale di Bari il cui adeguamento sta per essere realizzato).

Da Taranto la rete SNIT di primo livello continua a servirsi della SS7 per riconnettersi da un lato alla A14 e per realizzare il collegamento interregionale con Matera dall'altro, mentre la SS106 connette la

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Puglia a Calabria e Sicilia lungo la costa ionica (con una sezione a due corsie per senso di marcia ma con alcuni tratti a sezioni ristrette).

Fanno parte della rete portante SNIT anche il collegamento interregionale Bari-Altamura-Potenza lungo la SS96 e la diramazione lungo la SS99 da Altamura a Matera che riconnette la rete con la SS7 per Taranto (l'adeguamento a due corsie per senso di marcia è previsto per l'itinerario Bari-Altamura-Matera). Da Potenza la rete SNIT viene infine integrata dal collegamento con Foggia realizzato attraverso la SS655, che presenta nel tratto Candela-Foggia due corsie per senso di marcia.

4. Inquadramento del Programma di investimenti

Il Programma di Investimenti di potenziamento e riqualificazione dell'itinerario Napoli-Bari, finalizzato a dare adeguata risposta alle esigenze di mobilità dei viaggiatori e delle merci, costituisce un elemento fondamentale per lo sviluppo dell'intero meridione, per una sua migliore integrazione economica e sociale nel Paese ed in Europa.

Gli interventi in oggetto favoriscono, infatti, l'integrazione dell'infrastruttura ferroviaria del Sud – Est con le Diretrici di collegamento al Nord del Paese e con l'Europa, realizzando la connessione di due aree, quella campana e quella pugliese, strategiche per lo sviluppo socio-economico del Mezzogiorno e del sistema di interconnessione delle reti infrastrutturali nazionali ed europee.

Il potenziamento dell'asse ferroviario di collegamento fra il Tirreno e l'Adriatico permetterà di creare un "tripolo" (Roma, Napoli e Bari) che costituirà uno dei sistemi metropolitani più grandi d'Europa.

Di particolare rilevanza per il traffico merci, considerando che l'itinerario Napoli-Bari interessa due aree vaste identificate in Regione Campania e Puglia, rispettivamente, le aree vaste intermodali "Logistica campana" e il "Sistema pugliese", previste tra le Aree Logistiche Integrate del PON Infrastrutture e Reti 2014-2020 e di interesse per la rete centrale europea.

Infatti nell'ambito del nuovo assetto dei corridoi transeuropei (TEN-T) definito dalla Commissione Europea il 19 ottobre 2011, è stato identificato come prioritario lo sviluppo dell'itinerario Napoli – Bari, che nello specifico rientra all'interno del Core Network Corridor - Corridoio Scandinavia-Mediterraneo. Nel dettaglio, il progetto è identificato come sezione prioritaria all'interno dell'Allegato 1 Parte 1.2 del Regolamento 1316/2013.

La rete TEN-T è costituita da corridoi multimodali (strada e rotaia) progettati per facilitare la circolazione dei passeggeri, delle merci e di altre risorse tra i paesi membri dell'Unione Europea.

Le priorità per le reti TEN-T, definite a livello comunitario, includono la creazione e lo sviluppo delle connessioni e dei collegamenti chiave, necessari ad eliminare la congestione ed a completare i percorsi stradali principali, migliorando i collegamenti tra le zone isolate, periferiche e centrali dell'Unione Europea.

La strategia TEN-T prevede una rete dei trasporti europea molto più snella e rigorosamente definita, nell'intento di indirizzare la spesa verso un numero più ridotto di progetti con cui sia possibile realizzare un reale valore aggiunto.

In particolare, la rete TEN-T proposta dalla Commissione Europea individua:

- una rete centrale (*core*) da completare entro il 2030;
- una rete globale (*comprehensive*) destinata ad alimentare quella centrale, da completare entro il 2050.

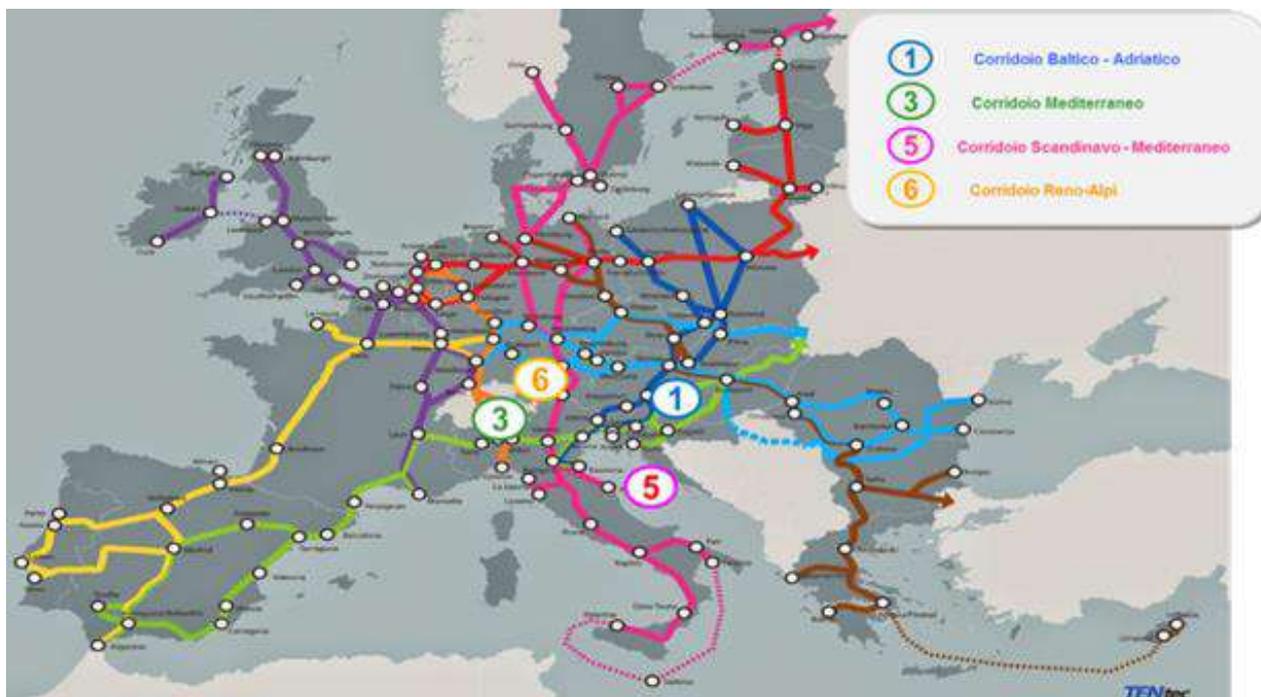
La rete globale si pone l'obiettivo di garantire la piena copertura del territorio dell'UE e l'accessibilità a tutte le regioni. La rete centrale, invece, si concentra sui collegamenti e sui nodi più importanti della TEN-T, in modo da renderla pienamente operativa entro il 2030.

Nella figura seguente sono rappresentati i "core corridor" che interessano il nostro Paese, incluso il corridoio "Scandinavo-Mediterraneo" (corridoio n. 5 Helsinki- Valletta) in cui ricade la tratta Napoli-Bari.

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Corridoi TEN-T che interessano il territorio italiano



Il Corridoio “Scandinavo-Mediterraneo” costituisce, nell’ambito del nuovo sistema dei Corridoi TEN-T, una delle principali arterie dei trasporti del mercato unico europeo e gli investimenti ad esso dedicati si pongono l’obiettivo di eliminare le strozzature esistenti nella rete ferroviaria e ammodernarne la dotazione infrastrutturale e tecnologica.

La rete ferroviaria nazionale ricadente nel Corridoio “Scandinavo-Mediterraneo” presenta una notevole disparità sotto il profilo della qualità e della disponibilità di infrastrutture ferroviarie. In particolare, emergono delle strozzature che interessano soprattutto il Meridione, sia per direttrici longitudinali (Napoli-Reggio Calabria) che trasversali (Napoli-Bari).

La realizzazione del Corridoio Scan-Med, con la costruzione di oltre 9.300 km di ferrovia (3.053 in Italia), permetterà di mettere in comunicazione le più importanti regioni dell’Unione Europea dal punto di vista socio-economico, rappresentando il 20% del PIL e circa il 15% della popolazione complessiva. Secondo il Work Plan di Corridoio nel 2030, grazie alla costruzione di questa grande arteria infrastrutturale europea nel 2030 si registrerà un incremento della merce trasportata in Europa del 30% in termini di tonnellate.km.

Nella figura seguente è rappresentato il dettaglio della sezione italiana del Corridoio Scandinavo-Mediterraneo:

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Corridoio Scandinavo-Mediterraneo: sezione italiana



Gli obiettivi definiti a livello comunitario e nazionale, rientrano in una strategia di medio-lungo periodo che risulta pienamente coerente con le strategie del Piano Generale dei Trasporti e della Logistica nonché con gli indirizzi, gli obiettivi e le azioni programmatiche dei Piani Regionali dei Trasporti delle Regioni Campania e Puglia.

Già nel 2006 era stato sottoscritto tra i Ministeri delle Infrastrutture e dei Trasporti, le sopraccitate Regioni, Ferrovie dello Stato e RFI, il protocollo d'intesa "Per la riqualificazione ed il potenziamento dell'itinerario ferroviario Roma/Napoli - Bari".

Successivamente, nel 2012, è stato sottoscritto il Contratto Istituzionale di Sviluppo (CIS) per la realizzazione della Direttrice Napoli – Bari – Lecce - Taranto fra Ministro della Coesione Territoriale, Ministro delle Infrastrutture e dei Trasporti, Regioni Campania, Puglia e Basilicata, FSI S.p.A. e RFI S.p.A., con l'individuazione degli obblighi delle Parti per la tempestiva attuazione degli interventi.

L'itinerario Napoli-Bari è compreso nel Sistema Nazionale Integrato dei Trasporti (SNIT), ossia infrastrutture sulle quali si effettuano servizi di interesse nazionale ed internazionale, che costituiscono la struttura portante del sistema italiano di offerta di mobilità delle persone e delle merci.

Alla luce della pianificazione infrastrutturale nell'ambito delle reti europee TEN-T e delle nuove infrastrutture realizzate dal 2001, lo SNIT è stato sottoposto ad aggiornamento nell'Allegato Infrastrutture al DEF 2017 dal titolo "Connettere l'Italia: fabbisogni e progetti infrastrutturali".

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Nel documento “Connettere l’Italia: fabbisogni e progetti infrastrutturali”, che individua i fabbisogni infrastrutturali al 2030, sono indicati gli obiettivi funzionali di base per la gestione e lo sviluppo della rete ferroviaria di interesse nazionale, tra i quali vi è la diffusione a rete dei servizi ferroviari ad alta velocità, in modo da ampliarne la connettività a livello nazionale.

L’orizzonte programmatico si apre oggi ad una progressiva estensione dei servizi ferroviari veloci all’insieme del territorio nazionale, in modo da garantire una connettività “a rete” su tutte le principali direttrici interpolo, caratterizzate da condizioni di domanda idonee a sostenere un’offerta adeguata in termini di frequenza e velocità. L’impegno prioritario consiste nell’identificare un certo numero di direttrici ordinarie da velocizzare ai fini di aumentare i livelli di connettività ed accessibilità delle regioni non direttamente connesse al sistema AV, come oggi configurato. Gli interventi programmati sono finalizzati, in particolare, a supportare la produzione di servizi “Alta Velocità di Rete” (AVR), con l’obiettivo di consentire tempi di accesso a Roma, da tutte le principali aree urbane del paese, non superiori a quelli oggi garantiti dal sistema AV tradizionale sulla tratta di maggior lunghezza (Torino-Roma, percorsa in circa 4h30min).

Il potenziamento dell’itinerario Napoli-Bari costituisce il primo importante programma di investimenti per estendere i benefici del sistema AV alle regioni del meridione.

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TEMPI DI PERCORRENZA ATTUALI



TEMPI DI PERCORRENZA FUTURI



Nell'ambito dell'Accordo Quadro sui Servizi ferroviari tra la Regione Campania ed RFI stipulato nel 2016, con orizzonte operativo di dieci anni, è stato ribadito l'obiettivo di garantire un'importante fase di sviluppo del network del Trasporto Pubblico Locale, potenziando i collegamenti delle relazioni metropolitane, realizzando una progressiva specializzazione e omogeneizzazione dei servizi, sia velocità commerciale sia fermate, e garantendo un sistema di integrazione e coincidenze nei principali Nodi ferroviari della rete campana, tra cui quelli dell'asse trasversale Napoli-Caserta-Benevento.

Lo scenario di sviluppo dei servizi commerciali nel quinquennio 2017-2021 vede un incremento dei collegamenti periferici rispetto al nodo di Napoli Centrale coerentemente con quanto previsto nell'Accordo Quadro stipulato nel 2016 con RFI ove è stato previsto un incremento di offerta di circa il 5% nel corso di validità dell'Accordo.

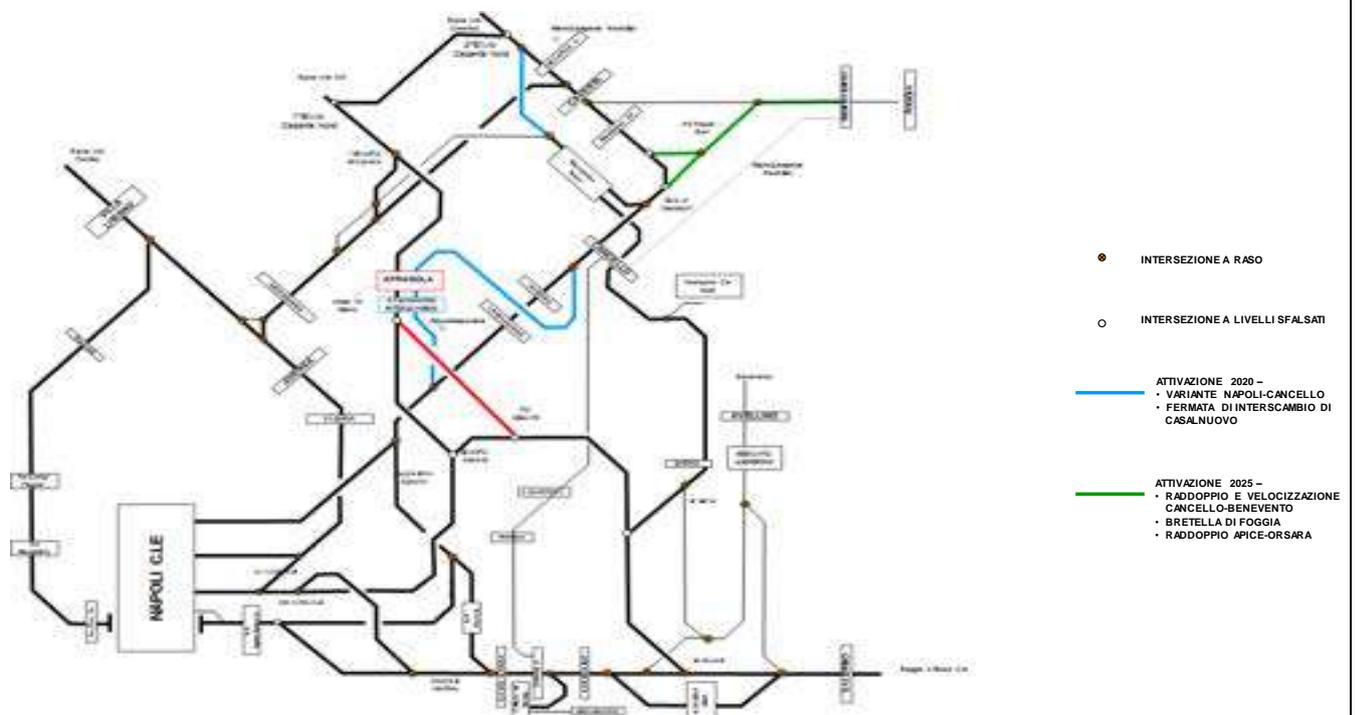
Per quanto riguarda il completamento della rete AV, a seguito dell'attivazione della stazione Afragola AV e dei confortanti dati di frequentazione della stessa, pur in assenza di sistemi di trasporto a suo servizio, va affiancata la realizzazione della Variante di Canello (attivazione prevista per il 2021) che ha proprio il fine di interconnettere il sistema AV al sistema regionale più capillare.

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Nel seguente grafico è riportato lo scenario infrastrutturale di regime relativamente alla stazione di Afragola AV che costituirà un importante snodo nel sistema dell'alta velocità nazionale.

Scenario infrastrutturale stazione Afragola AV



Il bacino di gravitazione della stazione di Afragola AV, confrontato con quello della stazione di Reggio Emilia AV, mostra come l'area interessata dall'investimento risulti fortemente antropizzata.

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Bacino di gravitazione stazione Afragola AV – popolazione residente (escluso il comune di Napoli)



| | BACINI | |
|---------------|---------|-----------|
| | 5 km | 10 km |
| Afragola | 320.000 | 1.117.200 |
| Reggio Emilia | 105.000 | 193.000 |

La riqualificazione e lo sviluppo dell'itinerario Napoli – Bari prevede interventi di raddoppio delle tratte ferroviarie a singolo binario e varianti rispetto agli attuali tracciati, perseguendo, con visione di sistema, la scelta delle migliori soluzioni, in grado di assicurare la velocizzazione dei collegamenti e l'aumento dell'offerta di trasporto ferroviaria, elevando l'efficacia dell'infrastruttura esistente, attraverso l'aumento dell'accessibilità al servizio nelle aree attraversate.

In particolare gli interventi sull'itinerario riguardano le seguenti tratte funzionali:

- Tratta Napoli – Cancello
- Tratta Cancello – Frasso T - Vitulano (Benevento)
- Tratta Apice – Orsara di Puglia
- Tratta Orsara di Puglia – Bovino
- Tratta Bovino – Cervaro di Foggia (già in esercizio)
- Bretella di Foggia (già in esercizio)

Di seguito vengono indicati in sintesi gli interventi già completati e di recente attivazione, e che, ai fini della presente ACB sono considerati nello Scenario infrastrutturale di Riferimento, costituendo pertanto un'invariante rispetto allo Scenario di Progetto.

Si rinvia al capitolo 5, invece, per il dettaglio degli interventi programmati e di attivazione futura, considerati nel solo Scenario di Progetto, e quindi inclusi nel Programma di Investimenti (c.d. Global Project) oggetto della presente valutazione.

Interventi già realizzati e in esercizio

- Raddoppio della Tratta Bovino – Cervaro di Foggia

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Attivato all'esercizio commerciale a giugno 2017, il nuovo tracciato ferroviario tra Bovino e Cervaro si sviluppa per un'estesa di circa 23 Km nel territorio pugliese ed è stato realizzato parte in variante e parte in affiancamento alla linea esistente completamente rinnovata.

L'intervento ha avuto ad oggetto altresì la realizzazione della nuova Stazione di Ponte Albanito e della nuova fermata di Bovino, con la contestuale soppressione della Stazione di Troia - Castelluccio dei Sauri e l'eliminazione di 7 passaggi a livello.

Per consentire l'innalzamento della velocità di percorrenza dei treni da 150 km/h fino a 200 km/h è stato previsto un nuovo apparato tecnologico per il distanziamento treni (ACC-M), governato dal Posto centrale di Napoli.

Il raddoppio di tale tratta consente di poter beneficiare di:

- vantaggi derivanti dalla soppressione dei passaggi a livello;
- incremento degli standard di regolarità e sicurezza della circolazione;
- recupero dei tempi di percorrenza.

➤ Bretella di Foggia

Attivato all'esercizio commerciale a luglio 2015, l'intervento ha consentito il ripristino della bretella di Incoronata di raccordo fra le linee ferroviarie Foggia-Bari e Foggia-Napoli. In dettaglio sono stati eseguiti i seguenti lavori:

- lavori di ripristino della sede ferroviaria (circa 1,6 km) e relativo attrezzaggio tecnologico;
- lavori agli impianti tecnologici nella stazione di Foggia e delle tratte adiacenti;
- realizzazione delle opere civili connesse e delle opere di compensazione ambientale (realizzazione di un sottovia come opera sostitutiva di due passaggi a livello e nuove viabilità complanari e di accesso ai fondi interclusi, sistemazione a verde di un "Regio Tratturo" interessato dalle opere come intervento di mitigazione prescritto dalla Regione Puglia in ambito di Conferenza dei Servizi).

L'intervento ha permesso ai servizi passeggeri e merci sul collegamento Bari – Napoli di non dover più attestarsi a Foggia ed effettuare il cambio banco, beneficiando quindi di risparmi nei tempi di viaggio.

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5. Il Programma di Investimenti oggetto dell'ACB

Il Programma di Investimenti relativo all'Itinerario Napoli-Bari oggetto della presente ACB è articolato negli interventi di seguito specificati:

| Programma di Investimenti oggetto della presente ACB | | | | |
|--|---|------------------------------|-----------------------------|---|
| Progetti di investimento | Interventi/Opere funzionali | Status attuale | Costo a vita intera (MEURO) | Anno di attivazione all'esercizio commerciale |
| Interventi sulla linea Canello-Napoli per integrazione con AV/AC | Variante Napoli-Canello | Attività negoziali | 813 | 2022 |
| Velocizzazione e Raddoppio Canello-Benevento | Raddoppio e velocizzazione tratta Canello-Frasso Telesino (Sotto progetto S11) | Attività negoziali | 730 | 2022 |
| | Raddoppio e velocizzazione tratta Frasso Telesino-Vitulano (Sotto progetti S06, S07, S08) | In Progettazione Definitiva | 995 | 2025 |
| Itinerario Napoli-Bari – Raddoppio Apice-Orsara | Raddoppio tratta Apice-Orsara (soluzione SUD) | In Progettazione Definitiva | 2.986 | 2026 |
| Potenziamento Infrastrutturale e Tecnologico Caserta-Foggia | Itinerario Napoli-Bari: Raddoppio Orsara-Bovino (soluzione 7) | In Progettazione Preliminare | | |
| TOTALE SPESA PER INVESTIMENTI | | | 5.524 | |

Nel complesso, ai fini della presente ACB, si considera quindi una spesa per investimenti di circa 5.524 milioni di euro, a valori finanziari.

In linea con le politiche di sviluppo, fissate a livello comunitario, nazionale e locale, il Programma di Investimenti finalizzato al potenziamento e alla riqualificazione della direttrice Napoli-Bari permetterà di conseguire importanti **obiettivi**, di seguito sintetizzati:

- miglioramento della competitività del trasporto su ferro, rispetto alla strada, attraverso l'incremento dei livelli prestazionali, con un aumento dei punti di accesso alla modalità ferroviaria oltre che un significativo recupero dei tempi di percorrenza;
- miglioramento dell'integrazione della rete ferroviaria di Sud – Est con il sistema AV/AC, con conseguente aumento generalizzato dell'offerta del servizio ferroviario per il Mezzogiorno;
- miglioramento dell'integrazione ferroviaria con le strutture dedicate all'intermodalità e alla logistica, con conseguente aumento delle quote di trasporto merci su rotaia, in coerenza con il sistema di nodi (es. piattaforme intermodali, porti) previsti nel nuovo assetto della rete TEN-T
- aumento degli standard di sicurezza (grazie anche all'eliminazione di numerosi passaggi a livello presenti sull'attuale linea) e di affidabilità complessiva della tratta.

In particolare l'intervento soddisfa pienamente il nuovo indirizzo di politica dei trasporti italiano, che secondo le indicazioni programmatiche del Ministro delle Infrastrutture ha l'obiettivo di superare il modello per l'alta velocità (quadruplicamento con nuove linee) e sostituirla con l'Alta Velocità di Rete

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(AVR), ovvero velocizzare alcune direttrici ferroviarie esistenti con upgrading e ammodernamenti, con costi e tempi ben più contenuti e possibilità di creare una "rete" di servizi ad alta velocità più connessa con il territorio.

Coerentemente con quanto riportato nell'allegato al DEF 2017, il ruolo delle infrastrutture di trasporto per la qualità della vita e competitività delle aree urbane deve essere letto come il tentativo di migliorare l'accessibilità ai principali nodi del sistema Paese: in primo luogo, le principali aree urbane e metropolitane, nelle quali si concentra la maggioranza della popolazione.

L'idea di ripartire dai nodi del sistema nazionale, considerando le infrastrutture e quindi i corridoi, uno strumento per connetterli in un'unica rete integrata e intermodale, rappresenta una radicale inversione di tendenza che cambia la logica dei corridoi, per rilanciare il ruolo strategico che i nodi della rete stanno acquistando nello scenario di polarizzazione degli spostamenti di merci e persone.

Le città e le aree metropolitane si candidano ad essere il principale driver delle economie nazionali: la competitività di un Paese si misura oggi attraverso l'efficienza dei servizi (in primo luogo quelli di mobilità), la vivibilità e le opportunità (lavorative, culturali, di scambio sociale, ...) offerte nelle principali città.

Nei seguenti paragrafi vengono forniti i dettagli degli interventi relativi al Programma di Investimenti dell'Itinerario Napoli-Bari, distinti per tratta:

- Tratta Napoli-Cancello
- Tratta Cancello-Benevento
- Tratte Apice-Orsara e Orsara-Bovino.

5.1. Variante alla linea Napoli-Cancello

L'intervento costituisce il primo segmento dell'itinerario Napoli-Bari e concretizza, inserendosi nella nuova stazione AV di Napoli Afragola, l'integrazione delle linee storiche con il sistema AV/AC.

In sintesi, l'intervento prevede la realizzazione di una nuova linea a doppio binario, in variante, lunga 15,5 km (con una velocità massima di 170 Km/h nei primi 3 Km da Napoli e di 130 Km/h nei successivi 12,5 Km), 2 nuove Fermate, 1 nuova Stazione e un nuovo Apparato Centrale Computerizzato Multistazione, con Posto Centrale a Napoli, permettendo, fra l'altro, di sopprimere tutti i 12 passaggi a livello presenti lungo la tratta storica, con un miglioramento complessivo della viabilità dell'area.

Descrizione dell'intervento

L'intervento ha inizio, lato Napoli, al Km 241+727 della linea storica Napoli – Cassino, nell'ambito del Comune di Casoria, per una lunghezza di circa 15,5 Km.

Dopo un primo tratto prima in rilevato e poi in trincea, alla progressiva di progetto Km 0+550 circa, inizia la galleria artificiale Casalnuovo lunga circa 2,5 Km che si sviluppa per la maggior parte nel Comune di Afragola e lambisce i Comuni di Casoria e Casalnuovo.

Alla progressiva di progetto km 2+606 circa, sempre in galleria, si trova la fermata Casalnuovo nel territorio del Comune di Afragola.

La Galleria Artificiale Casalnuovo, poi, si innesta nella Galleria Artificiale Santa Chiara, già realizzata, che si presenta con un'unica sezione a tre canne dove è allocata la sede della linea AV Roma - Napoli, della presente Variante Napoli - Cancello e della prevista Circumvesuviana.

A seguire il tracciato, in trincea, prosegue sino alla Stazione AV di Afragola. In uscita dalla stazione il tracciato è in rilevato per poi proseguire su viadotto, attraversando il Centro Commerciale (Le Porte di Napoli) con la fermata Marziasepe al km 7+239 circa.

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Il tracciato continua poi in rilevato sviluppandosi parallelamente ai Regi Lagni con un successivo Viadotto che scavalca il canale dei Regi Lagni e sovrappassa il raccordo industriale e all'asse mediano, per poi arrivare alla nuova Stazione di Acerra al km 10+945 circa.

La linea prosegue poi in rilevato e si riallaccia sulla sede esistente in corrispondenza della località Gaudello in prossimità del PL alla pk 229+530 della linea storica. Il PL sarà dismesso in quanto la viabilità su cui insiste sarà chiusa e sostituita da quella prevista nel presente progetto.

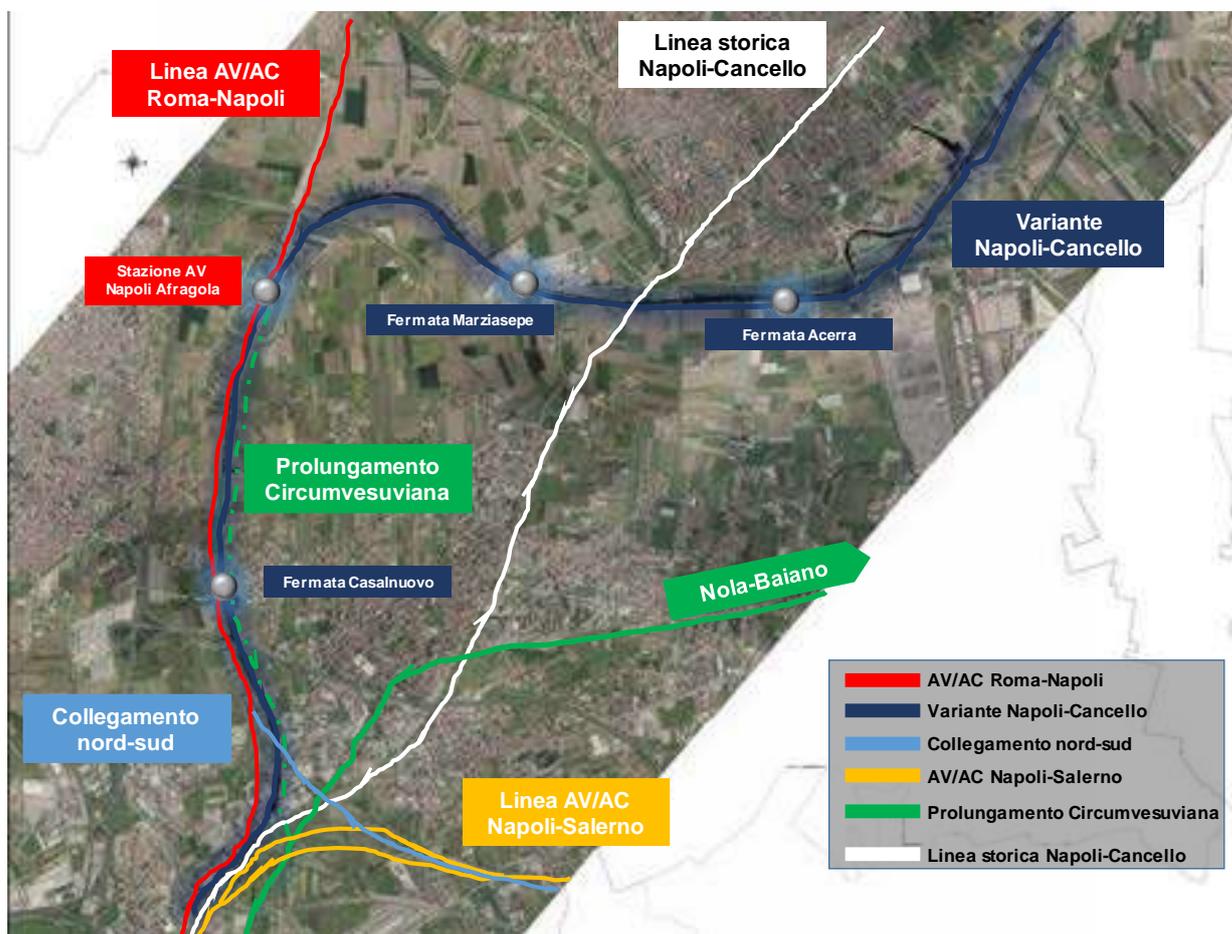
Il progetto, quindi, comprende, la realizzazione dei seguenti impianti:

- nuova Fermata Casalnuovo (in sotterraneo), ubicata nel Comune di Afragola;
- nuova Fermata Marziasepe ubicata nel Comune di Afragola;
- nuova Stazione di Acerra ubicata nel comune da cui prende il nome.

La fermata Casalnuovo, insieme alla Stazione AV/AC di Napoli Afragola (non oggetto di questo intervento), sono punti di scambio con la linea della Circumvesuviana da realizzarsi a cura della medesima Società.

La nuova Stazione di Acerra potrà scambiare con l'attuale linea della Circumvesuviana Acerra – Pomigliano D'Arco – Napoli una volta che la medesima Società avrà realizzato la stazione di scambio.

Nella figura seguente è rappresentato il tracciato dell'intervento e la localizzazione dei relativi impianti:



Di seguito i dettagli relativi alle altre principali opere d'arte, agli impianti di segnalamento e all'armamento previsti.

Analisi Costi-Benefici

➤ Opere d'arte:

Nel progetto, oltre alle suddette fermate e Stazioni, saranno realizzate le seguenti principali opere d'arte:

- Galleria Artificiale Casalnuovo dal Km 0+550 al Km 3+059 (l = 2.509 m circa);
- la galleria dal Km 0+550 al Km 1+028 presenta una sezione ad una sola canna in cui è alloggiata la sede della Variante Napoli-Cancello, successivamente la sezione si presenta a due canne per ospitare la futura Circumvesuviana non a carico del presente progetto.
- Viadotto VI01 tra le progressive Km 6+650 e Km 8+487 (l = 1.837 m circa); attraversa per la maggior parte il Centro Commerciale "Le Porte di Napoli", in tale tratto il viadotto si presenta ad archi a via superiore in cls.
- Viadotto VI02 tra le progressive Km 9+532 e Km 10+528 (l = 996 m circa) ricadente interamente nel Comune di Acerra;
- Viadotto VI03 tra le progressive Km 11+972 e Km 12+552 (l = 581 m circa) ricadente nel Comune di Acerra;
- Viadotto VI04 tra le progressive Km 13+201 e Km 13+580 (l = 379 m circa) ricadente nel Comune di Acerra;

Fabbricati Tecnologici lungo linea:

- Fabbricato PT1 al Km 0+350;
- Fabbricato Sicurezza in Galleria al Km 0+680 (PGEP Lato Napoli);
- Fabbricato impianto di sollevamento galleria Casalnuovo al Km 1+050;
- Fabbricato Sicurezza in Galleria al Km 3.550 (PGEP Lato Cancello);
- Fabbricato tecnologico Centro Commerciale Km 7+075.

➤ Impianti di Segnalamento:

Il distanziamento previsto sarà costituito da un Blocco Automatico Banalizzato con emulazione a tre aspetti per il binario legale e due aspetti per il binario illegale.

L'itinerario Napoli – Bari, da Napoli al PM Cervaro (e) sarà posto sotto la giurisdizione del nuovo sistema SCCM, collocato nell'attuale fabbricato SCC di Napoli, in uno al PCM dei due sistemi ACCM con due rispettive sezioni di DCO: la prima sezione interesserà la tratta Napoli – Caserta, la seconda sezione la tratta Caserta – PM Cervaro (e).

In parallelo agli appalti multidisciplinari finalizzati alla realizzazione delle tratte Variante Cancello e Cancello-Dugenta Frasso Telesino, si prevede un unico appalto tecnologico, che comprende entrambe le tratte suddette, finalizzato alla realizzazione dell'ACC-M Napoli-Caserta-Dugenta Frasso.

Infine si prevede un sistema ERTMS/L2, sovrapposto al suddetto sistema di distanziamento tradizionale, solo al completamento dei lotti dell'intero itinerario Napoli - Bari. Con il presente intervento saranno comunque realizzate tutte le predisposizioni necessarie per la tratta Napoli-Cancello.

➤ Armamento:

Configurazione tipologica di tipo 60 E1, sovrastruttura tradizionale su ballast e scartamento 1435.

Analisi Costi-Benefici

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Benefici attesi

L'intervento garantisce l'integrazione della linea convenzionale con la linea AV/AC, contribuendo al raggiungimento degli obiettivi generali associabili al potenziamento dell'intero itinerario Napoli-Bari.

5.2. Tratta Canello-Benevento

Descrizione degli interventi sulla tratta

Questa tratta è interessata dai seguenti interventi:

- A) "Raddoppio Canello - Frasso Telesino e variante alla linea Roma - Napoli via Cassino nell'ambito del Comune di Maddaloni e opere connesse" (Sottoprogetto S11)
- B) "Raddoppio Frasso - Vitulano" (costituito dai Sottoprogetti S06, S07, S08).

A) "Raddoppio Canello - Frasso Telesino e variante alla linea Roma - Napoli via Cassino nell'ambito del Comune di Maddaloni e opere connesse".

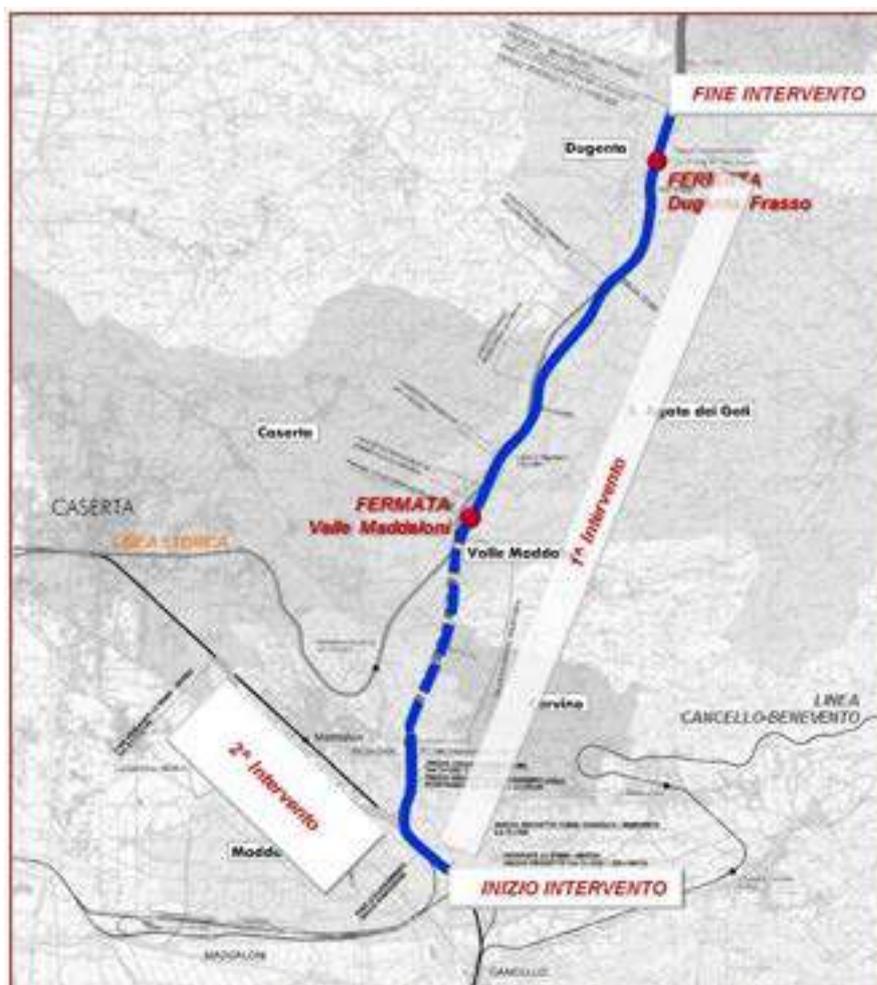
Il sottoprogetto si realizza attraverso due interventi.

- il primo intervento prevede la realizzazione del raddoppio nel tratto compreso tra Canello e la Stazione di Frasso T./Dugenta, per un'estensione complessiva pari a circa 16,5 Km.
- il secondo intervento prevede una variante alla linea Roma-Napoli via Cassino nel Comune di Maddaloni attraverso la realizzazione di interconnessioni nord per il collegamento della Canello - Frasso alla linea storica RM-NA via Cassino in direzione Caserta e relative opere di miglioramento e mitigazione del transito ferroviario, connesse e accessorie, al fine di garantire il collegamento Roma - Bari. Fra dette ultime opere figurano anche le opere sostitutive dei passaggi a livello presenti all'interno del tratto di linea ferroviaria che attraversa Maddaloni nonché le opere di mitigazione acustica.

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Velocizzazione e Raddoppio Cancelli Frasso T./Dugenta



Il primo intervento, procedendo dalla esistente stazione di Dugenta/Frasso T. (che diventa stazione di passaggio doppio/semplice binario), prevede un sostanziale affiancamento e raddoppio della linea esistente per circa 9 Km verso Napoli, con velocizzazione a 180 Km/h (200 Km/h in rango P).

In prossimità dell'attuale stazione di "Valle di Maddaloni" ha inizio un tratto a doppio binario completamente in variante, lungo circa 6 Km di cui 4 in galleria naturale, che si innesta sulla tratta Cancelli - Caserta della linea Roma - Napoli via Cassino, poco più a sud dell'esistente fermata di Maddaloni, con biforcazione sia verso Roma che verso Napoli.

Sulla bretella di innesto verso Napoli, si inserisce il collegamento con lo scalo merci di Maddaloni Marcianise, che sottopassa la linea storica Cancelli - Caserta: tale collegamento consente di istradare il traffico merci direttamente allo scalo, senza interessare la linea a vocazione regionale e l'impianto di Caserta.

Inoltre, è prevista la realizzazione di una bretella di collegamento di circa 1 Km fra la tratta Cancelli - Frasso e la linea esistente Roma Napoli Via Cassino, atta a rendere autonoma e funzionale, per le relazioni Napoli - Bari, la realizzazione della tratta Cancelli - Frasso rispetto alle opere di cui al secondo intervento, da completarsi quest'ultimo contestualmente al primo intervento per assicurare anche i collegamenti Roma - Bari sulla nuova linea, con la dismissione del tratto di linea storica Caserta - Frasso T.

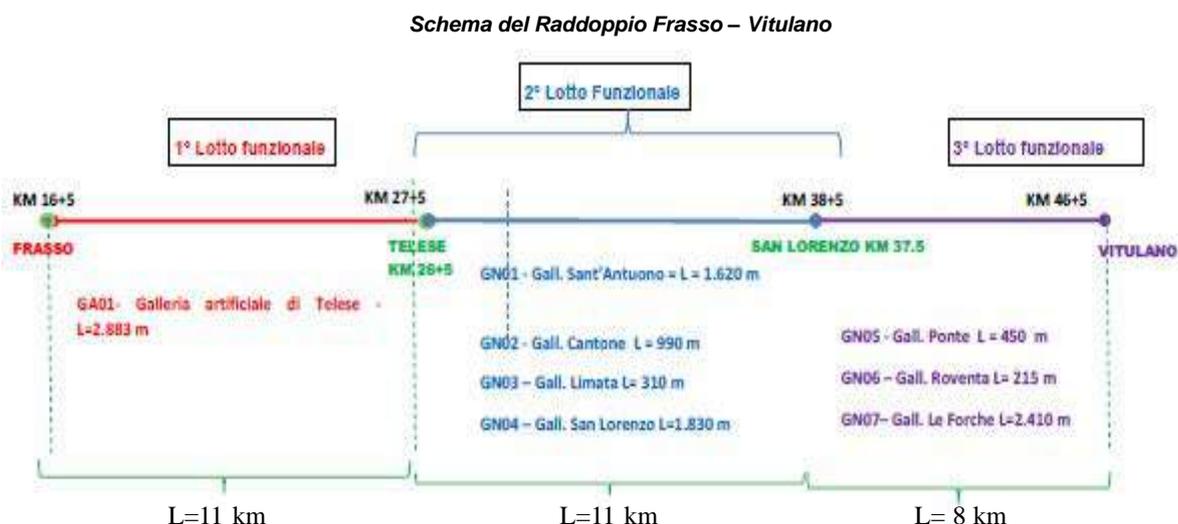
Analisi Costi-Benefici

Il primo intervento prevede la realizzazione di due nuove fermate: la fermata “Valle Maddaloni” – in sostituzione della attuale stazione, che sarà dismessa, sulla linea storica e la fermata “Frasso Telesino/Dugenta”, lungo la tratta Cancellò – Frasso Telesino.

B) “Raddoppio Frasso – Vitulano”

L'intervento, che si sviluppa per un'estesa di circa 30 km, prevede la velocizzazione a 180 km/h (200 Km/h in rango P) ed il raddoppio in variante ed in sede della linea storica, nella tratta che va da Frasso Telesino sino all'attuale impianto di Vitulano.

La realizzazione dell'intervento è articolata in tre Lotti funzionali, come rappresentato schematicamente nella figura seguente, che mette altresì in evidenza le gallerie previste in progetto:



La nuova infrastruttura, in uscita da Frasso e in direzione Benevento, per i primi 4 Km circa si sviluppa in stretto affiancamento alla sede del binario esistente. Nel successivo tratto di circa 7 km, la linea è in variante rispetto alla storica, fino all'immissione del nuovo tracciato nell'impianto esistente di Telese Terme. In tale tratto sono previste la realizzazione della nuova fermata di Amorosi e della galleria artificiale di Telese lunga circa 2.883 m (*primo lotto funzionale Frasso – Telese – S06*).

In uscita dall'impianto di Telese il tracciato curva e si stacca nuovamente dalla linea esistente per procedere sostanzialmente in variante fino in prossimità della nuova fermata di S. Lorenzo Maggiore. In tale tratto sono previste le gallerie naturali Tuoro S. Antonio (l=1.620 m), Cantone (l=990 m), Limata (l=310 m) e San Lorenzo (1830 m) (*secondo lotto funzionale Telese – San Lorenzo Maggiore – S07*).

All'uscita dell'impianto di San Lorenzo e per 3 Km circa il tracciato si sviluppa nuovamente in stretto affiancamento alla linea storica. Quindi, fino alla fine del lotto, la linea è prevista in completa variante, con la realizzazione delle gallerie naturali Ponte (l=450 m), Roventa (215 m) e Le Forche (2.410 m) (*terzo lotto funzionale San Lorenzo Maggiore - Vitulano – S08*).

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La fine dell'intervento è prevista immediatamente prima dell'attuale stazione di Vitulano. Il tratto compreso tra la fine progetto e la stazione di Benevento è già raddoppiato ed in esercizio.

Di seguito i dettagli relativi alle principali opere previste nell'ambito dei due interventi sulla tratta Cancello-Benevento:

- Impianti di Segnalamento, apparati centrali e blocco automatico:

Situazione attuale:

Le linee esistenti interessate dai Sottoprogetti sono:

- la linea Foggia – Napoli (tratta Caserta – Foggia) che è a singolo binario per quasi tutta la sua estensione di circa 163 km; risultano già raddoppiati solo i tratti compresi tra Vitulano ed Apice, a cavallo della stazione di Benevento e per un'estensione di circa 21 km, e tra Foggia Centrale e la fermata di PM Bovino, per un'estensione di circa 30 km. Il regime di circolazione è il blocco conta assi (Caserta –PM Bovino) il BACf co emulazione RSC (tratta PM Bovino – PM Cervaro) e il sistema di esercizio è DCO su linee CTC con sede presso il fabbricato SCC di Napoli (con ACC-M tratta PM Bovino – PM Cervaro);
- la linea Roma – Napoli Via Cassino (tratta Napoli - Cancello – Caserta) che è a doppio binario. Il regime di circolazione è il BAcc 3/2 e il sistema di esercizio è DC con sede presso il fabbricato SCC di Napoli.

Situazione di progetto:

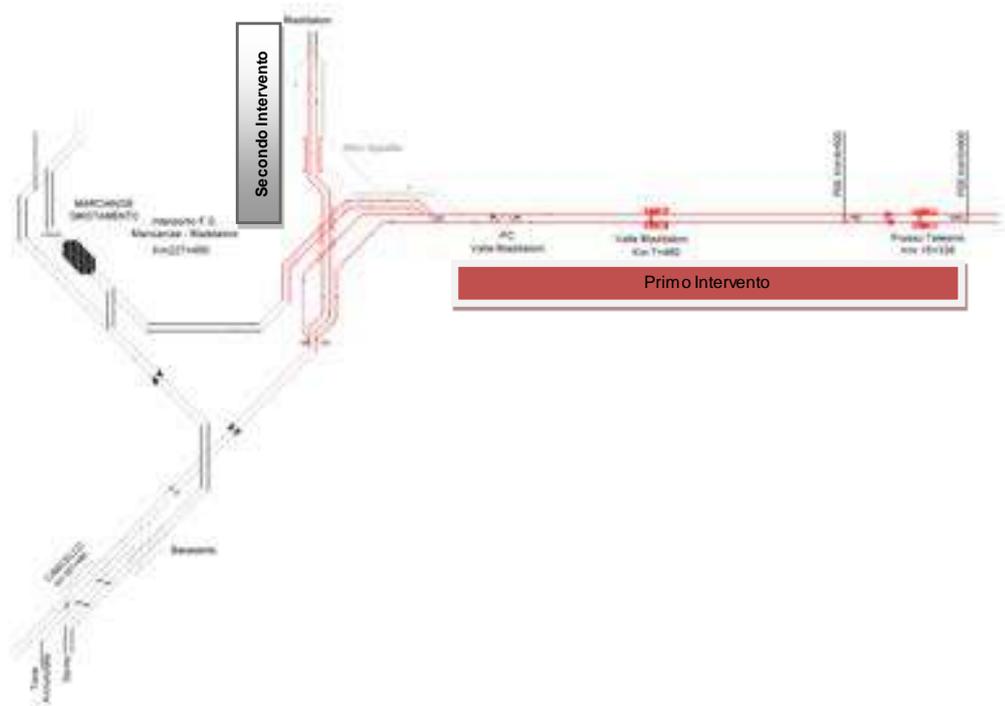
In parallelo agli appalti multidisciplinari finalizzati alla realizzazione del Sottoprogetto Cancello - Frasso e di quello afferente al progetto d'investimento "Variante Napoli Cancello", si prevede un unico appalto tecnologico, che comprende entrambe le tratte suddette, finalizzato alla realizzazione dell'ACC-M Napoli-Caserta-Dugenta Frasso.

Per quanto attiene i lotti funzionali costituenti la tratta Frasso – Vitulano, la logica è quella di attivazione progressiva, in concomitanza con l'attivazione dei singoli lotti, con ACC-M.

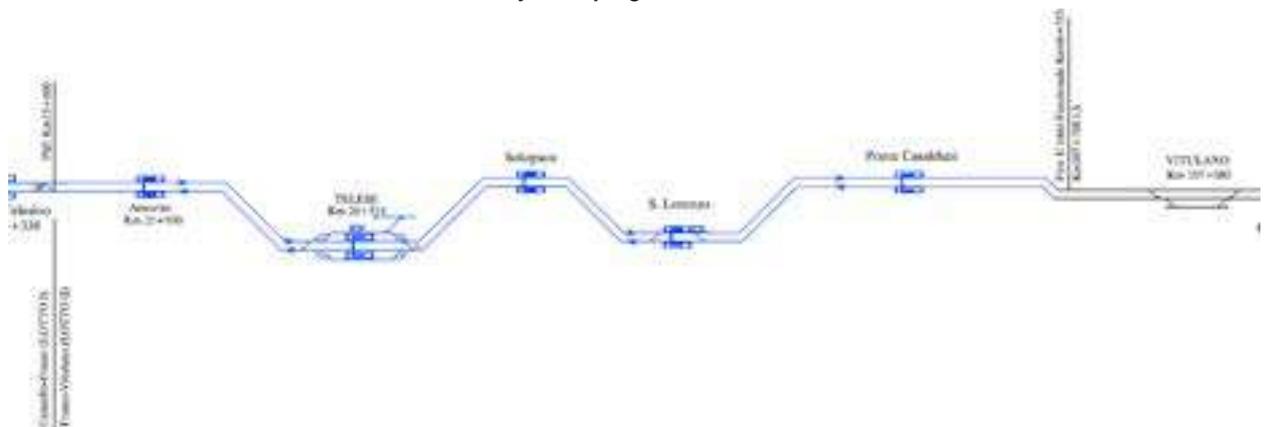
Analisi Costi-Benefici

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Layout di progetto – Tratta Canello-Frasso



Layout di progetto – Tratta Frasso-Vitulano



Come detto, l'itinerario Napoli – Bari, da Napoli al PM Cervaro (e) sarà posto sotto la giurisdizione del nuovo sistema SCCM, collocato nell'attuale fabbricato SCC di Napoli, in uno al PCM dei due sistemi ACCM con due rispettive sezioni di DCO: la prima sezione interesserà la tratta Napoli – Caserta, la seconda sezione la tratta Caserta – PM Cervaro (e).

Si prevede un sistema ERTMS/L2, sovrapposto al suddetto sistema di distanziamento tradizionale, solo al completamento dei lotti dell'intero itinerario Napoli - Bari. Con gli interventi sulla tratta Canello-Benevento saranno realizzate tutte le predisposizioni necessarie a tal fine.

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➤ Armamento

La configurazione tipologica dell'armamento è quella tipo 60 E1, sovrastruttura tradizionale su ballast e scartamento 1435.

La soluzione tipologica prevede l'impiego dei seguenti principali materiali:

- rotaie 60E1, di lunghezza 108 m;
- traverse in cap RFI-240;
- scambi tipo 60 UNI;
- pietrisco di 1^a categoria.

Le rotaie impiegate nella realizzazione dei nuovi binari di corsa saranno saldate elettricamente.

➤ Trazione Elettrica

Linea di contatto "a catenaria" con sospensione longitudinale e sezione complessiva di rame di 540 mmq.

➤ Fermate/Stazioni

Lungo il nuovo tracciato Cancello-Benevento sono previste le seguenti nuove fermate/stazioni:

- *nuova Fermata Valle di Maddaloni*: la nuova fermata, che sostituisce l'attuale stazione posizionata sulla linea storica, si inserisce in rilevato sul nuovo tracciato, a sud dell'abitato, appena dopo lo sbocco della nuova galleria (detta "monte Aglio" dal nome del massiccio attraversato); è localizzata in corrispondenza della pk 7+460.560.
- *nuova Stazione di Dugenta/Frasso T*: la stazione di Frasso Telesino/Dugenta esistente è ubicata al pk 15+181.645 del nuovo tracciato ferroviario. Le esigenze di sistema hanno richiesto lo spostamento dell'asse delle banchine e la trasformazione dell'impianto da stazione a P.C./fermata.
- *nuove Fermate di Amorosi, Solopaca, San Lorenzo Maggiore, Ponte Casalduni*, comprensive di due marciapiedi da 300 m con sottopassaggio pedonale;
- *nuova Stazione di Telese*, dotata di due marciapiedi da 400 m con sottopassaggio e modulo di 750 m, comprensiva di:
 - quattro comunicazioni P/D a 60 km/h;
 - due binari di precedenza con itinerari in deviata a 60 km/h;
 - modulo di stazione a 750 m;

Benefici attesi

Unitamente al complesso di interventi di incremento prestazionale previsto sull'intera relazione, gli interventi sulla tratta Cancello-Benevento consentiranno in particolare:

- un incremento della capacità di trasporto;
- di ottenere un significativo recupero dei tempi di percorrenza;
- l'eliminazione della rottura di carico per le relazioni Napoli – Benevento – Bari attualmente effettuata nella stazione di Caserta;

Analisi Costi-Benefici

- potenziamento delle relazioni merci tra l'area di Sud-Est e lo scalo di Maddaloni-Marcianise, ottimizzando i movimenti di accesso allo scalo

5.3. Tratta Apice-Orsara e Tratta Orsara-Bovino

Descrizione degli interventi sulle tratte

L'intervento relativo alla tratta "Apice-Orsara" rappresenta il "valico appenninico" della linea e quindi la tratta più impegnativa per la realizzazione dell'intero raddoppio. Territorialmente Orsara si pone come confine tra le Regioni Campania e Puglia, pertanto l'intervento si colloca in territorio campano, ad eccezione di un breve tratto iniziale ricadente nei territori comunali di Orsara di Puglia e Panni ricadenti nella Regione Puglia.

L'intervento sulla Tratta Apice – Orsara è diviso in due lotti funzionali:

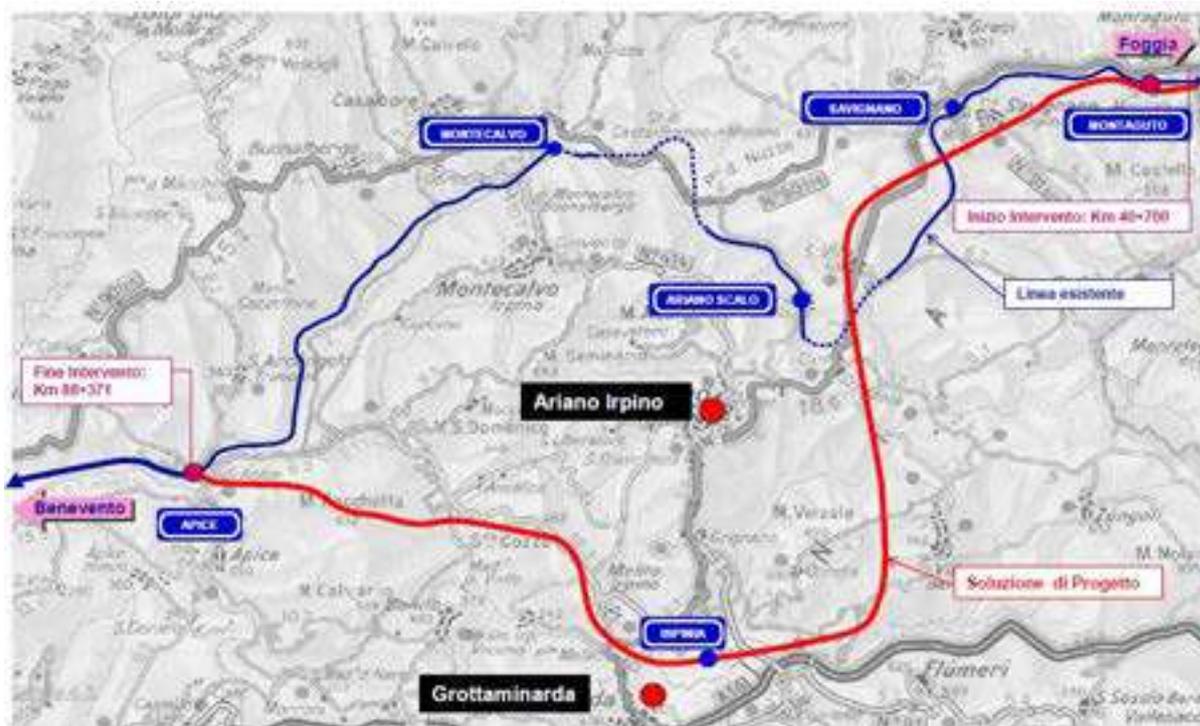
- 1° lotto: Apice – Irpinia inclusa;
- 2° lotto: Irpinia – Orsara: oggetto di approfondimenti progettuali in forma integrata con l'intervento di Raddoppio della tratta adiacente Orsara-Bovino.

I posti di servizio previsti nella tratta Apice-Orsara sono:

- la Stazione di Montaguto alla pk 44+600 circa, in cui si prevedono comunicazioni pari/dispari a 100 km/h, due binari di precedenza di modulo 650 m e con itinerari a 60 km/h, ed un fascio di binari per esigenze di manutenzione collegato al binario di precedenza dispari, con accesso a 30 km/h;
- la Stazione "Irpinia", in località Ariano Irpino, alla pk 71+100 circa in cui si prevedono comunicazioni pari/dispari da 60 km/h lato Napoli e comunicazioni pari/dispari da 100 km/h lato Bari, due binari di precedenza con modulo da 750 m e con itinerari a 60 km/h, ed un fascio di binari per esigenze di manutenzione collegato al binario di precedenza dispari, con accesso a 30 km/h;
- la Stazione di Apice alla pk 87+800 circa, in cui si prevedono comunicazioni pari/dispari a 100 km/h a monte e a valle dell'impianto, un binario di precedenza pari con modulo da 650 m e con itinerari a 60 km/h.

Complessivamente per la tratta Apice-Orsara è previsto il raddoppio dell'attuale collegamento ferroviario con una nuova infrastruttura di lunghezza totale pari a circa 47,4 km, con velocità pari a 200 Km/h, in completa variante di tracciato rispetto alla linea storica, come rappresentato nella figura seguente:

Analisi Costi-Benefici



La soluzione di Progetto (c.d. “soluzione SUD”), individuata sulla base di apposito Studio di fattibilità, si sviluppa a sud di Ariano Irpino, attraversando il territorio comunale di Grottaminarda, e risulta di circa 14 km più lungo di quello della soluzione alternativa, ma prevede una stazione baricentrica, “Irpinia”, in grado di servire ampie aree territoriali.

La caratteristica preponderante della tratta è la presenza dei tratti in galleria per la parte preminente del tracciato.

Il nuovo tracciato ferroviario, procedendo da Napoli in direzione Foggia, ha inizio al Km 88 circa, in corrispondenza della stazione di Apice opportunamente modificata e si sviluppa in direzione est.

Dopo un breve tratto all’aperto, il tracciato di progetto prevede una successione di gallerie (Rocchetta l= 6.500 m, Melito l=4.600 m, Grottaminarda l=1900m,) e di attraversamenti in viadotto del torrente Ufita, per poi proseguire nell’area dove è prevista la realizzazione della nuova Stazione Irpinia, con annesso posto di manutenzione.

All’uscita della stazione e dopo un breve tratto allo scoperto il tracciato entra in galleria (Flumeri l= 2.200 m) per poi proseguire in viadotto per l’attraversamento del torrente Fiumarella.

Per la sezione successiva, il tracciato previsto inizialmente nella Progettazione Preliminare del raddoppio Apice-Orsara, e che prevedeva tra l’altro la Galleria “Irpinia” di circa 21 km, è stato oggetto di approfondimenti nell’ambito di uno Studio di fattibilità che ha riguardato, in modo integrato, complessivamente la parte di tracciato tra la nuova Stazione Irpinia e la nuova Stazione di Bovino, quest’ultima facente parte dell’intervento di Raddoppio della tratta Orsara-Bovino.

Pertanto, il Progetto di Fattibilità Tecnico-Economica del Raddoppio Orsara-Bovino è finalizzato a sviluppare un tracciato aggiornato, integrato con gli approfondimenti progettuali della tratta adiacente Irpinia – Orsara, prescritti dal Commissario nell’Ordinanza n. 27 del 1° dicembre 2016, nella parte del tracciato ferroviario ricadente nell’area interessata dal fenomeno franoso in Comune di Montaguto.

Analisi Costi-Benefici

Dettaglio gallerie nel tratto di studio

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Sviluppo totale |
|-----------------------|----------------|-------|-------|-------|-------|------|------|------|-------|-----------------|
| Soluzione BASE | | 826 | 254 | 421 | 426 | 1042 | 2403 | 1280 | 21950 | 27702 |
| Corridoio in asse | Soluzione 1 | 9125 | 3533 | 21092 | | | | | | 33752 |
| | Soluzione 2 | 755 | 8822 | 956 | 21098 | | | | | 31668 |
| | Soluzione 7 | 10054 | 24475 | | | | | | | 34529 |
| Corridoio centrale | Soluzione 3 | 10110 | 21490 | | | | | | | 31600 |
| | Soluzione 4 | 13810 | 18703 | | | | | | | 32513 |
| Corridoio Sud | Soluzione 5 | 7053 | 25516 | | | | | | | 32569 |
| | Soluzione 5bis | 29387 | | | | | | | | 29387 |

| | ASPETTI PRESTAZIONALI / FUNZIONALI | | | | | CRITICITA' GEOLOGICHE | | CRITICITA' IDRAULICHE | CRITICITA' NTC 2008 ATTRAV. IDRAULICI |
|--------------------|------------------------------------|---|--|---|--|--|--------------------------------------|-----------------------|---------------------------------------|
| | Velocità | Realizzabilità PM/PC Intervento | Funzione sul territorio (servizio viaggiatori) | Individuazione costi costruttivi/funzionali | Necessità Trasformazione Bevino da PC a PM | Incompatibilità geomorfologica con il PAI | Gallerie in terreni difficili (L/Km) | | |
| Soluzione BASE | 200 km/h (N) | PC | Strategico | SI | NO | SI (100-1000 m) | 7 | | Obiezione in art. 108 (1) art. 109 |
| Corridoio in asse | Soluzione 1 | 200 km/h | PC | SI | SI | NO (nessuna delle interferenze NTC già presenti nel PAI) (nessuna Obiezione) | 4,3 | | |
| | Soluzione 2 | 200 km/h (Servizio Totale 240 km/h, NTC SA) | PC | SI | NO | NO (nessuna delle interferenze NTC già presenti nel PAI) (nessuna Obiezione) | 4,3 | | |
| Corridoio centrale | Soluzione 3 | 200 km/h (*) | PC | SI | SI | NO (nessuna delle interferenze NTC) | 5 | | |
| | Soluzione 4 | 200 km/h (*) | PC | SI | NO | SI (100-1000 m) | 5 | | |
| Corridoio Sud | Soluzione 5 | 200 km/h (*) | PC | SI | SI | NO (nessuna delle interferenze NTC) | 6 | | |
| | Soluzione 5bis | 200 km/h | SI | NO | NO | NO (nessuna delle interferenze NTC) | 6 | | |
| Corr. in asse | Soluzione 7 | 200 km/h (Servizio Totale 240 km/h, NTC SA) (N) (*) | PC | SI | SI | NO (nessuna delle interferenze NTC) | 6 | | |

MAX CRITICITA' / AGENZIA RICHIESTITO (*) Abbattimento velocità a 200 km/h in corrispondenza della nuova fermata
 MIN CRITICITA' / SODDISFACIMENTO RICHIESTITO

L'analisi ha infine individuato la soluzione di tracciato denominata 7 come quella che ottimizza le richieste migliorative. Tale soluzione prevede la presenza di due gallerie separate da un tratto all'aperto di circa 530 m in corrispondenza della zona di scavalco del torrente Cervaro e dell'intersezione con la linea storica nella zona di Orsara.



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La galleria di valico risulta lunga circa 24,5 km, mentre la seconda galleria risulta lunga circa 10 km. Nel tratto all'aperto compreso tra le due gallerie è prevista la realizzazione di una Fermata / Posto di Comunicazione.

Detta soluzione consente la possibilità di realizzare un lotto funzionale in corrispondenza dell'unico tratto allo scoperto in prossimità dell'attuale stazione di Orsara; la soluzione di allaccio di un primo lotto funzionale Bovino-Orsara comporterebbe un ramo di raccordo con velocità di tracciato dell'ordine dei 90 Km/h. Il passaggio doppio semplice binario avverrebbe in uscita dalla galleria in corrispondenza dell'attuale stazione di Orsara.

Sulla base dello studio di fattibilità, con riferimento alla soluzione 7, il raddoppio Orsara-Bovino risulta essere di circa 39 km e sostanzialmente in variante rispetto all'attuale tracciato.

Allo stato attuale è in corso lo sviluppo del Progetto Preliminare del raddoppio Orsara-Bovino; entro il 2026 è previsto il completamento dell'intervento e, quindi, l'attivazione all'esercizio commerciale anche della tratta Orsara-Bovino, oltre della tratta Apice-Orsara.

Benefici attesi

Nell'ambito degli obiettivi generali di potenziamento della relazione Napoli – Bari, la realizzazione degli interventi sulla tratta Apice-Orsara-Bovino consente in particolare di prevedere l'ottenimento dei seguenti benefici:

- riduzione dei tempi di percorrenza
- incremento delle prestazioni merci in termini di sagoma e modulo
- miglioramento nell'accessibilità al sistema ferroviario da parte della domanda di mobilità viaggiatori.
- vantaggi derivanti dalla soppressione dei numerosi passaggi a livello presenti lungo la linea
- incremento degli standard di regolarità e sicurezza della circolazione

6. Offerta commerciale ferroviaria e sviluppi attesi di traffico

I flussi di traffico utilizzati nella presente Analisi Costi Benefici sono stimati a partire dai risultati dello studio "Miglioramento del collegamento Napoli – Benevento e riqualificazione dell'itinerario Napoli – Bari – Università Tor Vergata" per traffico viaggiatori a carattere locale, elaborato con un sistema messo a punto dalla citata Università per il Trasporto Locale ed il sistema SAVEF³, per traffico viaggiatori Lunga Percorrenza e Merci (nella presente ACB denominato in breve "Studio di Traffico"). Ai fini della presente analisi i risultati di tali studi, realizzati nel 2006, sono stati oggetto di revisione al fine di tener conto dei più recenti sviluppi dei servizi ferroviari, dell'evoluzione degli scenari infrastrutturali e dell'evoluzione del quadro macroeconomico.

I flussi di traffico stimati fanno riferimento ai seguenti scenari infrastrutturali:

- Scenario "senza Progetto" (o di "Riferimento"): si considerano realizzati i progetti già programmati e/o avviati sugli itinerari dell'area territoriale della Regione Campania e Regione

³ "Sistema di Analisi e Valutazione dell'Evoluzione del sistema Ferroviario italiano": strumento modellistico in uso all'interno di RFI tra il 2000 e il 2010, mirato alla valutazione degli impatti di specifiche ipotesi di investimento sul sistema ferroviario.

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Puglia, e per quanto riguarda l'itinerario Napoli-Bari sono inclusi gli interventi già in esercizio, e quindi:

- Bretella di Foggia
 - Raddoppio della tratta Vitulano-Apice
 - Raddoppio della tratta Cervaro-Bovino;
- Scenario di Progetto (o "Con Intervento"): si riferisce alla situazione in cui vengano realizzati gli interventi compresi nello scenario infrastrutturale "di Riferimento" e altresì il Programma di Investimenti Itinerario Napoli-Bari oggetto della presente valutazione e costituito dai seguenti interventi:
- Variante alla Linea Napoli-Cancello
 - Raddoppio della tratta Cancello-Benevento
 - Raddoppio della tratta Apice-Orsara
 - Raddoppio della tratta Orsara-Bovino

Dal confronto tra la situazione "Con Intervento" e la situazione "di Riferimento" sono individuati i flussi di traffico differenziali per le diverse modalità di trasporto, associabili al Programma di Investimenti da valutare.

Come detto in precedenza la realizzazione del Programma di Investimenti consentirà un miglioramento della qualità del servizio ferroviario, in particolare in termini di:

- minori tempi di percorrenza sia per i servizi Lunga Percorrenza sia per parte dei servizi Regionali
- regolarità del traffico e migliore adattabilità alla domanda di trasporto
- incremento della frequenza dei servizi
- miglioramento dell'accessibilità al trasporto ferroviario
- incremento delle prestazioni merci e miglioramento dell'integrazione ferroviaria con le strutture dedicate all'intermodalità.

Lo Studio di Traffico ha consentito di definire i flussi di traffico associati al potenziamento dei servizi ferroviari nello Scenario "Con Intervento" che, messi in confronto con il traffico stimato per lo Scenario "senza Intervento", permettono di rilevare uno spostamento di traffico dalla strada alla ferrovia, sia per il trasporto passeggeri che per il trasporto merci.

6.1. Revisione dei risultati dello Studio di Traffico

Come detto ai fini della presente ACB si è ritenuto opportuno rettificare in ottica prudentiale i risultati dello Studio di Traffico, sia per tener conto dei più recenti sviluppi del quadro macroeconomico e della domanda di trasporto, sia per tener conto dell'evoluzione dell'infrastruttura e dei servizi ferroviari fino ad oggi attivati.

6.1.1. Evoluzione del quadro macroeconomico e della domanda di trasporto in Italia

Le condizioni economiche influenzano e hanno influenzato la mobilità sia dei passeggeri che delle merci in diversi ambiti: dal pendolarismo per motivi di lavoro al trasporto delle merci interno e negli scambi con l'estero, essendo il trasporto legato sia ai consumi che alla produzione.

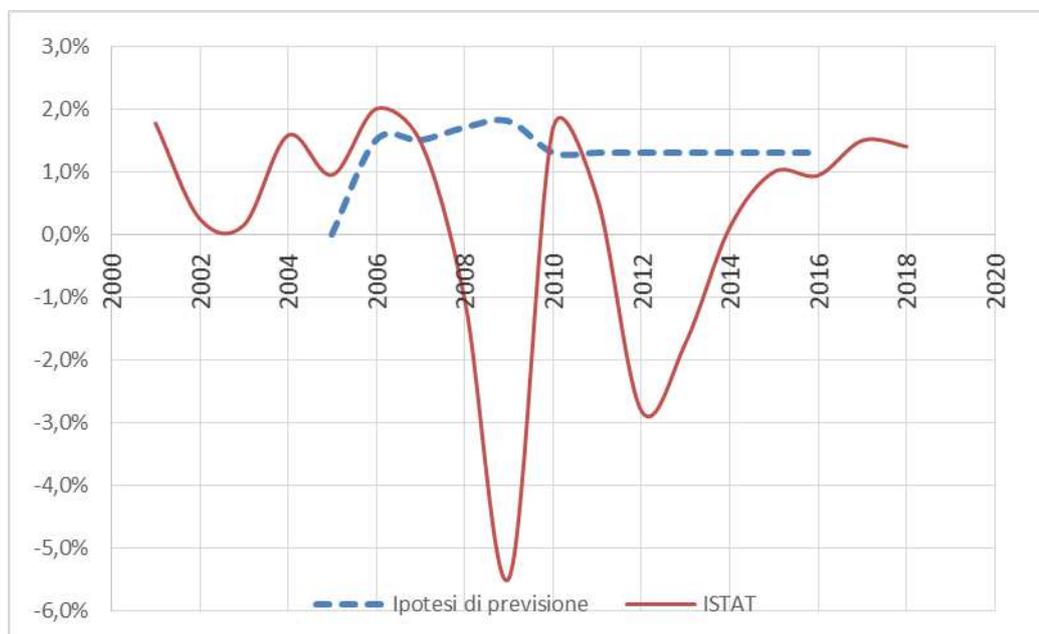
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Negli ultimi 10 anni l'economia del Paese ha subito l'impatto della crisi del 2008/2009 con ripercussioni fino ai giorni recenti. Negli ultimi due anni si vede un'inversione di tendenza e un miglioramento nel tasso di crescita del PIL: in un quadro economico internazionale in espansione, si consolida la crescita dell'economia italiana, sostenuta dalla ripresa del processo di accumulazione del capitale.

L'attività produttiva mantiene una intonazione complessivamente positiva in presenza di un rallentamento della crescita nei servizi. La crescita del Pil è stata trainata dalla domanda interna al netto delle scorte che ha fornito un contributo pari allo 0,7%. La ripresa del processo di accumulazione del capitale ha fornito la spinta maggiore (+0,5 punti percentuali il contributo alla crescita degli investimenti) accompagnata da una espansione più contenuta dei consumi delle famiglie (+0,2 punti percentuali il contributo). La variazione delle scorte ha fornito un apporto negativo (-0,5 punti percentuali) mentre il contributo della domanda estera netta è tornato ad essere positivo (+0,2 punti percentuali) a seguito dell'incremento sia delle importazioni di beni e servizi (+1,2%) sia delle esportazioni (+1,6%), in significativa accelerazione dopo il rallentamento nel secondo trimestre.

L'andamento dell'economia Italiana negli ultimi dieci anni (dati di consuntivo ISTAT) è rappresentato nel grafico successivo, nel quale è confrontato con le ipotesi macroeconomiche utilizzate per le previsioni di traffico utilizzate nello Studio di Traffico. Le ipotesi utilizzate nello Studio facevano riferimento alle previsioni del Documento di Programmazione Economica e Finanziaria 2006-2009 e una previsione contenuta del +1,3% annuo fino al 2015.

Andamento PIL Italia: confronto tra ipotesi previsionali dello Studio e dati di consuntivo.



Tale situazione ha portato ad un livello di PIL e di attività economica più basso rispetto a quello che si sarebbe immaginato in assenza di una crisi economica di tale portata.

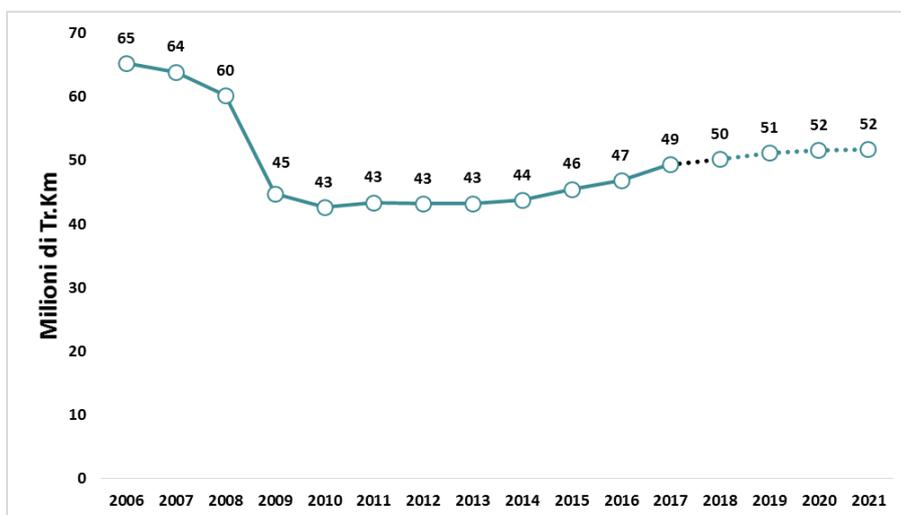
Il livello dell'attività economica si è riflesso in particolare sulle dinamiche del trasporto merci in quanto legato alle quantità assolute di merce prodotta internamente e di quella scambiata con l'estero.

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TRASPORTO MERCI

Per quanto riguarda il trasporto ferroviario delle merci le dinamiche presentate, in termini di Treni.km effettuati (dati di consuntivo fino al 2017) e previsti (anni 2018-2021) all'orizzonte di piano industriale RFI, mostrano quanto abbia inciso negativamente la crisi economica.

Trasporto merci su ferrovia - Italia
(Milioni di treni.km)

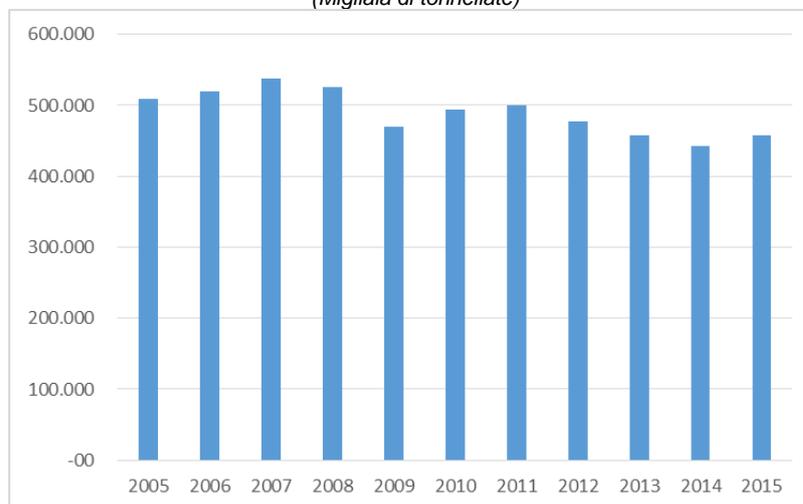


Fonte: RFI

Anche per le altre modalità si evidenzia una dinamica simile: nel seguito viene illustrato l'andamento del movimentato nei porti italiani e del trasportato su gomma.

Per il trasporto marittimo è evidente l'impatto sul 2009 e sul triennio 2012-2014, due periodi di crisi economica che hanno determinato un calo nei traffici ancora oggi non recuperato, se si considera che i dati 2016 si assestano sui valori del 2015.

Merce imbarcata e sbarcata nei porti italiani
(Migliaia di tonnellate)

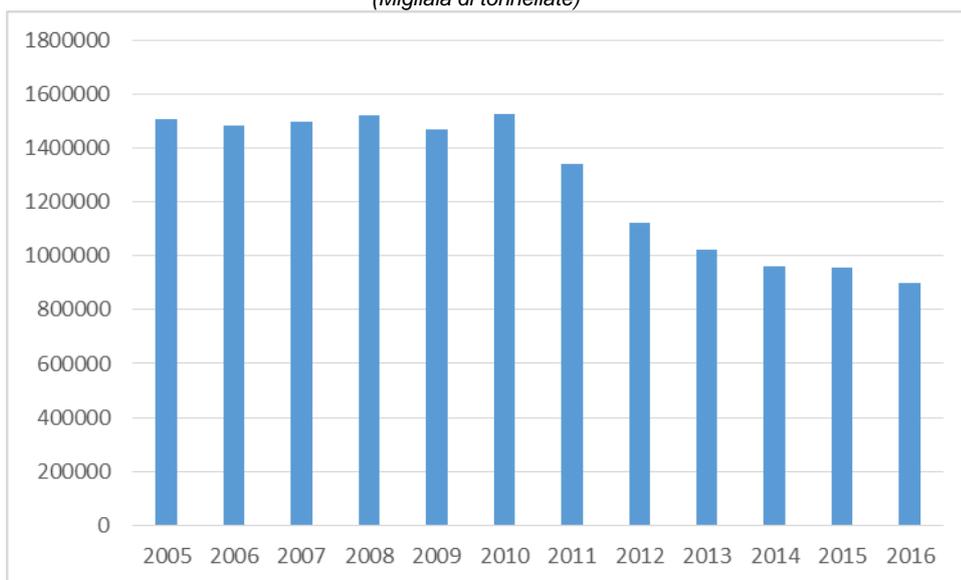


Fonte: banca dati ISTAT

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Nel grafico successivo viene riportato l'andamento del trasportato su gomma in termini di tonnellate, dal quale emerge un forte calo fino al 2016, andamento molto simile ma più contenuto si registra nell'area EU 27 in cui nel 2016 risulta un trasportato inferiore del 13% rispetto al 2006.

Andamento del trasporto merci su gomma - Italia
(Migliaia di tonnellate)



Fonte: Eurostat

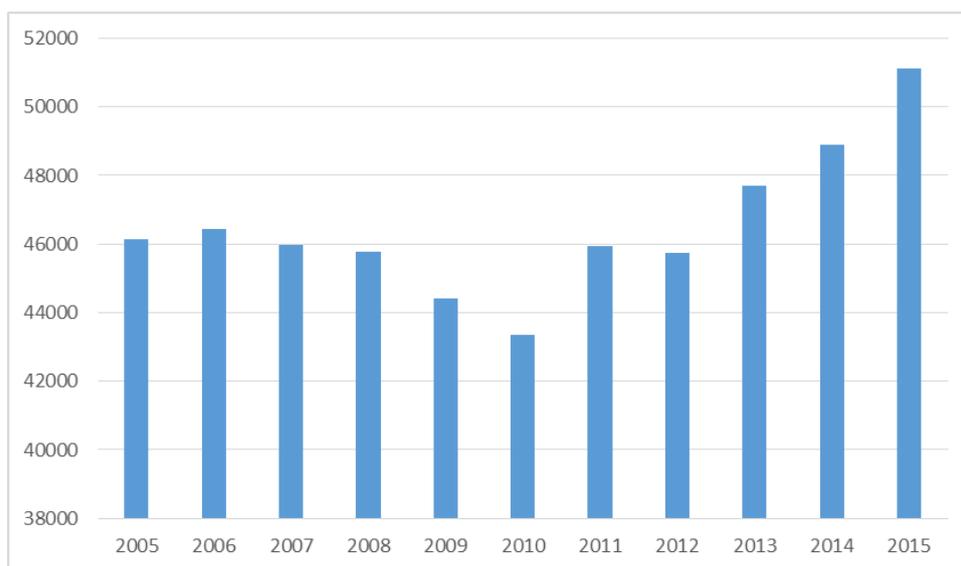
TRASPORTO PASSEGGERI

La dinamica del trasporto passeggeri negli ultimi anni assume invece un andamento diverso rispetto alle merci. Si riportano per i passeggeri la sola modalità ferroviaria e stradale, considerate in concorrenza nella modello di traffico utilizzato.

Nel trasporto ferroviario, espresso in termini di passeggeri.km complessivi (lunga percorrenza e trasporto regionale per tutte le Imprese Ferroviarie), si evidenzia un recupero già dal 2011 e un incremento annuo significativo dal 2013 in poi.

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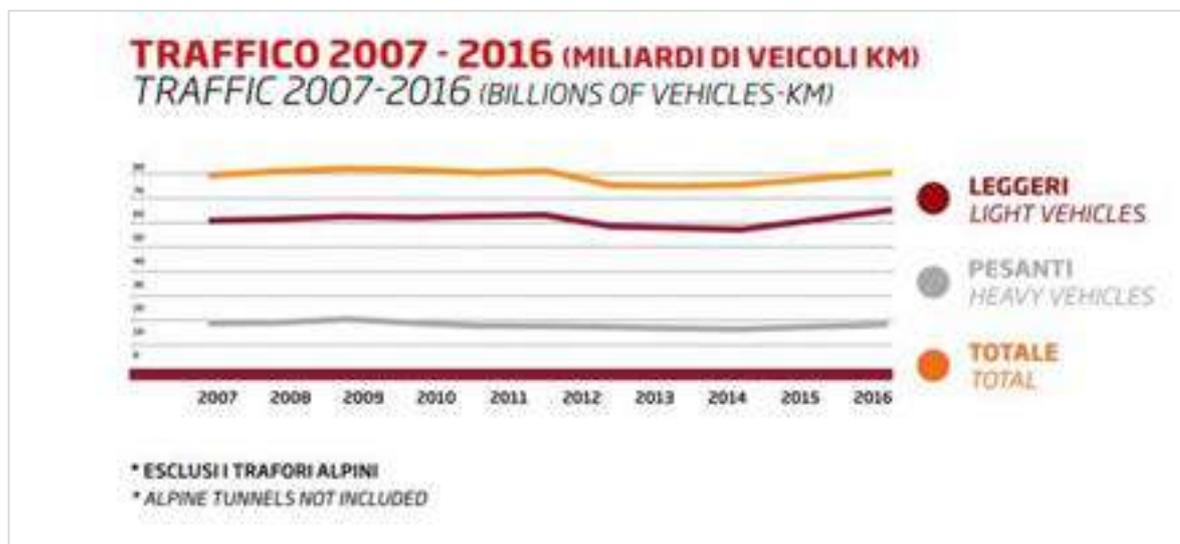
Andamento del trasporto ferroviario passeggeri - Italia
(Milioni di Passeggeri.Km)



Fonte: Eurostat

Per quanto riguarda il traffico stradale passeggeri si riportano i valori registrati sulle Autostrade da AISCAT (Associazione Italiana Società Concessionarie Autostrade e Trafori), in termini di veicoli.km leggeri e pesanti. Con riferimento ai veicoli leggeri, considerati rappresentativi del traffico passeggeri su itinerari di lunga percorrenza, è possibile rilevare un significativo incremento di traffico nell'ultimo triennio 2014-2016, che di fatto rappresenta una consolidata inversione di tendenza rispetto alla diminuzione registrata negli anni 2011-2013.

Andamento del traffico stradale trasporto ferroviario passeggeri - Italia
(Milioni di passeggeri.Km)



Fonte: AISCAT

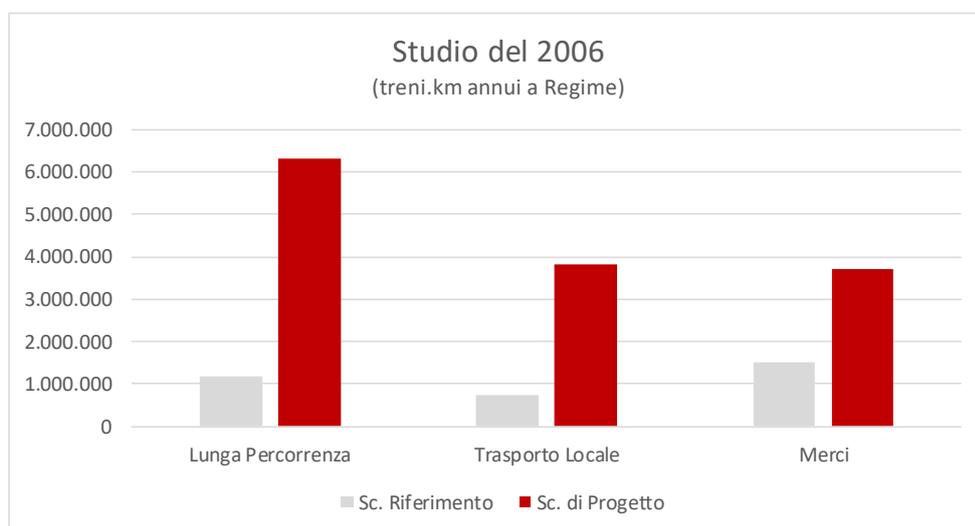
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6.1.2. Revisione delle stime di traffico

Nello Studio di Traffico del 2006 risultava definita l'offerta commerciale in grado di servire la domanda di trasporto su ferrovia, rilevabile a seguito dell'attivazione delle nuove opere sull'itinerario Napoli-Bari con orizzonte temporale 2015, e dal confronto con la situazione "senza Intervento" al 2006, risultava un incremento di traffico della modalità ferroviaria, sia passeggeri che merci, associabile ad una corrispondente diminuzione di traffico della modalità stradale⁴.

Nel grafico seguente è rappresentata, per le diverse categorie di servizi ferroviari, la stima di traffico in termini di treni.km annui (riferiti all'anno di regime, ossia anno di completamento di tutta la nuova offerta ferroviaria) per lo scenario di Progetto e per lo scenario senza Progetto:

Offerta commerciale ferroviaria definita nello Studio di Traffico del 2006



In considerazione delle dinamiche economiche e di trasporto sopra menzionate e al fine di tener conto dell'offerta commerciale ferroviaria aggiornata, ai fini della presente ACB sono state effettuate delle assunzioni che modificano in parte le stime dello Studio di Traffico, e che prevedono come anno di regime il 2026.

Nello specifico:

- si è provveduto ad aggiornare i dati di traffico viaggiatori e merci nello Scenario "Senza intervento", sulla base dell'evoluzione dei dati rilevabili attualmente sull'itinerario, anche in considerazione del fatto che in tale scenario infrastrutturale, come in precedenza definito, risultano già completati e in esercizio alcuni interventi relativi all'itinerario Napoli-Bari;
- per quanto attiene allo Scenario "Con intervento", a conclusione del Programma di investimenti, si ritiene di poter conservare le previsioni di sviluppo relative al trasporto viaggiatori di breve e lungo raggio, risultanti dallo Studio di Traffico

⁴ Nell'ambito delle alternative progettuali analizzate nello Studio di Traffico, ai fini della presente ACB si fa riferimento ai dati di traffico relativi alla c.d "Soluzione A", soluzione scelta ai fini della prosecuzione dell'iter progettuale ed autorizzativo, che combina l'alternativa 4 (raddoppio ed ammodernamento linea storica e raccordo con la linea Cancellone-Napoli) per la direttrice Napoli-Caserta-Benevento e l'alternativa SUD, con la costruzione della stazione di Irpinia, per la tratta Benevento-Foggia.

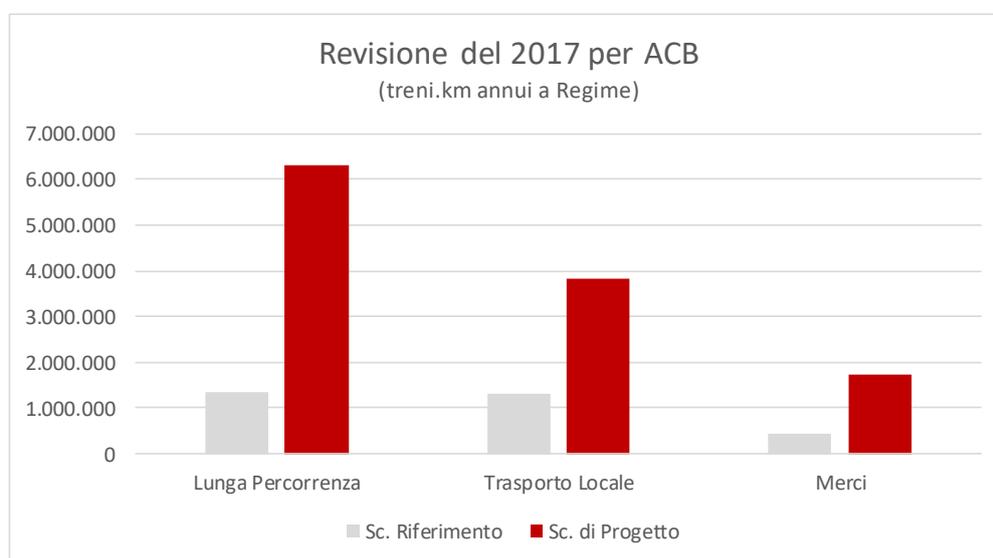
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- si è provveduto a stimare al ribasso le previsioni di sviluppo del traffico merci originariamente considerate nello Studio di Traffico, al fine di renderle coerenti con la diminuzione dei volumi trasportati dovuta alla crisi economica e con il recente trend di crescita del trasporto ferroviario, non trascurando la valenza dell'adeguamento delle caratteristiche prestazionali della direttrice rispetto alla capacità di trasporto merci, previsto nei programmi di investimento.

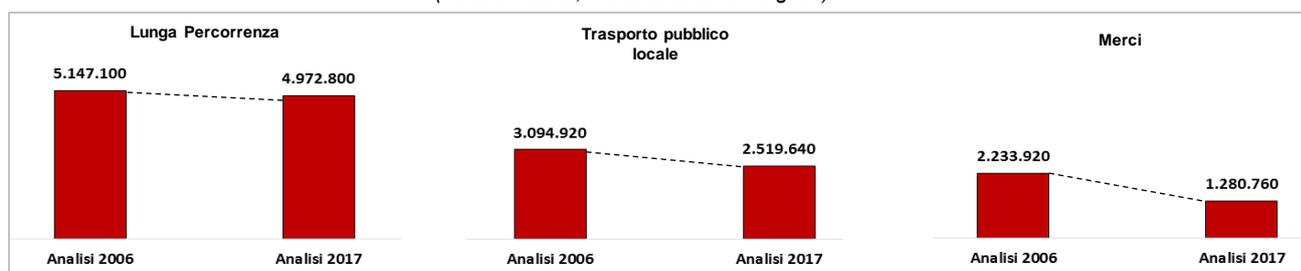
A seguito di tali assunzioni risulta stimato il traffico ferroviario illustrato nel grafico seguente, espresso in termini treni.km annui con riferimento all'anno di regime 2026:

Offerta commerciale ferroviaria – Revisione del 2017 utilizzata in ACB



La revisione delle stime di traffico è da intendersi in ottica prudentiale, come si evince dal fatto che l'offerta ferroviaria incrementale, determinata dalla differenza tra treni.km dello scenario di Riferimento e treni.km dello Scenario di Progetto e rappresentata nel grafico sottostante, risulta inferiore rispetto a quella definita nello Studio del 2006, per tutti i segmenti ed in modo particolare per il trasporto merci⁵.

Traffico incrementale tra Scenario di Riferimento e Scenario di Progetto per la modalità ferroviaria – confronto tra stime dello Studio 2006 e Revisione 2017 (treni.km annui, riferiti all'anno di Regime)



⁵ Nell'ambito dell'Analisi le nuove stime di traffico sono da intendersi maggiormente prudentiali in quanto definire traffici incrementali più bassi per la modalità ferroviaria significa considerare una diversione modale di minore entità (ossia minore traffico acquisito dalla strada), e pertanto, a parità di altre condizioni, determinare benefici netti di Progetto più bassi.

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Nel capitolo seguente sono specificate in dettaglio le previsioni di traffico risultanti dalle modifiche sopra menzionate ed utilizzate nella presente Analisi Costi-Benefici.

6.2. Previsioni di traffico utilizzate nella presente ACB

Considerando l'evoluzione infrastrutturale è possibile definire per lo scenario "Con Intervento" l'orizzonte temporale di potenziamento dei servizi ferroviari che beneficiano dell'aumento di capacità e di prestazioni a seguito degli interventi sull'itinerario Napoli-Bari:

- fase intermedia (2023-2025): si prevede che a partire dal 2° semestre 2023 siano raggiunte le condizioni per lo sviluppo graduale dell'offerta regionale a breve raggio;
- a regime: a partire dal 2026 sono attesi, per intero, tutti i benefici previsti dal Programma di Investimenti oggetto dell'analisi, e quindi anche quelli inerenti lo sviluppo dei servizi Passeggeri Lunga Percorrenza e Merci, oltre che il completamento dell'attivazione dei nuovi servizi Regionali Napoli-Foggia.

Come detto per lo Scenario di Progetto viene mantenuta l'offerta commerciale definita nello Studio di Traffico del 2006.

Nella analisi costi-benefici sono stati quindi considerati gli incrementi dell'offerta di trasporto ferroviaria per le sole relazioni per le quali si prevedono modifiche a seguito dell'attuazione del programma di investimenti.

La Tabella seguente fornisce un quadro di sintesi dell'evoluzione dell'offerta commerciale ferroviaria considerata nello scenario intermedio (in assenza del raddoppio del tratto di valico) e nello scenario a regime (a completamento di tutti gli interventi pianificati, in termini di treni.giorno):

*Evoluzione dell'offerta di servizi ferroviari per segmento di traffico
(Treni.Giorno)*

| Segmento di traffico | Scenario di Riferimento | Scenario Progetto Fase Intermedia (2024-2025)* | Scenario Progetto a Regime (dal 2026) | Variazione Offerta (a Regime) |
|------------------------------|-------------------------|--|---------------------------------------|-------------------------------|
| Passeggeri Lunga Percorrenza | 11 | 11 | 54 | +43 |
| Passeggeri Regionali | 70 | 126 | 144 | + 74 |
| Merci | 3 | 3 | 11 | + 8 |
| TOTALE TRENI.GG | 84 | 140 | 209 | + 125 |

(*) Per il 2023, anno di avvio dei nuovi servizi ferroviari regionali, si considera un traffico ferroviario incrementale ridotto del 50% rispetto al 2024

Nei paragrafi successivi vengono forniti dettagli in merito alla stima delle variazioni di traffico passeggeri e merci, per la modalità ferroviaria e stradale.

6.2.1. Traffico viaggiatori a carattere regionale

I risultati dello Studio di Traffico evidenziano nello scenario "senza Progetto" una ridotta competitività del trasporto pubblico ed in particolare di quello su ferro rispetto agli altri modi di trasporto privato. L'offerta ferroviaria risulta attualmente penalizzata in relazione ai tempi di percorrenza più elevati di altre modalità e dalla frequenza e distribuzione del servizio. Tali limiti potranno essere superati grazie alla nuova infrastruttura ferroviaria.

Nell'ambito dello Studio di Traffico, è stato calibrato ed applicato un modello quantitativo di proiezione della domanda di trasporto a carattere locale che, sulla base dello scenario evolutivo delle

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infrastrutture di trasporto⁶, ha consentito di definire il potenziamento dell'offerta commerciale per lo scenario "Con Intervento", in grado di determinare un miglioramento dei servizi ferroviari in particolare rispetto al trasporto privato.

In sostanza, i servizi ferroviari esistenti potranno essere adeguati alle nuove possibilità di collegamento tra Napoli e Benevento/Foggia derivanti dal programma di investimenti. In particolare si potrà rafforzare l'offerta lungo l'asse Napoli Campi Flegrei-Napoli Centrale/Garibaldi-Afragola-Acerra-Cancello a servizio dei bacini del casertano e del beneventano.

I servizi, che prevedibilmente si svilupperanno nell'arco di 18 ore, potranno avere cadenza di 30 min. Di minore frequenza l'offerta che si prevede di strutturare per le relazioni Caserta-Benevento e Napoli-Foggia, che, secondo il medesimo orario di servizio, avranno cadenza oraria.

Come detto, il cronoprogramma degli investimenti consente di prefigurare un periodo transitorio 2023-2025 nel quale, avendo già completato le fasi funzionali prioritarie relative alla linea Napoli-Cancello-Benevento, si sono già raggiunte le condizioni infrastrutturali per lo sviluppo di buona parte dell'offerta del segmento viaggiatori a breve raggio. Il potenziamento dei servizi regionali verrà completato nel 2026 con l'attivazione dei servizi sulla più lunga relazione Napoli-Foggia.

La Tabella seguente fornisce il dettaglio dell'evoluzione dei Servizi Regionali sulle singole relazioni, in termini di treni.giorno:

*Evoluzione dell'offerta di servizi ferroviari Regionali
(Treni.Giorno)*

| Tipologia | RELAZIONE | Scenario di Riferimento | Scenario Progetto Fase Intermedia (2024-2025) * | Scenario Progetto a Regime (dal 2026) | Variazione Offerta |
|-----------|-------------------------|-------------------------|---|---------------------------------------|--------------------|
| Regionale | Caserta Benevento | 16 | 18 | 18 | + 2 |
| | Napoli Caserta | 25 | 36 | 36 | + 11 |
| | Napoli Capua | 17 | 36 | 36 | + 19 |
| | Napoli Benevento | 12 | 36 | 36 | + 24 |
| | Napoli Foggia | | | 18 | + 18 |
| | TOTALE REGIONALI | 70 | 126 | 144 | + 74 |

(*) Per il 2023, anno di avvio dei nuovi servizi ferroviari regionali, si considera un traffico ferroviario incrementale ridotto del 50% rispetto al 2024

Sulla base delle stime di traffico, la domanda di trasporto locale servita dall'offerta ferroviaria, come potenziata nello Scenario di Progetto, risulterebbe in aumento di circa 6.600 passeggeri.giorno⁷, che possono considerarsi sottratti alla modalità stradale mezzo privato.

Considerando 360 gg.anno di circolazione dei servizi, nonché le distanze chilometriche e i carichi medi definiti per le relazioni oggetto di analisi⁸, è possibile stimare l'incremento di traffico ferroviario a carattere regionale in termini di treni.km annui e passeggeri.km annui:

FERROVIA: Passeggeri. Km e Treni.Km annui incrementali relativi ai Servizi Regionali

⁶ Come detto ai fini della presente ACB si è fatto riferimento alle stime di traffico dello scenario basato sulla c.d "Soluzione A", scelta come soluzione da realizzare.

⁷ Corrispondenti ad un miglioramento del *modal share* di circa il 7%, considerando che gli spostamenti giornalieri complessivi sono stimati dallo Studio di Traffico pari a 93.000, come totale di tutti i mezzi di trasporto.

⁸ I valori di carico medio dei servizi regionali sono stati definiti sulla base dei valori effettivi indicati per le singole relazioni nel Rapporto 2015 dell'Agenzia Campania per la Mobilità Sostenibile (ACAM) e considerando per i servizi di nuova attivazione Napoli-Foggia il valore rilevabile per i servizi di medio raggio Napoli-Benevento, in quanto maggiormente similari per bacino territoriale servito. I valori indicati nel Rapporto ACAM si riferiscono alle corse nei giorni da Lunedì e Venerdì: ai fini della presente Analisi tali valori sono stati espressi su base settimanale considerando per i giorni di Sabato e Domenica un carico medio prudenziale pari a 1/3 di quello rilevato nei giorni infrasettimanali.

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| | 2023 | 2024-2025 | dal 2026 (regime) |
|---|--------------|---------------|-------------------|
| Variazione Passeggeri.Km annui | + 56.875.500 | + 113.751.000 | + 235.063.080 |
| Variazione Treni.Km annui | + 634.500 | + 1.269.000 | + 2.519.640 |
| Carico medio calcolato su valori incrementali (pax.treno) | 90 | 90 | 93 |

Tenendo presente percorrenze chilometriche stradali analoghe a quelle dei servizi ferroviari e un coefficiente medio di occupazione delle autovetture pari a 1,5, risulta definita la corrispondente diminuzione di traffico stradale a carattere locale:

STRADA: Variazione in diminuzione del traffico stradale a carattere locale

| | 2023 | 2024-2025 | dal 2026 (regime) |
|----------------------------------|--------------|---------------|-------------------|
| Variazione Passeggeri.Km annui | - 56.875.500 | - 113.751.000 | - 235.063.080 |
| Variazione Veicoli.Km annui | - 37.917.000 | - 75.834.000 | - 156.708.720 |
| Coeff. Occupazione (pax.veicolo) | 1,5 | 1,5 | 1,5 |

6.2.2. Traffico viaggiatori lunga percorrenza

L'ipotesi di crescita dei servizi per effetto dell'investimento effettuata da RFI prefigura l'istituzione di nuovi servizi viaggiatori in grado di soddisfare la maggiore domanda di trasporto su ferrovia quantificabile in circa + 13.700 passeggeri.giorno⁹, da considerarsi sottratti alla modalità stradale mezzo privato.

Di particolare rilievo:

- il potenziamento dei servizi sulla relazione tra Roma e Bari con 21 nuove tracce orarie;
- l'attivazione di nuovi servizi Eurostar/Intercity diretti tra Napoli e Bari, nella misura di 16 treni/giorno, che beneficeranno della riduzione dei tempi di percorrenza conseguente sia al nuovo tracciato che all'incremento delle prestazioni dell'infrastruttura

Completa il quadro della previsione relativa all'offerta del segmento lunga percorrenza viaggiatori l'istituzione di servizi per Bari da Milano e Torino che utilizzano itinerari alternativi al tracciato della direttrice adriatica.

Nello schema riportato a fianco sono rappresentate le relazioni per le quali si prevedono sviluppi dell'offerta a seguito della attivazione delle nuove infrastrutture ferroviarie:

⁹ Valore da ritenersi prudenziale rispetto ai risultati dello Studio di Traffico del 2006 che prevedevano un incremento di passeggeri per la modalità ferroviaria, su itinerari di lungo raggio, pari a 15.000 passeggeri.giorno.

Analisi Costi-Benefici

Evoluzione dell'offerta di servizi ferroviari Lunga Percorrenza (Treni.Giorno)

| Tipologia | Servizio | RELAZIONE | Scenario di Riferimento | Scenario di Progetto (dal 2026) | Variazione Offerta |
|---------------------------------|----------|-------------|-------------------------|---------------------------------|--------------------|
| Lunga Percorrenza | AV | Roma Bari | 8 | 16 | + 8 |
| | | Milano Bari | | 4 | + 4 |
| | | Torino Bari | | 2 | + 2 |
| | ES | Napoli Bari | | 8 | + 8 |
| | IC | Roma Bari | 3 | 16 | +13 |
| | | Napoli Bari | | 8 | + 8 |
| TOTALE LUNGA PERCORRENZA | | | 11 | 54 | + 43 |

L'evoluzione dell'offerta per i servizi Lunga Percorrenza considera altresì le seguenti ipotesi:

- che all'aumento del numero dei servizi possa corrispondere una diminuzione del numero di giorni di circolazione: rispetto ai 350 gg.anno dei servizi attivi nello Scenario di Riferimento si considera pertanto una circolazione di 319 gg.anno per i servizi di tipo AV e 326 gg.anno per i servizi ES e IC.
- il carico medio utilizzato, risultante dallo Studio di Traffico (previsione con Sistema Savef), è pari a:
 - servizi AV e ES: 450 passeggeri per treno¹⁰
 - servizi IC Roma-Bari: 150 passeggeri per treno
 - servizi IC Napoli-Bari: 280 passeggeri

Considerando le ipotesi sopra specificate e le distanze chilometriche per le relazioni oggetto di analisi¹¹, è possibile stimare l'incremento di traffico ferroviario per i servizi LP, in termini di treni.km annui e passeggeri.km annui:

FERROVIA: Passeggeri. Km e Treni.Km annui incrementali Servizi Lunga Percorrenza

| | dal 2026 |
|--|-----------------|
| Variazione Passeggeri.Km annui | + 1.438.282.008 |
| Variazione Treni.Km annui | + 4.972.806 |
| Carico medio calcolato sui valori incrementali (pax.treno) | 289 |

Con percorrenze chilometriche stradali analoghe a quelle degli itinerari ferroviari e un coefficiente medio di occupazione delle autovetture pari a 1,5, risulta definita la corrispondente diminuzione di traffico stradale a lungo raggio:

¹⁰ In via prudenziale, per i servizi AV già attivi si prevede che nello Scenario di Progetto il valore diminuisca a 450 rispetto al valore dello Scenario di Riferimento (pari a 495).

¹¹ È opportuno precisare che nel calcolo dei costi e dei benefici derivanti da tale sviluppo di offerta ferroviaria non sono state considerate le percorrenze effettuate su asset derivanti da altri investimenti di sviluppo dell'infrastruttura ferroviaria. In particolare ci si riferisce alla linea AV/AC Torino-Milano-Napoli alla cui realizzazione si deve molta parte dello sviluppo dei servizi AV riportati nella precedente tabella. La componente di tali servizi svolti sull'asse AV/AC Torino-Milano-Napoli è stata considerata nella relativa valutazione economico-finanziaria di investimento, mentre nella presente analisi costi-benefici sono stati presi in considerazione i servizi AV solo per la parte svolta su rete tradizionale (e cioè da Bivio Caserta Nord a Bari, per circa 300 Km di percorrenza).

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STRADA: Variazione in diminuzione del traffico su itinerari di lungo raggio

| | dal 2026 (regime) |
|----------------------------------|-------------------|
| Variazione Passeggeri.Km annui | - 1.438.282.008 |
| Variazione Veicoli.Km annui | - 958.854.672 |
| Coeff. Occupazione (pax.veicolo) | 1,5 |

6.2.3. Traffico merci

Per quanto attiene al traffico merci si prevede un incremento di 6 treni/giorno sulla relazione Napoli-Bologna Interporto, connesso agli sviluppi dei terminali intermodali dei due capoluoghi. Sono attesi sviluppi, anche se in misura minore, nel traffico merci tra Napoli e Bari: +2 treni/giorno. Di seguito sono rappresentata l'evoluzione dell'offerta per il segmento merci:

Evoluzione dell'offerta dei servizi ferroviari Merci
(Treni.Giorno)

| RELAZIONE | Scenario di Riferimento | Scenario di Progetto (dal 2026) | Variazione Offerta |
|---------------------|-------------------------|---------------------------------|--------------------|
| Napoli Bari | 1 | 3 | +2 |
| Napoli Bologna | 2 | 8 | +6 |
| TOTALE MERCI | 3 | 11 | +8 |



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In termini di tonnellate trasportate l'incremento di traffico per la modalità ferroviaria è quantificabile in circa +4.000 tonnellate giorno¹², da considerarsi sottratte al trasporto merci su strada su itinerari analoghi.

Considerando 260 gg.anno di circolazione dei servizi, un carico medio di 500 t per treno e le percorrenze chilometriche rilevabili per le relazioni oggetto di analisi¹³, è possibile stimare l'incremento di traffico ferroviario merci in termini di treni.km annue e tonnellate.km annue:

FERROVIA: Tonnellate.Km e Treni.Km annui incrementali

| | dal 2026 |
|--------------------------------|-----------------|
| Variazione Tonnellate.Km annue | + 640.380.000 |
| Variazione Treni.Km annui | + 1.280.760 |
| <i>Carico medio per treno</i> | <i>500 t.</i> |

Considerando le percorrenze chilometriche stradali analoghe a quelle degli itinerari ferroviari merci e un carico medio dei veicoli stradali pari a 12 tonnellate¹⁴, risulta definita la corrispondente diminuzione di traffico stradale in relazione al trasporto merci:

STRADA: Variazione in diminuzione del traffico merci

| | dal 2026 (regime) |
|---------------------------------|--------------------------|
| Variazione Tonnellate.Km annue | - 640.380.000 |
| Variazione Veicoli.Km annui | - 53.365.000 |
| <i>Carico medio per veicolo</i> | <i>12 t.</i> |

¹² Valore da ritenersi prudenziale rispetto ai risultati dello Studio di Traffico del 2006 che prevedevano un incremento di traffico merci per la modalità ferroviaria pari a 6.000 tonnellate.giorno.

¹³ Parametri utilizzati nello Studio di Traffico sviluppato da RFI con il Sistema SAVEF.

¹⁴ Si considera un carico medio di 12 tonnellate per automezzo (definito a partire dai dati Eurostat, media Italia, e considerando l'ipotesi di minore saturazione dei mezzi per le relazioni che interessano il Mezzogiorno). In coerenza con il valore di carico medio utilizzato, tutte le altre ipotesi relative agli automezzi (costi operativi e valori esternalità) fanno riferimento ad un veicolo di media portata con massa a pieno carico compresa tra 16 e 32 t.

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7. Analisi finanziaria

7.1. Ipotesi di base

- L'anno base per l'attualizzazione dei flussi è il 2018.
- L'arco temporale della valutazione si estende fino all'anno 2047, quindi un orizzonte temporale di 30 anni a partire dall'anno base.
- Il tasso di attualizzazione è pari al 4% ("reale") come suggerito in "Guide to cost-benefit analysis of Investment Projects" – European Commission DG Regional Policy, 2014"
- I dati di input stimati lungo l'orizzonte temporale sono espressi a valori costanti €/2018, in coerenza con l'utilizzo di un tasso "reale" di attualizzazione dei flussi. La valorizzazione in €2018 è effettuata applicando opportuni coefficienti basati sull'indice ISTAT NIC.
- L'IVA è esclusa dall'analisi poiché rappresenta un costo recuperabile.

7.2. Costi e Ricavi di progetto

7.2.1. Costi di investimento

Il costo del Programma di Investimenti dell' "Itinerario Napoli-Bari" oggetto della presente valutazione è stimato complessivamente pari a **5.524 milioni di euro** (a valori finanziari).

Il piano annuale della spesa è rappresentato nella tabella seguente, con evidenza dei costi relativi agli interventi proposti per il sostegno comunitario:

Piano della spesa per investimenti (valori finanziari)

| Piano degli Investimenti (valori finanziari - Milioni di euro) | Totale | AL 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|----------------|------------|------|-------|-------|-------|-------|
| Programma di Investimenti Itinerario Napoli-Bari | 5.523,7 | 231,0 | 68,5 | 214,6 | 330,3 | 450,3 | 689,2 |
| di cui: | | | | | | | |
| <i>Variante Napoli-Cancello</i> | 812,8 | 147,9 | 12,9 | 64,0 | 88,0 | 97,0 | 150,0 |
| <i>Raddoppio della tratta Cancello-Frasso T</i> | 730,0 | 37,7 | 14,6 | 46,8 | 83,2 | 90,0 | 142,6 |

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| Piano degli Investimenti (valori finanziari - Milioni di euro) | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|-------|-------|-------|-------|-------|
| Programma di Investimenti Itinerario Napoli-Bari | 869,6 | 839,2 | 871,1 | 450,3 | 509,4 |
| di cui: | | | | | |
| <i>Variante Napoli-Cancello</i> | 127,0 | 126,0 | - | - | - |
| <i>Tratta Cancello-Frasso T</i> | 194,7 | 120,4 | - | - | - |

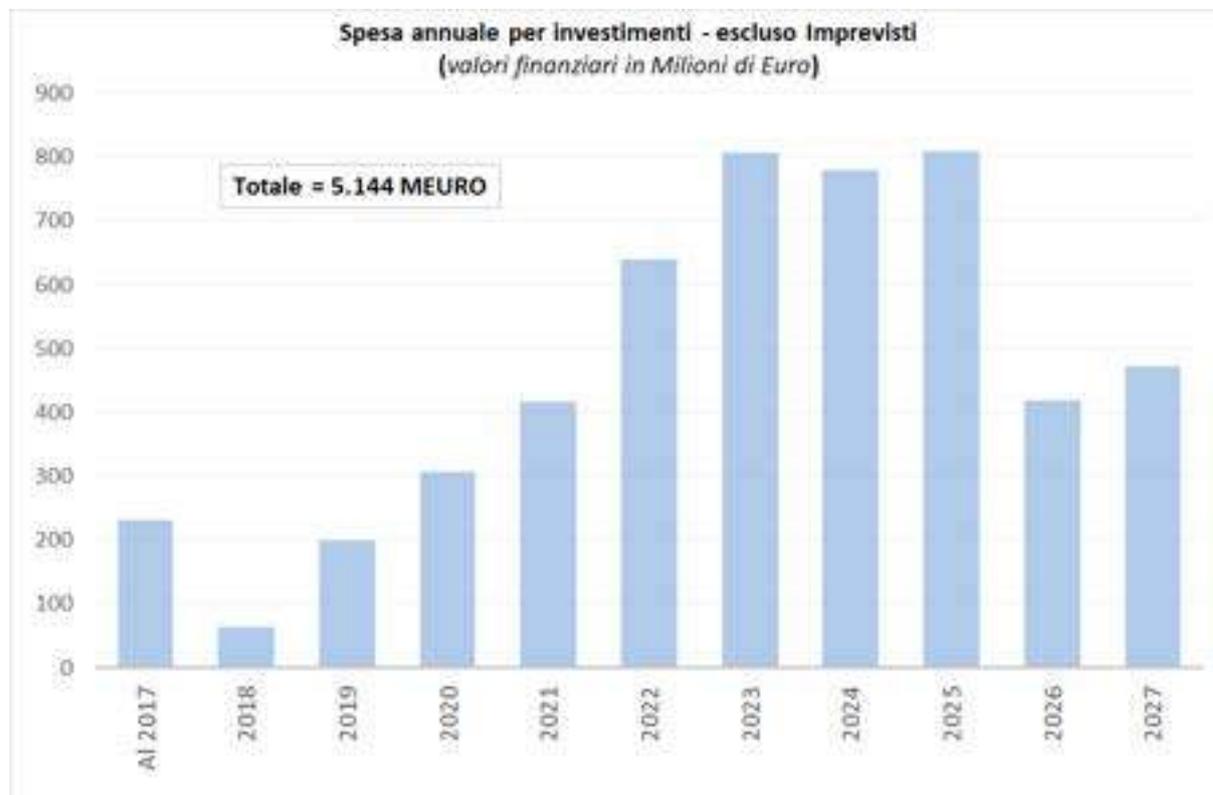
Ai fini della valutazione degli Indicatori di rendimento finanziario dell'investimento [VANF(C)] e [TIRF(C)], come da metodologia suggerita nelle Linee Guida UE (cfr "Guida all'analisi costi-benefici dei progetti d'investimento - Strumento di valutazione economica per la politica di coesione 2014-2020") la Spesa per Investimenti è considerata:

- al netto degli "Imprevisti" (valore indicato nei documenti progettuali, pari a circa il 7% del costo complessivo degli investimenti) nella elaborazione degli indicatori di redditività finanziaria dell'investimento VANF(C) e TRF(C)
- includendo gli Imprevisti, ai fini del calcolo degli indicatori di analisi economica VANE e TIRE

Si precisa che il valore degli "Imprevisti", intesi come valore di spesa "eventuale", è una voce specifica della Macrovoce "Somme a disposizione". Tale Macrovoce, oltre che da "imprevisti" è costituita da voci di spesa che vengono effettivamente sostenute (e che quindi non assumono il carattere di "contingencies"): per esempio "Acquisizione aree", "Progettazione", "Contributi di Legge", "Direzione lavori", ecc.

Risulta un "**costo di investimento escluso imprevisti**" complessivamente pari a **5.144 MEURO** ed un piano annuale di spesa di seguito rappresentato:

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7.2.2. Costi di manutenzione straordinaria

Nell'analisi sono stati preventivati i costi di manutenzione straordinaria, costituiti in particolare da interventi di sostituzione finalizzati a mantenere l'infrastruttura ad un livello standard di funzionamento nell'arco temporale di previsione.

Sulla base di dati gestionali di RFI sono stati individuati in dettaglio:

- gli oggetti da mantenere di cui è composta l'infrastruttura ferroviaria di nuova realizzazione, in riferimento ai quali è possibile stimare costi di manutenzione straordinaria incrementali;
- gli oggetti in funzione nella situazione infrastrutturale "senza intervento" e che saranno dismessi a seguito dell'attivazione delle nuove opere; in riferimento a tali oggetti è possibile determinare dei risparmi di costi.

Con riferimento a tali oggetti, sempre sulla base di dati gestionali di RFI per linee comparabili a quella oggetto di studio, sono stati stimati i costi mediamente necessari per effettuare gli interventi di manutenzione, tenendo presente cicli pluriennali (dai 10 ai 25 anni), a partire dall'anno di attivazione delle opere.

Risulta la seguente pianificazione, che tiene conto dei costi incrementali e dei risparmi di costo:

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Variazioni nei costi di manutenzione straordinaria

(Importi in Milioni di euro, a valori finanziari)

| 2032 | 2035 | 2036 | 2042 | 2045 | 2046 | 2047 |
|---------|---------|---------|---------|---------|---------|---------|
| + 0,366 | + 0,562 | + 3,256 | - 1,836 | - 0,842 | + 0,943 | - 0,212 |

Ai fini della presente Analisi, come suggerito nelle Linee Guida UE, per gli ultimi anni di piano (2045-2047), non è considerato per intero il costo di sostituzione ma le corrispondenti quote di manutenzione annuali, di seguito calcolate sulla base di un'utilità media degli interventi pari a 15 anni:

| | 2045 | 2046 | 2047 |
|---|---------|---------|---------|
| Valore della manutenzione espressa in quota annuale (valore / 15) | - 0,056 | + 0,063 | - 0,014 |

Ai fini della presente ACB risulta pertanto la pianificazione di costi di manutenzione straordinaria sotto riportata:

Variazioni dei costi di manutenzione straordinaria considerate nel Piano dei flussi

(Importi in Milioni di euro, a valori finanziari)

| 2032 | 2035 | 2036 | 2042 | 2045 | 2046 | 2047 |
|---------|---------|---------|---------|---------|---------|---------|
| + 0,366 | + 0,562 | + 3,256 | - 1,836 | - 0,056 | + 0,007 | - 0,007 |

7.2.3. Costi di esercizio delle nuove infrastrutture ferroviarie

La variazione nei costi di esercizio delle infrastrutture oggetto del Programma di Investimenti è costituita esclusivamente dai costi di manutenzione ordinaria, essendo trascurabili le variazioni per altri costi.

I maggiori oneri che il gestore dell'infrastruttura deve sostenere per garantire la manutenzione delle nuove opere che entrano in esercizio, secondo standard di qualità definiti, sono rappresentati dal costo delle prestazioni da affidare in appalto ovvero svolti internamente da RFI.

Anche per la manutenzione ordinaria sono stati individuati in dettaglio:

- gli oggetti di cui è composta l'infrastruttura ferroviaria di nuova realizzazione e che necessitano di manutenzione ordinaria, in riferimento ai quali è possibile stimare costi incrementali;
- gli oggetti in esercizio nella situazione infrastrutturale "senza intervento" e che saranno dismessi a seguito dell'attivazione delle nuove opere; in riferimento a tali oggetti è possibile determinare dei risparmi di costi.

Con riferimento a tali oggetti, sulla base di dati gestionali di RFI per linee comparabili a quella oggetto di studio, risultano determinati nello Scenario "con intervento" dei maggiori costi di manutenzione

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ordinaria rispetto allo Scenario “senza intervento”¹⁵, in concomitanza con la progressiva attivazione delle opere.

Variazione costi di manutenzione ordinaria

(Importi in Milioni di euro, a valori finanziari)

| 2023 (*) | 2024-2025 | 2026 | Dal 2027 in poi |
|----------|-----------|---------|-----------------|
| + 0,515 | + 1,029 | + 1,832 | 4,416 |

(*) Per il 2023 si considera il 50% del valore stimato per l'anno 2024

7.2.4. Ricavi

I ricavi sono costituiti dai proventi delle tariffe applicate alle imprese ferroviarie per l'accesso all'infrastruttura.

L'analisi di traffico ha definito le relazioni per le quali si prevedono modifiche nell'offerta di trasporto ferroviaria. Sulla base delle diverse relazioni sono stati calcolati gli specifici ricavi da pedaggio secondo la vigente normativa. Infatti, ai fini dell'accesso e dell'utilizzo equo e non discriminatorio dell'infrastruttura ferroviaria da parte delle Imprese Ferroviarie il canone dovuto per l'accesso all'infrastruttura ferroviaria nazionale è stabilito con decreto del Ministro delle Infrastrutture e dei Trasporti e pubblicato sulla Gazzetta Ufficiale della Repubblica Italiana e nella Gazzetta Ufficiale delle Comunità europee.

Il calcolo è basato sul Decreto del Ministero dei Trasporti e della Navigazione del 21 marzo 2000 n. 43/T recante “determinazione dei criteri di determinazione del canone di utilizzo dell'infrastruttura” e secondo i criteri definiti da tale decreto è effettuato il calcolo del pedaggio. Nel caso specifico, occorre precisare che l'itinerario Napoli-Bari è una infrastruttura appartenente alla rete ferroviaria Convenzionale, e che -ai fini del calcolo del pedaggio- tale rete è suddivisa nel Decreto 43/T del 2000 in tre categorie:

- rete fondamentale;
- rete complementare;
- nodi.

La rete fondamentale è a sua volta divisa in tratte commerciali; diversamente la rete complementare è considerata come un'unica tratta ed è suddivisa come segue:

- rete secondaria, comprendente linee ferroviarie caratterizzate da traffico contenuto;
- rete a scarso traffico, comprendente linee ferroviarie caratterizzate da traffico molto limitato, poiché localizzate in aree a domanda strutturalmente debole;
- linee a spola, sulle quali vengono effettuati servizi di andata e ritorno con una certa frequenza e senza intersezione di tracce in località intermedie.

Per ognuno dei nodi della rete indicati nel Decreto 43/T sono riportate le località che ne delimitano il perimetro.

Il canone per ciascuna traccia oraria si compone della somma delle seguenti parti:

- parte a tratta/nodo: costo di accesso a ciascuna tratta e a ciascun nodo interessati;
- parte a chilometro/minuto: costo di utilizzo dell'infrastruttura ferroviaria in funzione dei chilometri di percorrenza su ciascuna tratta e dei minuti di permanenza all'interno del perimetro di ciascun nodo interessati dalla traccia;

¹⁵ Si rinvia allo specifico Allegato per dettagli sulla determinazione dei costi di manutenzione.

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c) parte per consumo energetico: costo per la fruizione dell'energia elettrica per la trazione in funzione dei chilometri di percorrenza, sia sulle tratte che sui nodi interessati dalla traccia.

In particolare il costo relativo alla parte a chilometro/minuto di cui al precedente punto b) è il risultato della somma dei seguenti importi:

- l'importo legato alla distanza chilometrica utilizzata dalla traccia;
- l'importo legato al tempo di impegno dell'infrastruttura ferroviaria, all'interno del perimetro di ciascun nodo.

In linea generale questo calcolo considera i contributi di tutte e tre le tipologie di rete convenzionale potenzialmente utilizzabili: rete fondamentale, rete complementare e nodi.

Nella componente relativa alla rete fondamentale l'algoritmo considera anche i parametri di densità di traffico, velocità della traccia e usura.

Per la rete complementare l'algoritmo risulta molto più semplice e considera solo un prezzo base chilometrico.

Infine, per i nodi ferroviari l'algoritmo tiene conto del tempo di permanenza, della fascia oraria e della tipologia di stazioni interessate.

Per maggiori dettagli si rimanda al Decreto 43/T del 2000.

Occorre precisare che si registra una recentissima evoluzione nel sistema di pedaggio ferroviario.

Il nuovo sistema di pedaggio per l'accesso ai servizi del c.d. Pacchetto Minimo d'Accesso nel periodo regolatorio 2016-2021 è stato definito secondo i principi e criteri dettati dall'Autorità di Regolazione dei Trasporti ed è entrato in vigore dal 1 gennaio 2018, dopo un periodo transitorio di due anni in cui ha continuato a trovare applicazione il previgente sistema di pedaggio.

Sulla base dei richiamati principi regolatori, e in aderenza alle previsioni dell'articolo 16, comma 1 del D.Lgs. 112/2015, il Gestore Infrastruttura ha commisurato l'ammontare complessivo dei ricavi da pedaggio, nell'ambito del periodo regolatorio considerato, ai costi correlati alla gestione dell'infrastruttura almeno nelle sue componenti di costi operativi, ammortamenti e remunerazione del capitale investito al netto della contribuzione statale in conto esercizio definita nel Contratto di Programma – parte Servizi, delle eccedenze provenienti da altre attività commerciali e di eventuali altre entrate non rimborsabili da fonti private e pubbliche.

Con riferimento al nuovo sistema di pricing, si può evidenziare come questo abbia da un lato visto l'abbandono della logica di definizione del pedaggio sulla base dei numerosi parametri legati alla specifica traccia ed al suo percorso sulle diverse categorie di rete, che determinava una non facile predittibilità del pedaggio; dall'altro l'abbandono della componente fissa, che era fonte di possibili effetti distorsivi (si pensi ad esempio alla grande variabilità dei pedaggi in funzione dell'estensione dei nodi), e che ha invece comportato effetti redistributivi tra le varie Regioni.

In particolare il nuovo sistema anziché una formula complessa in funzione dei numerosi parametri legati alla traccia e alla successione delle tratte utilizzate, prevede più semplicemente una componente legata all'usura e definita dalle caratteristiche fisiche del treno (classe di peso, classe di velocità e tipo di trazione – elettrica o meno) e una componente legata al segmento di mercato, secondo i binomi definiti dall'Autorità di Regolazione dei Trasporti nella Delibera 96/2015 e gli ulteriori binomi definiti dal GI, in ragione della diversa ability to pay di tali segmenti.

L'attivazione della nuova infrastruttura sull'Itinerario Napoli-Bari, come detto, consentirà di incrementare l'offerta ferroviaria relativa ai servizi passeggeri Lunga Percorrenza, passeggeri Regionali e Mercè.

Dall'applicazione del pedaggio previsto dal Decreto 43/T per le diverse tipologie di servizi e per le diverse relazioni considerate, sono risultati i seguenti pedaggi unitari medi:

- Servizi Lunga Percorrenza: € 4,06 per treno.Km
- Servizi Regionali: € 5,11 per treno.Km

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- Servizi Merci: € 2,21 per treno.Km

La valorizzazione dei ricavi incrementali derivanti dal programma di investimenti oggetto della valutazione, è stata effettuata partendo dall'incremento dell'offerta ferroviaria in termini di treni.km alla quale è stata associata la specifica tariffa di pedaggio.

In particolare:

- a partire dal 2023: risulta un progressivo incremento di ricavi relativi al potenziamento dei servizi passeggeri Regionali;
- a partire dal 2026: si considerano i ricavi di pieno regime, pari a circa 36 milioni di euro all'anno, che includono anche la parte relativa al segmento passeggeri Lunga Percorrenza e al segmento Mercì.

7.3. Valore Residuo

Ai sensi di quanto previsto dal Regolamento Delegato (UE) 480/2014 e secondo prassi, il valore residuo dell'investimento al 2047 è determinato come valore attuale netto dei flussi di cassa degli anni di utilità dell'opera, rimanenti oltre l'orizzonte temporale di previsione esplicita.

Alla base del calcolo si considerano le seguenti ipotesi:

- i flussi annui futuri sono definiti a partire dal flusso dell'ultimo anno di previsione esplicita, normalizzato al fine di tener conto della corrispondente quota annuale di manutenzione straordinaria, calcolata sulla base del totale dei costi stimati nelle 16 annualità (2032-2047); risulta un flusso netto annuo periodico di +31,3 milioni di euro;
- l'utilità complessiva dell'infrastruttura è definita sulla base dell'articolazione dei costi di investimento per categoria inventariale, di seguito rappresentata:

Ripartizione degli Investimenti per categoria inventariale

| Categoria | Costo Investimento (MEURO) | Incidenza % sul totale | Anni utilità |
|----------------------------|----------------------------|------------------------|--------------|
| Opere civili | 4.417,3 | 80,0% | 75 |
| Sovrastruttura ferroviaria | 166,9 | 3,0% | 25 |
| Impianti tecnologici | 574,7 | 10,4% | 25 |
| Aree | 364,7 | 6,6% | 100 |
| Totale | 5.523,7 | 100% | |

risulta pertanto un'utilità media della nuova infrastruttura pari a 70 anni a partire dall'anno di regime 2026, e quindi un'utilità residua oltre il 2047 pari a 48 anni.

Applicando la formula del valore attuale con un tasso di sconto del 4%, risulta un Valore Residuo al 2047 pari circa 664,2 milioni di euro.

Nell'ambito dell'analisi di sensitività sarà effettuata una simulazione con valore residuo calcolato a partire da utilità delle opere commisurata al valore dell'investimento al netto del valore stimato per l'acquisizione delle Aree.

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7.4. Quadro di sintesi delle ipotesi

| Voci/Parametri | Ipotesi |
|---|--|
| Tasso di attualizzazione | 4% |
| Anno Base di attualizzazione | 2018 |
| Orizzonte temporale di valutazione | 30 anni da Anno Base |
| Unità di conto | €.2018 a prezzi costanti |
| Costo investimento (IVA esclusa) | 5.524 MEURO |
| Costo investimento (IVA esclusa) al netto di Imprevisti | 5.144 MEURO |
| Costi di manutenzione straordinaria | Dati medi gestionali RFI |
| Costi di manutenzione ordinaria | Dati medi gestionali RFI |
| Tariffe da pedaggio per accesso all'infrastruttura | Servizi Lunga Percorrenza: 4,06 €*Treno.Km Servizi Regionali: 5,11 €*Treno.Km Servizi Merci: 2,21 €*Treno.Km |
| Utilità complessiva dell'opera | 70 anni a partire dal 2026 |
| Valore Residuo | Valore attuale dei flussi annuali relativi agli anni di utilità residua |

Risultati dell'Analisi Finanziaria

7.4.1. Redditività finanziaria dell'investimento

Gli indicatori di redditività finanziaria dell'investimento (c.d "Senza il sostegno dell'Unione") risultano i seguenti:

- ❖ il Valore Attuale Netto Finanziario [VANF(C)], al tasso di sconto (4%), è pari a:
-3.714 milioni di euro.
- ❖ il Tasso di Rendimento Finanziario [TRF(C)] : **- 6,6%**

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Indicatori di valutazione della redditività finanziaria dell'investimento

| REDDITIVITA' FINANZIARIA DELL'INVESTIMENTO | Valore Attuale all'Anno Base 2018 (Milioni di euro) |
|--|---|
| Costi di investimento (escluso Imprevisti) (*) | 4.283,6 |
| Costi per manutenzione straordinaria | 1,4 |
| Costi operativi per gestione infrastruttura (manutenzione ordinaria) | 48,6 |
| Flussi in uscita totali | 4.333,6 |
| Entrate da Ricavi | 406,9 |
| Valore Residuo | 213,0 |
| Flussi in entrata totali | 619,9 |
| VANF(C) = | -3.713,7 |
| TRF(C)= | -6,6% |

(*) Ai fini dell'elaborazione degli Indicatori, i costi di investimento sostenuti fino al 2017 sono valorizzati al 2018 al tasso di capitalizzazione del 4%, a partire dallo specifico anno di contabilizzazione della spesa.

Gli indicatori evidenziano che le entrate nette del Progetto non sono in grado di ripagare l'investimento iniziale (indipendentemente dalle fonti di finanziamento), pertanto si conferma **l'ammissibilità del Progetto al sostegno dei contributi UE.**

Per i dettagli circa i valori considerati nel calcolo degli indicatori si rimanda allo specifico Allegato "Prospetto dei flussi di cassa previsionali", nel quale sono riportate, nell'arco temporale di analisi, tutte le voci precedentemente descritte.

7.4.2. Calcolo del contributo UE e ipotesi su altre fonti di finanziamento

Considerando costi ammissibili pari a 367 Milioni di Euro, complessivi per i due interventi dell'Itinerario Napoli-Bari¹⁶ oggetto della Domanda al sostegno comunitario PON 2014-2020, si rappresenta nella tabella seguente il calcolo del contributo massimo attraverso l'applicazione proporzionale delle entrate nette attualizzate.

¹⁶ Per elementi di dettaglio sui costi ammissibili relativi ai due interventi "Variante alla linea Napoli – Canello" e "Raddoppio tratta Canello – Benevento: lotto funzionale Canello – Dugenta Frasso Telesino", si rinvia alle rispettive Schede Grandi Progetto.

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| CALCOLO del Funding GAP e del CONTRIBUTO MASSIMO (importi in Milioni di Euro) | Valori Attualizzati |
|--|------------------------|
| Costi di Investimento Attualizzati (escluso Imprevisti) (CIA) | 4.283,600 |
| Calcolo delle Entrate Nette Attualizzate (ENA) | |
| Ricavi (tariffe di accesso all'infrastruttura) | 406,909 |
| Costi di manutenzione straordinaria | -1,371 |
| Costi di manutenzione ordinaria | -48,626 |
| Valore Residuo | 212,992 |
| Entrate Nette Attualizzate | 569,904 |
| Calcolo Pro-Rata di ENA = (CIA-ENA)/CIA | 86,7% |
| Costi ammissibili (CA) | 367,000 |
| Tasso di cofinanziamento Asse Prioritario (CF) | 75,0% |
| EU GRANT (=CA x Pro-Rata x CF) | 238,630 |
| Tasso finanziamento nazionale (TN) | 25,0% |
| Cofinanziamento nazionale (= CA x Pro-Rata x TN) | 79,543 |
| CONTRIBUTO MASSIMO | 318,173 |

Ai fini del calcolo degli indicatori di redditività finanziaria del capitale nazionale e della verifica di sostenibilità bancaria, di cui ai successivi paragrafi, si considerano le seguenti ipotesi relative alle fonti di finanziamento:

❖ Copertura della spesa per investimenti:

- il contributo PON previsto è pari a **316 milioni di euro**¹⁷, di cui:
 - Sostegno UE: 237 Milioni di euro
 - Cofinanziamento nazionale: 79 Milioni di euro ;
 per spese sostenute fino al 2018 l'incasso del contributo è ipotizzato nel 2019, mentre per gli anni successivi l'incasso del contributo è ipotizzato nell'anno seguente a quello di spesa, fino a concorrenza dei 316 Milioni di euro.
- la parte restante di spesa relativa all'intero Programma di Investimenti "Itinerario Napoli-Bari", per un importo di 5.207,7 milioni di euro (incluso "Imprevisti"), è finanziata da contributi pubblici a carattere nazionale¹⁸, considerati incassati nell'anno di sostenimento della spesa;

Risulta definito il seguente piano di copertura della spesa per investimenti:

¹⁷ Corrispondente all'importo complessivo previsto in "PON-Infrastrutture e Reti 2014/2020", come da Presa d'Atto del 28 luglio 2017, per tutti gli Interventi relativi al Corridoio Napoli-Bari.

¹⁸ Per gran parte trattasi di risorse finanziarie previste nel "Contratto di Programma-parte Investimenti" (di durata non inferiore a 5 anni, aggiornabile e rinnovabile anche annualmente) che è lo strumento cui è affidata la disciplina degli aspetti economici e finanziari del rapporto di concessione tra lo Stato e RFI, Gestore dell'infrastruttura, con riferimento alla realizzazione degli investimenti infrastrutturali.

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Piano delle entrate delle fonti di finanziamento per copertura investimenti (incluso Imprevisti)
(Importi in Milioni di euro)

| FINANZIAMENTO INVESTIMENTI Piano delle Entrate | Totale | AL 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|--|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Entrate contributo PON: sostegno UE | 237,0 | | | 30,000 | 48,750 | 67,500 | 82,500 | 8,250 | | | | |
| Entrate contributo PON: parte nazionale | 79,0 | | | 10,000 | 16,250 | 22,500 | 27,500 | 2,750 | | | | |
| Entrate altri contributi pubblici nazionali | 5.207,7 | 231,025 | 68,521 | 174,562 | 265,346 | 360,311 | 579,241 | 858,613 | 839,223 | 871,101 | 450,301 | 509,420 |
| TOTALE FINANZIAMENTO Programma "Itinerario Napoli-Bari" | 5.523,7 | 231,025 | 68,521 | 214,562 | 330,346 | 450,311 | 689,241 | 869,613 | 839,223 | 871,101 | 450,301 | 509,420 |

Nell'ipotesi di Piano degli Investimenti al netto di "Imprevisti", si considerano corrispondenti minori entrate per la voce "Altri contributi pubblici nazionali"

Piano delle entrate delle fonti di finanziamento per copertura investimenti (escluso Imprevisti)
(Importi in Milioni di euro)

| FINANZIAMENTO INVESTIMENTI Piano delle Entrate | Totale | AL 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Entrate contributo PON: sostegno UE | 237,0 | | | 30,000 | 48,750 | 67,500 | 82,500 | 8,250 | | | | |
| Entrate contributo PON: parte nazionale | 79,0 | | | 10,000 | 16,250 | 22,500 | 27,500 | 2,750 | | | | |
| Entrate altri contributi pubblici nazionali | 4.827,9 | 231,025 | 63,587 | 158,725 | 241,244 | 327,586 | 529,218 | 796,780 | 778,678 | 809,306 | 418,414 | 473,371 |
| TOTALE FINANZIAMENTO Programma "Itinerario Napoli-Bari" (escluso Imprevisti) | 5.143,9 | 231,025 | 63,587 | 198,725 | 306,244 | 417,586 | 639,218 | 807,780 | 778,678 | 809,306 | 418,414 | 473,371 |

- ❖ Copertura dei costi di manutenzione: secondo la normativa e il «Contratto di Programma-Parte Servizi» vigenti, nel piano delle entrate sono considerati anche contributi statali per la copertura dei costi di manutenzione (ovvero il mancato incasso di contributi in corrispondenza degli anni in cui la variazione determina un risparmio di costi). In dettaglio:
 - manutenzione straordinaria: contributi pubblici pari all'importo della spesa, con incasso nell'anno di spesa;
 - manutenzione ordinaria: contributi pubblici ipotizzati pari al 75% dei relativi costi, con incasso nell'anno di spesa.

7.4.3. Redditività finanziaria del capitale nazionale

L'obiettivo è quello di verificare il rendimento finanziario del progetto in relazione al solo capitale nazionale investito e quindi considerando l'ipotesi che parte dei costi di investimento siano finanziati dall'Unione.

Si può chiedere il contributo UE per un progetto a condizione che:

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- l'indicatore [VANF(K)] sia negativo o pari a zero
 - [TRF(K)] sia inferiore o pari al tasso di attualizzazione.
- Diversamente si deve fornire adeguata giustificazione.

Ai fini della presente analisi la redditività finanziaria del capitale nazionale è valutata considerando due casi:

- A. capitale nazionale investito rappresentato da contributi pubblici nazionali commisurati alla spesa per investimenti comprensiva della parte "Imprevisti";
- B. capitale nazionale investito rappresentato da contributi pubblici commisurati ad una spesa per investimenti che non include la parte "Imprevisti".

La tabella seguente fornisce in sintesi le ipotesi considerate ed il risultato dei relativi indicatori, calcolati considerando il tasso di attualizzazione del 4%:

| Voci | A. Contributi nazionali commisurati ad Investimenti comprensivi di "Imprevisti" | B. Contributi nazionali commisurati ad Investimenti al netto di "Imprevisti" |
|--|---|--|
| Uscite per Contributi pubblici nazionali (Valori non attualizzati, in MEURO) | -5.286,7 | -4.906,9 |
| Uscite per Contributi pubblici nazionali (Valore attuale al 2018, in MEURO) | -4.380,9 | -4.072,4 |
| Entrate Nette Attualizzate (in MEURO) | + 569,9 | + 569,9 |
| [VANF(K)] (MEURO) | -3.811,0 | -3.502,5 |
| [TRF(K)] (%) | -6,7% | -6,4% |

Si perviene ad indicatori negativi, che confermano pertanto **l'ammissibilità del progetto alla domanda di sostegno UE.**

Per completezza si fornisce di seguito il prospetto di dettaglio delle voci considerate ogni anno ai fini del calcolo¹⁹:

*Prospetto dei flussi di cassa per calcolo degli Indicatori di redditività del capitale nazionale (Caso A)
(Importi in Milioni di euro)*

| REDDITIVITA' FINANZIARIA DEL CAPITALE NAZIONALE | Valori attualizzati al 4% | AL 2017 | 2018 (anno base) | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---------------------------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <i>Contributi pubblici nazionali per investimenti (*)</i> | 4.380,928 | 231,025 | 68,521 | 184,562 | 281,596 | 382,811 | 606,741 | 861,363 | 839,223 |
| Manutenzione Straordinaria | 1,371 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Costi di manutenzione ordinaria | 48,626 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,515 | 1,029 |
| Flussi in uscita totali | 4.430,925 | 231,025 | 68,521 | 184,562 | 281,596 | 382,811 | 606,741 | 861,877 | 840,252 |
| Entrate da Ricavi | 406,909 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 3,242 | 6,485 |
| Valore Residuo | 212,992 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Flussi in entrata totali | 619,901 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 3,242 | 6,485 |

¹⁹ Il prospetto analitico è riferito al caso A), ossia considerando uscite di contributi nazionali commisurate alla spesa per investimenti comprensiva di "Imprevisti". Per il caso B) tutte le voci restano le stesse ad eccezione dei contributi nazionali, per i quali si considera la pianificazione indicata nel paragrafo precedente, relativa agli investimenti al netto di "Imprevisti".

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| REDDITIVITA' FINANZIARIA DEL CAPITALE NAZIONALE | Valori attualizzati al 4% | AL 2017 | 2018 (anno base) | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---------------------------------|--|------------------------|----------|----------|----------|----------|----------|----------|
| Flusso di cassa netto (saldo annuale) | | -231,025 | -68,521 | -184,562 | -281,596 | -382,811 | -606,741 | -858,635 | -833,768 |
| VANF(K) = | -3.811,0 | (*) Ai fini dell'elaborazione degli Indicatori, i contributi ottenuti fino al 2017 sono valorizzati al 2018 al tasso di capitalizzazione del 4% a partire dallo specifico anno di incasso. | | | | | | | |
| TRF(K)= | -6,7% | | | | | | | | |

| REDDITIVITA' FINANZIARIA DEL CAPITALE NAZIONALE | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|-----------------|-----------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <i>Contributi pubblici nazionali per investimenti</i> | 871,101 | 450,301 | 509,420 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Manutenzione Straordinaria | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,366 | 0,000 | 0,000 | 0,562 |
| Costi di manutenzione ordinaria | 1,029 | 1,832 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 |
| Flussi in uscita totali | 872,131 | 452,133 | 513,836 | 4,416 | 4,416 | 4,416 | 4,416 | 4,782 | 4,416 | 4,416 | 4,978 |
| Entrate da Ricavi | 6,485 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 |
| Valore Residuo | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Flussi in entrata totali | 6,485 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 |
| Flusso di cassa netto (saldo annuale) | -865,646 | -416,238 | -477,941 | 31,479 | 31,479 | 31,479 | 31,479 | 31,114 | 31,479 | 31,479 | 30,918 |

| REDDITIVITA' FINANZIARIA DEL CAPITALE NAZIONALE | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| <i>Contributi pubblici nazionali per investimenti</i> | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Manutenzione Straordinaria | 3,256 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | -1,836 | 0,000 | 0,000 | -0,056 | 0,007 | -0,007 |
| Costi di manutenzione ordinaria | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 |
| Flussi in uscita totali | 7,672 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 2,580 | 4,416 | 4,416 | 4,360 | 4,423 | 4,409 |
| Entrate da Ricavi | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 |
| Valore Residuo | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 664,247 |
| Flussi in entrata totali | 35,895 | 700,143 |
| Flusso di cassa netto (saldo annuale) | 28,223 | 31,479 | 31,479 | 31,479 | 31,479 | 31,479 | 33,315 | 31,479 | 31,479 | 31,536 | 31,473 | 695,734 |

7.4.4. Verifica di sostenibilità finanziaria

L'analisi della sostenibilità finanziaria, basata su proiezioni dei flussi finanziari non attualizzati, ha l'obiettivo di dimostrare che il progetto avrà a propria disposizione, anno dopo anno, risorse finanziarie sufficienti, tali da coprire le spese di investimento e di esercizio durante l'intero periodo di riferimento. La differenza tra flussi in entrata e flussi in uscita indica il deficit o il surplus che si prevede possa accumularsi per ciascun anno. La sostenibilità si ritiene garantita se il flusso di cassa generato accumulato risulta positivo (o non negativo) per tutti gli anni dell'orizzonte temporale di valutazione. Le ipotesi considerate nella presente ACB, e dettagliate nei precedenti paragrafi, permettono di definire il seguente Piano annuale dei flussi, completo di tutte le coperture finanziarie:

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| SOSTENIBILITA' FINANZIARIA (importi in milioni di Euro) | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Costi di manutenzione straordinaria | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | -1,836 | 0,000 | 0,000 | -0,056 | 0,007 | -0,007 |
| Costi di manutenzione ordinaria | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 |
| Flussi in uscita totali | 4,416 | 4,416 | 4,416 | 4,416 | 4,416 | 2,580 | 4,416 | 4,416 | 4,360 | 4,423 | 4,409 |
| Entrate da Ricavi | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 | 35,895 |
| Contributi UE | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Contributi pubblici nazionali per investimenti | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| Contributi pubblici per manutenzione straordinaria | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | -1,836 | 0,000 | 0,000 | -0,056 | 0,007 | -0,007 |
| Contributi pubblici per manutenzione ordinaria | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 | 3,312 |
| Flussi in entrata totali | 39,207 | 39,207 | 39,207 | 39,207 | 39,207 | 37,372 | 39,207 | 39,207 | 39,151 | 39,214 | 39,200 |
| Flusso di cassa netto (saldo annuale) | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 | 34,791 |
| Flusso di cassa netto cumulato | 433,711 | 468,503 | 503,294 | 538,085 | 572,877 | 607,668 | 642,460 | 677,251 | 712,043 | 746,834 | 781,625 |

Dall'analisi del Piano pluriennale dei flussi risulta che **il progetto è finanziariamente sostenibile**: il costo di investimento è coperto da finanziamenti dello stesso importo, i costi di esercizio sono coperti da ricavi e da sussidi statali e pertanto, complessivamente, il flusso di cassa netto cumulato rimane positivo durante l'intero periodo di valutazione.

8. Analisi economica

8.1. Ipotesi di base

In coerenza con l'Analisi Finanziaria sono utilizzate le seguenti ipotesi:

- Anno base per l'attualizzazione dei flussi: 2018.
- Orizzonte temporale di 30 anni a partire dall'anno base
- Dati espressi a prezzi costanti €.2018, in coerenza con l'utilizzo di un tasso "reale" di attualizzazione dei flussi.

Inoltre sono utilizzate le seguenti ipotesi specifiche dell'Analisi Economica:

- Tasso di attualizzazione.
Secondo quanto suggerito nella "Guide to cost-benefit analysis of Investment Projects" – European Commission DG Regional Policy, 2014, nella presente analisi economica viene utilizzato un tasso reale di sconto pari al **3%**.
- Indicizzazione.
Ai fini della indicizzazione nel tempo delle grandezze inerenti le esternalità e i risparmi di tempo, sono stati applicati parametri basati sulla variazione annua del PIL pro-capite a

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prezzi costanti: la stima è basata su proiezioni del PIL Italia al 2020 di fonte Prometeia e sull'evoluzione della popolazione Italia di fonte Eurostat. Nella tabella seguente viene fornito il dettaglio per alcuni anni ritenuti significativi:

Indicatori economici per l'indicizzazione

| ANNI | PIL (MEURO) | Popolazione (milioni) | PIL pro capite (EURO) | Parametri di indicizzazione |
|----------|-------------|-----------------------|-----------------------|-----------------------------|
| 2017 | 1.595.024 | 60,760 | 26.251 | |
| 2018 | 1.610.974 | 60,756 | 26.516 | 1,01% |
| 2019 | 1.623.862 | 60,740 | 26.735 | 0,83% |
| 2020 | 1.640.101 | 60,719 | 27.012 | 1,04% |
| 2021 | 1.653.221 | 60,692 | 27.239 | 0,84% |
| 2022 | 1.665.786 | 60,660 | 27.461 | 0,81% |
| 2026 | 1.710.854 | 60,499 | 28.279 | 0,69% |
| 2027 | 1.720.915 | 60,458 | 28.465 | 0,66% |
| 2028 | 1.730.530 | 60,418 | 28.643 | 0,63% |
| 2029 | 1.739.714 | 60,381 | 28.812 | 0,59% |
| 2030 | 1.748.486 | 60,350 | 28.972 | 0,56% |
| 2035 | 1.786.707 | 60,187 | 29.686 | 0,45% |
| 2040 | 1.816.870 | 59,982 | 30.290 | 0,38% |
| dal 2041 | | | | 0,38% |

8.2. Fattori di conversione

I fattori di conversione utilizzati nella presente analisi sono stati determinati tenendo conto delle indicazioni contenute nel Quaderno PON Trasporti 02/2006 e nella "Guide to cost-benefit analysis of Investment Projects – European Commission DG Regional Policy, 2014".

Considerando che i costi sostenuti da RFI sono stimati già al netto di IVA, i fattori di conversione utilizzati sono i seguenti:

Fattori di conversione applicabili alla Spesa per Investimenti e ai costi di manutenzione sostenuti dal Gestore

| Voci della spesa per investimenti (IVA esclusa) | Fattori di Conversione |
|---|------------------------|
| Materiali ed aree | 1,000 |
| Lavoro | 0,758 |
| Trasporti | 0,754 |
| Altri costi | 1,000 |

In particolare:

- Costo del Lavoro/Manodopera.
Per quanto riguarda il costo del lavoro (Manodopera impiegata nella realizzazione e manutenzione dell'opera, Personale adibito alla gestione dell'infrastruttura e Personale conducente dei mezzi di trasporto), viene utilizzato un fattore di conversione pari a 0,758

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²⁰, in grado di esprimere in termini di salari-ombra (shadow wages) i valori salariali medi di mercato: è determinato scorporando un'incidenza della tassazione pari al 32%.

- Trasporti.
Per la voce Trasporti si è considerata un'incidenza del costo del carburante pari al 20%, un'incidenza del costo del Personale pari al 60% e la restante parte costituita da ammortamento del mezzo e materiali vari ²¹.
Per la componente Carburante, già espressa al netto di IVA, si considera un fattore di conversione pari a 0,494 al fine di depurare il valore anche delle ulteriori imposte indirette. Risulta pertanto un fattore di conversione pari a 0,754

I fattori di conversione applicati ai costi del trasporto ferroviario sono stati definiti considerando le seguenti ipotesi:

- costi finanziari stimati già al netto di IVA;
- costi per energia di trazione comprensivi di imposte di produzione (stimate pari al 30%);

Fattori di conversione applicabili ai costi ferroviari

| Voci di costo (valori finanziari IVA esclusa) | Fattori di Conversione |
|--|------------------------|
| Ammortamento | 1,00 |
| Materiali | 1,00 |
| Personale | 0,758 |
| Energia per trazione | 0,769 |
| Altri costi | 1,00 |

Per quanto riguarda i costi di esercizio del trasporto stradale, i fattori di conversione sono stati ottenuti sulla base delle indicazioni suggerite in "Quaderno del PON Trasporti 02/2006" e considerando le seguenti ipotesi:

- costi chilometrici di auto comprensivi di IVA al 22%
- costo del carburante per auto composto per circa il 55% da IVA e accise
- costi chilometrici dei veicoli stradali pesanti per trasporto merci già espressi al netto di IVA e accise

Fattori di conversione applicabili ai costi dell'auto

| Voci di costo - AUTO | Fattori di Conversione per valori finanziari espressi IVA inclusa |
|----------------------|---|
| Ammortamento | 0,820 |
| Carburante | 0,450 |

²⁰ Tale valore è coerente con i valori stimati nello studio "Del Bo, C. F., Fiorio, C.V. and M. Florio (2011), Shadow wages for the EU regions, Fiscal Studies, vol. 32(1)"

²¹ La composizione della voce Trasporti è stimata a partire dai dati contenuti nella "Pubblicazione periodica dei costi di esercizio dell'impresa di autotrasporto per conto di terzi" del Ministero Infrastrutture e dei Trasporti di luglio 2014 (ultima disponibile), considerando i valori di un veicolo massa a pieno carico fino a 26 t con percorrenze fino a 150 Km, opportunamente aggiornati a valori €.2018 sulla base dell'indice ISTAT NIC.

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| Voci di costo - AUTO | Fattori di Conversione per valori finanziari espressi IVA inclusa |
|---------------------------------------|---|
| Manutenzione (materiali e pneumatici) | 0,820 |
| Manutenzione (lavoro) | 0,649 |

Fattori di conversione applicabili ai costi dei veicoli pesanti Merci

| Voci di costo – Veicolo pesante Merci | Fattori di Conversione per valori finanziari espressi al netto di IVA e Accise |
|--|---|
| Ammortamento | 1,000 |
| Carburante | 1,000 |
| Manutenzione (materiali e pneumatici) | 1,000 |
| Manutenzione (lavoro) | 0,758 |
| Personale conducente | 0,758 |

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8.3. Conversione dei costi di progetto in valori economici

8.3.1. Costi di investimento

Ai fini dell'analisi economica si considera il piano della spesa per investimenti comprensiva della parte Imprevisti.

Per poter applicare alla spesa per investimenti gli appropriati parametri di conversione da valori finanziari a valori economici, si è provveduto alla ripartizione per voce di costo, considerando lo sviluppo del programma di attività ed i seguenti criteri:

- per gli anni in cui sono svolte solo attività di progettazione la spesa si considera assorbita totalmente da Lavoro (personale e servizi a contenuto professionale);
- per la fase di realizzazione delle opere il costo è ripartito nelle seguenti voci: Materiali 30%, Manodopera 40%, Trasporti 30%;

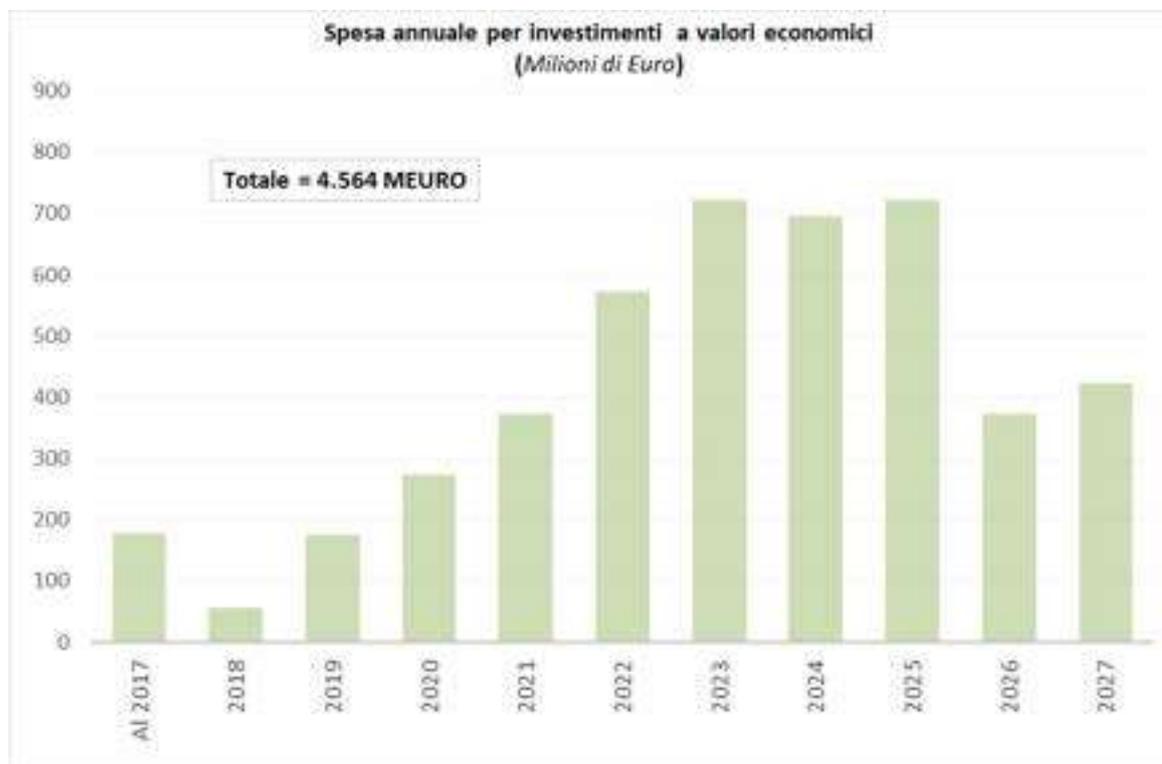
Per ciascun anno di spesa è quindi definita la seguente ripartizione dei costi di investimento:

Ripartizione degli Investimenti per voce di costo

| Ripartizione per voci di costo (%) | Totale | AL 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|------------------------------------|--------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Materiali e aree | 28,7% | 3,3% | 26,1% | 26,7% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% |
| Lavoro/Manodopera | 43,0% | 96,7% | 67,9% | 46,7% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% |
| Trasporti | 28,3% | 0,0% | 6,0% | 26,7% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% | 30,0% |

L'applicazione dei fattori di conversione, specificati al paragrafo precedente, consente di determinare una spesa per investimenti espressa a valori economici pari a circa 4.564 milioni di euro (al netto di IVA), per uno sviluppo temporale rappresentato nella figura seguente:

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8.3.2. Costi di manutenzione straordinaria

Ai fini della conversione dei costi finanziari in valori economici sono stati applicati i coefficienti di conversione considerando la ripartizione per natura di costo mediamente rilevabile per la tipologia di interventi di manutenzione straordinaria previsti nella presente analisi, svolti con attività interna di RFI oppure affidati in appalto.

Variazione costi di manutenzione straordinaria: articolazione per natura di costo

(Importi in Milioni di euro, a valori finanziari)

| | 2032 | 2035 | 2036 | 2042 | 2045 | 2046 | 2047 |
|---------------|---------------|---------------|----------------|---------------|---------------|----------------|----------------|
| Materiali | +0,366 | +0,562 | + 3,280 | - 1,665 | - 0,769 | + 0,908 | - 0,164 |
| Manodopera | | | -0,019 | - 0,137 | -0,058 | + 0,028 | - 0,038 |
| Trasporti | | | -0,005 | - 0,034 | -0,015 | + 0,007 | -0,010 |
| Totale | +0,366 | +0,562 | + 3,256 | -1,836 | -0,842 | + 0,943 | - 0,212 |

Dall'applicazione dei fattori di conversione e considerando la corrispondente quota annuale per i costi stimati negli anni 2045-2047, risulta il seguente piano dei costi di manutenzione straordinaria a valori economici:

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Variazione dei costi di manutenzione straordinaria – valori economici
(Importi in Milioni di euro)

| 2032 | 2035 | 2036 | 2042 | 2045 | 2046 | 2047 |
|---------|---------|---------|---------|---------|---------|---------|
| + 0,366 | + 0,562 | + 3,262 | - 1,794 | - 0,055 | + 0,007 | - 0,006 |

8.3.3. Costi di esercizio dell'infrastruttura

Ai fini della conversione dei costi finanziari in valori economici sono stati applicati i coefficienti di conversione considerando la ripartizione per natura di costo desumibile da valori mediamente riscontrabili nell'attività di manutenzione svolta da RFI.

Sulla base di dati gestionali di RFI, e tenendo presente gli oggetti di manutenzione costituenti la nuova infrastruttura e gli oggetti che andranno dismessi, è possibile determinare l'impegno in termini di Manodopera, Materiali e servizi di Trasporto, mediamente necessario per effettuare gli interventi annuali di manutenzione svolti internamente a RFI o affidati in appalto.

Risulta la seguente articolazione per voce di costo:

Costi di manutenzione ordinaria: articolazione per natura di costo

(Importi in Milioni di euro, a valori finanziari)

| Voce di costo | 2024-2025 | 2026 | dal 2027 in poi |
|---------------|--------------|--------------|-----------------|
| Manodopera | 0,336 | 0,575 | 1,457 |
| Materiali | 0,620 | 1,157 | 2,783 |
| Trasporti | 0,073 | 0,100 | 0,176 |
| TOTALE | 1,029 | 1,832 | 4,416 |

Dall'applicazione dei fattori di conversione risulta la seguente variazione dei costi di manutenzione ordinaria espressa a valori economici:

Variazione costi di manutenzione ordinaria – valori economici

(Importi in Milioni di euro)

| 2023 (*) | 2024-2025 | 2026 | A regime (dal 2027) |
|----------|-----------|---------|---------------------|
| + 0,465 | + 0,930 | + 1,669 | 4,020 |

(*) Per il 2023 si considera il 50% del valore stimato per l'anno 2024

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8.4. Vantaggi economici e altri costi

Oltre ai costi di realizzazione dell'infrastruttura e ai costi per il suo mantenimento, ai fini della presente analisi si considerano gli ulteriori costi e benefici per la collettività derivanti dall'utilizzo dell'infrastruttura.

Come indicato precedentemente nelle stime di traffico, l'attuazione dell'intervento comporterà una maggiore attrattività del vettore ferroviario a seguito del potenziamento dell'infrastruttura e del miglioramento generale delle performance del sistema, rispetto alla situazione attuale.

In particolare il miglioramento in termini di tempi di percorrenza e maggior numero di treni, e quindi frequenza, potrà portare ad un incremento dell'utilizzo del mezzo di trasporto treno rispetto all'utilizzo del mezzo privato.

Nelle successive sezioni si evidenzieranno i principali vantaggi economici e costi derivanti dalla diversione modale a favore del servizio ferroviario che si attende a seguito dell'attuazione degli investimenti oggetto della presente analisi.

Nello specifico sono stati analizzati e quantificati i seguenti costi e benefici economici:

- **Incremento dei costi di esercizio connessi alla erogazione dei servizi di trasporto ferroviario**, sia viaggiatori che merci, connessi al potenziamento dell'offerta commerciale da parte degli operatori;
- **Risparmio dei costi di esercizio della modalità strada** per la quota di traffico viaggiatori e merci che si prevede venga sottratta alla strada dal servizio ferroviario;
- **Risparmi di tempo** per gli utenti che già utilizzavano il vettore ferroviario e per gli utenti acquisiti dalla modalità strada;
- **Variazione dei costi "esterni" della mobilità** associati alla redistribuzione modale strada-ferro.

8.4.1. Costi di esercizio dei servizi ferroviari

Il Programma di Investimenti comporterà un miglioramento delle caratteristiche tecniche dell'itinerario che potenzialmente permetterà una gestione maggiormente efficiente dei servizi, in particolare consentendo di produrre treni di maggiore capacità, e quindi, a parità di altre condizioni, riducendo i costi unitari (per passeggero e per tonnellata trasportata) per gli operatori ferroviari.

A livello complessivo il nuovo modello di esercizio, prevedendo il potenziamento dell'offerta di servizi ferroviari associati all'attivazione delle nuove infrastrutture di trasporto e richiesti dal maggior traffico stimato per la modalità ferro, determinerà comunque un aumento dei costi operativi, rispetto allo scenario "senza progetto", strettamente connesso all'aumento della produzione espressa in termini di treni.km.

Per stimare tali costi incrementali, sono stati applicati i costi medi standard di produzione sostenuti dal principale operatore di trasporto ferroviario per le tipologie di servizi Passeggeri e Merci.

Ai fini dell'analisi economica in tali oneri non sono stati compresi i costi relativi al canone di pedaggio di accesso ed utilizzo dell'infrastruttura ferroviaria, in quanto aventi natura di trasferimento di risorse tra soggetti e non comportano consumo netto di risorse per la collettività.

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Di seguito i costi per treno.km stimati a valori finanziari (IVA esclusa):

Costi medi per treno.km del trasporto ferroviario, valori finanziari €.2018

| Voce di costo | Servizi Passeggeri Regionali (€/treno.km) | Servizi Passeggeri Lunga Percorrenza (€/treno.km) | Servizi Merci (€/treno.km) |
|-------------------------------|---|---|----------------------------|
| Personale | 4,103 | 6,009 | 4,641 |
| Ammortamenti | 1,554 | 3,897 | 0,777 |
| Manutenzione | 2,590 | 4,362 | 2,768 |
| Verifica e pulizia | 1,109 | 4,724 | 3,862 |
| Energia per trazione | 1,046 | 1,409 | 3,440 |
| Totale euro a treno.km | 10,401 | 20,401 | 15,489 |

Applicando i corrispondenti fattori di conversione risultano i seguenti valori economici per treno.km:

Costi medi per treno.km del trasporto ferroviario, valori economici €.2018

| Voce di costo | Servizi Passeggeri Regionali (€/treno.km) | Servizi Passeggeri Lunga Percorrenza (€/treno.km) | Servizi Merci (€/treno.km) |
|-------------------------------|---|---|----------------------------|
| Personale | 3,110 | 4,555 | 3,518 |
| Ammortamento | 1,554 | 3,897 | 0,777 |
| Manutenzione * | 2,277 | 3,834 | 2,433 |
| Verifica e pulizia ** | 0,894 | 3,810 | 3,114 |
| Energia per trazione | 0,805 | 1,083 | 2,645 |
| Totale euro a treno.km | 8,639 | 17,179 | 12,488 |

* Costituita mediamente da 50% consumo di materiali e 50% lavoro

** Costituita mediamente da 20% consumo di materiali e 80% lavoro

I valori economici indicati in tabella sono applicati all'offerta ferroviaria incrementale determinata in termini di treni.km, pervenendo quindi ad un incremento netto di costi operativi annui connessi all'erogazione dei servizi ferroviari.

8.4.2. Risparmi nei costi operativi della modalità stradale

Il previsto incremento del traffico viaggiatori e merci su ferrovia conseguibile grazie al progetto considerato, consente di stimare le corrispondenti quote di traffico che vengono dirottate dalla modalità stradale. Le minori percorrenze veicolari su strada costituiscono un beneficio per la collettività in quanto permettono di liberare risorse per impieghi alternativi.

Una approssimazione del "valore" di queste risorse liberate è rappresentata dal loro costo di produzione (costo operativo) espresso a valori economici.

La valorizzazione monetaria dei risparmi di costo è ottenuta applicando alla quota di traffico (in termini di veicoli.km) dirottata dalla modalità stradale per "passeggeri (Auto)" e "merci", i rispettivi costi medi chilometrici.

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Variazione costi riferiti al traffico passeggeri per la modalità "Auto"

Per la valorizzazione dei costi cessanti relativi al traffico passeggeri su strada è stato utilizzato il costo medio di produzione su base chilometrica fornito dalle Tabelle Aci (dati settembre 2017).

In particolare è stata considerata la media dei costi rilevati per autovetture benzina in produzione e autovetture diesel in produzione di media cilindrata (1500-2000 cc), per le specifiche voci di costo (sono escluse le voci che rappresentano trasferimenti di risorse e non consumi effettivi per la collettività).

A partire da tali valori è stimabile un costo di 0,329 euro per veicolo.km (include carburante, manutenzione, pneumatici e ammortamento del valore iniziale dell'auto e sono escluse le voci di costo che rappresentano puri trasferimenti e non consumo di risorse).

Applicando analiticamente a ciascuna voce di costo il corrispondente parametro di conversione il costo economico è stimato in circa 0,227 €/veicolo.km.

Costo medio chilometrico – Auto

(Importi €.2018)

| Voce di costo | Componenti di costo (IVA inclusa) | | |
|----------------|-----------------------------------|------------------------|-----------------------------------|
| | Costo unit. Finanziario (€/v.km) | Fattore di conversione | Costo unitario Economico (€/v.km) |
| Ammortamento | 0,130 | 0,820 | 0,107 |
| Carburante | 0,100 | 0,450 | 0,045 |
| Pneumatici | 0,029 | 0,820 | 0,024 |
| Manutenzione * | 0,070 | 0,735 | 0,052 |
| Totale | 0,329 | | 0,227 |

* Costituita mediamente da 50% consumo di materiali e 50% lavoro

Il costo unitario (economico) a veicolo.km è stato poi applicato alla variazione del traffico passeggeri su strada espresso in veicoli.km: la riduzione dei veicoli in circolazione nello Scenario di Progetto rispetto allo Scenario di Riferimento determina un risparmio di costi e quindi un beneficio per la collettività.

Variazione costi relativi al traffico merci su strada

Per la determinazione dei costi cessanti relativi al traffico merci su strada è applicato un costo chilometrico calcolato a partire dai "Costi di esercizio dell'impresa di autotrasporto per conto di terzi" pubblicati dal Ministero delle Infrastrutture e dei Trasporti: in particolare si è fatto riferimento alla media dei valori rilevabili per veicoli di massa complessiva a pieno carico compresa tra 11,5 e 26 tonnellate e per quelli superiori alle 26 tonnellate, con percorrenze mediamente superiori ai 250 km.

Il corrispondente costo economico, dopo l'applicazione dei fattori di conversione ed al netto delle componenti che costituiscono trasferimento di risorse (assicurazione, tassa e pedaggi), risulta essere pari a 0,895 €/veicolo.km, così determinato:

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Costo medio chilometrico - Veicolo pesante Merci

(Importi €.2018)

| Voce di costo | Componenti di costo (iva esclusa) | | |
|---------------------------------------|---------------------------------------|------------------------|-------------------------------------|
| | Costo unitario finanziario (€ / v.km) | Fattore di Conversione | Costo unitario economico (€ / v.km) |
| Ammortamento | 0,130 | 1,00 | 0,130 |
| Carburante (al netto di IVA e accise) | 0,319 | 1,00 | 0,319 |
| Manutenzione materiali e Pneumatici | 0,051 | 1,00 | 0,051 |
| Manutenzione manodopera | 0,029 | 0,758 | 0,022 |
| Personale conducente | 0,492 | 0,758 | 0,373 |
| Totale | 1,021 | | 0,895 |

Il costo unitario (economico) a veicolo.km è stato poi applicato alla variazione del traffico merci su strada: la riduzione dei veicoli in circolazione nello Scenario di Progetto rispetto allo Scenario di Riferimento determina un risparmio di costi e quindi un beneficio per la collettività.

8.4.3. Risparmi dei tempi di viaggio

Tra i benefici conseguenti all'attuazione del Programma di investimenti ferroviario è da includere il guadagno di tempo di cui si avvantaggiano gli utenti della modalità ferroviaria direttamente coinvolti e che è connesso alla percezione del valore del tempo.

Considerando nel complesso tutti gli interventi e le azioni programmatiche previste per lo sviluppo del Corridoio Napoli-Bari, l'obiettivo, condiviso a vari livelli istituzionali, è quello di ridurre progressivamente in modo significativo i tempi di percorrenza e raggiungere, per le relazioni di lunga distanza tra Napoli e Bari e, più estesamente, sulla direttrice AVR Roma- Bari, i seguenti valori obiettivo:

- ✓ Napoli - Bari: tempo di percorrenza totale di circa 2 ore (no stop);
- ✓ Roma - Bari: tempo di percorrenza totale di circa 3 ore (no stop).

Al raggiungimento di tali obiettivi complessivi contribuiscono di fatto i seguenti fattori:

- riduzioni dei tempi di percorrenza a seguito di interventi infrastrutturali già completati (per es: Bretella di Foggia)
- riduzioni dei tempi di percorrenza che sono direttamente connessi agli interventi oggetto della presente valutazione (come da Programma di Investimenti definito nel capitolo 5)
- riduzioni dei tempi di percorrenza che sono attesi dall'attuazione di altri investimenti ancora da avviare, non compresi nel Programma di Investimenti oggetto della presente valutazione, oltre che da interventi sulla struttura dei servizi (es. istituzione di servizi non stop) o altre azioni nella programmazione dell'orario.

Ai fini della presente valutazione si devono considerare solo i risparmi di tempo direttamente associabili alla realizzazione del Programma di Investimenti, come definito al capitolo 5, e facendo riferimento ai servizi ferroviari delle corrispondenti tratte oggetto di analisi.

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In particolare, l'attivazione delle opere presenti nel Programma di Investimenti potrà permettere una riduzione dei tempi di percorrenza per i servizi passeggeri, sia Lunga Percorrenza che Regionali, come specificato in dettaglio nella tabella seguente:

Risparmi di Tempo associabili al Programma di Investimenti

| | Servizi ferroviari sulle tratte: | | Risparmi di tempo (minuti) | |
|------------|----------------------------------|-----------|----------------------------|----------|
| | | | 2023-2025 | dal 2026 |
| LP | Roma | Bari | | 27' |
| | Napoli | Bari | | 45' |
| Reg | Caserta | Benevento | 2' | 11' |
| | Napoli | Benevento | 20' | 29' |
| | Napoli | Foggia | | 45' |

Sulla base del traffico ferroviario atteso, come definito al capitolo 6, è possibile quantificare gli utenti dei servizi ferroviari interessati dai benefici dei risparmi di tempo:

Passeggeri dei servizi ferroviari che beneficiano di minori tempi di percorrenza (dati di regime, dal 2026)

(Passeggeri.Anno – Migliaia)

| Servizi ferroviari | Traffico Conservato | Traffico Acquisito da strada (dato a regime, dal 2026) | Totale traffico ferrovia (dal 2026) |
|--------------------------------------|------------------------|---|--|
| Servizi LP | Roma-Bari | 1.543,5 | 2.400,6 |
| | Napoli Bari | | 1.903,8 |
| | Totale Pass. LP | 1.543,5 | 4.304,4 |
| Servizi Regionali | Caserta-Benevento | 138,2 | 17,3 |
| | Napoli-Benevento | 419,0 | 838,1 |
| | Napoli-Foggia | | 628,6 |
| Totale Pass. Reg | 557,3 | 1.483,9 | 2.041,2 |
| Totale Passeggeri.Anno (.000) | 2.100,8 | 5.788,3 | 7.889,1 |

Per la ripartizione dell'utenza ferroviaria per motivi di spostamento, specificata nella tabella sotto riportata, si è fatto riferimento:

- per i viaggiatori lunga percorrenza a dati di letteratura, in particolare allo Studio "Un sistema di modelli per la previsione della domanda passeggeri sui servizi ferroviari AV" di Dall'Alba-Velardi, pubblicato su Ingegneria Ferroviaria (numero 3 del 2015)²²
- per i viaggiatori a carattere locale, ai valori indicati nello Studio di Traffico²³

²² Nell'ambito di tale studio è stata condotta un'indagine RP-SP (Revealed Preference-Stated Preference) finalizzata alla raccolta di informazioni sulle scelte di viaggio di un campione di viaggiatori. Ai fini della presente ACB si è fatto riferimento alla media dei valori risultanti per le diverse frequenze di spostamento.

²³ Nello Studio di Traffico risulta definita la ripartizione dell'utenza ferroviaria tra "Pendolarismo" (78%) e "Altro" (22%). Ai fini della presente ACB, la categoria "Altro" è stata ipotizzata costituita per metà da utenti che viaggiano per "Business" e per metà da utenti che viaggiano per "Altri motivi".

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Ripartizione dell'utenza ferroviaria per motivi di spostamento

| Motivo di spostamento | Passeggeri lunga percorrenza | Passeggeri a carattere locale |
|-----------------------|------------------------------|-------------------------------|
| Business | 70% | 11 % |
| Pendolarismo | | 78 % |
| Altri Motivi | 30% | 11 % |

Per la valorizzazione monetaria del tempo risparmiato si è fatto riferimento ai valori suggeriti per l'Italia in HEATCO (2002), considerando la media tra valori "breve" e "lunga distanza", aggiornati a €.2018:

Valore monetario del tempo

| Motivo di spostamento | Valore del tempo (€2018) |
|-----------------------|--------------------------|
| Business | 34,21 € / h |
| Pendolarismo | 15,48 € / h |
| Altri Motivi | 12,99 € / h |

Fonte: elaborazione su valori HEATCO (2002)

Come suggerito in "Guide to cost-benefit analysis of Investment Projects, DG Regional Policy, 2014", il valore del tempo è indicizzato negli anni sulla base delle variazioni del PIL pro-capite, considerando una elasticità 0.5 per il valore del tempo "lavoro" e 0.3 per il valore del tempo "non lavoro".

Applicando i valori monetari del tempo alle ore risparmiate in ciascun anno da parte degli utenti della modalità ferroviaria, distinti per i diversi motivi di viaggio, risulta determinato il valore dei risparmi di tempo associabili al progetto di investimento.

Ai fini della presente ACB i risparmi di tempo sono associati:

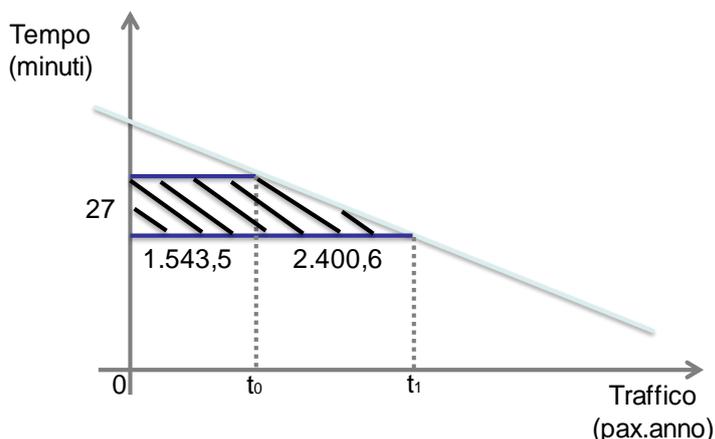
- per intero alla quota di traffico conservato, ossia a quella componente di mobilità che usufruirebbe dei servizi ferroviari per i propri spostamenti, indipendentemente dal miglioramento dei servizi offerti;
- ridotti al 50% per la componente di utenti acquisiti dalla strada.

A titolo di esempio, si riporta il calcolo effettuato lungo la relazione Roma – Bari, per l'anno di valutazione (2026), ai fini della quantificazione del risparmio di tempo scaturente dall'investimento.

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Risparmi di tempo relativi alla relazione Roma – Bari (anno 2026)



| ITINERARIO ROMA-BARI | 2026 |
|---|-------------------|
| Traffico conservato (pax.anno) | 1.543.500 |
| Traffico acquisito da strada (pax.anno) | 2.400.600 |
| Risparmio tempo di percorrenza (min) | 27 |
| Risparmio di tempo (regola della metà) | 1.234.710 |
| Motivo spostamento Business | 70% |
| Motivo spostamento Pendolarismo | 0% |
| Motivo spostamento Altri motivi | 30% |
| Valore del tempo Business (€/pax.h) | 35,33 |
| Valore del tempo Pendolarismo (€/pax.h) | 15,78 |
| Valore del tempo Altri motivi (€/pax.h) | 13,24 |
| Risparmio di tempo Business (€) | 30.537.122 |
| Risparmio di tempo Pendolarismo (€) | 0 |
| Risparmio di tempo Altri motivi (€) | 4.905.796 |
| TOTALE (€) | 35.442.917 |

$$Area = \frac{(B + b) * h}{2} = \frac{(1.543,5 + 2.400,6 + 1543,5) * 27}{2} = 1.234.710$$

8.4.4. Esternalità

Vari studi confermano che il potenziamento dei servizi di trasporto ferroviario produce impatti positivi sull'ambiente, grazie alla riduzione dei volumi di traffico delle modalità di trasporto su strada.

La riduzione del volume di traffico su strada porta altresì miglioramenti nella sicurezza (riduzione di incidenti) e nei livelli di congestione delle stesse arterie stradali.

La modalità ferroviaria risulta essere quella che mediamente genera costi esterni minori rispetto a tutte le altre modalità, sia in riferimento al traffico passeggeri che al traffico merci, con maggiore evidenza se si considera il mezzo treno con trazione elettrica.

La valutazione economica delle esternalità derivanti dall'attivazione degli interventi sull'itinerario Napoli-Bari è stata effettuata considerando per lo scenario "Con progetto" gli effetti dovuti alla diversione modale e quindi stimando:

- la riduzione delle esternalità connesse al minor traffico merci e passeggeri su strada rispetto allo scenario "senza-progetto"
- l'incremento delle esternalità dovute al corrispondente incremento di traffico merci e passeggeri nella modalità ferro, sempre rispetto ai volumi di traffico rilevabili nello scenario "senza-progetto"

Ai fini della presente analisi sono state considerate le cinque esternalità più diffusamente riconosciute in ambito trasportistico: inquinamento atmosferico, effetti sul cambiamento climatico, inquinamento acustico, incidenti e congestione

Per la determinazione di tali esternalità connesse alle diverse modalità di trasporto si è fatto riferimento alla metodologia e ai i valori suggeriti in:

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- "Update of the Handbook on External Costs of Transport - DG MOVE, 2014" che aggiorna il precedente studio "Handbook on estimation of external costs in the transport sector-IMPACT" (CE Delft et al for EC DG TREN,2008) e che fa altresì riferimento ai valori calcolati in "External Costs of Transport in Europe" (CE Delft, Infrac, Fraunhofer ISI, 2011);
- Linee Guida per la valutazione degli investimenti in opere pubbliche – MIT -2016"

Laddove disponibili si è fatto riferimento a dati riferiti alle Regioni principalmente interessate dall'itinerario, ovvero ai valori indicati per l'Italia, considerando un itinerario medio in prevalenza di tipo non urbano.

Se non diversamente specificato, i valori sono stati determinati prendendo come riferimento quelli riferibili alle seguenti categorie di mezzi:

- AUTO: alimentazione benzina e diesel, di media cilindrata, considerando l'evoluzione del parco veicolare negli anni e quindi un sempre maggior peso dei veicoli meno inquinanti (Euro 5 e successivi);
- VEICOLI MERCI SU STRADA: veicoli stradali HGV di categoria 16-32 t, maggiormente rappresentativi del parco circolante nell'area di studio ed in coerenza con il carico medio ipotizzato, considerando l'evoluzione del parco veicolare negli anni;
- TRENO a trazione elettrica.

Inquinamento atmosferico: riduzione di emissioni a livello locale

Si considerano gli impatti derivanti dalle emissioni nell'atmosfera delle seguenti tipologie di inquinanti, dovute ai processi di combustione dei veicoli stradali:

- Ossidi di azoto (NO_x);
- Biossido di zolfo (SO₂);
- Composti Organici Volatili Non Metanici (COVNM)
- Particolato (PM_{2,5});

Per il calcolo annuale delle esternalità da inquinamento si è fatto riferimento alle emissioni, espresse in tonnellate/veicolo.km, generate dalla circolazione dei veicoli stradali ed applicando il costo unitario per tonnellata emessa, secondo la seguente formula:

$$[emissioni \text{ in tonnellate per km} * \text{totale veicoli.km percorsi}] * \text{costo €/tonnellata emessa}$$

Per i fattori di emissione, espressi in grammi per veicolo.km, si è fatto riferimento alla banca dati "Fattori di emissione medi del trasporto stradale in Italia 2015", stimati da ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale)²⁴ sulla base della "EMEP/EEA air pollutant emission inventory guidebook 2016".

La stima delle emissioni unitarie medie (per veicolo.km) tiene conto della progressiva entrata in esercizio di veicoli sempre meno inquinanti.

²⁴ ISPRA, Ente pubblico di ricerca sottoposto alla vigilanza del Ministro dell'ambiente e della tutela del territorio e del mare, realizza annualmente l'inventario nazionale delle emissioni in atmosfera come strumento di verifica degli impegni assunti a livello internazionale sulla protezione dell'ambiente atmosferico, quali la Convenzione Quadro sui Cambiamenti Climatici (UNFCCC), il Protocollo di Kyoto, la Convenzione di Ginevra sull'inquinamento atmosferico transfrontaliero (UNECE-CLRTAP), le Direttive europee sulla limitazione delle emissioni.

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In particolare ai fini della presente ACB sono stati stimati valori rappresentativi di emissioni per itinerari di tipo “non urbano”, considerando il parco veicoli circolante nelle regioni Campania e Puglia e la sua evoluzione a partire dai dati di consistenza 2010-2016 di fonte ACI, ed inoltre:

- per il traffico passeggeri Auto, si è tenuto conto del tipo di alimentazione (benzina, gasolio e altra tipologia a basso impatto ambientale), nonché della cilindrata;
- per quanto riguarda il trasporto merci su strada, si è tenuto conto dei valori associati a mezzi Diesel “HGV” di categoria 16-32 t, maggiormente rappresentativa del parco circolante italiano in relazione al carico medio ipotizzato nella presente Analisi.

Sono stati definiti i seguenti valori medi al 2024 e 2047, e per gli anni intermedi si è ipotizzata un’evoluzione di tipo lineare.

Fattori medi di emissione per la modalità stradale

| Tipo di veicolo | Anno | Unità di misura | Fattori di emissione | | | |
|-----------------------|------|-----------------|----------------------|--------|--------|--------|
| | | | SO2 | NOx | COVNM | PM2,5 |
| Autovettura | 2024 | g/veicolo*km | 0,0005 | 0,2982 | 0,0273 | 0,0115 |
| | 2047 | g/veicolo*km | 0.0005 | 0,1714 | 0,0178 | 0,0010 |
| Veicolo Merci pesanti | 2024 | g/veicolo*km | 0,0027 | 2,8140 | 0,1038 | 0,0603 |
| | 2047 | g/veicolo*km | 0,0025 | 1,3549 | 0,0560 | 0,0269 |

Le emissioni medie in g/vkm per autovettura e per veicoli pesanti sono state moltiplicate per le variazioni, stimate in diminuzione, dei veicoli.km su strada, determinando pertanto le emissioni totali annue evitabili grazie all’attivazione della nuova opera ferroviaria e alla conseguente diversione modale dalla strada alla ferrovia.

Nella tabella seguente, per ciascuna tipologia di inquinante, sono indicate le emissioni “evitate” in termini di tonnellate totali, con indicazione del dato puntuale per alcuni anni e del dato cumulato relativo all’intero orizzonte temporale 2023-2047²⁵

Emissioni inquinanti “evitate”

| Tipo di veicolo | Periodo | Tonnellate totali per periodo | | | |
|-----------------------|---------------------------|-------------------------------|------------------|----------------|----------------|
| | | SO2 | NOx | COVNM | PM2,5 |
| Auto | 2026 | -0,6 | -320,4 | -29,5 | -11,8 |
| | 2035 | -0,6 | -265,0 | -25,4 | -7,2 |
| | 2047 | -0,6 | -191,2 | -19,9 | -1,1 |
| | Cumulato 2023-2047 | -12,4 | - 5.683,4 | - 548,4 | - 144,3 |
| Veicolo Merci pesanti | 2026 | -0,1 | -143,4 | -5,3 | -3,1 |
| | 2035 | -0,1 | -113,0 | -4,3 | -2,4 |
| | 2047 | -0,1 | -72,3 | -3,0 | -1,4 |

²⁵ Per l’anno 2023 sono applicabili i fattori di emissione unitari stimati al 2024.

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| Tipo di veicolo | Periodo | Tonnellate totali per periodo | | | |
|----------------------------------|--------------------|-------------------------------|-----------------|----------------|-------------------|
| | | SO ₂ | NO _x | COVNM | PM _{2,5} |
| | Cumulato 2023-2047 | - 3,0 | - 2.372,7 | - 91,4 | - 49,5 |
| Totale cumulato 2023-2047 | | -15,4 | -8.056,1 | - 639,8 | - 193,8 |

Infine si è proceduto alla valorizzazione monetaria dei relativi risparmi di costo dal 2023 al 2047: a tal fine si è fatto riferimento ai valori unitari per tonnellata emessa rilevati per l'Italia, tratti da "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" e rappresentati in tabella.

Costi inquinanti: valori unitari per tonnellata emessa

| Tipologia di Inquinante | Costo Unitario (€ ₂₀₁₀ per tonnellata emessa) |
|---------------------------------------|---|
| NO _x | 10.824 |
| SO ₂ | 9.875 |
| COVNM | 1.242 |
| PM _{2,5} (media non "Urban") | 37.342 |

I valori unitari sono stati aggiornati a valori €2018 e indicizzati nel tempo in base all'evoluzione del PIL pro-capite a prezzi costanti fino al 2047.

Riduzione delle emissioni di gas a effetto serra

Il c.d. effetto serra è principalmente determinato dalle emissioni di Anidride Carbonica (CO₂), oltre che dalle emissioni di Metano (CH₄) e Ossido di diazoto (N₂O).

Per la stima dei fattori di emissione delle auto si è fatto riferimento al Regolamento (CE) n. 333/2014 che, modificando il Regolamento (CE) n. 443/2009, fissa un obiettivo di 95 g CO₂/veicolo.km per il livello medio di emissioni per le nuove immatricolazioni di auto a decorrere dall'anno 2020, termine poi prorogato di un anno. Considerando l'articolazione al 2016 del parco veicolare delle regioni interessate dall'itinerario e la sua evoluzione negli anni, è possibile stimare al 2024 un valore medio di emissioni pari a 138 g.v.km e il raggiungimento del valore obiettivo, come media riferita all'intero parco circolante, all'anno 2035.

Al fine di considerare l'evoluzione nel tempo dei fattori di emissione, è stata effettuata un'interpolazione lineare fino all'anno 2035, mentre per gli anni successivi si è ipotizzato un decremento delle emissioni unitarie dell'0,5% ogni anno.

Fattori unitari di emissione di gas a effetto serra - Autovettura

| 2016 | 2024 | 2035 | Dal 2035 |
|---------------------------|-------------|------------|-------------|
| 170 g. v.Km ²⁶ | 138 g. v.Km | 95 g. v.Km | -0,5% annuo |

²⁶ Tale valore è ritenuto coerente con i dati suggeriti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", basati sullo studio TREMOVE 3.2.2, che per la modalità auto indica al 2010 un valore medio di 189 g. CO₂ eq/v.km.

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Per la stima dei fattori di emissione dei veicoli merci HGV, espressi in g CO₂eq/veicolo.km, si è fatto riferimento ai dati suggeriti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" ²⁷, in particolare considerando il valore di emissione suggerito per veicoli pesanti della categoria HGV 16-32 t. ²⁸, pari a 715 g CO₂eq/v.km (valore al 2008).

Sulla base delle strategie delineate in ambito europeo²⁹ il dato prospettico è stato stimato considerando una riduzione al 2030 pari al 20% dei valori TREMOVE rilevati nel 2008. Pertanto risultano i seguenti valori unitari:

Fattori unitari di emissione di gas a effetto serra – Veicolo pesante

| 2008 | 2026 | 2030 | Dal 2031 |
|-------------|-------------|-------------|-------------|
| 715 g. v.Km | 598 g. v.Km | 572 g. v.Km | -0,5% annuo |

Le emissioni in g/vkm per autovettura e veicolo pesante sono state moltiplicate per il decremento dei veicoli.km su strada risultante negli scenari di traffico, determinando pertanto le emissioni totali annue evitabili grazie all'attivazione della nuova opera ferroviaria e alla conseguente diversione modale.

La tabella seguente indica in sintesi i valori puntuali di alcuni anni ed il dato complessivo relativo all'intero orizzonte temporale 2023-2047:

Emissioni "evitate" di gas a effetto serra

| Tipo di veicolo | Anni | Emissioni CO ₂ (tonnellate) |
|----------------------------------|---------------------------|--|
| Auto | 2026 | -145.610 |
| | 2035 | -105.979 |
| | 2047 | -99.792 |
| | Cumulato 2023-2047 | -2.515.196 |
| Veicoli Merci pesanti | 2026 | -31.912 |
| | 2035 | -29.769 |
| | 2047 | -28.031 |
| | Cumulato 2023-2047 | -652.274 |
| Totale cumulato 2023-2047 | | - 3.167.470 |

Per la valorizzazione monetaria dei risparmi di costo si è fatto riferimento al valore centrale proposto in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", pari a € 90/t CO₂-eq.per l'anno 2010, derivato da valori stimati in letteratura³⁰.

²⁷ I fattori di emissione presentati sono basati su dati del modello TREMOVE 3.2.2.

²⁸ Tale categoria è quella maggiormente rappresentativa della tipologia media di veicoli pesanti ipotizzata nella presente Analisi

²⁹ COM/2014/0285 final "Strategy for reducing Heavy-Duty Vehicles fuel consumption and CO₂ emissions"

³⁰ Kuik, O., Brander, L., and Tol, R. S. (2009). Marginal abatement costs of greenhouse gas emissions: A meta-analysis. Energy Policy, vol. 37, no. 4, pp. 1395-1403

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Il costo unitario delle emissioni di gas a effetto serra è molto variabile negli anni in quanto dipende da vari elementi, quali l'evoluzione tecnologica dei mezzi, l'andamento del mercato delle emissioni, ecc. Ai fini della presente analisi si ipotizza che a partire dal 2010 il valore cresca del 2% annuo fino al 2040, anno in cui è stimato pari a € 163/t³¹, e che poi resti costante per gli anni successivi.

Per quanto riguarda il trasporto ferroviario si ricorda che sull'itinerario oggetto della presente analisi non sono presenti treni diesel.

Inquinamento acustico

Per la monetizzazione dell'inquinamento acustico si è fatto riferimento ai costi marginali Italia proposti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" che richiama i valori dello studio "CE Delft et al. (2011)".

Per quanto riguarda il trasporto merci i valori sono stati stimati ipotizzando che gli spostamenti siano effettuati sia di giorno che di notte su percorsi non urbani.

Per quanto riguarda il trasporto passeggeri i valori sono stati definiti ipotizzando spostamenti in prevalenza diurni, su percorsi non urbani.

I costi marginali unitari sono stati aggiornati a valori €2018 e indicizzati nel tempo in base all'evoluzione del PIL pro-capite.

Inquinamento acustico: costi marginali unitari

| Costi per inquinamento acustico | | €ct /treno.km €ct / veicolo.km (€.2018) |
|---------------------------------|----------------------------|---|
| Merci | Treno | 6,15 |
| | Trasporto su strada – HGV | 0,76 |
| Passeggeri | Treno | 2,23 |
| | Trasporto su strada - Auto | 0,06 |

Applicando tali valori alle variazioni di traffico su strada e ferrovia risulta un beneficio netto, dovuto a risparmi di costi per riduzione di traffico stradale superiori ai costi connessi all'incremento di traffico ferroviario.

Incidentalità

Per la stima di tale tipologia di costi esterni si è fatto riferimento ai tassi annui di incidentalità rilevabili da statistiche ufficiali per la modalità strada e per la modalità ferroviaria. Tali tassi, applicati alle variazioni di traffico consentono di determinare il numero di eventi (incrementali per la ferrovia ed eventi evitati per la modalità stradale) che sono poi oggetto di valorizzazione monetaria, attraverso l'applicazione di costi monetari unitari.

³¹ Valore prudenzialmente contenuto entro € 168/t., che rappresenta il limite massimo del range proposto in "Update of the Handbook on External Costs of Transport"

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Nel caso del **trasporto stradale** i tassi di incidentalità, mortalità e lesività sono desunti dai dati AISCAT³², riferiti al traffico autostradale, distinto tra veicoli leggeri e pesanti³³, relativo alle arterie stradali presenti sul territorio di riferimento.

Sono stati pertanto considerati i dati relativi alle seguenti autostrade:

- A1 Roma-Napoli
- A30 Caserta-Nola-Salerno
- A16 Napoli-Canosa
- A14 Bari-Canosa-(Bologna)

Considerando i dati dell'ultimo quinquennio disponibile, 2012-2016, sono stati definiti i seguenti tassi, mantenuti costanti lungo l'intero orizzonte di analisi:

Tassi di incidentalità stradale, espressi in numero di incidenti, morti e feriti

| | Numero di eventi per milione di Veicoli.Km | |
|------------------------|--|-----------------|
| | Veicoli leggeri | Veicoli pesanti |
| Tassi di incidentalità | 0,082 | 0,084 |
| Tassi di mortalità | 0,005 | 0,005 |
| Tassi di lesività | 0,155 | 0,140 |

Fonte: elaborazione su dati AISCAT

Per la definizione dei tassi di incidentalità del **trasporto ferroviario** si è fatto riferimento ai dati di traffico e ai dati sugli incidenti desunti dalla banca dati ISTAT³⁴. Ai fini della presente ACB sono stati utilizzati i tassi risultanti come media dell'ultimo quinquennio disponibile, 2011-2015, mantenuti costanti lungo l'orizzonte di analisi.

Tassi di incidentalità ferroviaria, espressi in numero di incidenti, morti e feriti

| | Numero di eventi per milione di Treni.Km |
|-------------------------------|--|
| Tassi di incidentalità | 0,340 |
| Tassi di mortalità | 0,189 |
| Tassi di lesività (n° feriti) | 0,111 |

Fonte: elaborazione su dati ISTAT.

³² Rapporti Semestrali AISCAT (Associazione italiana società concessionarie autostrade e trafori)

³³ Per veicoli leggeri si intendono i motocicli e gli autoveicoli a due assi con altezza da terra, in corrispondenza dell'asse anteriore, inferiore a 1,30m.; per veicoli pesanti si intendono sia gli autoveicoli a due assi con altezza da terra, in corrispondenza dell'asse anteriore, superiore a 1,30 m., sia tutti gli autoveicoli a tre o più assi.

³⁴ L'Istat conduce dal 2004 una rilevazione sul trasporto ferroviario finalizzata a produrre informazioni statistiche sul servizio di trasporto fornito dalle imprese ferroviarie operanti sul territorio nazionale, in ottemperanza a quanto previsto nel regolamento del Parlamento europeo e del Consiglio n. 91/2003 e successive modifiche. Le elaborazioni ISTAT non prendono in considerazione i servizi metropolitani, tramviari e di metropolitana leggera. Inoltre è opportuno precisare che nella fattispecie incidente rientrano i seguenti eventi: collisioni, deragliamenti, incidenti a passaggi a livello, incendi al materiale rotabile, altri (incidenti classificabili come tipici), e incidenti con materiale in movimento (incidenti classificabili come atipici).

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Per la valorizzazione monetaria sono stati utilizzati i valori di costo unitario per tipologia di danno (decesso, lesioni gravi e infortunio leggero) proposti per l'Italia nell'ambito dello studio "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", aggiornati a valori €.2018 ed indicizzati sulla base delle variazioni annue del PIL pro-capite.

Incidentalità: costi unitari sociali
(Valori in €.2010 per tipologia di danno)

| Decesso | Lesioni gravi | Ferite lievi |
|-----------|---------------|--------------|
| 1.916.000 | 246.200 | 18.800 |

Come suggerito in "Linee guida per la misura dei Costi Esterni nell'ambito del PON Trasporti 2000–2006", per l'applicazione dei valori monetari sopra specificati si ipotizza che il 20% dei feriti riportati delle lesioni gravi e l'80% riportati ferite lievi³⁵.

Applicando tali valori alle variazioni di traffico su strada e ferrovia risulta un beneficio netto, dovuto a risparmi di costi per incidenti su strada superiori ai costi connessi all'incremento di traffico ferroviario.

Congestione stradale

I costi connessi alla congestione consistono prevalentemente in costi legati all'aumento dei tempi di viaggio, oltre che maggiori costi operativi di utilizzo del mezzo stradale (maggiori consumi di carburante e usura in situazione di congestione).

Rispetto ad altre esternalità, la congestione è quindi caratterizzata dal fatto che i costi sono subiti in prevalenza dalla stessa categoria di soggetti che la causa.

In sostanza all'aumentare del flusso di veicoli su una data strada, ogni veicolo aggiuntivo non soltanto si trova ad operare ad un costo privato sempre più elevato, ma provoca un aumento di costo anche agli altri veicoli in circolazione.

L'ammontare di tali costi dipende dalla densità di traffico esistente sull'itinerario percorso e quindi dal contributo che il proprio veicolo apporta al congestionamento complessivo.

Gli itinerari inerenti la presente analisi comprendono le principali arterie stradali di collegamento tra grandi aree metropolitane (Roma, Napoli, Bari), in cui risultano significativi livelli di congestione stradale, in particolare in prossimità dei grandi centri.

Pertanto nel presente lavoro si ritiene opportuno considerare come benefici di progetto i risparmi per congestione connessi al traffico sottratto alla strada.

I costi marginali unitari per veicolo.km sono stati stimati a partire dai valori dello studio "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" ³⁶, considerando, in via prudenziale e al fine di tener conto anche delle percorrenze in tratti stradali con minori livelli di congestione rispetto alle aree metropolitane, la media dei valori minimi ("free flow"), ulteriormente ridotta del 50%. Risultano applicabili i valori unitari indicati nella tabella seguente:

³⁵ Fonte: "Deliverable 12, Annex5 -The Pilot Accounts for Italy" (progetto UNITE, 2003).

³⁶ Tale studio recepisce ed aggiorna i valori proposti nello studio IMPACT 2008

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Congestione stradale: costi marginali unitari

| Tipologia di veicolo | €ct ₂₀₁₈ per veicolo.km |
|---|---------------------------------------|
| Auto | 0,49 |
| Veicoli pesanti per trasporto merci su strada | 1,21 |

Tali valori, indicizzati sulla base dell'evoluzione del PIL pro capite, sono applicati al traffico sottratto alla strada, espresso in termini di veicoli.km, determinando dei risparmi di costi da congestione.

Determinazione dei risparmi complessivi per esternalità

Considerando la totalità delle Esternalità, si rileva che annualmente i Risparmi dei costi esterni per la modalità stradale risultano superiori ai Costi incrementali connessi alla modalità ferroviaria e pertanto l'effetto netto è inserito tra i Benefici del progetto.

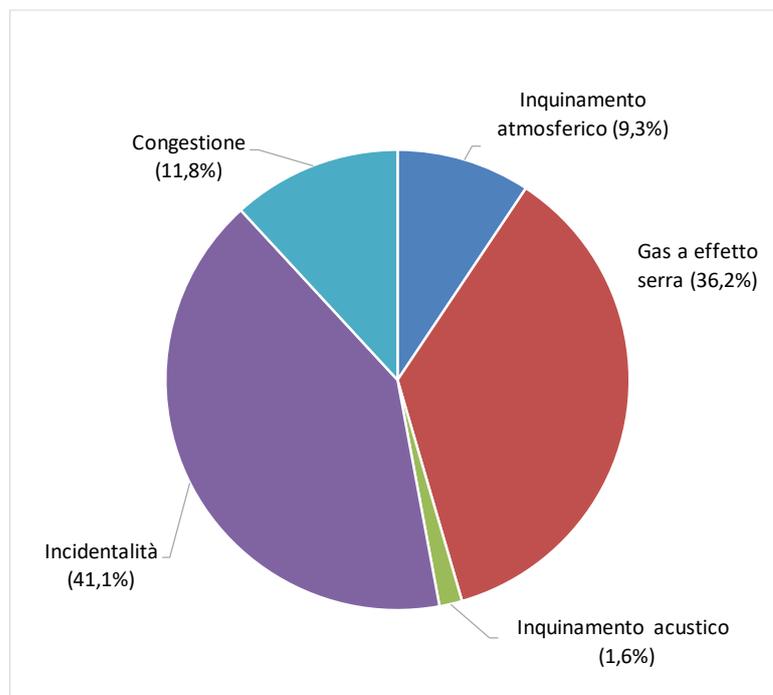
Di seguito sono rappresentati i risultati del calcolo dei costi "esterni" relativi all'intero orizzonte temporale 2023-2047, attualizzati al 2018 al tasso di sconto del 3%.

Valore Attuale dei Risparmi di Costi "esterni"

| | Valore Attuale 2018 (Milioni di euro) |
|---------------------------------------|--|
| Benefici netti da Esternalità: | 762,2 |
| Inquinamento atmosferico | 71,1 |
| Gas a effetto serra | 275,9 |
| Inquinamento acustico | 12,1 |
| Incidentalità | 313,3 |
| Congestione | 89,9 |

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Benefici netti da Esternalità: composizione % per voce di costo



8.5. Valore Residuo

Gli effetti del progetto sono stimati in modo analitico fino al 2047, ultimo anno di previsione esplicita. Al fine di considerare la capacità dell'investimento di creare vantaggi per la collettività anche oltre il 2047, si è provveduto a determinare il valore residuo dell'investimento sulla base del flusso dell'ultimo anno, considerando le seguenti ipotesi, in coerenza con quanto previsto nell'analisi finanziaria:

- i flussi annui futuri sono definiti a partire dal flusso dell'ultimo anno di previsione esplicita, normalizzato in modo da considerare la manutenzione straordinaria come quota annuale; risulta un flusso netto annuo periodico di +302 milioni di euro a valori economici;
- utilità complessiva dell'infrastruttura pari a 70 anni dall'anno di regime 2026, e quindi utilità residua oltre il 2047 pari a 48 anni;

Applicando la formula del valore attuale al tasso di sconto del 3%, risulta un Valore Residuo al 2018 pari a circa 3,2 miliardi di euro.

Nell'ambito dell'analisi di sensitività sarà effettuata una simulazione con valore residuo calcolato a partire da utilità delle opere commisurata al valore dell'investimento al netto del valore stimato per l'acquisizione delle Aree.

In sostanza verrà considerata un'utilità pari a 68 anni, come risulta in dettaglio dalla tabella sottostante (gli importi della categoria "Altro" in tale scenario sono ribaltati sulle tre opere, escludendo le "Aree"):

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| Categorie | Importo a valori finanziari | Peso percentuale | Anni Utilità | Utilità media dell'Opera |
|----------------------------|-----------------------------|------------------|--------------|--------------------------|
| Opere civili | 4.546,02 | 85,7% | 75 | 64,3 |
| Sovrastruttura ferroviaria | 170,30 | 3,2% | 25 | 0,8 |
| Impianti tecnologici | 586,23 | 11,1% | 25 | 2,8 |
| Aree | - | | | |
| Totale | 5.302,6 | 100,0% | | 68 anni |

8.6. Quadro di sintesi delle ipotesi

| Voci/Parametri | Ipotesi |
|---|---|
| Tasso di attualizzazione | 3% |
| Anno Base di attualizzazione | 2018 |
| Orizzonte temporale di valutazione | 30 anni da Anno Base |
| Unità di conto | €.2018 a prezzi costanti |
| Parametro di indicizzazione | PIL pro-capite |
| Fattori medio di conversione dei costi di investimento | 0,826 |
| Costo investimento (IVA esclusa). Incluso imprevisti | 4.564 MEURO a valori economici |
| Costi operativi treno per treno.km (a valori economici) | Servizi Passeggeri Regionali: 8,6 €/treno.km Servizi Passeggeri Lunga percorrenza: 17,2 €/treno.km Servizi Mercì: 12,5 € treno.km |
| Carico medio treno - passeggeri | Dato medio relativo al traffico incrementale: Lunga percorrenza: 289 passeggeri per treno Servizi Regionali: 90-93 passeggeri per treno |
| Carico medio treno-mercì | 500 tonnellate |
| Coefficiente occupazione media auto | 1,5 passeggeri |
| Carico medio veicoli stradali pesanti (mercì) | 12 tonnellate |
| Costi operativi veicoli strada (a valori economici) | Autovetture: 0,227 €/v.Km Veicoli pesanti mercì: 0,895 €/v.Km |
| Motivi di spostamento | Utenti servizi Lunga Percorrenza: ▪ Lavoro: 70% ▪ Altro: 30% Utenti servizi Lunga Percorrenza: ▪ Lavoro: 11% ▪ Pendolarismo: 78% ▪ Altro: 11% |

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| Voci/Parametri | Ipotesi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-----------------|--------|-----------------|----------------------|----------------------|--|--|-----|-----|-------|-------|-------------|------|--------------|--------|--------|--------|--------|------|--------------|--------|--------|--------|--------|-----------------------|------|--------------|--------|--------|--------|--------|------|--------------|--------|--------|--------|--------|
| Valore del Tempo (fonte HEATCO) | 34,21 €.2018/h per Lavoro 15,48 €.2018/h per Pendolarismo 12,99 €.2018/h per Altri motivi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inquinamento a livello locale: fattori di emissione unitari | <table border="1"> <thead> <tr> <th rowspan="2">Tipo di veicolo</th> <th rowspan="2">Anno</th> <th rowspan="2">Unità di misura</th> <th colspan="4">Fattori di emissione</th> </tr> <tr> <th>SO2</th> <th>NOx</th> <th>COVNM</th> <th>PM2,5</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Autovettura</td> <td>2024</td> <td>g/veicolo*km</td> <td>0,0005</td> <td>0,2982</td> <td>0,0273</td> <td>0,0115</td> </tr> <tr> <td>2047</td> <td>g/veicolo*km</td> <td>0,0005</td> <td>0,1714</td> <td>0,0178</td> <td>0,0010</td> </tr> <tr> <td rowspan="2">Veicolo Merci pesanti</td> <td>2024</td> <td>g/veicolo*km</td> <td>0,0027</td> <td>2,8140</td> <td>0,1038</td> <td>0,0603</td> </tr> <tr> <td>2047</td> <td>g/veicolo*km</td> <td>0,0025</td> <td>1,3549</td> <td>0,0560</td> <td>0,0269</td> </tr> </tbody> </table> | Tipo di veicolo | Anno | Unità di misura | Fattori di emissione | | | | SO2 | NOx | COVNM | PM2,5 | Autovettura | 2024 | g/veicolo*km | 0,0005 | 0,2982 | 0,0273 | 0,0115 | 2047 | g/veicolo*km | 0,0005 | 0,1714 | 0,0178 | 0,0010 | Veicolo Merci pesanti | 2024 | g/veicolo*km | 0,0027 | 2,8140 | 0,1038 | 0,0603 | 2047 | g/veicolo*km | 0,0025 | 1,3549 | 0,0560 | 0,0269 |
| Tipo di veicolo | Anno | | | | Unità di misura | Fattori di emissione | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SO2 | NOx | COVNM | | PM2,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Autovettura | 2024 | g/veicolo*km | 0,0005 | 0,2982 | 0,0273 | 0,0115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2047 | g/veicolo*km | 0,0005 | 0,1714 | 0,0178 | 0,0010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Veicolo Merci pesanti | 2024 | g/veicolo*km | 0,0027 | 2,8140 | 0,1038 | 0,0603 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2047 | g/veicolo*km | 0,0025 | 1,3549 | 0,0560 | 0,0269 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inquinamento a livello locale: costi unitari per inquinante | NOx: 10.824 €2010 per tonnellata emessa SO2 9.875 €2010 per tonnellata emessa COVNM : 1.242 €2010 per tonnellata emessa PM2,5: 37.342 €2010 per tonnellata emessa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas a effetto serra: fattori di emissione unitari | Valori obiettivo come media del parco circolante: <ul style="list-style-type: none"> ▪ Veicoli pesanti: 572 g. v/KM (al 2030) ▪ Autovetture: 95 g .v.Km (al 2035) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gas a effetto serra: costo unitario | Da € 90/t CO2-eq (al 2010) a € 163/t CO2-eq (al 2040 e anni successivi) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inquinamento acustico: costi marginali unitari | Auto: 0,06 €ct2018 per veicolo.km Veicoli pesanti merci: 0,76 €ct2018 per veicolo.km Treno Passeggeri: 2,23 €ct2018 per treno.km Treno Merci : 6,15 €ct2018 per treno.km | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Incidentalità: costi unitari sociali | Decesso: 1.916.000 €.2010 Lesioni gravi: 246.200 €.2010 Ferite lievi: 18.800 €.2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Congestione: costi marginali unitari | Auto: 0,49 €ct2018 per veicolo.km Veicoli pesanti merci: 1,21 €ct2018 per veicolo.km | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Utilità complessiva dell'opera | 70 anni a partire dal 2026 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Valore Residuo | Valore attuale dei flussi annuali relativi agli anni di utilità residua | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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8.7. Risultati dell'Analisi Economica

Di seguito si riportano gli indicatori di prestazione economica del Programma di investimenti:

- il Valore Attuale Netto Economico (VANE), ovvero la sommatoria dei saldi annuali tra costi e benefici generati dall'investimento, scontati secondo il tasso predefinito (3%) è pari a: **3.218,3 milioni di euro**.
- il Tasso Interno di Rendimento Economico (TIRE), ovvero il valore del tasso che applicato come sconto ai saldi annuali costi-benefici rende il valore del VANE pari a zero, risulta: **6,8 %**
- il B/C Ratio, ossia il rapporto tra Benefici attualizzati e Costi attualizzati è pari a **2,3**.

Il contributo di ciascuna voce alla composizione del VANE è rappresentato nella seguente tabella:

Indicatori e Composizione del VANE

| Calcolo del tasso di rendimento economico (Importi in milioni di euro) | Valore Attuale al 2018 Tasso 3% | % su Costi attualizzati e % su Benefici attualizzati |
|---|--|---|
| Costi di Investimento al netto del Valore Residuo | 715,7 | 30,0% |
| <i>Costi di Investimento (*)</i> | 3.958,0 | |
| <i>Valore Residuo</i> | 3.242,3 | |
| Manutenzione straordinaria | 1,6 | 0,1% |
| Costi O&M per gestione infrastruttura | 52,2 | 2,2% |
| Costi di esercizio operatori ferroviari | 1.619,1 | 67,8% |
| Totale Costi economici | 2.388,6 | 100,0% |
| Benefici da Risparmi di costi operativi strada | 3.936,6 | 70,2% |
| Benefici da Risparmi di tempo utenti ferrovia | 908,0 | 16,2% |
| Benefici da Esternalità in fase di esercizio: | 762,2 | 13,6% |
| Totale Benefici economici | 5.606,9 | 100,0% |
| VANE TOTALE (milioni di euro) | 3.218,3 | |
| TIRE | 6,8% | |
| Rapporto B/C | 2,3 | |

(*) Ai fini dell'elaborazione degli Indicatori, i costi di investimento sostenuti fino al 2017 sono valorizzati al 2018 al tasso di capitalizzazione del 3%, a partire dallo specifico anno di contabilizzazione della spesa

I risultati dell'ACB indicano che il Programma di Investimenti complessivamente considerato produce dei benefici netti per la collettività e pertanto può considerarsi conveniente da un punto di vista economico-sociale.

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Per i dettagli circa i valori considerati nel calcolo degli indicatori si rimanda allo specifico Allegato “Piano annuale dei costi e dei benefici”, nel quale sono riportate, nell’arco temporale di analisi ed in termini economici, tutte le voci precedentemente descritte.

8.8. Ulteriori vantaggi non quantificati

L’opera insiste su un’area densamente abitata, dove sono ricompresi i capoluoghi di regione di Napoli e Bari i capoluoghi di provincia Caserta, Benevento e Foggia. La popolazione interessata dalla realizzazione dell’intervento è pari a circa 6,2 milioni di abitanti (dati ISTAT 2017). Inoltre, le due Regioni Campania e Puglia interessate dall’infrastruttura rappresentano circa il 10,5% del PIL italiano (Dati Svimez³⁷ per l’anno 2016).

Oltre agli effetti diretti di natura trasportistica, oggetto di quantificazione nell’ambito della presente Analisi, la realizzazione dell’opera produrrà su questo tessuto economico e sociale anche ulteriori effetti di tipo indiretto e indotto. Gli impatti indiretti comprendono un’ampia varietà di possibili effetti, tra cui le variazioni di produttività del comparto trasporti, gli investimenti nell’industria di fornitura, le variazioni di produttività in altri settori, i cambiamenti nei livelli di importazione ed esportazione. Inoltre, la letteratura economica arriva ad includere anche altri effetti, quelli indotti e quelli catalitici. Questi sono dati dall’incremento di domanda finale dovuta alla spesa dei lavoratori e delle aziende direttamente coinvolte nelle attività di trasporto e infrastrutturali (effetti indotti) e l’insieme di attività ed insediamenti produttivi che si generano a seguito della costruzione di una nuova infrastruttura in una determinata area (effetti catalitici).

Secondo i dati elaborati da RFI la realizzazione del collegamento Napoli-Bari produrrà circa 2.000 occupati nella realizzazione diretta delle opere e nelle attività indirette ad essa collegate. Oltre a questi saranno attivati circa 200 occupati nell’indotto.

8.9. Aspetti di mitigazione dei cambiamenti climatici e di adattamento ai medesimi

Con riferimento specifico all’intervento “Variante alla linea Napoli-Cancello” si evidenzia che il progetto contribuisce direttamente al miglioramento in chiave sostenibile della mobilità locale e di area vasta, in quanto è finalizzato a realizzare la maglia di collegamento tra la fermata dell’Alta Velocità Napoli Afragola e l’area metropolitana circostante. Si tratta di un’area urbanizzata alla quale afferisce non solo l’utenza dei numerosi comuni limitrofi, densamente popolati, appartenenti alla cosiddetta area metropolitana, ma anche quella proveniente dalle province di Avellino, Benevento e Caserta, che traggono vantaggio dalla presenza di un nodo di scambio che non vincoli all’ingresso all’interno della città di Napoli. Il completamento di questo nodo ferroviario ha evidenti ricadute sull’incentivo all’uso del trasporto pubblico su ferro a discapito di quello su gomma, con effetti diretti sulla riduzione dei carburanti da fonte fossile, delle emissioni di gas climalteranti in atmosfera e, non da ultimo, del miglioramento della qualità dell’ambiente urbano interessato e del benessere della popolazione coinvolta. L’elevata antropizzazione dell’area, anche interessata da fenomeni di degrado, garantisce che non vi siano effetti negativi sulla flora e sulla fauna locali; le prescrizioni individuate dalla VIA, che ha esclusa la necessità di effettuare una Valutazione di Incidenza Ambientale, assicurano inoltre che

³⁷ Si considerano i dati relativi al Prodotto interno lordo ai prezzi di mercato, per regione, anno 2016 (milioni di euro correnti) di Campania e Puglia .

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siano prese opportune misure di mitigazione a tutela della fauna locale (attraversamenti, fasce arborate e macchie boscate).

Considerando in generale il Programma degli Investimenti "Itinerario Napoli-Bari", si evidenzia che RFI ha adottato il Protocollo di sostenibilità «Envision»TM, recentemente introdotto in Italia dagli Stati Uniti, e che prevede la valutazione del grado di sostenibilità ambientale, economica e sociale delle opere. Tale Protocollo prevede una valutazione basata su 60 criteri di sostenibilità, suddivisi in 5 categorie:

- Qualità of life: Purpose, Wellbeing, Community;
- Leadership: Collaboration, Management, Planning;
- Resource Allocation: Materials, Energy, Water;
- Natural World: Siting, Land-water, Biodiversity;
- Climate and Risk: Emissions, Resilience.

Il sistema Envision prevede quattro livelli di certificazione, in base alla percentuale di raggiungimento del massimo punteggio applicabile per l'opera (rispettivamente 20% per il livello «Bronze», 30% per il livello «Silver», 40% per il livello «Gold» e 50% per il livello «Platinum»).

Con riferimento al Corridoio Napoli-Bari, da una fase di valutazione preliminare, l'opera risulta classificabile complessivamente a livello «Gold», con risultati particolarmente significativi ottenuti per gli aspetti riconducibili alla categoria "Climate and Risk" (66,4%)³⁸.

Nell'ambito di tale categoria l'opera è valutata rispetto al perseguimento dei seguenti obiettivi:

- Ridurre le emissioni di gas serra attraverso una progettazione adeguata e un'analisi dell'intero ciclo di vita dell'infrastruttura
- Progettare in modo da ridurre gli inquinanti durante la fase di gestione dell'infrastruttura
- Evitare di progettare infrastrutture che, durante la loro vita utile, possano essere soggette a vulnerabilità legate a scarsità di risorse, configurazioni rischiose o normative ambientali obsolete
- Effettuare una valutazione degli impatti dovuti ai cambiamenti climatici
- Progettare infrastrutture resilienti e in grado di adattarsi ai cambiamenti e alle minacce a breve termine
- Ridurre l'effetto «isola di calore» utilizzando materiali riflettenti o superfici a verde

L'ottimo risultato raggiunto nella categoria "Climate and Risk", quindi, evidenzia che le soluzioni progettuali scelte per la realizzazione dell'infrastruttura sono in generale caratterizzate da efficaci misure di mitigazione dei cambiamenti climatici e misure di adattamento.

In particolare per garantire la resilienza all'attuale variabilità climatica e ai futuri cambiamenti climatici, per l'Itinerario Napoli-Bari sono state rafforzate le strategie di protezione utilizzando un tempo di ritorno di eventi idraulici eccezionali di 300 anni, con un margine di sicurezza notevole rispetto alle normative vigenti (100 e 200 anni). Gli elaborati progettuali illustrano la capacità a resistere a sollecitazioni e ad eventi eccezionali senza subire particolari danni.

Riguardo il fenomeno delle "isole di calore", particolarmente critico sia verso le parti asfaltate di parcheggi, interporti e scali merci sia verso la sovrastruttura ferroviaria, si è ricorso nel progetto all'utilizzo di materiali che riducono l'accumulo. Inoltre, la sovrastruttura ferroviaria è realizzata in modo da assorbire le dilatazioni e le contrazioni termiche della rotaia anche di parecchi gradi senza alcun problema alla sovrastruttura stessa e alla marcia in sicurezza dei treni.

³⁸ E' in corso la revisione della valutazione, basata sugli elaborati di Progetto Definitivo di recente emissione.

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Inoltre sono state previste azioni di prevenzione e monitoraggio: l'itinerario sarà inserito nel sistema di allerta meteo RFI, che utilizza un modello di simulazione delle previsioni del tempo sull'intero territorio nazionale e fa attivare allerta meteo ogni qualvolta vengano raggiunte determinate soglie critiche per i parametri meteorologici previsionali forniti dal sistema. Una specifica procedura contiene inoltre le attività propedeutiche e le linee guida comportamentali (controllo, mantenimento in efficienza o ripristino dell'efficienza delle apparecchiature automatiche di rilevamento di alcune grandezze "critiche" come, ad esempio, la temperatura degli enti costituenti l'infrastruttura, etc.), in corrispondenza a determinati livelli di allerta per neve e ghiaccio, pioggia, neve, vento, visibilità e calore. Infine, al fine di ridurre il rischio guasti legato alle variazioni climatiche che si presentano a seguito di escursioni termiche significative, è stato predisposto da Rete Ferroviaria Italiana un "Piano Stagionale", che identifica alcune attività di manutenzione preventiva riguardanti enti e apparecchiature sensibili alle variazioni termiche (tra cui i sistemi di condizionamento, le rotaie, i deviatori, i sezionamenti della linea di contatto, etc.) e impone una calendarizzazione rigorosa delle stesse

Il costo del Programma di Investimenti considerato ai fini della presente Analisi Costi-Benefici, in totale pari a 5.524 milioni di euro (a valori finanziari), include tutti i costi delle soluzioni progettuali adottate e quindi anche quelle finalizzate alla mitigazione dei cambiamenti climatici e all'adattamento ai medesimi.

Con particolare riferimento all'impatto del progetto sulle emissioni di gas a effetto serra, come già indicato nel paragrafo "Esternalità", la diversione modale di traffico passeggeri e merci dalla modalità stradale alla modalità ferroviaria consente di ipotizzare una riduzione nelle emissioni di CO₂.

La tabella seguente indica in sintesi i valori puntuali di alcuni anni ed il dato complessivo relativo all'intero orizzonte temporale 2023-2047:

Emissioni "evitate" di gas a effetto serra

| Tipo di veicolo | Anni | Emissioni CO ₂ (tonnellate) |
|----------------------------------|---------------------------|--|
| Auto | 2026 | -145.610 |
| | 2035 | -105.979 |
| | 2047 | -99.792 |
| | Cumulato 2023-2047 | -2.515.196 |
| Veicoli Merci pesanti | 2026 | -31.912 |
| | 2035 | -29.769 |
| | 2047 | -28.031 |
| | Cumulato 2023-2047 | -652.274 |
| Totale cumulato 2023-2047 | | - 3.167.470 |

Come detto, per la valorizzazione monetaria dei risparmi di costo si è fatto riferimento al valore centrale proposto in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", pari a € 90/t CO₂-eq. per l'anno 2010 e considerando un incremento annuo del 2% fino al 2040, anno in cui è stimato pari a € 163/t.

Il risparmio complessivo in termini di Valore Attuale al 2018 (al tasso del 3%) risulta pari a circa 296 milioni di euro.

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9. Valutazione dei rischi

9.1. Analisi di sensibilità

Tale tipo di analisi ha lo scopo di verificare la robustezza dei risultati ottenuti nel c.d scenario Base dell'analisi finanziaria e dell'analisi economica.

L'analisi di sensibilità consiste nel ripetere il calcolo degli indicatori facendo variare i valori attribuiti ai singoli elementi considerati nella valutazione stessa, allo scopo di identificare quali previsioni possono maggiormente incidere sugli indicatori finanziari ed economico-sociali attribuiti all'investimento: ciò consente di verificare la stabilità della valutazione rispetto a modifiche delle ipotesi assunte e di identificare le variabili "critiche" del progetto e cioè quelle che hanno il maggior impatto sulle performance finanziarie e/o economiche.

TEST PRINCIPALI

Ai fini della presente ACB l'analisi di sensibilità è condotta modificando i valori associati a ciascuna singola variabile e valutando l'effetto di tale cambiamento su VANF(K), VANF(C) e VANE.

Si considerano "critiche" quelle variabili per le quali una variazione di $\pm 1\%$ del valore adottato nel caso base dia luogo a una variazione di più dell'1% del valore degli indicatori VAN.

Il test di sensibilità è effettuato:

- per l'analisi finanziaria: considerando le variabili relative a tutte le entrate e le uscite ad eccezione della manutenzione straordinaria, che è di importo trascurabile;
- per l'analisi economica: considerando oltre alle variabili di natura finanziaria, anche i costi economici e i benefici economici che risultano avere maggior peso nella formazione del VAN del caso Base, ed altresì considerando la diversione modale nei traffici ³⁹.

I risultati dell'analisi di sensibilità sono indicati nella Tabella seguente, in cui sono evidenziati in rosso le variazioni degli indicatori superiori (o prossime) all'1%:

Risultati dell'analisi di sensibilità, in termini di variazioni percentuali rispetto al caso BASE

| Variazioni di $\pm 1\%$ delle seguenti variabili: | VANF(K)* Variazioni (%) | VANF(K)** Variazioni (%) | VANF(C) Variazioni (%) | VANE Variazioni (%) |
|---|----------------------------|-----------------------------|---------------------------|------------------------|
| Caso BASE (in milioni di euro) | -3.811,0 | -3.502,5 | -3.713,7 | 3.218,3 |
| Costi di investimento | 1,18% | 1,19% | 1,12% | 1,21% |

³⁹ Diversione modale nei traffici: i benefici economici del progetto dipendono in sostanza dalla capacità della ferrovia di attrarre traffico dalla modalità stradale e sono commisurati alla variazione in diminuzione, tra scenario senza progetto e scenario di progetto, dei volumi di traffico stradali (espressi in termini di veicoli.km). In via prudenziale il test è effettuato considerando come costante l'offerta commerciale ferroviaria (e quindi considerando i servizi ipotizzati nel caso base ed i relativi costi incrementali) e facendo variare solo i veicoli.km sottratti alla strada. Ciò consente di apprezzare anche il rischio che, pur in presenza di offerta ferroviaria "di progetto", la domanda di trasporto "servita" dalla modalità ferroviaria non raggiunga i livelli stimati, determinando quindi più bassi load factor. D'altra parte effettuare il test ipotizzando variazioni in diminuzione dei servizi ferroviari (correlati alla minore domanda di trasporto sulla ferrovia) non è significativo ai fini della verifica di robustezza dei risultati economici in quanto produrrebbe un miglioramento del VANE.

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| Variazioni di ± 1% delle seguenti variabili: | VANF(K)* Variazioni (%) | VANF(K)** Variazioni (%) | VANF(C) Variazioni (%) | VANE Variazioni (%) |
|--|----------------------------|-----------------------------|---------------------------|------------------------|
| Valore Residuo (anni di utilità complessiva dell'opera) | 0,03% | 0,03% | 0,03% | 0,69% |
| Costi di manutenzione ordinaria | 0,02% | 0,02% | 0,02% | 0,03% |
| Tariffe unitarie di accesso all'infrastruttura | 0,17% | 0,19% | 0,18% | n.a |
| <i>Costo unitario operativo servizi ferroviari merci</i> | <i>n.a.</i> | <i>n.a.</i> | <i>n.a.</i> | <i>0,13%</i> |
| <i>Costo unitario operativo servizi ferroviari LP</i> | <i>n.a.</i> | <i>n.a.</i> | <i>n.a.</i> | <i>0,63%</i> |
| <i>Costo unitario operativo servizi ferroviari Regionali</i> | <i>n.a.</i> | <i>n.a.</i> | <i>n.a.</i> | <i>0,16%</i> |
| Costo unitario operativo servizi ferroviari (aggregato) | <i>n.a.</i> | <i>n.a.</i> | <i>n.a.</i> | 0,91% |
| Costo unitario operativo stradale - auto | n.a | n.a | n.a | 1,87% |
| Costi unitario operativo stradale – veicoli pesanti merci | n.a | n.a | n.a | 0,35% |
| Valore monetario unitario del tempo | n.a | n.a | n.a | 0,52% |
| Incidentalità: costi monetari unitari | n.a | n.a | n.a | 0,18% |
| Gas a effetto serra: costo unitario per tonnellata emessa | n.a | n.a | n.a | 0,15% |
| Traffico: diversione modale dalla strada alla ferrovia (riduzione di veicoli.km su strada) | n.a | n.a | n.a | 2,68% |

Legenda:

* variazione redditività finanziaria del capitale nazionale (incluso imprevisti)

** variazione redditività finanziaria del capitale nazionale (escluso imprevisti)

n.a = non applicabile

in rosso (varie gradazioni): risultati che determinano variabili da considerare critiche

Dai risultati sopra esposti emerge che:

- le performance finanziarie del progetto non sono particolarmente sensibili alle possibili oscillazioni dei valori delle variabili stimati nel caso base, ad eccezione del valore del costo dell'investimento che quindi rappresenta l'unica variabile critica per gli indicatori di analisi finanziaria;
- le performance economiche sono sensibili ad alcune variabili da considerare critiche, di seguito in ordine di importanza:
 - traffico (una variazione del 1% determina una variazione nel VANE pari al 2,68%);
 - costi operativi dell'auto (una variazione dell'1% nel costo unitario a chilometro, determina una variazione del 1,87% del VANE);
 - costi di investimento (variazione del 1,21% del VANE)

A queste è opportuno aggiungere i costi operativi dei servizi ferroviari in quanto, considerati nel loro insieme, raggiungono un valore molto vicino all' 1%.

Per ogni variabile critica è stato calcolato il c.d. valore soglia, ossia quel valore in corrispondenza del quale gli indicatori VAN diventano zero.

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Nella tabella seguente vengono forniti i valori soglia, in termini di variazione percentuale della variabile critica che determina un azzeramento del VAN:

Valori soglia per singola variabile critica

| Variabili critiche: | Variazione % per cui VANF(K)* = 0 | Variazione % per cui VANF(K)** = 0 | Variazione % per cui VANF(C) = 0 | Variazione % per cui VANE = 0 |
|--|---|--|--|-------------------------------------|
| Costi di investimento | -85,0% | -83,9% | -89,0% | +85,9% |
| Costo unitario operativo servizi ferroviari (aggregato) | n.a | n.a | n.a. | +109,5% |
| Costo unitario operativo stradale - auto | n.a | n.a | n.a. | -53,3% |
| Traffico: diversione modale dalla strada alla ferrovia (riduzione di veicoli.km su strada) | n.a | n.a | n.a. | -37,2% |

Legenda:

* variazione redditività finanziaria del capitale nazionale (incluso imprevisti)

** variazione redditività finanziaria del capitale nazionale (escluso imprevisti)

n.a = non applicabile

Per quanto riguarda gli indicatori finanziari risulta che il costo dell'investimento dovrebbe diminuire di una percentuale irrealistica per poter pervenire a valori di VAN positivi, pertanto **si conferma un profilo finanziario decisamente negativo e quindi viene ancor più avvalorato il rispetto di tale requisito per l'ammissibilità del progetto al sostegno UE.**

I valori indicano che il progetto rientrerebbe economicamente nei parametri di break-even anche se:

- il costo del progetto fosse fino a circa l'86% più alto di quello definito per il caso base
- oppure i costi operativi dei servizi ferroviari raggiungessero valori più del doppio di quelli attuali
- oppure i costi operativi dell'auto fossero circa la metà di quelli stimati nel caso base
- oppure la riduzione di veicoli sulla strada fosse inferiore di circa il 37% rispetto al valore stimato.

I risultati dell'analisi di sensitività consentono di pervenire ad un giudizio di buona solidità del progetto sotto il profilo economico.

TEST AGGIUNTIVI

A completamento dell'analisi di sensitività vengono forniti di seguito i risultati di ulteriori test effettuati considerando ipotesi "peggiorative" (ossia dirette a penalizzare i risultati dell'Analisi economica) con riferimento alle grandezze che hanno un maggior peso nella formazione del VANE, con l'obiettivo di verificare se anche con tali ipotesi viene mantenuta una soddisfacente convenienza economico-sociale del Progetto di Investimento, rappresentata in particolare da un TIRE > 5%.

E' considerato l'impatto sugli indicatori TIRE e VANE, applicando il tasso di attualizzazione del 3%.

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a. Variazione nei costi di investimento:

| | Caso Base | Variazione rispetto al caso Base | | |
|----------------|-----------|----------------------------------|-------|-------|
| | | + 10% | + 20% | + 30% |
| VANE (Mio EUR) | 3.218 | 2.844 | 2.469 | 2.094 |
| TIRE | 6,6% | 6,1% | 5,6% | 5,1% |

b. Valore residuo

a.1 Valore residuo commisurato agli anni di utilità delle voci di investimento diverse dalla voce "acquisizione aree".

L'utilità dell'opera è calcolata senza tener conto dell'incidenza del valore dei terreni, e quindi ribaltando il valore "altri costi" sulle altre 3 categorie principali di opere. Risulta la seguente ripartizione:

Ripartizione degli Investimenti per categoria inventariale

| Categoria | Costo Investimento (MEURO) | Incidenza % sul totale | Anni utilità |
|----------------------------|----------------------------|------------------------|--------------|
| Opere civili | 4.546,0 | 85,7% | 75 |
| Sovrastruttura ferroviaria | 170,3 | 3,2% | 25 |
| Impianti tecnologici | 586,23 | 11,1% | 25 |
| Aree | - | - | 100 |
| Totale | 5.302,6 | 100% | |

risulta pertanto un'utilità media della nuova infrastruttura pari a 68 anni a partire dall'anno di regime 2026, e quindi un'utilità residua oltre il 2047 pari a 46 anni.

Considerando tale ipotesi gli indicatori risultano i seguenti:

- VANE: 3.155 milioni di euro
- TIRE: 6,7%

a.2 Variazioni negli anni di utilità complessiva dell'opera:

La variazione è applicata al valore di utilità stimato nel caso Base (70 anni a partire dal 2026)

| | Caso Base | Variazione rispetto al caso Base | | |
|--------------------------|-----------|----------------------------------|---------|-------|
| | | - 10% | - 20% | - 30% |
| Anni utilità complessiva | 70 | 63 | 56 | 49 |
| VANE (Mio EUR) | 3.218 | 2.980,3 | 2.687,6 | 2.328 |
| TIRE | 6,6% | 6,5% | 6,3% | 6,0% |

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c. Variazione nei costi incrementali operativi della modalità ferroviaria:

La variazione è applicata in modo omogeneo ai vari Servizi ferroviari (Passeggeri Lunga Percorrenza, Regionali e Merci).

| | Caso Base | Variazione dei costi a Treno.Km per i vari Servizi ferroviari | | |
|----------------|-----------|--|-------|-------|
| | | + 10% | + 20% | + 30% |
| VANE (Mio EUR) | 3.218 | 2.924 | 2.630 | 2.336 |
| TIRE | 6,8% | 6,47% | 6,2% | 5,86% |

d. Variazione nel risparmio di costi operativi della modalità stradale: in considerazione del peso rilevante di tale categoria di Benefici si è provveduto a verificare l'andamento degli Indicatori applicando ipotesi di costi chilometrici di importo inferiore rispetto a quelli utilizzati nello scenario Base, e che quindi determinano minori risparmi.

La variazione è applicata in modo omogeneo ad autovetture e a veicoli merci.

| | Caso Base | Variazione dei costi chilometrici stradali (Auto e Veicoli Merci) | | |
|----------------|-----------|--|-------|-------|
| | | - 10% | - 20% | - 30% |
| VANE (Mio EUR) | 3.218 | 2.502 | 1.785 | 1.069 |
| TIRE | 6,8% | 6,0% | 5,3% | 4,4% |

Dai risultati di tali test emerge che gli indicatori di analisi economica assumono valori soddisfacenti (TIRE > 5) considerando ipotesi di variazioni delle grandezze anche fino al 30%, ad eccezione della variazione dei costi operativi stradali.

Con riferimento a tale variabile è necessario comunque sottolineare che il TIRE risulta poco sotto il 5%, e comunque in corrispondenza di una variazione in diminuzione dei costi chilometrici pari al 30%, ipotesi da considerarsi ragionevolmente poco probabile considerando il valore di partenza prudenziale utilizzato nel caso base.

9.2. Analisi dei rischi

In via preliminare, è opportuno ricordare che il Corridoio Napoli-Bari è oggetto di valutazione del grado di sostenibilità ambientale, economica e sociale, attraverso il Protocollo Multicriteria "Envision".

L'applicazione del Protocollo "Envision" di fatto ha determinato un processo di progettazione integrata e partecipata, promuovendo la valutazione di sinergie, opportunità ed efficientamenti a livello dell'opera in progetto e del contesto infrastrutturale, ambientale, economico e sociale in cui si colloca. Ha fornito inoltre basi metodologiche per un approccio progettuale innovativo e sostenibile, guidando e giustificando il decision-making e portando ad una riduzione dei costi stimati e dei rischi.

Le metodiche Envision sono state efficacemente integrate anche con l'applicazione del Building Information Modeling (BIM), il cui uso favorisce la disponibilità immediata di tutte le informazioni necessarie per la progettazione e la costruzione dell'infrastruttura grazie alla condivisione del know-how di molteplici esperti che operano sulla piattaforma. La piattaforma BIM permette ai diversi soggetti di interagire con un modello unico condiviso, ciascuno operando all'interno delle proprie discipline.

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Grazie a questa tecnologia i professionisti condividono le modifiche apportate al modello e contemporaneamente ricevono quelle effettuate dagli altri utenti. In questo modo viene facilitato il coinvolgimento di tutti gli stakeholders del progetto identificando criticità e soluzioni maggiormente sostenibili per la realizzazione dell'opera.

Si evidenzia in particolare che l'intervento "Itinerario Napoli – Bari. Infrastruttura ferroviaria della tratta Apice-Hirpinia" è risultato vincitore del "Bim&Digital Award 2017 categoria: INFRASTRUTTURE", per quanto riguarda l'applicazione della metodologia BIM allo sviluppo del progetto definitivo della tratta costituita dalla fermata Apice alla stazione Hirpinia.

Nell'ambito del BIM viene tra l'altro gestito un piano di monitoraggio ambientale finalizzato al controllo delle criticità e interventi di compensazione ambientale e paesaggistica: conservazione, ripristino e valorizzazione di tipo qualitativo e quantitativo dell'equilibrio ambientale.

Nel corso dell'iter progettuale le metodiche "Envision" e il BIM Management hanno consentito di conseguire importanti obiettivi:

- Facilitare il coinvolgimento di tutti gli stakeholder, valorizzando le priorità della comunità
- Identificare soluzioni sostenibili e innovative, aumentando la resilienza dell'opera
- Migliorare le performance sia nella fase progettuale sia durante la costruzione
- Facilitare il coinvolgimento e il confronto con l'opinione pubblica, favorendo il consenso

In sostanza l'adozione di "Envision" e il "BIM Management" consentono di migliorare la visione sistemica di tutti gli elementi costitutivi del progetto e soprattutto delle sue interrelazioni con le componenti esterne, sia territoriali che sociali. Temi come la salvaguardia delle risorse idriche, il riutilizzo dei materiali di costruzione, la resilienza delle infrastrutture agli effetti del cambiamento climatico, il valore aggiunto alla qualità della vita e agli effetti economici, peraltro già centrali nelle metodologie di progettazione di RFI, vengono strutturati efficacemente grazie all'utilizzo delle metriche Envision e all'applicazione del BIM Management.

Tutto ciò consente di ridurre notevolmente i rischi del progetto in tutte le fasi, dalla progettazione alla realizzazione dell'infrastruttura nonché nella fase di esercizio.

Permangono comunque delle aree di rischio che opportuno monitorare durante l'intero ciclo di vita del progetto: ai fini della presente ACB si ritiene opportuno procedere ad una valutazione qualitativa e quantitativa delle categorie di rischio ritenute particolarmente significative in base alle caratteristiche del progetto.

9.2.1. Analisi qualitativa

Per l'analisi qualitativa sono stati innanzitutto individuati i principali rischi ai quali è esposto il progetto e che hanno un diretto impatto sulla valutazione economico-sociale; è stata loro attribuita una probabilità di insorgenza, secondo la seguente classificazione:

- A: Molto improbabile (0-10%)
- B: Improbabile (10-33%)
- C: Neutro (33-66%)
- D: Probabile (66-90%)
- E: Molto probabile (90-100%)

Per ciascun rischio sono stati individuati gli effetti sulla valutazione del progetto ed è stato assegnato un livello di gravità, secondo la seguente articolazione:

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- I: nessun effetto rilevante sul benessere sociale,
- II: lieve perdita di benessere sociale generata dal progetto
- III: moderata perdita di benessere sociale, principalmente danno finanziario anche nel medio-lungo periodo
- IV: elevata perdita di benessere sociale (l'insorgenza del rischio causa una perdita della funzione primaria del progetto. L'esecuzione di azioni riparatrici non è sufficiente per evitare danni seri.
- V: insuccesso del progetto che può causare la totale perdita delle sue funzioni. I principali effetti del progetto nel medio-lungo termine non si concretizzano e non esistono misure di mitigazione.

Il livello di rischio è stato desunto dalla combinazione di probabilità assegnata e gravità considerando la tabella seguente:

| LIVELLO DI RISCHIO (Probabilità*Gravità) | I | II | III | IV | V |
|---|----------|----------|------------|------------|------------|
| A | Basso | Basso | Basso | Basso | Moderato |
| B | Basso | Basso | Moderato | Moderato | Alto |
| C | Basso | Moderato | Moderato | Alto | Alto |
| D | Basso | Moderato | Alto | Molto alto | Molto alto |
| E | Moderato | Alto | Molto alto | Molto alto | Molto alto |

Come detto l'applicazione del protocollo ENVISION e delle metodiche di BIM Management consentono in generale di gestire al meglio il progetto e costituiscono di fatto delle misure di prevenzione dei rischi, in particolare in relazione ai rischi connessi alle attività di progettazione, alle procedure amministrative, agli aspetti ambientali e alla condivisione del progetto da parte dell'opinione pubblica.

Pur in presenza di una gestione di progetto improntata ad un generale contenimento dei rischi, permangono alcune aree di rischio particolarmente significative che si ritiene opportuno valutare ai fini della presente ACB:

❖ Costruzione

Il Programma di investimenti richiede un impegno tecnico articolato in vari interventi su diverse tratte, e che prevede in totale la realizzazione di circa 120 km di nuova linea con opere di particolare complessità, come ad esempio sulla tratta Irpinia-Bovino la galleria di valico di circa 24,4 Km e la successiva galleria di 10 km, separate da un tratto all'aperto di circa 500 metri.

Un tipico rischio a cui il progetto è esposto è la variazione dei costi di costruzione: parte degli interventi sono ancora in fase di progettazione preliminare, altri sono attualmente in fase di progettazione definitiva, e pertanto la quantificazione dei costi ad oggi stimata ha un livello di approssimazione che si presta ad essere migliorato; in fase di appalto dei lavori potranno poi manifestarsi costi effettivi maggiori rispetto a quelli definiti in fase di progettazione.

Il rischio di maggiori costi di investimento è in parte limitato dal fatto che la stima è basata su dati storici e metodologia di stima consolidata: il costo dell'intervento è desunto attraverso un censimento analitico delle opere componenti; le opere censite sono valorizzate sulla base di un costo tipologico di riferimento, concepito in relazione ad opere similari già realizzate o frequentemente impiegate negli interventi ferroviari. La determinazione dei singoli costi tipologici è desunta utilizzando le Tariffe Prezzi RFI. Infine il valore dell'opera censita è modificato da fattori correttivi, che ne determinano un

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adeguamento in termini di quantità e/o costo unitario, in relazione a specifiche caratteristiche del progetto in esame.

La struttura organizzativa di RFI, di comprovata esperienza, garantisce il presidio e il monitoraggio di tutte le fasi di progettazione e realizzazione degli interventi. Inoltre, come detto, nel caso specifico del Programma di Investimenti sull'itinerario Napoli-Bari i rischi nella gestione del progetto sono ulteriormente ridotti grazie all'applicazione del protocollo Envision e del BIM ("Building Information Modeling") management.

Infine per tener conto di possibili incrementi di costo, anche in relazione a eventuali ulteriori oneri connessi all'ottemperanza delle prescrizioni formulate dai vari stakeholder, nell'ambito dell'analisi economica i Costi di investimento considerati già includono la voce "Imprevisti".

Pur considerando queste forme di mitigazione e prevenzione del rischio di incremento dei costi di investimento, si valuta comunque il permanere di un rischio residuo "moderato" e pertanto, in via prudenziale, si ritiene opportuno includere la voce "costi di investimento" nel test di rischio di tipo quantitativo.

❖ **Acquisizione dei terreni**

L'acquisizione dei terreni è una variabile da prendere in considerazione in quanto nell'attuazione delle procedure di esproprio potrebbero verificarsi eventuali ritardi ed aumenti nei costi di esproprio. Con riferimento al Programma di Investimenti oggetto della presente valutazione, si rileva che gli importi relativi ad "Acquisizione di aree" assumono una maggiore incidenza nell'ambito degli interventi per i quali sono già avviate le procedure di esproprio (tratta Napoli-Cancello e tratta Cancello-Frasso T.) e pertanto allo stato attuale esiste già una certa visibilità sul loro esito: in riferimento ad essi non si rilevano criticità rispetto ai piani di esproprio tali da far ipotizzare ritardi sull'attivazione finale delle opere. Le osservazioni pervenute dai soggetti proprietari delle aree potrebbero invece comportare un aumento delle indennità di esproprio rispetto a quanto stimato. Tale rischio è valutato come moderato pertanto nel test quantitativo si terrà conto anche del possibile incremento nei costi di esproprio, considerandoli in modo implicito nell'ambito della più generale variabilità dei costi di investimento.

❖ **Costi operativi di gestione dell'infrastruttura**

La manutenzione rappresenta un'attività fondamentale per il mantenimento nel tempo in piena efficienza dell'infrastruttura ferroviaria, oltre che per garantire gli opportuni standard di sicurezza e funzionalità. RFI attua la sua strategia manutentiva come una combinazione di diverse "politiche manutentive" (preventiva, migliorativa, correttiva e straordinaria), avvalendosi di strutture con esperienza consolidata.

La stima dei costi di manutenzione ordinaria effettuata per la presente ACB è basata su dati storici gestionali di RFI e può essere considerata ragionevolmente affidabile e in ottica prudenziale. Considerando altresì che nella presente ACB i costi di manutenzione risultano avere un'incidenza inferiore al 10% dei costi economici totali (in termini di valore attuale 2018), il livello di rischio può essere classificato come "basso".

❖ **Domanda di servizi ferroviari**

In generale nei progetti di infrastrutture di trasporto esiste un rischio connesso al volume di traffico, ossia potrebbe verificarsi che la domanda di trasporto "servita" dalla nuova opera risulti inferiore rispetto a quella stimata, determinando pertanto una possibile riduzione dei relativi vantaggi rispetto a quelli quantificati in sede di valutazione ex-ante. Nel caso di infrastrutture ferroviarie tale rischio è legato in particolare all'effettivo miglioramento del livello del servizio offerto agli utenti da parte degli

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operatori di trasporto ferroviario e non solo dal gestore dell'infrastruttura e, con riferimento al traffico di breve-medio raggio, dipende anche dalle politiche di sostegno della mobilità ferroviaria promosse dalle Regioni interessate dall'opera.

Nel caso specifico dell'Itinerario Napoli-Bari, gli interventi di potenziamento e riqualificazione previsti sono il risultato di azioni convergenti verso il medesimo obiettivo, da parte delle varie istituzioni nazionali e regionali, oltre che di RFI, basate su accordi formalizzati, prima con il Protocollo d'Intesa del 2006 e poi con il Contratto Istituzionale di Sviluppo (CIS) del 2012.

Nell'ambito dell'Accordo Quadro sui Servizi ferroviari tra la Regione Campania ed RFI stipulato nel 2016, con orizzonte operativo di dieci anni, è stato ribadito l'obiettivo di garantire un'importante fase di sviluppo del network del Trasporto Pubblico Locale, potenziando i collegamenti delle relazioni metropolitane, realizzando una progressiva specializzazione e omogeneizzazione dei servizi, sia velocità commerciale sia fermate, garantendo un sistema di integrazione e coincidenze nei principali Nodi ferroviari della rete campana (Napoli, Caserta, Salerno, Avellino, Benevento) e sviluppando la connessione fra l'infrastruttura gestita da Rete Ferroviaria Italiana e il network dell'operatore ferroviario regionale. Sono previsti incrementi della capacità di traffico ferroviario e degli standard di qualità del servizio (regolarità, puntualità e sicurezza). L'Accordo Quadro è lo strumento tecnico che consentirà alla Regione di prenotare capacità di traffico per la rete ferroviaria della Campania e di programmare nel medio/lungo periodo l'uso dell'infrastruttura ferroviaria in funzione del Piano regionale dei trasporti. Per RFI è il principale strumento per determinare, in relazione alla capacità ferroviaria, le reali esigenze di mobilità del territorio e per programmare, laddove necessario, piani di upgrade infrastrutturali funzionali per il corretto sviluppo dei servizi regionali.

Inoltre sempre di intesa con la Regione Campania, Rete Ferroviaria Italiana ha avviato uno Studio di Corridoio per il nuovo itinerario Napoli-Bari, avente tra l'altro i seguenti obiettivi:

- identificare le azioni volte a massimizzare i benefici dell'opera per il territorio attraversato, in una logica di corridoio integrato con i nodi urbani, portuali ed interportuali, misurando le nuove performance della rete complessiva dei trasporti in termini di velocità, capacità ed accessibilità, sia per le merci che per i passeggeri;
- valutare gli effetti del potenziamento dell'itinerario sulla connessione diretta tra la Piattaforma Logistica "Tirrenica Sud", di cui fanno parte il Porto di Napoli e il sistema interportuale di Nola-Marcianise e i corrispondenti nodi della Piattaforma Logistica "Adriatica Sud", cioè il porto di Bari e il suo interporto, i porti di Brindisi e Taranto e la piattaforma logistica di quest'ultimo;
- definire un modello integrato di *governance* del corridoio nel suo complesso in un'ottica di corridoio multifunzionale, con riferimento quindi all'infrastruttura ferroviaria ma anche alle sue connessioni con i sistemi produttivi e logistici, nonché alle altre infrastrutture a rete (energetiche e telematiche) che dovranno essere coerentemente sviluppate per affermarne il carattere multifunzionale.

In sostanza quindi lo sviluppo futuro dei traffici ferroviari sull'itinerario Napoli-Bari è elemento centrale di azioni promosse dai principali stakeholder di progetto, azioni che nella sostanza possono considerarsi, ai fini della presente valutazione, delle forme di prevenzione del rischio che la domanda di servizi ferroviari risulti inferiore alle attese.

Sempre nell'ambito delle misure di prevenzione del rischio connesso ai livelli di domanda attesi, è da considerare che nella presente ACB le ipotesi di traffico sono state riviste in ottica prudenziale rispetto ai risultati dello Studio di Traffico del 2006, al fine di tener conto anche della recente fase di recessione economica.

Ciò detto, permane ad un livello "moderato" il rischio che la domanda di servizi ferroviari possa essere nella realtà inferiore rispetto ai livelli ipotizzati nella presente Analisi: pertanto si ritiene opportuno tener conto, nella valutazione quantitativa dei rischi, della possibile minore diversione modale strada-ferrovia e dei conseguenti minori benefici associabili al Programma di Investimenti.

Analisi Costi-Benefici

❖ Rischi Ambientali

Tutti gli interventi compresi nel Programma di Investimenti "Itinerario Napoli-Bari" sono soggetti alla procedura di VIA. Lo svolgimento della procedura di VIA garantisce il rispetto dei principi di precauzione, dell'azione preventiva e della correzione, anzitutto alla fonte, dei danni all'ambiente, in quanto tali principi, così come anche richiamato nell'ordinamento italiano, costituiscono i fondamenti giuridici alla base dell'applicazione della Valutazione di Impatto Ambientale.

Per gli interventi compresi nel Programma di Investimenti "Itinerario Napoli-Bari" le procedure VIA ad oggi concluse (tra cui quelle relative agli interventi "Variante della linea Napoli-Cancello" e "Raddoppio della tratta Cancello-Frasso T", oggetto di domanda al sostegno comunitario) hanno tutte ottenuto decreto favorevole, se pur con delle prescrizioni che comunque sono recepite nelle successive fasi progettuali e di cui se ne terrà quindi conto in fase di realizzazione delle opere.

Gli approfondimenti richiesti dall'Autorità Competente nel corso dello svolgimento delle procedure, hanno consentito di appurare che, sulla base delle conoscenze e dei dati scientifici disponibili, gli interventi proposti non siano forieri di eventuali effetti ambientali potenzialmente negativi, e che, nell'elaborazione del progetto, sono state prese tutte le misure atte a prevenire, a eliminare e a ridurre fortemente, laddove ipotizzabili, tutti i rischi connessi al verificarsi di danni ambientali irreversibili.

Nell'ambito del Progetto sono state previste varie misure per garantire la resilienza all'attuale variabilità climatica e ai futuri cambiamenti climatici: tali misure sono state illustrate in dettaglio nel paragrafo 8.9. Sempre nell'ambito delle misure di prevenzione dei rischi ambientali, si evidenzia che il citato Studio di Corridoio, inteso a valorizzare l'Itinerario Napoli-Bari come sistema di mobilità multifunzionale sostenibile, tra l'altro, andrà ad individuare anche un piano di azioni ed interventi complementari alla realizzazione della nuova linea ferroviaria, volti ad integrare le reti energetiche e telematiche nell'ambito del corridoio e a rendere così possibile l'utilizzo di reti di monitoraggio e di protezione delle zone attraversate, con la finalità di mettere in atto misure di prevenzione di incendi, dissesti idrogeologici, rischio sismico, etc.

Anche il Raddoppio della tratta Orsara-Bovino, per il quale è stato riavviato l'iter per un nuovo Progetto di Fattibilità Tecnica ed Economica, sarà sottoposto alla procedura VIA, pertanto verranno garantite azioni di mitigazione e prevenzione dei rischi ambientali. In particolare tale tratta, insieme alla tratta adiacente Irpina-Orsara, è oggetto di approfondimenti progettuali in quanto ricadente nell'area interessata dal fenomeno franoso in Comune di Montaguto e presenta altri tratti di sede ferroviaria interferenti con le aree a maggior rischio geomorfologico (così come perimetrate dall'Autorità di Bacino della Puglia).

Eventuali eventi avversi potrebbero verificarsi sia in fase di costruzione dell'opera sia in fase di esercizio, potendo quindi determinare dei maggiori costi di costruzione, dei maggiori costi di manutenzione per il ripristino della linea oltre che possibili interruzioni dei servizi ferroviari, con effetti anche in termini di minore domanda di servizi ferroviari a vantaggio della modalità strada.

Pertanto, nonostante la presenza di idonee misure di prevenzione, si considera comunque il permanere di un rischio ambientale di cui è opportuno tener conto nei test quantitativi.

MATRICE DEI RISCHI

La valutazione qualitativa per singola area di rischio è sintetizzata nella seguente matrice che riporta tra l'altro le misure di prevenzione e/o mitigazione e il livello di rischio residuo.

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| AREA DI RISCHIO | IMPATTO SULLE GRANDEZZE DI ANALISI | Probabilità (p) | Gravità (g) | Livello di rischio (p X g) | MITIGAZIONE / PREVENZIONE | RISCHIO RESIDUO |
|--|--|-----------------|-------------|----------------------------|--|--------------------|
| Costruzione | Maggiori costi di investimento rispetto a quelli stimati | D | III | Alto | <ul style="list-style-type: none"> Stima dei costi basata su metodologia e dati consolidati Struttura organizzativa di comprovata esperienza nella progettazione e realizzazione di infrastrutture ferroviarie Procedure e struttura organizzativa preposta alla gestione e monitoraggio degli appalti Considerati "Imprevisti" tra i costi di investimento dell'Analisi economica L'applicazione del protocollo ENVISION e del modello BIM garantiscono uno stretto monitoraggio nella gestione del progetto <p>Soggetto Responsabile: RFI</p> | Moderato |
| Acquisizione terreni | Aumento dei costi di esproprio/ slittamento dei tempi di attivazione | D | II | Moderato | <ul style="list-style-type: none"> Procedure già avviate per la parte di espropri maggiormente rilevanti: non si rilevano criticità tali da comportare slittamenti sui tempi finali di attivazione delle opere. Possibili incrementi delle indennità di esproprio, comunque con incidenza non significativa rispetto al costo totale dell'intero Programma di Investimenti <p>Soggetto Responsabile: RFI</p> | Moderato |
| Costi Operativi di Gestione dell'infrastruttura | Aumento costi di manutenzione ordinaria | B | II | Basso | <ul style="list-style-type: none"> Ipotesi utilizzate nell'analisi basate su costi storici del Gestore e basate in generale su logiche prudenziali volte a evitare stime pregiudizialmente ottimistiche Politiche di manutenzione caratterizzate da consolidata esperienza e improntate alla prevenzione Strutture preposte di consolidata esperienza <p>Soggetto Responsabile: RFI</p> | Basso |
| Domanda di servizi ferroviari | Diversione modale a vantaggio della ferrovia inferiore rispetto al livello previsto | C | IV | Alto | <ul style="list-style-type: none"> Accordi con Regione per TPL Adeguate azioni per lo sviluppo del traffico futuro passeggeri e merci sul corridoio Napoli-Bari Nella valutazione del caso Base utilizzo di ipotesi di traffico prudenti <p>Soggetti Responsabili: Imprese Ferroviarie, Regioni</p> | Moderato |
| Ambientali | <ul style="list-style-type: none"> Incremento costi di costruzione; Maggiori costi di manutenzione in fase di esercizio per ripristino linea Minore domanda di servizi ferroviari a | C | III | Moderato | <ul style="list-style-type: none"> Procedure ambientali in gran parte completate secondo elevati standard di qualità e seguendo i pareri degli Enti direttamente interessati. Nella VIA sono state individuate misure di mitigazione, specialmente in fase di costruzione; misure che saranno attuate dal soggetto responsabile. Gestione degli aspetti ambientali nell'ambito del protocollo ENVISION e secondo logiche di BIM management Definizione di un piano di azioni e interventi volti ad integrare linea | Moderato/ Basso |

Analisi Costi-Benefici

| AREA DI RISCHIO | IMPATTO SULLE GRANDEZZE DI ANALISI | Probabilità (p) | Gravità (g) | Livello di rischio (p X g) | MITIGAZIONE / PREVENZIONE | RISCHIO RESIDUO |
|-----------------|-------------------------------------|-----------------|-------------|----------------------------|---|-----------------|
| | causa dell'interruzione della linea | | | | ferroviaria e reti energetiche e telematiche, con l'obiettivo di utilizzare reti di monitoraggio e di protezione delle zone attraversate, per prevenire incendi e dissesti idrogeologici <ul style="list-style-type: none"> • Presidio da parte di strutture di comprovata esperienza con definizione di un piano di azioni e monitoraggio in fase di costruzione e in fase di esercizio. Soggetto Responsabile: RFI | |

Dall'analisi qualitativa emerge che le misure di mitigazione/prevenzione previste nella gestione del progetto fanno ritenere possibile una generale riduzione del livello di rischio da Alto/Moderato a Moderato/Basso. Tuttavia ai fini della presente analisi si ritiene opportuno procedere ad un'analisi quantitativa, con riferimento alle grandezze economiche interessate dai rischi sopra esposti.

9.2.2. Analisi quantitativa dei rischi

Sebbene i risultati dell'analisi di sensibilità e la valutazione qualitativa dei rischi facciano emergere un profilo di rischio del progetto tendenzialmente basso, per completezza si ritiene utile procedere ad una verifica dei rischi di tipo quantitativo.

Per valutare i rischi connessi all'investimento sono stati presi in esame diversi possibili scenari legati a mutamenti nei valori di alcune categorie di costi e benefici, che possono essere rappresentativi dell'impatto dei rischi maggiormente significativi per il progetto di investimento.

In particolare le categorie che sono oggetto di variazione sono le seguenti:

- **Costi di investimento:** voce interessata dai rischi di costruzione in senso stretto ma anche da rischi specifici di possibili incrementi del valore di acquisizione delle Aree e di costi integrativi per opere di mitigazione/prevenzione ambientale;
- **Costi di O&M:** gli impatti ipotizzati su tale grandezza sono dati da possibili incrementi non previsti dei costi di manutenzione, nonché da costi dovuti a possibili interruzioni di linea per cause ambientali e conseguenti ripristini (pur avendo natura straordinaria, ai fini del presente test tali costi si considerano come quote annuali distribuite lungo l'intero orizzonte temporale);
- **Costi operativi servizi ferroviari:** grandezza di costo che pesa significativamente nella formazione del VANE e che è risultata come variabile "critica" nei risultati dell'analisi di sensibilità; si ritiene quindi opportuno includerla nel test quantitativo dei rischi, considerando l'aggregazione dei tre segmenti (servizi regionali, lunga percorrenza, merci);
- **Benefici connessi alla diversione modale strada-ferrovia:** gran parte dei benefici incrementali di progetto derivano dalla domanda di trasporto che la ferrovia attrae dalla strada e che determina tra l'altro una variazione in diminuzione dei veicoli.km tra scenario "con progetto" e scenario "senza progetto". Pertanto tali benefici incrementali sono interessati dal rischio che la domanda di trasporto venga attratta dai servizi ferroviari solo in parte rispetto ai livelli stimati nel caso base, ma continui ad utilizzare la modalità stradale. In via prudenziale il test è effettuato considerando l'ipotesi meno vantaggiosa per la valutazione del progetto e cioè che un'eventuale

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domanda inferiore alle attese non comporti riduzioni dell'offerta ferroviaria incrementale, mantenendo quindi invariati i costi ad essa associati nello scenario di progetto. In conclusione ai fini del test quantitativo la variazione nella diversione modale in termini di minori veicoli.km su strada e minori utenti ferroviari acquisiti dalla strada impatta sui seguenti benefici esposti nel piano dei flussi:

- Risparmi di tempo relativi agli utenti della ferrovia acquisiti dalla strada
- Risparmi costi operativi auto
- Risparmi costi operativi veicoli stradali merci
- Risparmi da esternalità relativi al minor traffico Passeggeri su strada
- Risparmi da esternalità relativi al minor traffico Merci su strada

L'analisi è stata condotta mediante la simulazione dell'evoluzione del sistema interessato dall'investimento di fronte ad eventi aleatori che possono incidere sullo stesso sistema, in particolare sugli indicatori di performance economica TIRE e il VANE.

L'aleatorietà legata alle componenti di costo ed ai benefici è stata modellata attraverso l'utilizzo di variabili aleatorie con funzione di distribuzione triangolare.

I valori percentuali di minimo e massimo del range di variazione sono definiti in coerenza con i valori convenzionalmente applicati da RFI basati su dati di progetti simili (generalmente -20% e +5%)⁴⁰, e tenendo conto di alcune specificità:

- per i costi O&M si considera una variazione in aumento del 25%, rappresentativa anche di maggiori costi per eventuali ripristini di linea;
- maggiore prudenza nella valutazione dei benefici, prevedendo la possibilità di variazioni in diminuzione della diversione modale che determini diminuzione dei benefici fino al 25%.

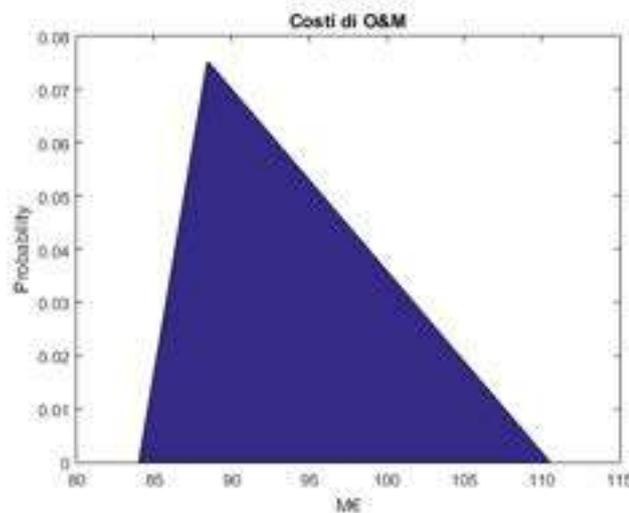
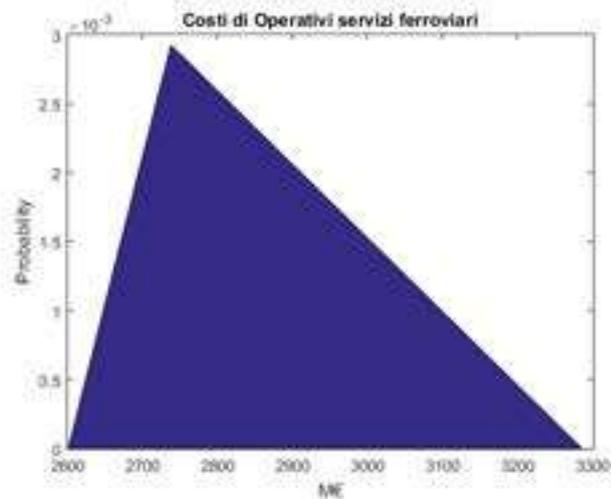
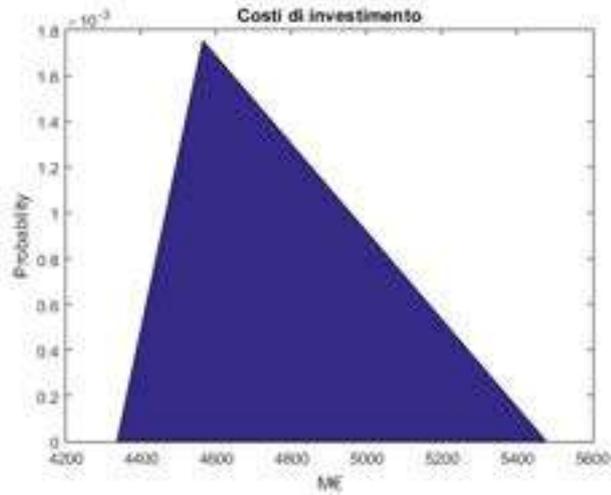
Nello specifico, la tabella che segue riporta le caratteristiche delle variabili considerate (valore stimato, valori soglia), espresse in termini di valori cumulati non attualizzati, in milioni di euro:

| Voce | Valore Minimo | Valore Stimato (caso base) | Valore Massimo |
|------------------------------------|-----------------|-------------------------------|-----------------|
| Costi di investimento | 4.335,5 (-5%) | 4.563,7 | 5.476,44 (+20%) |
| Costi di O&M | 84 (-5%) | 88,42 | 110,5 (+25%) |
| Costo operativi servizi ferroviari | 2.600,7 (-5%) | 2.737,6 | 3.285,1 (+20%) |
| Benefici | 6.782,77 (-25%) | 9.043,7 | 9.495,88 (+5%) |

I seguenti grafici mostrano le funzioni di distribuzione utilizzate:

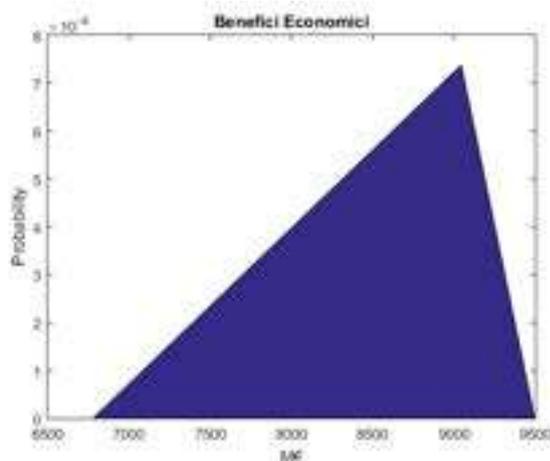
⁴⁰ In via prudenziale è prevista generalmente una distribuzione asimmetrica che prevede scostamenti delle variabili che determinano impatti favorevoli agli indicatori non superiori al 5% e quelli sfavorevoli fino al 20%.

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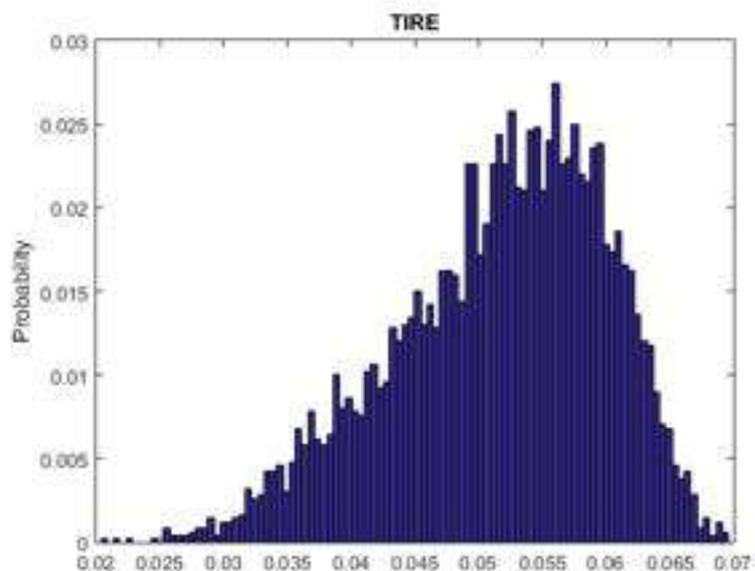


Alla luce di tali ipotesi è stata condotta una simulazione di tipo “Montecarlo” in ambiente MATLAB, mediante la generazione di 5.000 scenari con un intervallo di confidenza del 95%, che ha consentito la stima della variabilità degli indicatori di performance (TIRE e VANE).

I risultati dell’analisi sono riportati di seguito.

➤ TIRE

| QUADRO DI SINTESI | |
|---|------------------|
| Campo di variazione | Da 2,04% a 6,96% |
| Caso Base | 6,75% |
| Valore Medio | 5,17% |
| Errore standard dalla media (5.000 tentativi) | 0,017% |



Analisi Costi-Benefici

| Statistiche | Valori |
|-----------------------------|---------|
| Trials | 5.000 |
| Media | 5,17% |
| Mediana | 5,27% |
| Standard Deviation | 0,83% |
| Varianza | 0,0069% |
| Skewness | -0,53 |
| Kurtosis | 2,80 |
| Coeff. di variazione | 0,16 |
| Minimo | 2,04% |
| Massimo | 6,96% |
| Intervallo | 4,92% |
| Errore assoluto medio | 0,67% |
| Errore standard dalla media | 0,017% |
| Prob. TIRE < 3% | 0,8% |

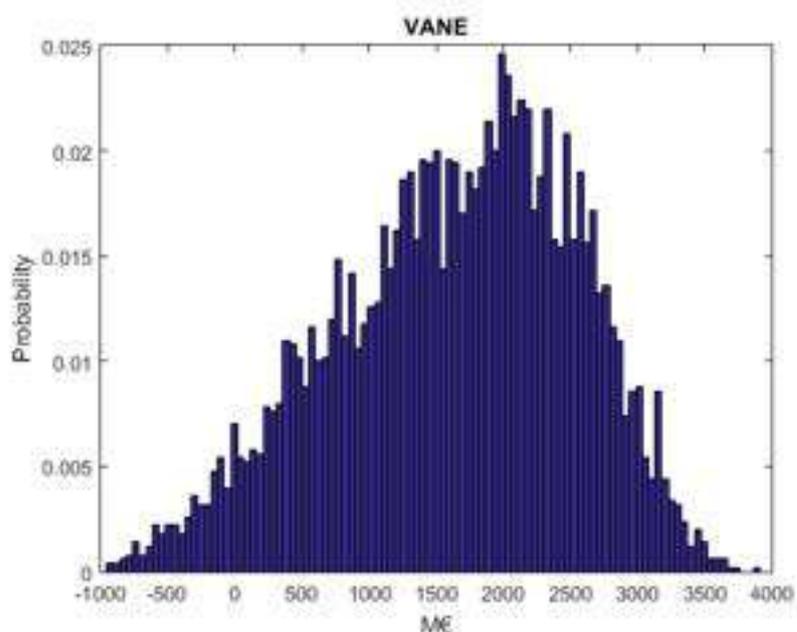
| Percentili | Valori |
|------------|--------|
| 0% | 2,04% |
| 5% | 3,63% |
| 10% | 3,97% |
| 15% | 4,24% |
| 20% | 4,45% |
| 25% | 4,63% |
| 30% | 4,79% |
| 35% | 4,94% |
| 40% | 5,06% |
| 45% | 5,17% |
| 50% | 5,27% |
| 55% | 5,38% |
| 60% | 5,48% |
| 65% | 5,59% |
| 70% | 5,69% |
| 75% | 5,79% |
| 80% | 5,91% |
| 85% | 6,02% |
| 90% | 6,16% |
| 95% | 6,34% |
| 100% | 6,96% |

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➤ VANE

| QUADRO DI SINTESI | |
|---|---------------------|
| Campo di variazione | Da -662,5 a 3.293,5 |
| Caso Base | 3.218,25 |
| Valore Medio | 1.735 |
| Errore standard dalla media (5.000 tentativi) | 9,89 |



| Statistiche | Valori |
|-----------------------------|----------------------|
| Trials | 5.000 |
| Media | 1.735 |
| Mediana | 1.819,5 |
| Standard Deviation | 699,41 |
| Varianza | 4,89*10 ⁵ |
| Skewness | -0,43 |
| Kurtosis | 2,55 |
| Coeff. di variazione | 0,4031 |
| Minimo | -662,5 |
| Massimo | 3.293,5 |
| Intervallo | 3956 |
| Errore assoluto medio | 574,83 |
| Errore standard dalla media | 9,89 |
| Prob. VANE < 0 | 0,74% |

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| Percentili | Valori |
|------------|----------|
| 0% | -662,49 |
| 5% | 459,03 |
| 10% | 724,57 |
| 15% | 934,18 |
| 20% | 1.105,77 |
| 25% | 1.252,60 |
| 30% | 1.396,87 |
| 35% | 1.515,76 |
| 40% | 1.613,21 |
| 45% | 1.725,17 |
| 50% | 1.819,47 |
| 55% | 1.912,81 |
| 60% | 2.001,82 |
| 65% | 2.095,48 |
| 70% | 2.185,59 |
| 75% | 2.276,97 |
| 80% | 2.373,17 |
| 85% | 2.474,63 |
| 90% | 2.591,68 |
| 95% | 2.734,88 |
| 100% | 3.293,55 |

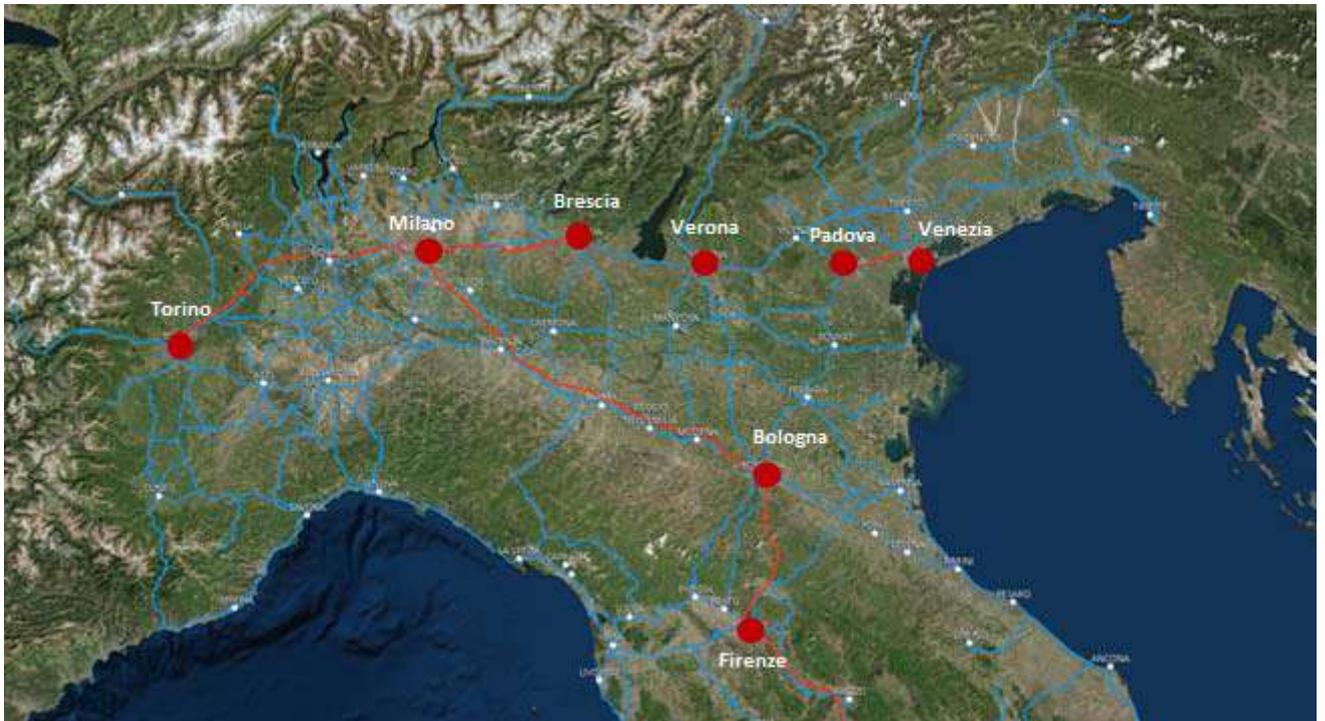
Dall'analisi quantitativa risulta che vi è una probabilità di solo lo 0,8% che il TIRE sia inferiore a 3, in un intervallo di possibili valori che va dal 2,04% a 6,96%.

Il valore più probabile del TIRE è 5,17, da ritenersi soddisfacente, con una deviazione standard dell'0,83%, rappresentativa di una variabilità contenuta.

Per quanto riguarda il VANE, che nel caso base risulta essere pari a circa 3.218 Milioni di euro, il valore maggiormente probabile risulta essere pari a circa 1.736 Milioni di euro, ampiamente soddisfacente, se si considera che risulta essere comunque superiore alla metà del valore del caso base. La probabilità di un VANE negativo è solo dello 0,74%.

I risultati dell'analisi di rischio confermano dunque la solidità del modello di ACB del progetto e nel merito consentono di giungere ad un giudizio di rischiosità molto bassa (praticamente nulla).

LINEA AV/AC MILANO-VENEZIA: TRATTE BRESCIA-VERONA E VERONA-PADOVA



ANALISI COSTI-BENEFICI

| Data | Il Responsabile <i>Investimenti e Contratto di Programma</i> | Data | Il Direttore <i>Pianificazione Strategica</i> |
|------|---|------|--|
| | | | |

Analisi costi-benefici

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Allegati

- Piano pluriennale dei costi e dei benefici

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1. Premessa

RFI svolge, sulla base di quanto previsto dal Contratto di Programma con lo Stato e dalle procedure aziendali in vigore, la valutazione ex ante degli investimenti infrastrutturali attraverso l'analisi economico-finanziaria dei progetti di investimento, la quale prevede l'individuazione dei flussi monetari in entrata ed in uscita generati dall'iniziativa e direttamente riferibili all'Azienda.

Tale analisi consente di prefigurare gli effetti economici e finanziari per RFI derivanti dalla realizzazione e dalla gestione delle nuove opere.

Poiché tuttavia gli investimenti infrastrutturali in ambito ferroviario introducono significativi impatti sul sistema della mobilità e sull'equilibrio ambientale, con effetti di carattere economico per la collettività che non sono trascurabili, per taluni progetti di particolare rilevanza strategica, può essere richiesto a RFI di ampliare le informazioni a supporto delle decisioni di investimento fornendo indicazioni sulla convenienza economico-sociale del progetto.

In questi termini RFI affianca alla valutazione prettamente finanziaria una valutazione socio-economica o Analisi Costi-Benefici (ACB).

Tale analisi prevede che ci si sposti da un'ottica puramente privatistico – aziendale e si prendano in considerazione gli effetti che l'investimento introduce per il benessere della collettività.

Infatti, mentre l'analisi finanziaria consente di pervenire ad indicatori di convenienza sull'utilizzo di risorse da parte degli stakeholders, l'analisi socio-economica consente di valutare l'effetto netto del progetto in termini di benessere sociale, ovvero se esso determina consumo o creazione di ricchezza per l'intera collettività.

Secondo tale ottica, anche investimenti che dal punto di vista finanziario non risultano vantaggiosi, potrebbero risultare sul piano sociale convenienti in quanto generatori di valore per la collettività interessata dal progetto.

L'Analisi Costi-Benefici, attraverso l'opportuna rettifica dell'analisi finanziaria e tramite la quantificazione monetaria degli effetti ambientali e sociali generati dal progetto, consente di pervenire ad indicatori di convenienza economica dell'intervento dal punto di vista dell'interesse generale.

La presente Analisi Costi-Benefici è stata redatta al fine di integrare la documentazione progettuale relativa alla realizzazione della "Tratta AV/AC Brescia-Verona" (CUP F81H91000000008).

Nell'ambito dell'iter autorizzativo, la Regione Lombardia, con delibera n. X/3055 del 23.1.2015 ha espresso parere favorevole al progetto definitivo della tratta AV/AC Brescia-Verona, a condizione che siano recepite integralmente le prescrizioni e le raccomandazioni riportate al par.4 dell'Allegato A) "Valutazione tecnica del progetto" ed in particolare a condizione che: "... il progetto sia integrato con un quadro trasportistico complessivo che analizzi l'interrelazione tra l'insieme di servizi ferroviari AV che saranno attivati e di quelli oggi attivi sia passeggeri che merci, specificando l'impatto che i servizi AV avranno sul Servizio Ferroviario Regionale e sul trasporto merci anche in relazione alle loro possibili prospettive di sviluppo e con un modello di esercizio di progetto che, partendo dalla situazione attuale, analizzi futuri scenari di domanda e offerta di trasporto passeggeri e merci, includendo l'ipotesi di una fase transitoria di realizzazione del solo tratto Brescia Est-Verona (lotti costruttivi 1 e 2) ...".

Inoltre sempre la Delibera della Regione Lombardia indica tra l'altro di "rivedere la soluzione per l'ingresso a Est di Brescia (salto di Montone) con il Quadruplicamento della Linea Storica tramite l'affiancamento della Linea AV/AC...".

Ai fini dell'approvazione del progetto della tratta AV/AC Brescia – Verona da parte del CIPE, il Ministero delle Infrastrutture e dei Trasporti con lettera del 14.4.2016 ha richiamato la delibera della Regione Lombardia ed ha chiesto ad RFI di procedere all'aggiornamento dello studio trasportistico condotto dalla Commissione Interministeriale istituita nel 1999, specificando che gli studi richiesti "dovranno permettere il confronto tra i vari possibili scenari e le possibili alternative progettuali", ivi compreso il solo potenziamento tecnologico della linea storica, e dovranno essere corredate da "specifiche analisi

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costi – benefici e apposite matrici di comparazione riassuntive dei vantaggi e degli svantaggi connessi a ciascuno scenario ipotizzato”.

In tale contesto, si è ritenuto opportuno procedere ad una **valutazione complessiva dell'intero Programma di Investimento, ancora da realizzare, riguardante la Tratta AV/AC Brescia-Verona-Padova**. Infatti il quadruplicamento AV/AC della tratta Brescia-Verona ed il quadruplicamento della tratta Verona-Vicenza-Padova consentono di completare l'intero asse AV/AC Milano-Venezia e quindi, nell'ambito di un quadro trasportistico complessivo, possono essere considerati interventi che si influenzano reciprocamente e determinano effetti sinergici, meritevoli di essere valutati nel loro insieme.

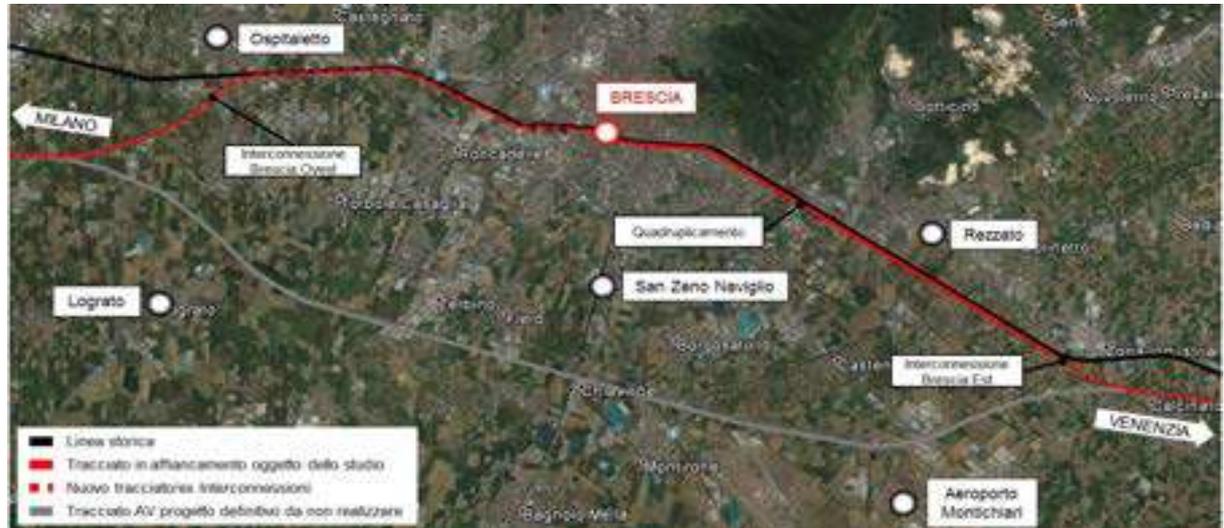
Con riferimento specifico agli interventi della Tratta AV/AC Brescia-Verona, nella presente ACB si considera la soluzione progettuale alternativa “*Quadruplicamento della Linea Storica per l'ingresso a Est di Brescia*”, in sostituzione della soluzione progettuale originale che prevede lo “*Shunt di Brescia*” inclusa nel Progetto Definitivo sul quale è stato avviato l'iter autorizzativo.

Figura 1- Tratta AV/AC Brescia-Verona: Tracciato previsto nel Progetto Definitivo avviato all'iter autorizzativo



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Figura 2 – Tratta AV/AC Brescia-Verona: tracciato alternativo previsto con il Quadruplicamento e considerato nella presente ACB



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2. Contesto della mobilità ferroviaria nel territorio di riferimento

Le Regioni interessate dal programma di investimento sono Lombardia e Veneto. Per un sintetico inquadramento territoriale del progetto si riportano di seguito alcune informazioni sulla situazione attuale delle infrastrutture ferroviarie presenti nelle Regioni e i principali collegamenti ferroviari.

2.1 Lombardia

La Lombardia è la regione italiana più popolata, con oltre 9 milioni di persone. Si trova nel Nord-ovest della parte Settentrionale dell'Italia ed il suo territorio risulta pianeggiante per il 47%, montuoso per il 40% e collinare per il restante 13%.

Nella parte meridionale della Lombardia scorre il più lungo fiume italiano, il Po, che nella regione ha come affluenti altri importanti corsi d'acqua come il Ticino, l'Adda, l'Oglio ed il Mincio. Nella fascia prealpina sono situati parecchi laghi, i più estesi dei quali sono: il Lago Maggiore, il Lago di Lugano, il Lago di Como, il Lago d'Iseo, il Lago d'Idro ed il Lago di Garda (il più esteso d'Italia).

Il Capoluogo di regione è Milano, principale centro economico e finanziario d'Italia.

La regione ha un'estesa territoriale di 23.864 kmq ed una popolazione residente di circa 10 milioni di abitanti, presentando quindi una densità media regionale di 419 abitanti/kmq.

Nella regione figurano 12 province (Milano, Brescia, Bergamo, Como, Cremona, Lecco, Lodi, Mantova, Monza, Pavia, Sondrio e Varese).

In relazione alla sua posizione, la Regione risulta attraversata da reti di trasporto terrestre delle seguenti tipologie:

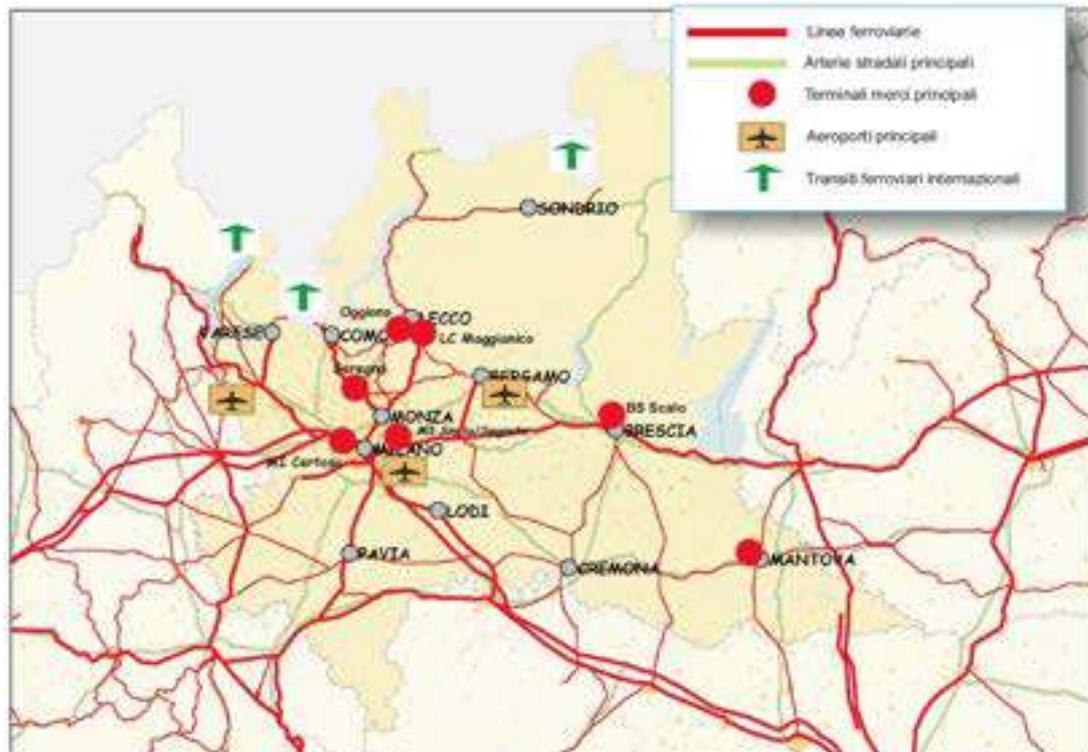
- linee ferroviarie per una consistenza complessiva di binario pari a 2.464 km (considerando la somma delle estese delle linee a semplice binario e quelle del doppio calcolato due volte);
- autostrade per un'estesa complessiva di circa 600 km;
- strade statali, regionali e provinciali per uno sviluppo complessivo pari a circa 10.350 km.

Inoltre, nella regione sono localizzati i seguenti grandi terminali per l'intermodalità:

- l'Aeroporto di Milano Malpensa, quello di Milano Linate e quello di Bergamo Orio al Serio;
- il Porto di Mantova;
- i Terminali ferroviari Merci di Milano Smistamento, Milano Certosa, Mantova, Lecco Maggianico, Seregno, Brescia Scalo e Oggiono.

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Figura 3 - Reti di trasporto e Terminali della Regione Lombardia



Rete ferroviaria della Lombardia

Rete Ferroviaria Italiana (RFI) gestisce in Lombardia 1.680 km di linee ferroviarie. Il 31% della rete è costituito dalle cosiddette linee fondamentali, il 57% dalle linee complementari ed il restante 12% da linee di nodo.

La rete ferroviaria della Lombardia è incentrata sul Nodo di Milano, punto di confluenza e di attraversamento di direttrici nazionali ed internazionali di particolare rilevanza.

Si distingue innanzi tutto l'asse principale ovest-est del nord-Italia, costituito dalla **linea storica Torino-Milano-Brescia-Verona-Venezia**, che taglia in due la Regione e che è stata quadruplicata con la realizzazione della nuova **linea AV/AC Torino-Milano**, la tratta Milano-Pioltello-Treviglio nella stessa Lombardia e la tratta Padova-Venezia Mestre in Veneto.

Provenienti invece da Nord, confluiscono nel Nodo di Milano le due linee transfrontaliere italo-svizzere, che originano dal Nord e da Nord-Ovest dal **valico del Gottardo** e da quello del **Sempione**, e che sono, rispettivamente le linee Chiasso-Como-Monza-Milano, Luino-Gallarate-Milano e la linea (Domodossola-Sesto Calende)-Gallarate-Milano.

A Sud del Capoluogo di Regione si dipartono da Milano Rogoredo, due importanti linee facenti parte dell'asse centrale della rete ferroviaria nazionale: la **linea storica Milano-Lodi-(Piacenza-Bologna)** e la nuova **linea AV-AC Milano-(Piacenza-Bologna)**.

Sempre da Milano Rogoredo, ma stavolta in direzione Sud-ovest, ha origine la linea **Milano-Pavia-Mortara**, la cui prosecuzione collega la Regione con la Liguria ed il Piemonte.

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È ricompresa nella rete fondamentale la linea **(Bologna)-Poggio Rusco-Ostiglia-(Nogara-Verona)**. Per la rete complementare secondaria con origine da Piacenza si sviluppa verso Est la linea c.d. “**Mediopadana**”, (Piacenza-Castelvetro)-Cremona-Mantova-(Nogara-Monselice-Padova), parallela all’asse trasversale Milano-Padova-Venezia, rispetto al quale costituisce un itinerario alternativo soprattutto per i servizi di trasporto delle merci. Un’altra linea della rete complementare secondaria è la **Mortara-(Vercelli/Alessandria)**.

Della rete complementare secondaria fa parte anche la linea **Lecco-Colico-Sondrio-Tirano**, la cui prosecuzione oltre la frontiera italo-svizzera si collega con Saint Moritz.

Inoltre, le altre linee facenti parte della rete complementare secondaria sono: Treviglio-Olmeneta-Cremona, Colico-Chiavenna, Brescia-Piadena-Casalmaggiore, (Verona)-Mantova-(Modena), Monza-Calolziocorte, Rovato-Bergamo-Lecco, Cava Carbonara-Torreberetti-Pavia e Cava Carbonara-Mortara-(Vercelli).

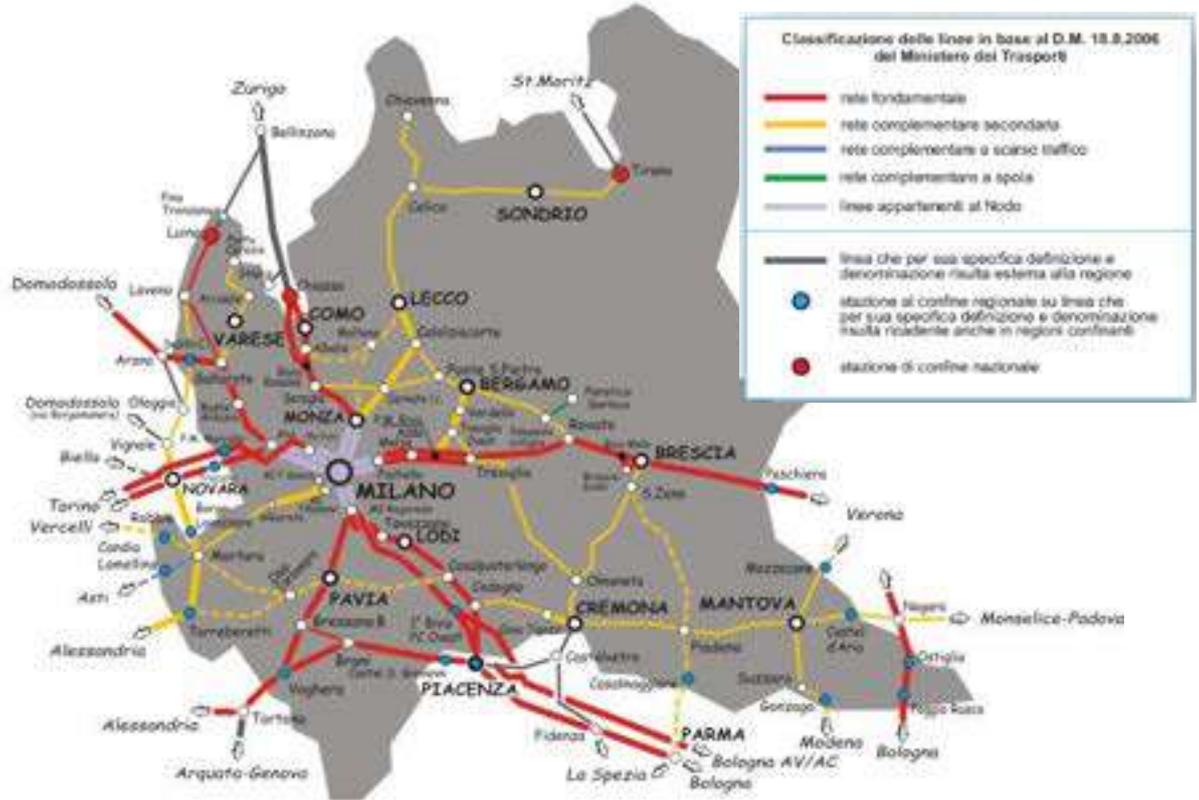
La linea Mortara-Candia Lomellina-(Casale Monferrato-Asti) fa parte della rete complementare a scarso traffico. Infine, fa parte della rete complementare a spola la linea Chiavenna-Paratico Sarnico. L’immagine seguente illustra la rete ferroviaria regionale distinguendo in modo chiaro le reti fondamentali, quelle complementari (secondarie, a scarso traffico, a spola) e quelle appartenenti al Nodo.

Sono 296 le stazioni per servizio viaggiatori attive sul territorio e 28 quelle presenti nel solo nodo di Milano.

Tutte le linee sono attrezzate con tecnologia di protezione della marcia del treno ed il 60% circa della rete è gestita in telecomando con il Sistema di Comando e Controllo (SCC)/ Comando Centralizzato del Traffico (CTC) o con ERTMS.

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Figura 4 - La rete ferroviaria della Lombardia



Nella figura seguente sono rappresentate le principali Stazioni attualmente presenti nel territorio, classificate per classe di importanza

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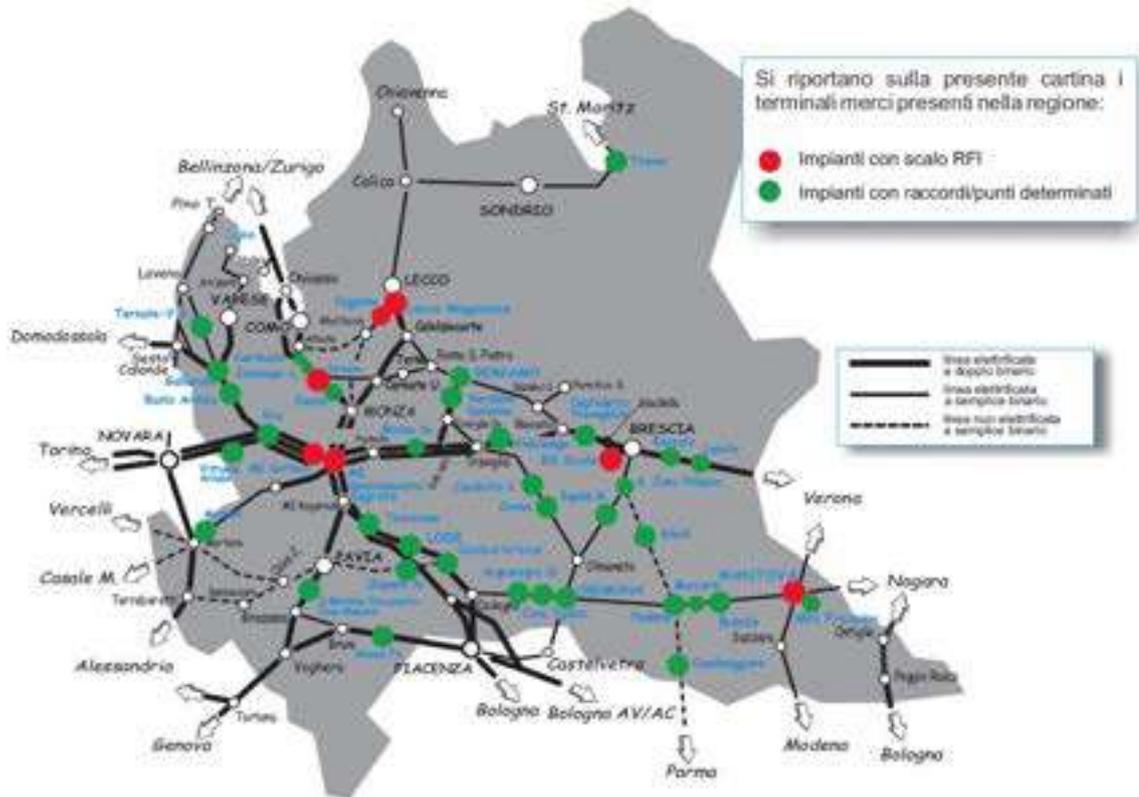
Figura 5 – Principali Stazioni della Lombardia



Nella figura seguente sono indicati i terminali merci attualmente presenti nella Regione, con evidenza degli impianti aventi scalo RFI.

Figura 6 - Rete ferroviaria della Lombardia: terminali merci

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2.2 Veneto

Il territorio del Veneto, regione facente parte dell'Italia nord-orientale, confina a nord con l'Austria e il Trentino Alto Adige ad est con il Friuli-Venezia Giulia, ad ovest con la Lombardia, a sud con l'Emilia Romagna ed è limitata dal Mar Adriatico dal quale è bagnato per quasi 200 Km.

La maggior parte del territorio è pianeggiante (57%), la parte restante è montuosa (29%) o collinare (14%). Il monte più elevato è la Marmolada (3.342 metri), situata nelle Dolomiti al confine con il Trentino-Alto Adige. Nel Veneto scorrono i due fiumi più lunghi d'Italia: il Po, che segna gran parte del confine con l'Emilia-Romagna e l'Adige.

La regione ha un'estensione territoriale di 18.407 kmq ed una popolazione residente di circa 4,9 milioni di abitanti, presentando quindi una densità media regionale di 267 abitanti/kmq.

Nella regione figurano 7 province (Venezia, Belluno, Padova, Rovigo, Treviso, Verona e Vicenza).

La Regione risulta attraversata da reti di trasporto terrestri delle seguenti tipologie:

- linee ferroviarie per una consistenza complessiva di binario pari a 1.800 km (considerando la somma delle estese delle linee a semplice binario e del doppio calcolato due volte);
- autostrade per un'estesa complessiva di circa 560 km;
- strade statali, regionali e provinciali per uno sviluppo complessivo pari a circa 8.290 km.

Inoltre, nella Regione sono localizzati i seguenti grandi terminali per l'intermodalità tra i diversi sistemi di trasporto:

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- l'Aeroporto di Venezia Tessera, e quelli di Verona Villafranca e Treviso S. Angelo;
- il Porto di Venezia;
- il Terminale ferroviario Merci di Verona Q. Europa, e quello di Padova Interporto.

Figura 7 - Reti di trasporto e Terminali della Regione Veneto



Rete ferroviaria del Veneto

La rete ferroviaria veneta gestita da Rete Ferroviaria Italiana (RFI) è costituita da 1.188 km di linee. Le cosiddette linee fondamentali costituiscono il 38% della rete, le linee complementari costituiscono il 56% e le linee di nodo il restante 6%.

La rete di linee ferroviarie risulta interessata da numerose importanti direttrici:

- la **direttrice ovest-est proveniente dalla Lombardia**, che attraversa l'intera area padana e risulta costituita:
 - dall'asse principale, che attraversa il nord-Italia, rappresentato dalla linea storica (Milano-Brescia-) Verona-Vicenza-Padova-Venezia, che è destinato ad essere quadruplicato con la realizzazione della nuova linea AV/AC Torino-Venezia; questo asse costituisce, inoltre, parte del più vasto corridoio Transeuropeo, che si origina nella Francia meridionale, attraversa l'Italia, entra in Slovenia e prosegue, con la denominazione di corridoio "Paneuropeo V" verso Budapest-Kiev;

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- dalla linea complementare “mediopadana” (Piacenza-Mantova-) Nogara-Legnago-Monselice (parallela e, perciò, alternativa alla linea storica Milano-Venezia), che si immette sulla direttrice Bologna-Venezia;
- dalla linea complementare Vicenza-Treviso-Portogruaro, parallela e alternativa alla tratta Vicenza-Portogruaro della linea storica Milano-Venezia, in quanto evita l’attraversamento del nodo di Venezia;
- la **direttrice principale in direzione sudovest-nord** (Bologna-) Rovigo-Padova-Venezia, la quale superato il Nodo di Venezia si biforca in particolare:
 - verso nord con la linea Venezia-Treviso-Conegliano (-Udine-Tarvisio), linea di valico verso l’Austria;
 - verso nord-est con la linea Venezia-Portogruaro (-Trieste/Villa Opicina), linea di valico verso la Slovenia;
- la **direttrice fondamentale sud-nord** (Bologna-)Nogara-Verona, la quale si prolunga a nord con la tratta di valico verso l’Austria Verona-Brennero-Confini;
- l’**itinerario nord-sud da Verona**, alternativo a quello sopraelencato, rappresentato dalla linea complementare secondaria Verona(-Mantova-Modena), utile in particolare per l’inoltro dei traffici merci.

Le stazioni attive sul territorio sono 161 e nelle sole stazioni di Venezia Mestre e Venezia S. Lucia transita circa il 30% dei viaggiatori-anno che utilizzano la rete ferroviaria del Veneto.

La gestione in telecomando della circolazione è resa possibile su circa l’87% della rete grazie al Sistema di Comando e Controllo (SCC) ed al Comando Centralizzato del Traffico (CTC).

L’immagine seguente illustra la rete ferroviaria regionale distinguendo in modo chiaro le reti fondamentali, quelle complementari (secondarie ed a scarso traffico) e quelle appartenenti al Nodo.

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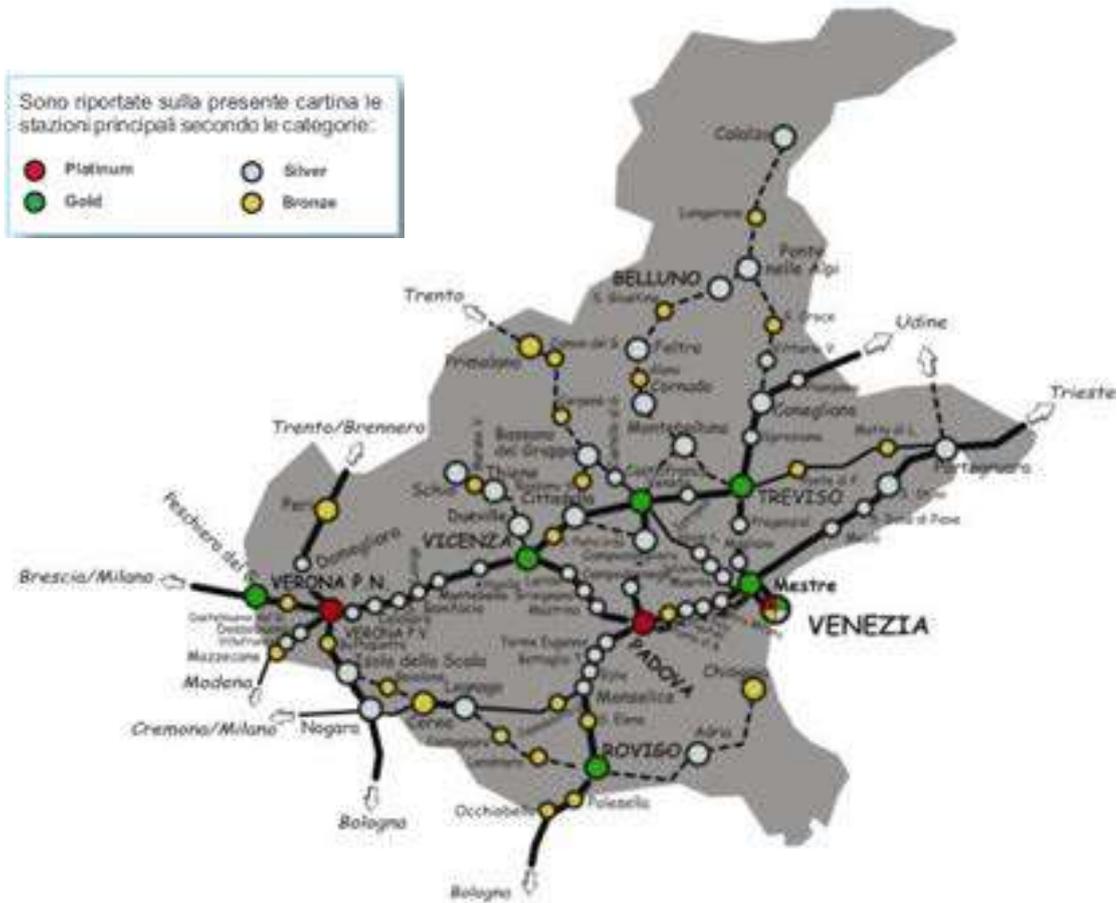
Figura 8 - La rete ferroviaria del Veneto



Nella figura seguente sono rappresentate le principali Stazioni attualmente presenti nel territorio, classificate per classe di importanza.

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Figura 9 – Principali Stazioni della Regione Veneto



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Nella figura seguente sono indicati i terminali merci attualmente presenti nella Regione, con evidenza degli impianti aventi scalo RFI.

Figura 10 - Rete ferroviaria del Veneto: terminali merci



3. Inquadramento del Programma di investimento

Il Programma di Investimento finalizzato alla realizzazione delle Tratte AV/AC Brescia-Verona-Vicenza-Padova interessa la trasversale Torino-Milano-Venezia, il cosiddetto "Asse Orizzontale", e costituisce uno dei più importanti interventi infrastrutturali per lo sviluppo del core corridor "Mediterraneo" della rete TEN-T.

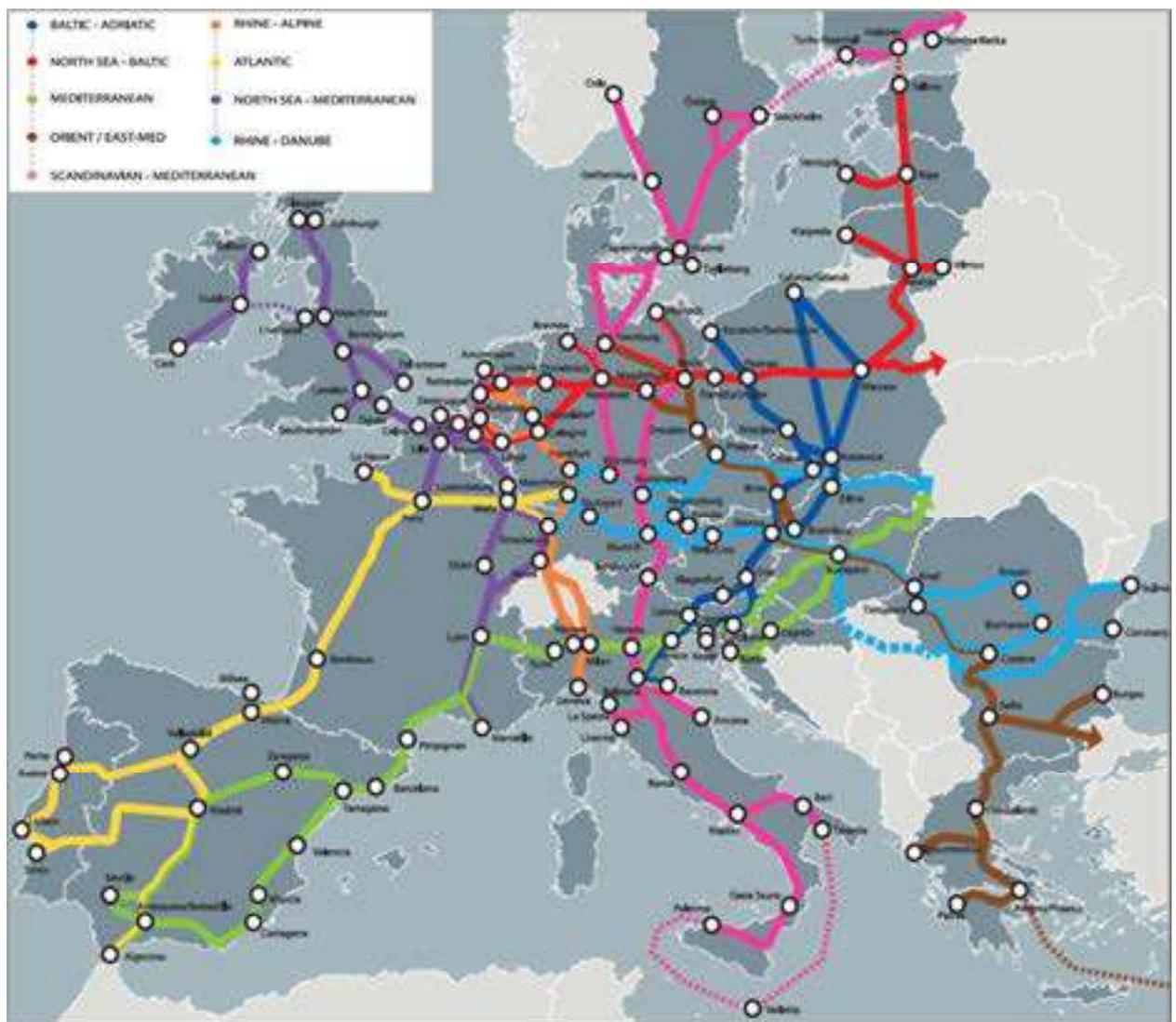
La rete TEN-T è costituita da corridoi multimodali (strada e rotaia) progettati per facilitare la circolazione dei passeggeri, delle merci e di altre risorse tra i paesi membri dell'Unione Europea. Le priorità per le reti TEN-T includono la creazione e lo sviluppo delle connessioni e dei collegamenti chiave, necessari ad eliminare la congestione ed a completare i percorsi stradali principali, migliorando i collegamenti tra le zone isolate, periferiche e centrali dell'Unione Europea.

La nuova strategia prevede una rete dei trasporti europea molto più snella e rigorosamente definita, nell'intento di indirizzare la spesa verso un numero più ridotto di progetti con cui sia possibile realizzare un reale valore aggiunto. La nuova rete TEN-T si articola in due strati: una rete centrale da completare entro il 2030 e una rete globale destinata ad alimentare quella centrale, da completare entro il 2050. La rete globale garantirà la piena copertura del territorio dell'UE e l'accessibilità a tutte le regioni. La rete centrale privilegerà i collegamenti e i nodi più importanti della TEN-T, in modo da renderla

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pienamente operativa entro il 2030. Entrambi gli strati comprendono tutti i modi di trasporto: strade, ferrovie, linee aeree, vie navigabili interne e trasporto marittimo, nonché le piattaforme intermodali.

Figura 11 - TEN-T Core Network Corridors (Regolamento (UE) n.1316/2013)



In relazione a quanto definito nel “Regolamento (UE) N. 1315/2013 del Parlamento Europeo e del consiglio dell’11 Dicembre 2013, sugli orientamenti dell’Unione per lo sviluppo della rete transeuropea dei trasporti”, l’intervento sulla Tratta Brescia-Verona ricade quindi nel Corridoio della rete centrale denominato “Mediterraneo” e si colloca sull’allineamento Tarragona – Barcellona – Perpignan – Marsiglia/Lione – Torino – Novara – **Milano** – **Verona** – **Padova** – Venezia – Ravenna/Trieste/Capodistria - Lubiana – Budapest.

In tale contesto, la direttrice Milano-(Brescia)-Verona-Padova è una delle linee più importanti a livello nazionale e funge da distributore dei traffici merci che giungono dal Nord Europa attraverso l’Austria e la Svizzera verso il resto del paese. Allo stesso tempo, si caratterizza per la presenza di un alto

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numero di treni viaggiatori, nelle ore diurne, a cui si aggiunge una consistente quantità di treni merci soprattutto nelle ore notturne.

La rete Alta Velocità / Alta Capacità in Italia

Il Programma di Investimento oggetto della presente ACB si inserisce nel più ampio programma di realizzazione della rete Alta Velocità/Alta Capacità a servizio dei principali capoluoghi nazionali.

L'asse verticale AV/AC Torino-Milano-Bologna-Salerno e l'asse orizzontale AV/AC nelle tratte Milano-Treviglio-Brescia e Padova-Mestre sono già in esercizio e sono stati avviati i lavori sulla AV/AC Milano-Genova: terzo valico dei Giovi.

Le restanti tratte del sistema, relative agli assi Milano-Venezia, Napoli-Bari, Salerno-Reggio Calabria e Messina-Catania-Palermo, sono in fase di avanzata progettazione.

Con la realizzazione dell'infrastruttura Alta Velocità/Alta Capacità, negli ultimi anni l'offerta di trasporto lunga percorrenza è stata potenziata con collegamenti sempre più frequenti e veloci.

Completamente aperta al pubblico dall'orario 2010, la direttrice AV/AC Torino-Milano-Napoli-Salerno si sviluppa complessivamente per oltre 900 km (tra nuove linee e circa 254 km della Direttissima Roma-Firenze) ed è collegata al resto della rete ferroviaria attraverso binari di interconnessione. Lo sviluppo della rete ha riguardato anche le stazioni di connessione delle linee AV, le quali sono state ristrutturate e in alcuni casi integrate con progetti completamente nuovi, come ad esempio le stazioni AV di Torino Porta Susa, Reggio Emilia, Bologna Centrale e Roma Tiburtina.

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Figura 12 - Rete ferroviaria Alta Velocità / Alta Capacità in Italia



Gli elementi caratterizzanti del sistema italiano per l'alta velocità / alta capacità ferroviaria tengono conto delle peculiarità del territorio attraversato e del contesto economico nazionale:

- nuove linee progettate per traffico misto passeggeri medio-lunga percorrenza e merci;
- integrazione con i corridoi internazionali del network europeo ad Alta Velocità, con caratteristiche prestazionali pienamente rispondente alle Specifiche Tecniche di Interoperabilità e alle esigenze del mercato;
- rete alta capacità fortemente interconnessa con quella convenzionale, anche per garantire una elevata flessibilità di esercizio;
- separazione e specializzazione del traffico ferroviario, con decongestionamento dei principali nodi ferroviari e recupero di capacità da dedicare al trasporto regionale e metropolitano e merci

La realizzazione delle opere è programmata per fasi successive con priorità al quadruplicamento dei tratti più saturi e al potenziamento della capacità per il traffico merci e passeggeri anche nei grandi nodi ferroviari attraversati.

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La linea AV/AC Milano-Venezia

La caratteristica internazionale della Linea Milano - Venezia è conseguenza del suo ruolo di raccordo dei collegamenti ferroviari, attuali e futuri, con i Paesi confinanti attraverso i valichi alpini (Frejus, Sempione, Chiasso, Brennero, Tarvisio, Villa Opicina).

La Linea è parte fondamentale della direttrice Torino-Venezia che viene definita dal Piano Generale dei Trasporti italiano come elemento portante della rete ferroviaria italiana (direttrice di collegamento trasversale medio - padana), assegnandole lo scopo di contribuire a mantenere ed incrementare la quota modale di trasporto su ferrovia sia per i viaggiatori sia per le merci.

Il completamento dell'asse orizzontale AV/AC riveste quindi un'importanza strategica sia per superare i vincoli capacitativi e prestazionali dell'infrastruttura esistente che per cogliere le opportunità di sviluppo dei traffici lungo il corridoio TEN-T Mediterraneo. Infatti come già detto la linea è parte integrante del corridoio infrastrutturale che collega la penisola iberica con il confine tra Ungheria e Ucraina passando a sud delle Alpi.

Figura 13 – Linea AV/AC Milano-Venezia nel Corridoio TEN-T Mediterraneo



La linea è inoltre interessata da un intenso traffico regionale tra i vari centri di media dimensione che caratterizzano la pianura padana, con situazioni già prossime alla saturazione sulla tratta Milano - Brescia (tratte Rovato-bivio Mella e DD Pioltello-PM Adda).

I progetti infrastrutturali finalizzati al completamento della nuova linea AV/AC Milano – Venezia riguardano le nuove tratte Brescia-Verona e Verona-Padova, attualmente in fase di progettazione ed oggetto della presente valutazione.

In particolare la Tratta AV/AC Milano-Verona (della quale risultano già in esercizio le tratte Milano-Treviglio e Treviglio-Brescia) fa parte del sistema di linee AV/AC fin dal momento in cui questo fu definito nel suo assetto strutturale. Come tale essa è stata costantemente considerata nei diversi documenti programmatici concernenti la modernizzazione e lo sviluppo del sistema ferroviario nel nostro Paese.

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4. Il Programma di Investimento

La presente Analisi Costi Benefici riguarda la valutazione del Programma di Investimento finalizzato alla realizzazione della Linea AV/AC Milano-Venezia, tratte Brescia-Verona e Verona-Padova.

Tratta AV/AC Brescia-Verona

Con riferimento alla Tratta Brescia-Verona la presente Analisi considera l'alternativa progettuale che prevede il Quadruplicamento in affiancamento della Linea Storica in uscita da Brescia Est (e quindi senza lo shunt di Brescia).

Gli interventi sulla tratta Brescia-Verona si sviluppano per un'estesa complessiva di 74,7 Km, di cui 68,4 Km sono costituiti da nuova linea a doppio binario.

Gli interventi sulla Tratta Brescia-Verona prevedono un piano di spesa per complessivi 3.430 milioni di euro (a valori finanziari), ed in dettaglio sono costituiti da ¹:

❖ **Lotto "Brescia Est-Verona" di competenza del General Contractor diviso in due lotti costruttivi ²:**

1° Lotto costruttivo: comprende le opere civili della tratta AV/AC dalla progressiva 100+551 alla progressiva 140+780 e le opere civili dell'interconnessione di Verona Merci (esclusi quota parte degli interventi di mitigazione acustica).

Le principali opere incluse nel 1° Lotto costruttivo sono:

- realizzazione della galleria di Lonato da pk 104+740 a pk 112+112 (galleria a doppia canna, in parte naturale da eseguirsi con scavo meccanizzato ed in parte artificiale, e relative trincee di imbocco lato Brescia e lato Verona);
- realizzazione della galleria di Colle Baccotto (galleria monocanna in parte naturale da eseguirsi con scavo tradizionale e in parte artificiale) e gallerie di Madonna del Frassino Est e Ovest (gallerie artificiali monocanna), da pk 121+655 a pk 123+605;
- galleria Paradiso da pk 125+200 a pk 126+500 (galleria artificiale monocanna);
- galleria di San Giorgio da pk 130+180 a pk 133+574 (galleria monocanna in parte naturale da eseguirsi con scavo tradizionale e in parte artificiale);

2° Lotto costruttivo: comprende le opere civili di completamento del Lotto "Brescia Est-Verona" nonché la realizzazione della Sovrastruttura Ferroviaria e degli Impianti tecnologici dell'intero Lotto "Brescia_Est-Verona" di competenza del GC.

¹ Nella descrizione del Programma di Investimento sono indicati gli interventi principali in Opere civili, Sovrastruttura ferroviaria e Impianti, tralasciando i dettagli relativi ad altre attività quali bonifiche, attività propedeutiche inizio lavori, risoluzione interferenze, espropri, monitoraggio ambientale, direzione lavori, oneri di ingegneria, ecc.

² Come definito in "Relazione illustrativa della realizzazione del Lotto "Brescia Est-Verona (escluso nodo)" per lotti costruttivi (RFI SpA , Febbraio 2017).

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In conseguenza dell'eliminazione dello Shunt di Brescia, il tracciato dell'interconnessione di Brescia Est sarà ottimizzato eliminando le opere previste in corrispondenza degli innesti lato Brescia e lato Verona ³

- ❖ **Intervento relativo all'ingresso AV nel Nodo di Verona Ovest** (fase di Progettazione Preliminare completata) da realizzare a cura di RFI tramite nuovi appalti, funzionale all'inserimento della tratta Brescia-Verona sui binari IV e VI di Verona Porta Nuova. Intervento che si estende dalla pk 140+696 della nuova Linea AV/AC e la pk 148+200 della linea storica Milano-Venezia.

I principali interventi sono:

- realizzazione di due nuovi binari AV/AC con ingresso sui binari IV e VI di Verona Porta Nuova, previo spostamento su nuova sede (a nord di quella esistente) della linea storica MI-VE;
- realizzazione, tra il cavalcavia dell'A22 e l'innesto sulla Linea "Brennero", della c.d. "indipendente merci", con tracciato parallelo e posto a nord sia della MI-VE sia della Linea AV/AC;
- realizzazione dei raccordi per il collegamento della nuova linea indipendente merci con il Quadrante Europa e con Verona Porta Nuova, tramite due gallerie artificiali di sottoattraversamento della MI-VE e della Linea AV/AC;
- modifiche al PRG di Verona Porta Nuova;
- nuovo viadotto a tre luci sulla Linea Bologna-Verona, necessario per consentire il sottoattraversamento della stessa linea da parte dei binari AV e consentire l'ingresso della BS-VR nella stazione elementare AV di Verona P.N. (ricompresa nell'intervento Nodo di Verona Est);
- realizzazione della nuova SSE "Verona Ovest", con dismissione dell'attuale SSE di Santa Lucia e costruzione di nuovi tratti di Linea Primaria funzionali alla nuova Sottostazione;
- armamento, attrezzaggio tecnologico delle opere di nuova realizzazione e adeguamento/potenziamento tecnologico per la gestione delle modifiche agli impianti esistenti.

- ❖ **Quadruplicamento in uscita da Brescia Est** dell'attuale linea Milano-Venezia con affiancamento alla linea storica.

L'intervento (attualmente in fase di Studio di Fattibilità) ha origine in uscita alla stazione di Brescia lato Verona alla progressiva 83+705 e termina sull'interconnessione Brescia Est, prevista dal progetto definitivo dell'AV Brescia – Verona, al km 93+970 per una estesa complessiva di circa 10,3 km.

La tratta si sviluppa interamente in superficie seguendo l'andamento planimetrico della linea storica il cui tracciato non viene modificato.

Dal km 84+215 al km 85+100 per una estesa di circa 0,9 km il quadruplicamento interessa un'area densamente urbanizzata della città di Brescia. Al fine di ridurre il numero di edifici

³ Nelle more della progettazione degli interventi di adeguamento, nella presente ACB, pur escludendo dallo studio lo *Shunt di Brescia*, per le altre sezioni della Tratta di competenza del General Contractor si è fatto riferimento ai contenuti della Progettazione Definitiva ad oggi disponibile.

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interessati è stato ipotizzato di adottare una sezione ridotta rispetto gli standard RFI che prevede l'affiancamento "stretto" del doppio binario AV alla linea esistente.

Per minimizzare l'impatto acustico nella tratta più densamente urbanizzata, è stata prevista la realizzazione di un tunnel afonico denominato "Ecotunnel" costituito da una volta in materiale fonoassorbente trasparente ancorato su muri anti-svio. L'opera di estesa complessiva di circa 900 m è suddivisa in due tronchi per la presenza del cavalcaferrovia in via Padre M. Kolbe (km 84+856).

Per la restante tratta dal km 85+100 al km 93+970 di estesa pari a 8,9 km il quadruplicamento attraversa un'area a carattere extraurbano ed agricolo. Data la bassa densità di interferenze con la nuova linea è stata adottata la sezione tipo AV standard in affiancamento alla linea storica MI-VE. La linea TE rimane separata per le due linee ed ove necessario si prevede l'installazione di barriere antirumore di altezza variabile.

Sono previsti interventi al PRG di Brescia per consentire l'innesto della nuova coppia di binari AV. Tale modifica è compatibile anche con un futuro raddoppio della linea Brescia - Cremona. La velocità massima dovrebbe essere elevata dagli attuali 160 km/h ad un minimo di 200 km/h.

Nella figura seguente si riporta lo schema funzionale della linea Milano-Verona, in cui è evidenziato con il colore rosso il collegamento Brescia-Verona, oggetto del Programma di Investimento sopra descritto e valutato nella presente ACB.

Figura 14 - Schema funzionale del collegamento Brescia - Verona



Tratta AV/AC Verona-Padova

Gli interventi nella tratta **Verona-Padova** consistono nella realizzazione di una nuova linea con caratteristiche AV/AC tra Verona e Padova e delle opere funzionali all'ingresso della nuova linea nel nodo di Verona (est), per complessivi 5.261 milioni di euro (a valori finanziari)

Nella sua attuale configurazione, il Progetto è articolato in 3 lotti funzionali:

- 1° Lotto Funzionale: Verona-Bivio Vicenza;
- 2° Lotto Funzionale: Attraversamento di Vicenza;
- 3° Lotto Funzionale: Vicenza (esclusa)-Padova.

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Figura 15 – Tratta AV/AC Verona-Padova: attuale configurazione progettuale



Per il 1° Lotto Funzionale sono considerati gli interventi previsti nella documentazione progettuale di riferimento:

- per la tratta tra Verona e Montebello Vicentino: il Progetto Preliminare approvato dal CIPE, con prescrizioni e raccomandazioni, con Delibera n. 94/2006. Fa eccezione la tratta in attraversamento del Comune di San Bonifacio, per la quale - in aderenza a quanto definito con il Protocollo d'Intesa sottoscritto nel 2015 tra RFI, MIT, Regione Veneto, Provincia di Verona, Provincia di Vicenza, Comune di Belfiore, Comune di Lonigo e Comune di San Bonifacio - il progetto definitivo è stato sviluppato con una variante di tipo sostanziale al tracciato del progetto preliminare, con spostamento della linea AV/AC a sud dell'abitato di San Bonifacio, parallelamente al corridoio della strada provinciale Porcilana;
- per la tratta Montebello-Vicenza: lo Studio di Fattibilità redatto ai sensi di quanto previsto dal Protocollo di Intesa sottoscritto il 29.7.2014 tra RFI, MIT, Regione Veneto, Comune di Vicenza e CCIAA di Vicenza. Il tracciato del 1° Lotto Funzionale termina al km 44+250 della linea AV/AC nel Comune di Altavilla Vicentina, poco prima del confine con l'ambito territoriale del Comune di Vicenza;

In tale Lotto sono inclusi altresì gli interventi funzionali all'ingresso della tratta AV/AC Verona-Vicenza nel Nodo di Verona lato Est;

Per il 2° Lotto Funzionale "Attraversamento di Vicenza", la presente Analisi Costi-Benefici prende a riferimento la soluzione progettuale che prevede:

- il mantenimento delle linee ferroviarie in superficie, con la linea ferroviaria AV/AC che, a partire dal "Bivio Vicenza" (limite di batteria del 1° Lotto Funzionale, posto al km 44+250), si sviluppa in affiancamento a sud della linea esistente fino all'ingresso dell'impianto di Vicenza;
- il mantenimento dell'attuale stazione di Vicenza V.le Roma, dedicata al traffico AV/AC, al Servizio Ferroviario Metropolitano e Regionale ed alle merci;
- il rifacimento del PRG di stazione nell'impianto di Vicenza Viale Roma, che sarà sviluppato prevedendo nella parte nord dell'impianto la coppia di binari della linea lenta con le relative

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precedenze, nella parte centrale la “stazione elementare” AV e verso sud il nuovo scalo merci costituito da 4 binari;

- la realizzazione in zona Fiera di una nuova fermata sulla linea storica Milano-Venezia (per il servizio regionale) e di una fermata sulla linea AV/AC da utilizzare, eventualmente in particolari circostanze, anche per il servizio AV.

Il 2° Lotto Funzionale si chiude subito dopo il fiume Retrone, in corrispondenza di viale Risorgimento, intorno al km 49+600 della linea AV/AC; l'ultimo tratto in uscita dall'impianto di stazione è interessato solo da lavori di armamento. Nella tratta immediatamente ad est della stazione di Viale Roma è previsto il mantenimento degli attuali quattro binari in uscita dalla stazione, utilizzando l'esistente linea Verona-Padova per il traffico AV/AC e i due binari delle linee per Schio/Treviso per il restante traffico.

Figura 16 – Attraversamento di Vicenza in superficie



Per il tracciato del 3° Lotto Funzionale “Vicenza-Padova” si è fatto riferimento:

- per la tratta Vicenza - Grisignano di Zocco: allo Studio di Fattibilità del 2014. La linea AV/AC si sviluppa in affiancamento a sud dell'esistente linea Milano-Venezia fino al comune di Grumolo delle Abbadesse (ca. km 59 linea AV), dove si realizza lo scavalco delle due linee e il passaggio della linea AV/AC a nord dell'esistente; successivamente, la linea AV/AC prosegue sviluppandosi in affiancamento a nord fino a Grisignano (ca. km 64 linea AV);
- per la tratta Grisignano di Zocco-Padova: al tracciato del Progetto approvato dal CIPE, che prevede l'affiancamento della nuova linea AV a nord della esistente linea Milano-Venezia, con una diramazione merci che consente il collegamento con la linea Padova – Bassano.

Obiettivi del Programma di Investimento

Gli obiettivi del Programma di Investimento finalizzato alla realizzazione delle Tratte AV/AC Brescia-Verona e Verona-Padova possono essere così sintetizzati:

- potenziamento del servizio ferroviario nel suo insieme, attraverso un aumento generale della capacità di trasporto ed un aumento del grado di omotachicità sulla Linea Storica, oltre che ad una omotachicità delle tracce per fasce orarie sulla Linea Nuova: la realizzazione della Linea ferroviario AV/AC, rendendo disponibili linee che consentono di sviluppare servizi di livello

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superiore fortemente integrati rispetto al sistema dei nodi di trasporto e dei poli regionali, consente di migliorare e specializzare l'offerta anche nella rete ordinaria, che oggi presenta situazioni di saturazione, per la compresenza di servizi di livello regionale – locale con altri di rango nazionale – internazionale, lungo le tratte più cariche;

- integrazione Europea: il potenziamento della direttrice che percorre la pianura padana consente l'integrazione della rete ferroviaria del nostro Paese ai livelli più elevati della rete europea, consolidando e rafforzando il ruolo di cerniera che questo ambito interregionale oggi svolge tra l'Europa Mediterranea e Centro-occidentale da un lato, e l'Europa Centro-orientale ed i Paesi Balcanici dall'altro;
- distribuzione delle opportunità offerte da un servizio potenziato: il sistema di Alta Capacità si presenta come fortemente interconnesso, attraverso opportuni rami di collegamento, con i poli urbani ed i sistemi economici di livello regionale; questo consente sia una maggiore diffusione dei livelli elevati di accessibilità offerti dal sistema, sia di attingere a bacini di domanda più estesi nel territorio, aspetto quest'ultimo di fondamentale importanza in un contesto territoriale come quello del Nord Italia, caratterizzato da sistemi economici e insediativi diffusi;
- miglioramento generale della competitività del trasporto su ferro rispetto al trasporto su gomma grazie all'incremento dei livelli prestazionali (maggiore fluidità e migliori standard di regolarità e puntualità del traffico ferroviario, riduzione di tempi in particolare per i Servizi Lunga Percorrenza, migliore affidabilità dell'infrastruttura ferroviaria complessiva): elevare il servizio ferroviario e renderlo più competitivo significa spostare quote di mobilità, sia di persone che di merci, dalla strada alla ferrovia, con indiscutibili ricadute positive in termini ambientali (riduzione delle emissioni atmosferiche inquinanti) e di sicurezza del sistema dei trasporti nel suo complesso.

Costo dell'investimento e pianificazione della spesa

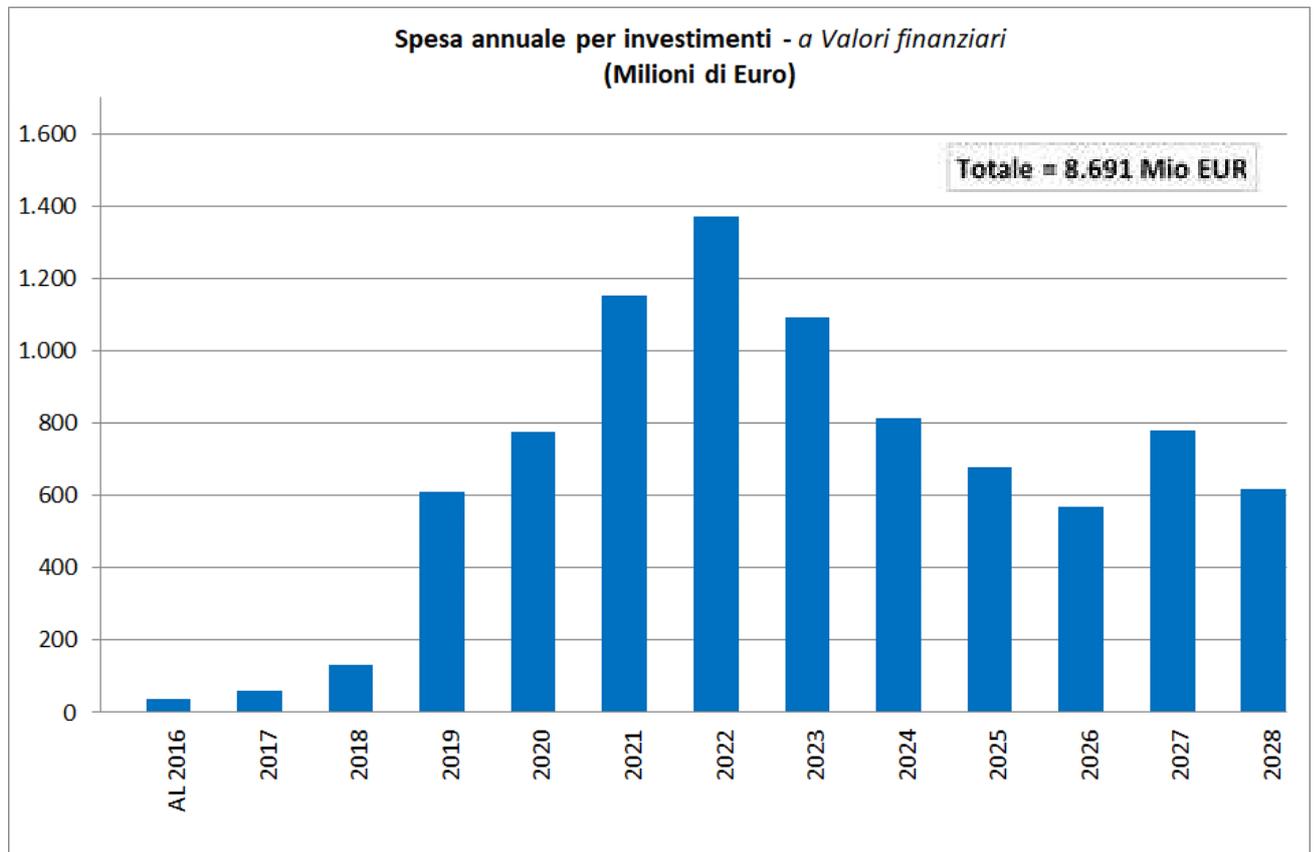
Il costo del Programma di Investimento relativo alla realizzazione delle Linee AV/AC Milano-Venezia tratte Brescia-Verona e Verona-Padova, articolato negli interventi come sopra definiti, è stimato complessivamente pari a **8.691 milioni di euro**.

Le ipotesi più aggiornate relative allo sviluppo temporale del programma, che recepiscono oltre alla pianificazione tecnica della realizzazione delle opere, anche le assunzioni sui tempi per l'acquisizione delle autorizzazioni e dei finanziamenti necessari, indicano il completamento del programma nel 2028, anno a partire dal quale, ai fini della presente ACB, si considerano in modo pieno gli effetti di progetto. Si precisa che il programma prevede la progressiva attuazione di una serie di interventi suscettibili di autonoma attivazione all'esercizio ferroviario.

Il piano di spesa per investimenti a valori finanziari è rappresentato nel seguente grafico:

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Figura 17 – Piano della spesa per investimenti



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5. L'analisi costi-benefici

5.1 Approccio metodologico

L'analisi costi-benefici ha l'obiettivo di valutare l'incremento del benessere della collettività indotto dalla realizzazione del progetto di investimento.

Si deve, in pratica, verificare se l'investimento soddisfa o no interessi pubblici quali il miglioramento della qualità ambientale, della sicurezza del trasporto, ecc. Sulla scorta di tale analisi, si offrono elementi decisionali sull'opportunità dell'impegno di risorse pubbliche per la realizzazione dei progetti di investimento.

Il beneficio apportato deve essere considerato in termini "netti", ovvero come incremento del saldo tra benefici e costi generato da un Progetto di investimento rispetto ad una situazione cosiddetta "senza progetto".

E' importante specificare che lo scenario "senza progetto" (detto anche "di riferimento") non deve essere caratterizzato da una generale situazione di "non fare" rispetto alla situazione attuale, ma deve prevedere un'evoluzione tendenziale dell'infrastruttura e dei flussi economici secondo interventi già pianificati e avviati, ma escludendo il Progetto di Investimento oggetto di valutazione. La costruzione degli scenari, effettuata attraverso apposito Studio di Trasporto, è finalizzata a mettere in evidenza:

- l'ambito territoriale di influenza del Progetto di Investimento
- la dinamica dei flussi di traffico per merci e passeggeri nella situazione "senza progetto" (o "di riferimento"), con evidenza della loro evoluzione temporale e della loro ripartizione tra le diverse modalità di trasporto
- l'evoluzione temporale dei flussi di traffico per merci e passeggeri nella situazione "con progetto", ripartiti tra le diverse modalità di trasporto e con evidenza dei traffici aggiuntivi eventualmente generati dalla nuova infrastruttura.

Dal confronto tra la situazione "senza progetto" e la situazione "con progetto" è possibile ricavare i flussi differenziali di traffico associabili alla realizzazione del progetto, distinti tra modalità ferroviaria e altre modalità, per merci e per passeggeri.

I flussi differenziali così ottenuti sono alla base dell'individuazione e quantificazione monetaria degli effetti diretti e delle esternalità che, confrontati con i costi di costruzione e gestione dell'infrastruttura, consentono di determinare gli indicatori utili a valutare la convenienza economico-sociale del progetto.

Costi di costruzione ed esercizio dell'infrastruttura

L'ACB è condotta a partire dalle ipotesi su costi di investimento e costi di esercizio contenute nell'analisi finanziaria.

Tuttavia, mentre nell'analisi finanziaria i beni e servizi prodotti e utilizzati nel progetto sono valutati ai prezzi di mercato effettivamente riscossi e pagati secondo un criterio di cassa, nell'analisi economica la valutazione deve avvenire secondo la logica del valore che tali beni e servizi hanno per la collettività, ossia sulla base del costo-opportunità sociale: da tale punto di vista, la realizzazione del progetto fa diminuire le risorse disponibili per la collettività.

Alcune voci e prezzi che figurano tra le entrate e uscite nell'analisi finanziaria non rispecchiano un'effettiva utilizzazione di risorse, ma riflettono piuttosto trasferimenti di ricchezza da un gruppo

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all'altro nell'ambito della collettività (per esempio perché includono imposte indirette, oneri sociali, sussidi ed altre forme di agevolazione) ovvero possono riflettere distorsioni di mercato.

In ottica di analisi economica è necessario quindi l'utilizzo di "prezzi-ombra" basati sui costi-opportunità sociale invece dei prezzi osservati sul mercato: a tale scopo si fa ricorso ad una serie di fattori di conversione che, applicati ai valori finanziari, consentono di ottenere i corrispondenti valori economici per le varie voci di costo.

Effetti diretti

Si tratta di costi e benefici rilevabili per quella parte di collettività che è direttamente interessata dal progetto.

Per progetti di investimento in ambito trasportistico il beneficio diretto è tipicamente rappresentato dal "risparmio per l'utente" in termini di:

- tempo, per cui un progetto di trasporto contribuisce al benessere degli utenti se è in grado di garantire una riduzione dei tempi medi di trasporto rispetto allo scenario di riferimento ("senza progetto")
- costi operativi, per cui il benessere collettivo risulta aumentato nella misura in cui il progetto consente di offrire una modalità di trasporto complessivamente più economica rispetto alla situazione di riferimento

Come per i costi di costruzione ed esercizio dell'infrastruttura anche i costi delle diverse modalità di trasporto devono essere espressi a valore economico, attraverso l'applicazione dei fattori di conversione.

Esternalità

Si tratta di effetti a carattere socio-ambientale che riguardano la collettività nel suo complesso.

La teoria economica definisce le esternalità come cambiamenti del livello di benessere generati da una determinata attività che non sono tuttavia riflessi nei prezzi di mercato. Le esternalità possono essere negative (costi esterni) o positive (benefici esterni).

Un costo esterno, o esternalità negativa, rappresenta uno svantaggio o una conseguenza negativa che l'attività di un agente economico (o di un gruppo d'agenti) determina nei confronti di un altro agente (o gruppo di agenti), qualora tale impatto non sia in qualche modo compensato in termini monetari dall'agente che lo ha causato. Analogamente, un beneficio esterno, o esternalità positiva, è il vantaggio o la conseguenza positiva che l'attività svolta da un agente (o gruppo) genera nella sfera di uno o più altri agenti, i quali però non versano alcun corrispettivo monetario per il beneficio ottenuto.

Nel settore dei trasporti, si concorda nel considerare che la maggior parte delle esternalità sono negative (costi esterni), mentre vi è un ampio consenso nel considerare che il valore degli eventuali benefici esterni è trascurabile al confronto con quello dei costi, e soprattutto che la maggior parte dei benefici generati dall'attività di trasporto sono internalizzati all'origine. Tipico è l'esempio della crescita economica (regionale, locale, nazionale) indotta dal potenziamento dell'offerta di trasporto: si tratta di un beneficio esplicitamente atteso dallo sviluppo infrastrutturale e dunque direttamente considerato nel processo decisionale.

Analisi costi-benefici

Nella prassi, le esternalità che generalmente sono valutate per investimenti in infrastrutture di trasporto sono: inquinamento atmosferico, inquinamento acustico, contributo all'effetto serra, congestione, incidentalità.

Indicatori di valutazione

Come per l'analisi finanziaria, il giudizio di convenienza o di apprezzamento economico-sociale dell'investimento viene sintetizzato nel calcolo di indici che, in questo caso, sono rappresentati da: **Valore Attuale Netto Economico (VANE)**, ovvero la sommatoria dei saldi annuali tra costi e benefici generati dall'investimento, scontati ad un tasso predefinito;

$$VANE = \sum_{t=0}^n \frac{(B_t - C_t)}{(1+r)^t}$$

in cui:

B_t = Benefici al tempo t

C_t = Costi al tempo t

t = varia da 0 (anno della valutazione) a n (ultimo anno di previsione esplicita dei flussi annuali)

r = tasso di attualizzazione dei flussi annuali

Tasso Interno di Rendimento Economico (TIRE), ovvero il valore del tasso che, applicato come sconto ai saldi annuali costi-benefici, rende il valore del VANE pari a zero.

B/C Ratio, ossia il rapporto tra Benefici attualizzati e Costi attualizzati.

Riferimenti metodologici e fonti dati

I principali riferimenti metodologici utilizzati nella elaborazione della presente analisi costi-benefici sono i seguenti:

- Quaderni del PON Trasporti n° 02/2006 "I Grandi Progetti del PON Trasporti 2000–2006 Metodologie di analisi e casi di applicazione"
- Quaderni del PON Trasporti n° 08/2008 "Linee guida per la misura dei Costi Esterni nell'ambito del PON Trasporti 2000 – 2006"
- RailPAG – Railway Project Appraisal Guidelines – 2005
- "Guide to cost-benefit analysis of Investment Projects" – European Commission DG Regional Policy, 2014
- CE Delft, Infrac, Fraunhofer Isi, "External Costs of Transport in Europe - Update Study for 2008", pubblicato a Ottobre 2011
- CE Delft et Al "Handbook on estimation of external costs in the transport sector" (IMPACT) - European Commission DG TREN - 2008
- Ricardo-AEA "Update of the Handbook on external costs of transport – Final Report", European Commission DG MOVE – 2014
- "Linee Guida per la valutazione degli investimenti in opere pubbliche" – Ministero delle Infrastrutture e dei Trasporti, approvate dal CIPE a dicembre 2016

Per gli scenari infrastrutturali e le ipotesi di traffico si è fatto riferimento allo «Studio di Trasporto della Linea AV/AC Milano-Venezia» (aggiornamento Maggio 2017) da ora in poi "SdT".

Analisi costi-benefici

Si precisa che anche le altre grandezze in comune allo SdT e alla presente ACB sono state condivise al fine di rendere coerenti i due elaborati.

L'analisi costi-benefici che segue è stata condotta prendendo in considerazione i costi ed i benefici economico-sociali derivanti dal Programma di investimento costituito dalla realizzazione delle Tratte AV/AC Brescia-Verona e Verona-Padova (come definito nel paragrafo "Programma di Investimento").

Secondo l'approccio differenziale, la valutazione riguarda i flussi annuali relativi a costi e benefici, determinati dal confronto tra lo scenario "con progetto" e lo scenario di riferimento (o scenario "senza progetto").

5.2 Ipotesi di base

5.2.1 Orizzonte temporale di analisi

L'arco temporale della valutazione si estende dall'anno 2016 all'anno 2050.

Lungo tale arco temporale è possibile distinguere la fase di progettazione e realizzazione dell'opera (fino al 2025), una fase transitoria che prevede l'entrata in esercizio di alcune opere (in particolare l'intera Tratta AV/AC Brescia-Verona) e il completamento delle altre (2026-2027), ed infine la fase di esercizio a regime in cui risultano attivate tutte le opere e si sviluppano in modo pieno gli effetti dell'intero Programma degli Investimenti (dal 2028 in poi).

L'anno base per l'attualizzazione dei flussi è il 2017.

5.2.2 Tasso di attualizzazione

Nell'ACB il tasso di attualizzazione rappresenta il saggio sociale di preferenza intertemporale in grado di riflettere il valore attribuito dalla collettività al consumo attuale e al consumo futuro, ed in particolare esso esprime:

- la preferenza dell'individuo ad ottenere un determinato servizio nel presente piuttosto che differire tale consumo nel futuro;
- la propensione a spendere una determinata quota del proprio reddito disponibile nel presente piuttosto che investire la stessa per un utilizzo futuro;
- il diverso interesse tra le generazioni attuali e quelle a venire in materia di scelte di investimento.

Secondo quanto suggerito nella "Guide to cost-benefit analysis of Investment Projects" – European Commission DG Regional Policy, 2014, nella presente analisi viene utilizzato un tasso di sconto reale pari al 3%.

5.2.3 Valore monetario e Indicizzazione

Analisi costi-benefici

Costi e benefici sono espressi a valori costanti €/2017, in coerenza con l'utilizzo di un tasso "reale" di attualizzazione dei flussi.

Tutti i dati di input sono stati valorizzati €/2017 applicando coefficienti di rivalutazione basati sull'indice ISTAT NIC.

Ai fini della quantificazione delle esternalità sono stati applicati parametri di indicizzazione basati su ipotesi di evoluzione del PIL e PIL procapite a prezzi costanti, coerenti con le previsioni del PIL utilizzate nello Studio di Trasporto.

5.2.4 Fattori di conversione dei valori finanziari in valori economici

I fattori di conversione utilizzati nella presente analisi sono stati determinati tenendo conto delle indicazioni contenute Quaderno PON Trasporti 02/2006.

Considerando che la spesa per investimenti stimata è già al netto di IVA, i fattori di conversione utilizzati sono i seguenti:

Tabella 1 – Fattori di conversione applicabili alla Spesa per Investimenti

| Voci della spesa per investimenti (IVA esclusa) | Fattori di Conversione |
|--|---------------------------|
| Materiali e acquisizioni aree | 1,00 |
| Lavoro | 0,758 |
| Trasporti | 1,00 |

Per quanto riguarda il costo del lavoro (Manodopera impiegata nella realizzazione e manutenzione dell'opera, Personale adibito alla gestione dell'infrastruttura e Personale conducente dei mezzi di trasporto), viene utilizzato un fattore di conversione pari a 0,758⁴, in grado di esprimere in termini di salari-ombra (shadow wages) i valori salariali medi di mercato: è determinato scorpendo un'incidenza della tassazione pari al 32%.

I fattori di conversione applicati ai costi del trasporto ferroviario e della gestione dell'infrastruttura sono stati definiti considerando le seguenti ipotesi:

- costi finanziari stimati già al netto di IVA;
- costi per energia di trazione comprensivi di imposte di produzione (stimate pari al 30%);

Tabella 2 – Fattori di conversione applicabili ai costi ferroviari

| Voci di costo (valori finanziari IVA esclusa) | Fattori di Conversione |
|--|---------------------------|
| Ammortamento | 1,00 |
| Materiali | 1,00 |
| Personale | 0,758 |
| Energia per trazione | 0,769 |
| Altri costi | 1,00 |

⁴ Stimato sulla base delle indicazioni presenti in "Guide to cost-benefit analysis of Investment Projects" – European Commission DG Regional Policy, 2014.

Analisi costi-benefici

Per quanto riguarda i costi di esercizio del trasporto stradale, i fattori di conversione sono stati ottenuti sulla base delle indicazioni suggerite in “Quaderno del PON Trasporti 02/2006” e considerando le seguenti ipotesi:

- costi chilometrici di auto comprensivi di IVA al 22%
- costo del carburante per auto composto per il 53% da IVA e accise
- costi chilometrici del mezzo trasporto veicolo pesante merci (HGV-Heavy goods vehicle) già espressi al netto di IVA e accise

Tabella 3 – Fattori di conversione applicabili ai costi dell'auto

| Voci di costo - AUTO | Fattori di Conversione per valori finanziari espressi IVA inclusa |
|---------------------------------------|---|
| Ammortamento | 0,820 |
| Carburante | 0,654 |
| Manutenzione (materiali e pneumatici) | 0,820 |
| Manutenzione (lavoro) | 0,649 |

Tabella 4 - Fattori di conversione applicabili ai costi dei veicoli pesanti Merci

| Voci di costo – Veicolo pesante Merci | Fattori di Conversione per valori finanziari espressi al netto di IVA e Accise |
|---------------------------------------|--|
| Ammortamento | 1,000 |
| Carburante | 1,000 |
| Manutenzione (materiali e pneumatici) | 1,000 |
| Manutenzione (lavoro) | 0,758 |
| Personale conducente | 0,758 |

Analisi costi-benefici

5.3 Scenari infrastrutturali e di traffico

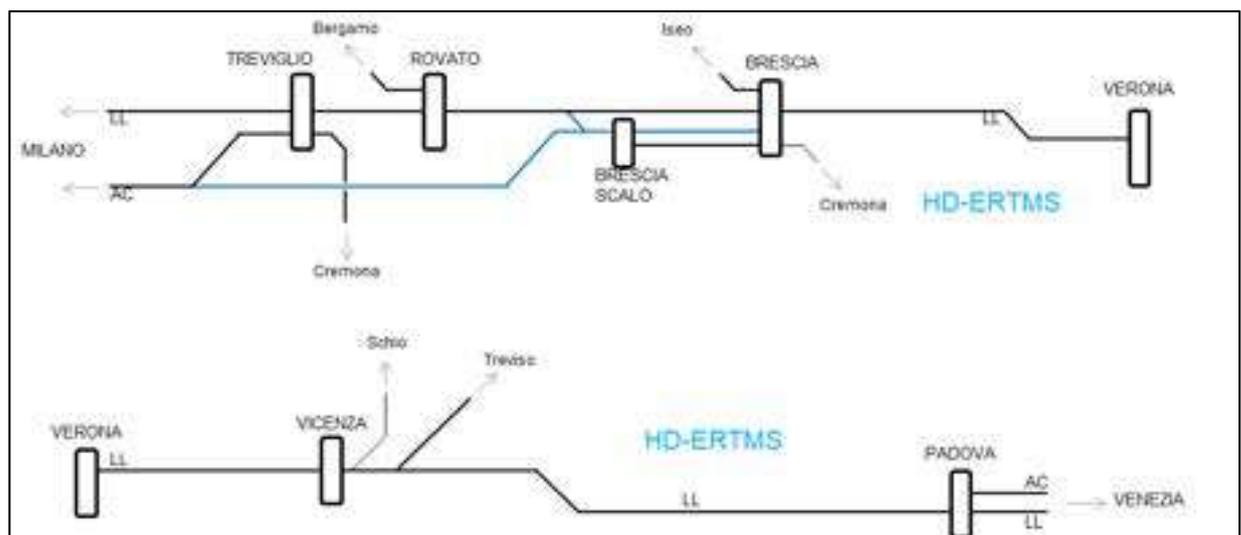
Le ipotesi di traffico utilizzate nella presente Analisi Costi Benefici sono definite sulla base dei risultati dello “Studio di Trasporto della Linea AV/AC Milano-Venezia” (aggiornamento maggio 2017), nel quale sono stati altresì definiti gli Scenari Infrastrutturali per le diverse modalità di trasporto.

Con particolare riferimento al trasporto ferroviario si indicano di seguito in sintesi gli Scenari Infrastrutturali definiti nello Studio di Trasporto ed utilizzati anche ai fini della presente ACB:

- Scenario di Riferimento: vengono realizzati gli investimenti già programmati e/o avviati nell’area di Studio come da vigente “Contratto di Programma Parte Investimenti”, ad esclusione degli interventi di realizzazione delle Tratte AV/AC Brescia-Verona e Verona-Padova; rispetto alla situazione attuale su tali tratte si ipotizza un intervento di solo potenziamento tecnologico (adeguamento con HD-ERTMS).
- Scenario di Progetto ⁵: per la Tratta Brescia-Verona-Padova in alternativa al solo Potenziamento Tecnologico, si considera effettuato l’intero Programma di Investimento relativo alla realizzazione delle tratte AV/AC Brescia-Verona e Verona-Padova (come definito al capitolo 4). Si considerano effettuati tutti gli altri interventi come nello scenario di Riferimento.

Nelle figure seguenti sono rappresentati gli Schemi funzionali della Linea interessata dal Programma di Investimento nei due Scenari:

Figura 18 – Schema funzionale della Linea nello Scenario di Riferimento

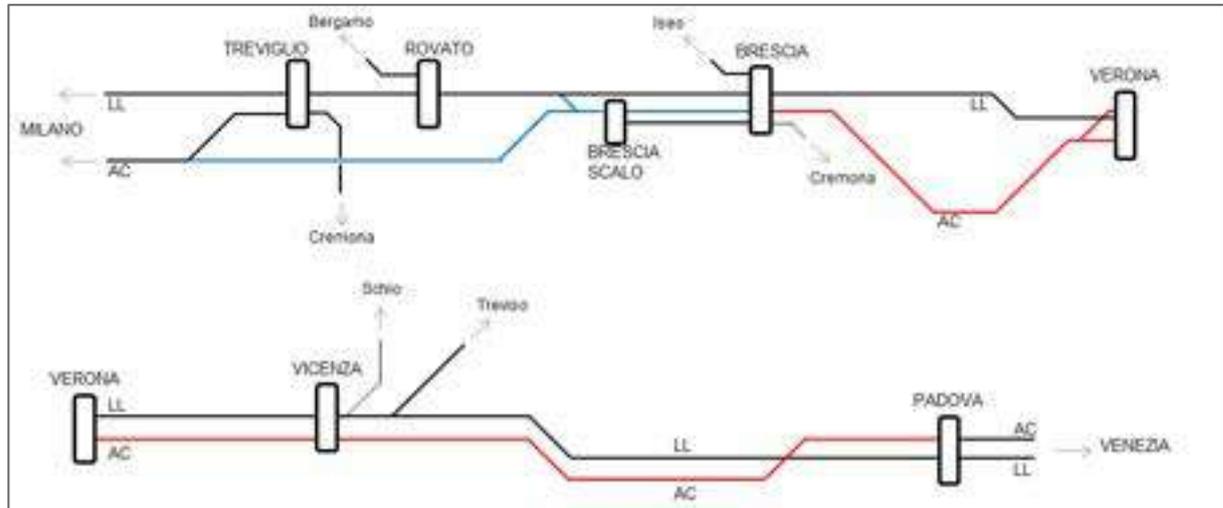


⁵ Lo Scenario “Con Intervento” è quello denominato “Scenario 3” nello Studio di Trasporto.

Analisi costi-benefici

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Figura 19 - Schema funzionale della Linea AV/AC nello Scenario di Progetto



Risultati del modello previsionale: variazioni di traffico per le diverse modalità di trasporto

Come risulta dal modello previsionale di traffico dello Studio di Trasporto il completamento della Linea AV/AC, grazie alla realizzazione delle Tratte AV/AC Brescia-Verona e Verona-Padova, comporterà una maggiore attrattività del vettore ferroviario a seguito del potenziamento dell'infrastruttura e del miglioramento generale delle performance del sistema, rispetto alla situazione "senza progetto", con conseguente incremento dell'utilizzo del mezzo di trasporto treno. Infatti dal confronto tra previsioni di traffico dello Scenario "Con Progetto" e previsioni dello Scenario "di Riferimento", lo Studio di Trasporto ha consentito di apprezzare un incremento di traffico ferroviario ed una correlata diminuzione del traffico stradale, sia per il trasporto passeggeri sia per il trasporto merci.

Nello Studio di Trasporto la zonizzazione di riferimento per la stima del traffico passeggeri considera le Regioni Lombardia e Veneto come Area di Studio e tiene altresì conto di altre Aree di influenza esterne, pertanto i dati di traffico risultanti dallo Studio si riferiscono non solo all'impatto sui servizi che attraversano le tratte AV/AC Brescia-Verona-Padova ma sono rappresentativi di un più ampio "effetto rete".

La tabella seguente sintetizza i risultati relativi al traffico Passeggeri stimati in termini di variazione annua, considerati interamente ⁶ a partire dall'anno 2028 e ipotizzati costanti per tutto l'orizzonte temporale fino al 2050:

⁶ Per il periodo transitorio 2026-2027 durante il quale, come già detto, vi è l'entrata in esercizio di alcune opere, gli effetti in termini di costi e di benefici connessi all'esercizio dell'infrastruttura sono stimati pari alla metà di quelli quantificabili per l'anno 2028

Analisi costi-benefici

Tabella 5 – Variazione annua del traffico Passeggeri dal 2028

| Modalità di trasporto | | Variazione* annua (migliaia) |
|---|--------------------|---------------------------------|
| Traffico ferroviario Lunga Percorrenza | Passeggeri.Km/Anno | + 685.405 |
| Traffico ferroviario Servizi Regionali | Passeggeri.Km/Anno | + 704.691 |
| Traffico stradale ⁷ | Passeggeri.Km/Anno | - 1.400.454 |
| | Veicoli.Km/Anno | - 933.636 |

* Valore differenziale tra Scenario di progetto e Scenario di Riferimento

Lo Studio di Trasporto ha analizzato l'attuale traffico merci attraverso i dati disponibili sui traffici nazionali e internazionali tra Province/Regioni e per categorie merceologiche, considerando le principali O/D che attraversano la Linea Brescia-Verona-Padova, per poi sviluppare delle previsioni che considerano l'evoluzione dell'infrastruttura ferroviaria secondo i due scenari "con progetto" e "di riferimento".

La tabella seguente sintetizza i risultati relativi al traffico Merci per gli anni 2028 e 2050, i valori per gli anni intermedi sono stati definiti ipotizzando una crescita di tipo lineare:

Tabella 6 – Variazione annua traffico Merci 2028 e 2050

| Modalità di trasporto | | Variazione* anno 2028 (migliaia) | Variazione* anno 2050 (migliaia) |
|-----------------------|--------------------|-------------------------------------|-------------------------------------|
| Ferrovia | Tonnellate.Km/Anno | + 9.739.533 | + 12.181.455 |
| Strada | Tonnellate.Km/Anno | - 9.739.533 | - 12.181.455 |
| | Veicoli.Km/Anno | - 543.501 | - 679.769 |

* Valore differenziale tra Scenario di progetto e Scenario di Riferimento

Considerando le percorrenze chilometriche e i giorni di circolazione dei vari servizi, in coerenza con i risultati dello Studio di Trasporto è possibile definire altresì la variazione di offerta commerciale ferroviaria annuale in termini di treni.km, distinta per tipologia di Servizio, come rappresentata nella tabella seguente:

Tabella 7 – Incremento dell' offerta commerciale ferroviaria 2028 e 2050

| Tipologia di Servizi | Variazione* anno 2028 (migliaia di Treni.Km) | Variazione* anno 2050 (migliaia di Treni.Km) |
|-------------------------------------|---|---|
| Passeggeri Lunga Percorrenza | + 1.302,5 | + 1.302,5 |
| Passeggeri Regionali | + 656,3 | + 656,3 |
| Merci | + 16.859,9 | + 19.661,7 |

* Valore differenziale tra Scenario di progetto e Scenario di Riferimento.

⁷ In coerenza con i risultati dello Studio di Trasporto, il traffico stradale passeggeri è interamente associato al mezzo privato Autovettura.

Analisi costi-benefici

Per i servizi Passeggeri l'incremento di offerta commerciale in termini di treni.km si considera costante dal 2028 in poi, mentre per i servizi Merci si ipotizza una crescita lineare negli anni fino al 2050.

5.4 Costi di investimento e manutenzione straordinaria

Ai fini della presente analisi costi-benefici è stato considerato il piano di spesa annuale per investimenti previsto dal Programma degli Investimenti specificato al capitolo 4, che prevede un importo complessivo di 8.691 milioni di euro, espresso a valori finanziari €.2017⁸.

Per poter applicare alla spesa per investimenti gli appropriati parametri di conversione da valori finanziari a valori economici, si è provveduto a ripartire il flusso di spesa secondo i seguenti criteri:

- per le attività di progettazione la spesa si considera assorbita totalmente da Lavoro (personale e servizi a contenuto professionale);
- per le fasi di realizzazione il costo è ripartito nelle seguenti voci: Materiali 40%, Manodopera 40%, Trasporti 20%;
- l'acquisizione dei terreni è ipotizzata in fasi immediatamente precedenti l'apertura dei cantieri.

Risulta in dettaglio la seguente ripartizione per voce di costo:

Tabella 8 - Piano degli investimenti per voce di costo, a valori finanziari

(importi in milioni di euro)

| Investimenti per voce di costo - valori finanziari | | | | | | | | | | | | | | |
|--|--------------|-------------|-------------|--------------|--------------|--------------|----------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|
| VOCE | TOTALE | AL 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| Materiali ed espropri | 3.693 | - | 32,0 | 63,3 | 343,4 | 367,4 | 495,6 | 571,6 | 437,3 | 325,6 | 270,8 | 228,0 | 312,0 | 246,4 |
| Lavori/Manodopera | 3.360 | 39,1 | 21,2 | 53,6 | 181,7 | 273,4 | 437,6 | 533,6 | 437,3 | 325,6 | 270,8 | 228,0 | 312,0 | 246,4 |
| Trasporti | 1.637 | - | 6,0 | 16,1 | 84,2 | 136,2 | 217,8 | 266,8 | 218,6 | 162,8 | 135,4 | 114,0 | 156,0 | 123,2 |
| Totale | 8.691 | 39,1 | 59,2 | 133,1 | 609,3 | 777,0 | 1.151,0 | 1.372,0 | 1.093,2 | 814,0 | 677,0 | 570,0 | 780,0 | 616,0 |
| % Materiali ed espropri | 42,5% | 0,0% | 54,0% | 47,6% | 56,4% | 47,1% | 42,1% | 41,7% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% |
| % Lavori | 38,7% | 100,0% | 35,8% | 40,3% | 29,6% | 35,2% | 38,0% | 38,9% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% | 40,0% |
| % Trasporti | 18,8% | 0,0% | 10,1% | 12,1% | 13,8% | 17,5% | 18,9% | 19,4% | 20,0% | 20,0% | 20,0% | 20,0% | 20,0% | 20,0% |

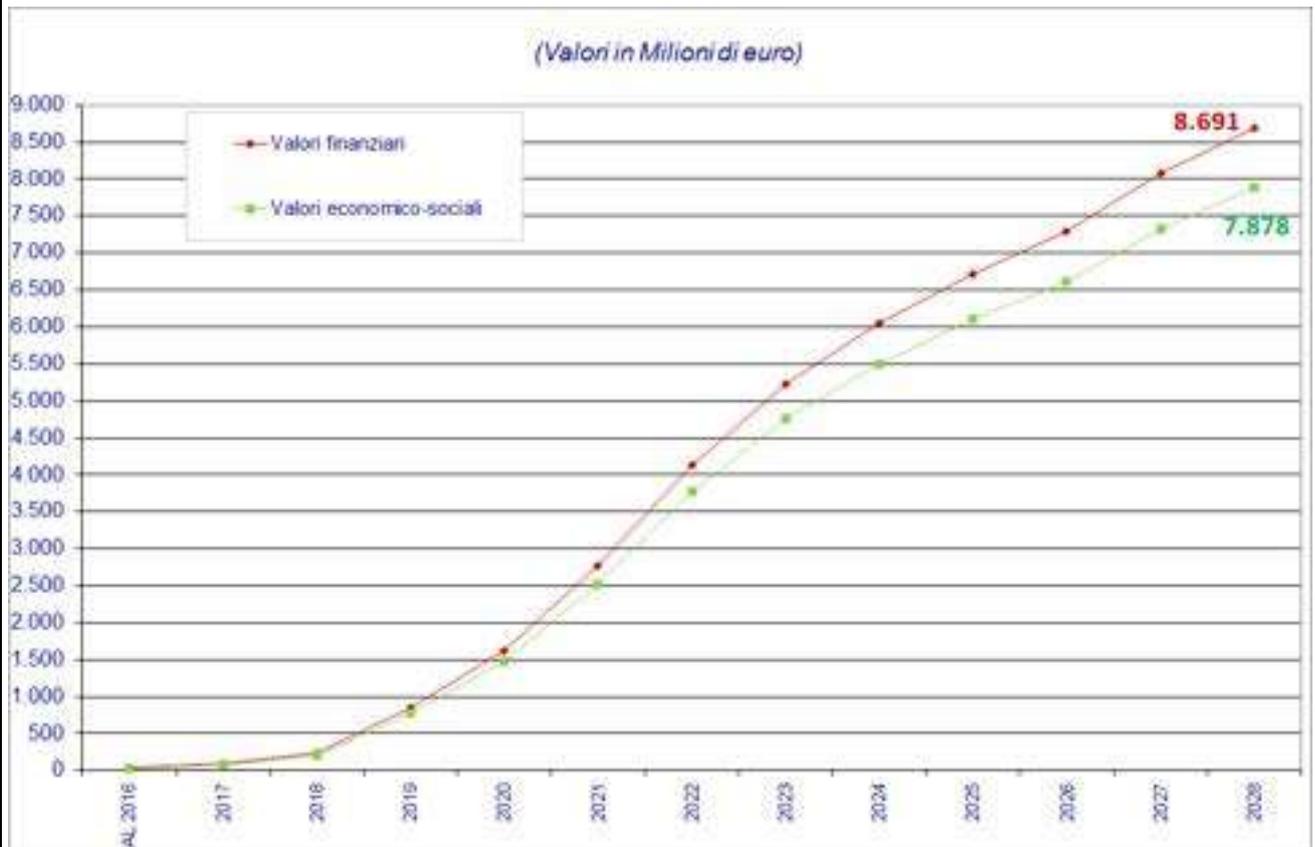
L'applicazione dei fattori di conversione correttivi per le singole voci, specificati al paragrafo 5.2, determina una spesa per investimenti espressa a valori economici pari a 7.878 milioni di euro (al netto di IVA).

Di seguito sono rappresentati i valori finanziari ed economico-sociali della spesa annua cumulata per il Programma di Investimento oggetto della presente Analisi.

⁸ Si precisa che i risparmi di costi connessi alla mancata realizzazione dell'alternativa progettuale "Potenziamento Tecnologico" delle tratte Brescia-Verona e Verona-Padova (Scenario di Riferimento), non determinabili in misura certa nella loro allocazione temporale, e comunque di importo trascurabile, a fini prudenziali non sono considerati nella presente ACB.

Analisi costi-benefici

Figura 20 – Spesa per investimenti cumulata



Il completamento del Programma di Investimento è previsto per il 2028, pertanto nell'ambito della presente Analisi si considera l'anno 2028 come primo anno a partire dal quale andranno a manifestarsi gli effetti pieni del progetto connessi all'esercizio dell'intera nuova Linea AV/AC. Inoltre si prevede che già negli anni 2026 e 2027 parte delle opere del Programma (tra cui l'intera Tratta AV/AC Brescia-Verona) risulteranno in esercizio, pertanto i costi e i benefici derivanti dal progetto per tale biennio sono stimati in quota parte dei valori quantificati per il 2028, applicando una percentuale che, in via prudenziale, si ipotizza essere del 50%.

Al fine di rendere la valutazione economico-sociale indipendente dalla durata dell'orizzonte di analisi, si è ritenuto di prevedere nell'anno 2050 – ultimo anno considerato nei calcoli degli indicatori sintetici della costi/benefici – un **valore residuo dell'investimento**, commisurato alla residua capacità dello stesso di creare vantaggi per la collettività.

Analisi costi-benefici

Il valore residuo al 2050 è calcolato in proporzione alla vita utile residua di ciascuna categoria di opera ⁹, considerando l'articolazione per opere principali ¹⁰ sotto riportata:

Tabella 9 – Spesa per Investimenti: ripartizione per categoria di opera

| Categorie | Peso percentuale | Importo a valori finanziari (milioni di euro) | Anni di Vita Utile complessiva |
|----------------------------|------------------|---|--------------------------------|
| Opere civili | 59,9% | 5.207 | 90 |
| Sovrastruttura ferroviaria | 7,1% | 621 | 25 |
| Impianti tecnologici | 20,3% | 1.768 | 25 |
| Aree | 12,6% | 1.096 | 100 |
| Totale | 100,0% | 8.691 | |

Risulta un Valore Residuo al 2050 pari a 4.747 Milioni di euro a valori finanziari corrispondenti a 4.303 Milioni di euro a valori economici (circa il 55% del valore della spesa iniziale per investimenti).

Costi di manutenzione straordinaria

Nell'Analisi è stata stimata altresì la variazione nei **costi di manutenzione straordinaria**, i costi connessi ad interventi di ripristino dell'investimento nell'arco temporale di previsione nonché i costi connessi all'obsolescenza degli impianti tecnologici.

Sulla base di dati da letteratura e di dati gestionali di RFI, con riferimento alla nuova infrastruttura ferroviaria è possibile in media stimare:

- un ciclo di manutenzione straordinaria con interventi a cadenza decennale ⁹ quantificabili in una spesa pari al 2% dell'investimento iniziale;
- interventi a cadenza ventennale per una spesa pari al 10% del valore degli Impianti Tecnologici di cui in Tabella 9.

Con riferimento agli importi stimati nell'ultimo ciclo dell'orizzonte temporale di analisi (2047) si è considerato altresì il relativo valore residuo al 2050.

Risulta pertanto il seguente sviluppo di costi incrementali per manutenzione straordinaria:

⁹ Tenendo conto che è prevista l'attivazione graduale delle varie opere in più anni, è utilizzato convenzionalmente il 2027 come anno medio di riferimento per il calcolo della vita utile residua e dei cicli di Manutenzione Straordinaria per l'intero Programma di Investimento, comprendente sia la Tratta AV/AC Brescia-Verona che la Tratta AV/AC Verona-Padova.

¹⁰ Articolazione definita sulla base di dati di progetto integrati con stime parametriche. Nell'ambito di tale articolazione i costi di progettazione, costi generali di struttura, costi da prescrizioni Enti ed altri costi residui sono imputati alle categorie di opere principali rappresentate in Tabella.

Analisi costi-benefici

Tabella 10 – Pianificazione dei costi di manutenzione straordinaria

(Importi in Milioni di euro, a valori finanziari)

| 2037 | 2047 | Valore Residuo al 2050 | Totale cumulato 2037-2050 |
|-------|-------|------------------------|---------------------------|
| 173,8 | 350,6 | -271,9 | 252,5 |

Per la determinazione dei costi a valori economici sono stati applicati i coefficienti di conversione, considerando la seguente ripartizione per natura di costo: Materiali 50%; Lavoro 40%; Trasporti 10%.

Risulta complessivamente sull'arco temporale 2037-2050, una manutenzione straordinaria cumulata pari a circa 228 milioni di euro a valori economico-sociali (al netto del valore residuo).

5.5 Effetti prodotti dal programma di investimento

Oltre ai costi di investimento, la valutazione economica di un progetto di investimento include costi e benefici per la collettività derivanti dall'investimento.

Come indicato dai risultati dello Studio di Trasporto, l'attuazione dell'intervento comporterà una maggiore attrattività del vettore ferroviario a seguito del potenziamento dell'infrastruttura e del miglioramento generale delle performance del sistema, rispetto alla situazione "senza progetto".

In particolare il miglioramento in termini di tempi di percorrenza e maggior numero di treni, e quindi frequenza, potrà portare ad un incremento dell'utilizzo del mezzo di trasporto treno rispetto all'utilizzo del mezzo privato.

Nelle successive considerazioni si evidenzieranno i principali effetti positivi e negativi derivanti dalla diversione modale a favore del servizio ferroviario che si attende a seguito dell'attuazione degli investimenti oggetto della presente analisi. Nello specifico sono stati analizzati e valorizzati i seguenti aspetti:

- **Variazione nei costi di esercizio connessi alla modalità ferroviaria**, riferibili sia al mantenimento dell'infrastruttura che all'erogazione del servizio di trasporto passeggeri e merci per la quota di traffico incrementale;
- **Risparmio dei costi di esercizio della modalità strada** per la quota di traffico passeggeri e merci che si prevede venga sottratta alla strada dal servizio ferroviario;
- **Risparmi di tempo** per gli utenti che già utilizzavano il vettore ferroviario e per gli utenti acquisiti dalla modalità strada;
- **Variazione dei costi "esterni" della mobilità** associati alla redistribuzione modale strada-ferro;

Come detto gli effetti del progetto sono quantificati per intero a partire dal 2028, anno in cui l'intera Tratta AV/AC Brescia-Verona-Padova risulta in esercizio, mentre per gli anni 2026-2027 gli effetti in termini di costi e benefici sono ipotizzati, in via prudenziale, pari al 50% del valore quantificato per il 2028.

Analisi costi-benefici

5.5.1 Variazioni nei costi di esercizio delle infrastrutture ferroviarie

I costi di esercizio delle infrastrutture oggetto del Programma di Investimento sono riconducibili all'incremento di costi di **manutenzione ordinaria**.

I maggiori oneri economici che il gestore dell'infrastruttura deve sostenere per garantire la manutenzione delle nuove opere che entrano in esercizio, secondo standard di qualità definiti, sono rappresentati dal costo delle prestazioni da affidare in appalto, dal costo dei materiali e dal costo delle prestazioni del personale.

La determinazione dei costi è stimata a partire da dati medi gestionali RFI relativi ai Gruppi di Linee in cui è suddiviso il network ferroviario e con riferimento ai dati storici di manutenzione ordinaria rilevabili per linee comparabili: la nuova linea è classificabile nel "*Gruppo AC/AV – Linee con tecnologie innovative e velocità > a 250 km/h*"

Per la manutenzione delle nuove opere risulta quindi applicabile un costo medio a km di linea pari a 120.000 euro all'anno (IVA esclusa).

Ai fini della determinazione dei costi di esercizio dell'infrastruttura si è considerato che l'intero Programma di Investimento comporti un incremento di costi connesso allo sviluppo di nuove linee ferroviarie per un totale di 146 km.

Si perviene pertanto ad un incremento di costi annui di manutenzione ordinaria pari a circa 17,6 milioni di euro (valori finanziari) a partire dall'anno 2028, ipotizzati pari al 50% per il biennio 2026-2027.

Per la determinazione dei costi di natura economica sono stati applicati i coefficienti di conversione, ipotizzando la ripartizione per natura di costo desumibile da valori mediamente riscontrabili nell'attività di manutenzione svolta da RFI: Materiali 50% e Manodopera 50%.

5.5.2 Variazione nei costi operativi dei servizi ferroviari

Il potenziamento dell'offerta di servizi ferroviari associati all'attivazione delle nuove infrastrutture di trasporto e richiesti dal maggior traffico stimato per la modalità ferro, determinerà un aumento dei costi operativi del servizio ferroviario, rispetto allo scenario "senza progetto", strettamente connesso all'aumento della produzione espressa in termini di treni.km: come risulta dallo Studio di Trasporto il progetto comporterà un aumento dell'offerta dei servizi Merci, dei servizi Passeggeri Lunga Percorrenza e dei servizi Passeggeri Regionali.

Per stimare tali costi incrementali, sono stati applicati i costi medi standard di produzione sostenuti dal principale operatore di trasporto ferroviario per le tipologie di servizio Passeggeri e servizio Merci.

Ai fini dell'analisi economica in tali oneri non sono stati compresi i costi relativi al canone di pedaggio di accesso ed utilizzo dell'infrastruttura ferroviaria, in quanto aventi natura di trasferimento di risorse tra soggetti e non comportano consumo di risorse per la collettività.

Di seguito i costi per treno.km a valori finanziari (IVA esclusa):

Analisi costi-benefici

Tabella 11 – Costi medi per treno.km del trasporto ferroviario, valori finanziari €.2017

| Voce di costo | Servizi Passeggeri Lunga Percorrenza (€/treno.km) | Servizi Passeggeri Regionali (€/treno.km) | Servizi Merci (€/treno.km) |
|-------------------------------|---|---|----------------------------|
| Personale | 5,893 | 4,023 | 5,690 |
| Ammortamenti | 3,822 | 1,524 | 0,953 |
| Manutenzione | 4,277 | 2,540 | 3,393 |
| Verifica e pulizia | 4,633 | 1,087 | 4,735 |
| Energia per trazione | 1,382 | 1,026 | 4,216 |
| Totale euro a treno.km | 20,007 | 10,201 | 18,987 |

Applicando i corrispondenti fattori di conversione (specificati nel paragrafo 5.2) risultano i seguenti valori economici per treno.km:

Tabella 12 - Costi medi per treno.km del trasporto ferroviario, valori economici €.2017

| Voce di costo | Servizi Passeggeri Lunga Percorrenza (€/treno.km) | Servizi Passeggeri Regionali (€/treno.km) | Servizi Merci (€/treno.km) |
|-------------------------------|---|---|----------------------------|
| Personale | 4,467 | 3,050 | 4,313 |
| Ammortamento | 3,822 | 1,524 | 0,953 |
| Manutenzione * | 3,760 | 2,233 | 2,983 |
| Verifica e pulizia ** | 3,736 | 0,877 | 3,818 |
| Energia per trazione | 1,063 | 0,789 | 3,242 |
| Totale euro a treno.km | 16,847 | 8,472 | 15,309 |

* Costituita mediamente da 50% consumo di materiali e 50% lavoro

** Costituita mediamente da 20% consumo di materiali e 80% lavoro

I valori economici indicati in tabella sono applicati ai treni.km incrementali come definiti nel paragrafo 5.3

5.5.3 Variazione dei costi operativi connessi alla modalità stradale

Il previsto incremento del traffico viaggiatori e merci su ferrovia conseguibile grazie al progetto considerato, consente di stimare le corrispondenti quote di traffico che vengono dirottate dalla modalità stradale. Le minori percorrenze veicolari su strada costituiscono un beneficio per la collettività in quanto permettono di liberare risorse per impieghi alternativi.

Una approssimazione del “valore” di queste risorse liberate è rappresentata dal loro costo di produzione (costo operativo) espresso a valori economici.

La valorizzazione monetaria dei risparmi di costo è ottenuta applicando alla quota di traffico (in termini di veicoli.km) dirottata dalla modalità stradale per “passeggeri (Auto)” e “merci”, i rispettivi costi medi chilometrici.

Analisi costi-benefici

Variazione costi riferiti al traffico passeggeri per la modalità "Auto"

Per la valorizzazione dei costi cessanti relativi al traffico passeggeri su strada è stato utilizzato il costo medio di produzione su base chilometrica fornito dalle Tabelle Aci. Considerando la media dei valori indicati per auto alimentazione a benzina e auto alimentazione diesel, di cilindrata compresa tra 1501cc e 2000cc, è stimabile un costo di 0,324 euro per veicolo.km (include carburante, manutenzione, pneumatici e ammortamento del valore iniziale dell'auto e sono escluse le voci di costo che rappresentano puri trasferimenti e non consumo di risorse). Applicando analiticamente a ciascuna voce di costo il corrispondente parametro di conversione il costo economico è stimato in circa 0,24 €/veicolo.km.

Tabella 13 - Costo medio chilometrico – Auto

(Importi €.2017)

| Voce di costo | Componenti di costo (IVA inclusa) | | |
|----------------|-----------------------------------|------------------------|-----------------------------------|
| | Costo unit. Finanziario (€/v.km) | Fattore di conversione | Costo unitario Economico (€/v.km) |
| Ammortamento | 0,108 | 0,820 | 0,088 |
| Carburante | 0,119 | 0,654 | 0,078 |
| Pneumatici | 0,024 | 0,820 | 0,020 |
| Manutenzione * | 0,073 | 0,735 | 0,054 |
| Totale | 0,324 | | 0,240 |

* Costituita mediamente da 50% consumo di materiali e 50% lavoro

Il costo unitario (economico) a veicolo.km è stato poi applicato alla variazione del traffico passeggeri su strada espresso in veicoli.km, risultante dallo Studio di Trasporto. La riduzione dei veicoli in circolazione nello Scenario di Progetto rispetto allo Scenario di Riferimento determina un risparmio di costi e quindi un beneficio per la collettività.

Variazione costi relativi al traffico merci su strada

Per la determinazione dei costi cessanti relativi al traffico merci su strada è applicato un costo chilometrico calcolato a partire dai "Costi di esercizio dell'impresa di autotrasporto per conto di terzi" pubblicati dal Ministero delle Infrastrutture e dei Trasporti (dati di luglio 2014): in particolare si è fatto riferimento ai dati relativi ad un veicolo di massa complessiva a pieno carico superiore a 26 tonnellate con percorrenze mediamente superiori ai 250 km.

Il corrispondente costo economico, dopo l'applicazione dei fattori di conversione ed al netto delle componenti che costituiscono trasferimento di risorse (assicurazione, tassa e pedaggi), risulta essere pari a 0,965 €/veicolo.km, così determinato:

Analisi costi-benefici

Tabella 14 - Costo medio chilometrico - Veicolo pesante Merci

(Importi €.2017)

| Voce di costo | Componenti di costo (iva esclusa) | | |
|---------------------------------------|--------------------------------------|------------------------|-------------------------------------|
| | Costo unitario finanziario (€ /v.km) | Fattore di Conversione | Costo unitario economico (€ / v.km) |
| Ammortamento | 0,137 | 1,00 | 0,137 |
| Carburante (al netto di IVA e accise) | 0,355 | 1,00 | 0,355 |
| Manutenzione materiali e Pneumatici | 0,052 | 1,00 | 0,052 |
| Manutenzione manodopera | 0,031 | 0,758 | 0,023 |
| Personale conducente | 0,525 | 0,758 | 0,398 |
| Totale | 1,100 | | 0,965 |

Il costo unitario (economico) a veicolo.km è stato poi applicato alla variazione del traffico merci su strada, risultante dallo Studio di Trasporto e specificato nel paragrafo 5.3.

La riduzione dei veicoli in circolazione nello Scenario di Progetto rispetto allo Scenario di Riferimento determina un risparmio di costi e quindi un beneficio per la collettività.

5.5.4 Risparmi di tempo degli utenti ferroviari

Tra i benefici conseguenti all'attuazione del programma di investimento ferroviario è da includere il guadagno di tempo di cui si avvantaggiano gli utenti direttamente coinvolti. Infatti la riduzione dei tempi di percorrenza, oltre a determinare una maggiore attrattività dell'offerta di trasporto rispetto a modalità concorrenziali, produce un beneficio per i viaggiatori stessi che è connesso alla percezione del valore del tempo.

In particolare l'attivazione della nuova Linea AV/AC produce una riduzione dei tempi di percorrenza per i servizi Lunga Percorrenza che transitano sull'itinerario Brescia-Verona-Padova, stimata mediamente in circa 11 minuti.

Gli utenti dei servizi ferroviari interessati dai benefici in termini di risparmi di tempo, sono definiti sulla base dello Studio di Trasporto e specificati nella tabella seguente:

Tabella 15 – Passeggeri dei servizi ferroviari che beneficiano di minori tempi di percorrenza

| PASSEGGERI / ANNO (migliaia) | | |
|--|-----------------------------------|--------------|
| Utenti di servizi Lunga Percorrenza lungo l'itinerario Brescia-Verona-Padova | Traffico conservato | 3.953 |
| | Traffico acquisito | 949 |
| | Totale Passeggeri all'anno | 4.902 |

Per la ripartizione dell'utenza per motivi di viaggio, come suggerito dal "Quaderno dei PON Trasporti n° 08/2008", si è fatto riferimento ai valori stimati dal progetto di ricerca UNITE:

- spostamenti per motivi di lavoro: 6%
- spostamenti per pendolarismo: 71%
- spostamenti per altri motivi: 23%.

Per la valorizzazione monetaria del tempo risparmiato si è fatto riferimento alla metodologia proposta dal "Quaderno dei PON Trasporti n° 08/2008".

Analisi costi-benefici

Il valore monetario del tempo di viaggio per il trasporto Passeggeri viene quantificato in relazione a tre categorie di utenti/ motivazioni:

- valore del tempo di lavoro;
- valore del tempo dei pendolari;
- valore del tempo libero.

Valore del tempo di lavoro

Si intende il tempo dell'attività lavorativa vera e propria, escluso quindi il tempo utilizzato per lo spostamento dall'abitazione al luogo di lavoro (e viceversa). Come parametro di monetizzazione viene adottato il *costo industriale medio della manodopera*, intendendo misurare con questo la produttività marginale del lavoro, in altri termini, il suo costo opportunità.

Valore del tempo dei pendolari

I fenomeni di congestione nei trasferimenti quotidiani da e per i luoghi di lavoro e di studio, non incidono direttamente sulla produzione, che va comunque garantita dal lavoratore nel corso dell'orario di lavoro. Possono tuttavia generare ripercussioni sull'attività lavorativa sia per quanto riguarda la produttività durante l'orario di lavoro, che potrebbe risentire dello stress subito durante il trasferimento, sia perché può generare distorsioni sul mercato del lavoro. La presenza di fenomeni di congestione può infatti influire sulla disponibilità di offrire prestazioni lavorative a determinate condizioni. Si ritiene che la disponibilità a pagare per la diminuzione di un'ora dei tempi di viaggio da e per il luogo di lavoro, sia dunque maggiore di quella relativa al tempo libero e che la sua valorizzazione monetaria possa essere confrontata a quella di un'ora di lavoro. Per tale motivo si ritiene che una proxy del valore monetario del tempo per gli spostamenti verso o dal luogo di lavoro, possa essere monetizzata utilizzando *i salari orari netti medi nazionali*.

Valore del tempo libero

I tempi di viaggio aggiuntivi, rispetto a quelli previsti o a quelli potenzialmente possibili, così come il tempo impiegato in code e ingorghi, per attività di trasporto non connessa all'attività lavorativa, incidono sulla gestione e godimento del tempo libero, provocando una perdita di benessere, pari almeno al valore attribuibile al tempo perso. Si ritiene che una proxy del valore monetario del tempo libero possa essere rappresentata dai *consumi orari pro capite nazionali*.

Ai fini della presente Analisi sono pertanto applicati i valori del tempo specificati nella tabella seguente:

Tabella 16 – Valore monetario del tempo

| Categorie di utenti | Proxy del valore monetario del tempo | Valore del tempo (€2017) |
|---------------------------------|---|--------------------------|
| Passeggeri per motivi di lavoro | Costo industriale medio della manodopera = Costo lavoro dipendente / Ore lavorative annue complessive | 22,31 € / h |
| Passeggeri per pendolarismo | Salari orari netti medi nazionali = Reddito netto lavoro dipendente / Ore lavorative annue complessive | 10,18 € / h |
| Passeggeri per altri motivi | Consumi orari <i>pro capite</i> nazionali = Consumi pro capite / Ore tempo libero medie per abitante | 4,13 € / h |

Fonte: elaborazione su dati Istat

Come suggerito in "Guide to cost-benefit analysis of Investment Projects, DG Regional Policy, 2014" il valore del tempo è indicizzato negli anni sulla base delle variazioni del PIL pro-capite, considerando una elasticità 0.7 per il valore del tempo "lavoro" e 0.5 per il valore del tempo "non lavoro".

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Applicando i valori monetari del tempo alle ore risparmiate in ciascun anno da parte degli utenti della modalità ferroviaria, distinti per i diversi motivi di viaggio, risulta determinato il valore dei risparmi di tempo associabili al progetto di investimento.

Ai fini della presente ACB i risparmi di tempo sono associati:

- per intero alla quota di traffico conservato, ossia a quella componente di mobilità che usufruirebbe dei servizi ferroviari per i propri spostamenti, indipendentemente dal miglioramento del servizio offerto;
- ridotti al 50% per la componente di utenti acquisiti dalle altre modalità di trasporto.

5.5.5 Esternalità

Vari studi confermano che il potenziamento dei servizi di trasporto ferroviario produce impatti positivi sull'ambiente grazie alla riduzione dei volumi di traffico delle modalità di trasporto a maggior emissione di carbonio come auto, bus e autocarri per il trasporto merci.

La riduzione del volume di traffico su strada porta altresì miglioramenti nella sicurezza (riduzione di incidenti) e nei livelli di congestione delle stesse arterie stradali.

Di particolare rilevanza è lo studio denominato "External Costs of Transport in Europe – update study for 2008", pubblicato a ottobre 2011, condotto da CE Delft in collaborazione con INFRAS e Fraunhofer ISI e commissionato dall'UIC.

Tale studio è basato su dati di 27 paesi europei (gli EU 27, escluso Malta e Cipro ma includendo Norvegia e Svizzera) e considera oltre alle cinque categorie di costo considerate in generale come le principali (incidentalità, inquinamento atmosferico, cambiamento climatico, rumore, congestione), anche altre ulteriori cinque categorie.

La tabella seguente fornisce un quadro di sintesi sugli approcci per la valutazione delle esternalità maggiormente diffusi in letteratura:

Tabella 17 – Esternalità: metodologie di valutazione in letteratura

| Cost category | Cost elements and valuation approach | Data sources + input data |
|----------------------|--|--|
| Accidents | Cost elements: Medical costs, production losses, loss of human life. Valuation: Willingness to pay approach for Value of statistical life VSL/Value of Life Years Lost VLYL. Cost allocation to different vehicle categories is based on a two-step approach: <ul style="list-style-type: none"> • Intermodal allocation (e.g. road/rail) is based on responsibility. • Within a transport mode (e.g. road) allocation according to damage potential approach (intrinsic risk). Degree of externality of accident costs: risk value is taken as 100% external. | National accident data available in the IRTAD database, CARE project and EUROSTAT (highly differentiated by transport mode, network type and vehicle category). Rail accident data based on UIC and EUROSTAT statistics, aviation accident data based on long-term development of aviation accidents in Europe. |
| Air pollution | Health/medical costs (VLYL), crop losses, building damages, biodiversity losses (biodiversity losses due to air pollution are covered in a separate cost category, see Table 4). Valuation: Impact-Pathway-Approach. Dose-Response functions based on the EcoSense Model (ExternE, HEATCO). Willingness-to-pay values from NEEDS, HEATCO and CAFE CBA. | Air pollutant emissions based on TREMOVE emission factors and harmonised transport data (see Chapter 2.4). Damage cost factors per ton of air pollutant based on NEEDS, HEATCO and UBA. |

Fonte: "External Costs of Transport in Europe – update study for 2008", ottobre 2011, CE Delft in collaborazione con INFRAS e Fraunhofer ISI

Analisi costi-benefici

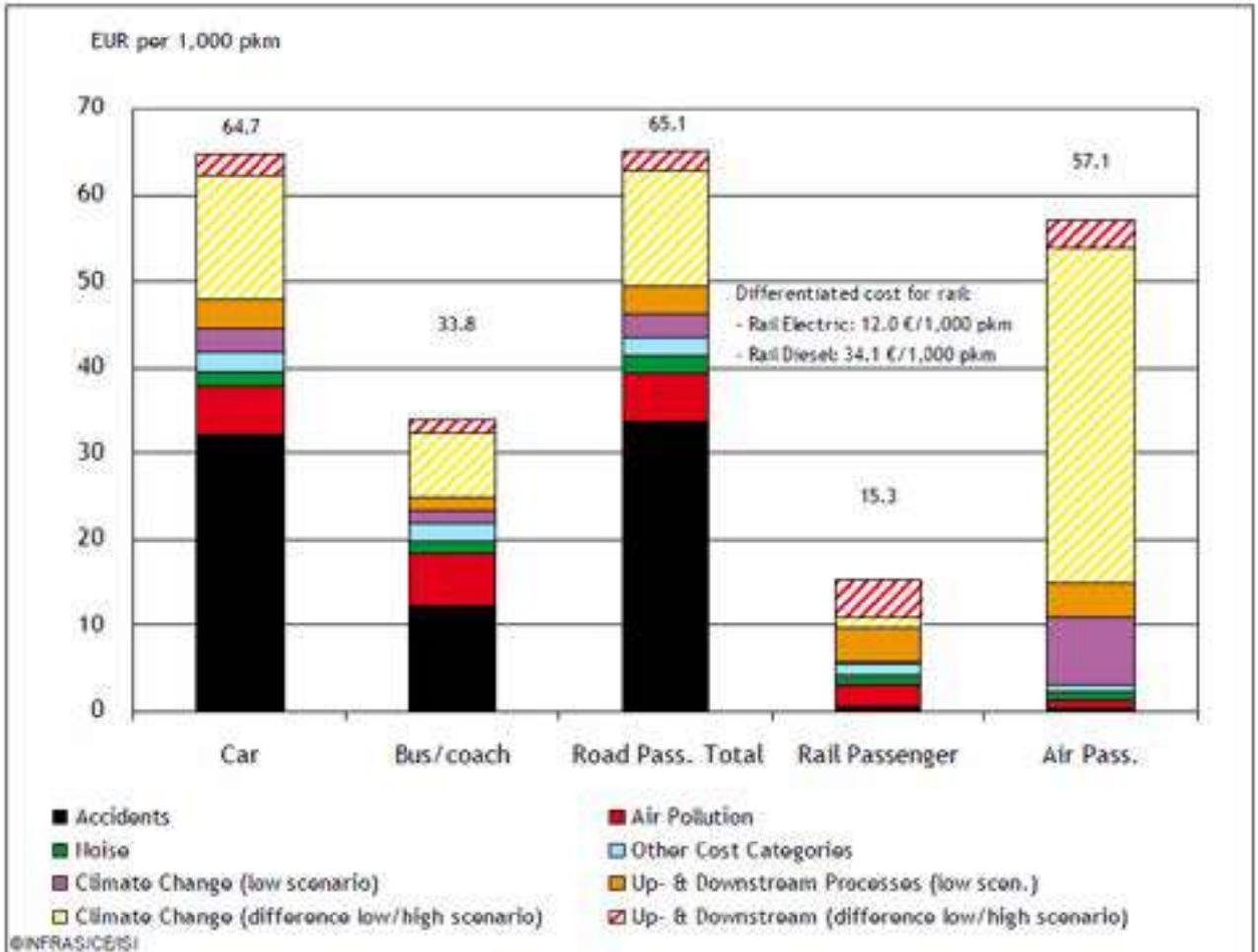
| | | |
|--|--|--|
| Climate change | <p>Cost elements: Avoidance costs to reduce risk of climate change, damage costs of increasing average temperature.</p> <p>Valuation: Unit cost per tonne of greenhouse gas (short term acc. to Kyoto targets, long-term acc. to IPCC aims).</p> | <p>CO2 emissions per transport mode based on TREMOVE emission factors and harmonised transport data (see Chapter 2.4).</p> <p>New findings on avoidance and damage costs based on recent literature.</p> <p>Two different scenarios (low and high value).</p> |
| Noise | <p>Annoyance costs, health costs.</p> <p>Valuation: Cost factors for annoyance and health effects per person and dB(A).</p> | <p>Noise exposure data:</p> <p>Noise maps based on Directive 2002/49/EC, extrapolation of data for missing regions or countries. Valuation based on HEATCO.</p> |
| Congestion and delay costs | <p>Cost elements: Time and additional operating costs; for scheduled transport: delay costs.</p> <p>Valuation: Cost calculation acc. to different approaches (deadweight loss, revenues to compensate deadweight loss, delay costs).</p> | <p>Speed-flow curves, level of traffic and capacity per network segment.</p> <p>Measurements of time losses peak-off peak.</p> <p>Studies and statistics on road congestion in specific countries.</p> <p>Traffic model analysis based on TRANS-TOOLS model, local statistics and studies.</p> |
| Up- and downstream processes | <p>Cost elements: Climate change and air pollution costs of energy consumption and GHG emissions of up- and downstream processes. The focus is hereby on fuel and electricity production. Emissions from vehicle and infrastructure production, maintenance and disposal are not taken into account.</p> | <p>LCA data per transport mode (TREMOVE well-to-tank emissions, Ecoinvent database).</p> <p>Electricity mix data for European railways based on UIC data.</p> |
| Nature and landscape | <p>Cost elements: Repair cost and restoration measures (e.g. unsealing, renaturation, green bridges).</p> <p>Valuation: definition of reference state, calculation of repair/restoration costs per network-km.</p> | <p>Network length based on data analysis.</p> <p>Valuation: based on new findings of NEEDS project (for restoration) as well as updated cost factors from the last UIC study (INFRAS/IWW, 2004) for unsealing.</p> |
| Additional costs in urban areas | <p>Cost elements:</p> <p>Time losses of non-motorised traffic in urban areas.</p> | <p>Urban population and estimated time losses due to the road and rail network in urban areas.</p> |
| Biodiversity losses | <p>Cost elements: Damage or restoration costs of air pollutant related biodiversity losses (new evidence based on NEEDS project).</p> | <p>Air pollutant emissions (based on TREMOVE) and damage cost factors of NEEDS project.</p> |
| Soil and water pollution | <p>Cost elements: Restoration and repair costs for soil and water pollutant. Focus on transport related heavy metal and hydrocarbon emissions.</p> | <p>Emission factors based on Ecoinvent 2.1.</p> <p>Restoration cost factors based on INFRAS/IWW, 2004 and Swiss studies.</p> |

Lo studio *CE Delft-INFRAS* perviene alla quantificazione dei costi esterni del trasporto nell'Unione Europea, come costo unitario per passeggero.km trasportato e per tonnellata.km trasportata. I risultati per i vari mezzi di trasporto sono rappresentati nei due grafici seguenti, nella configurazione di costo medio per i 27 Paesi UE, esclusa la congestione:

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Figura 21 – Esternalità: confronto tra le diverse modalità di trasporto passeggeri

Average external costs 2008 for EU-27*: passenger transport (excluding congestion)



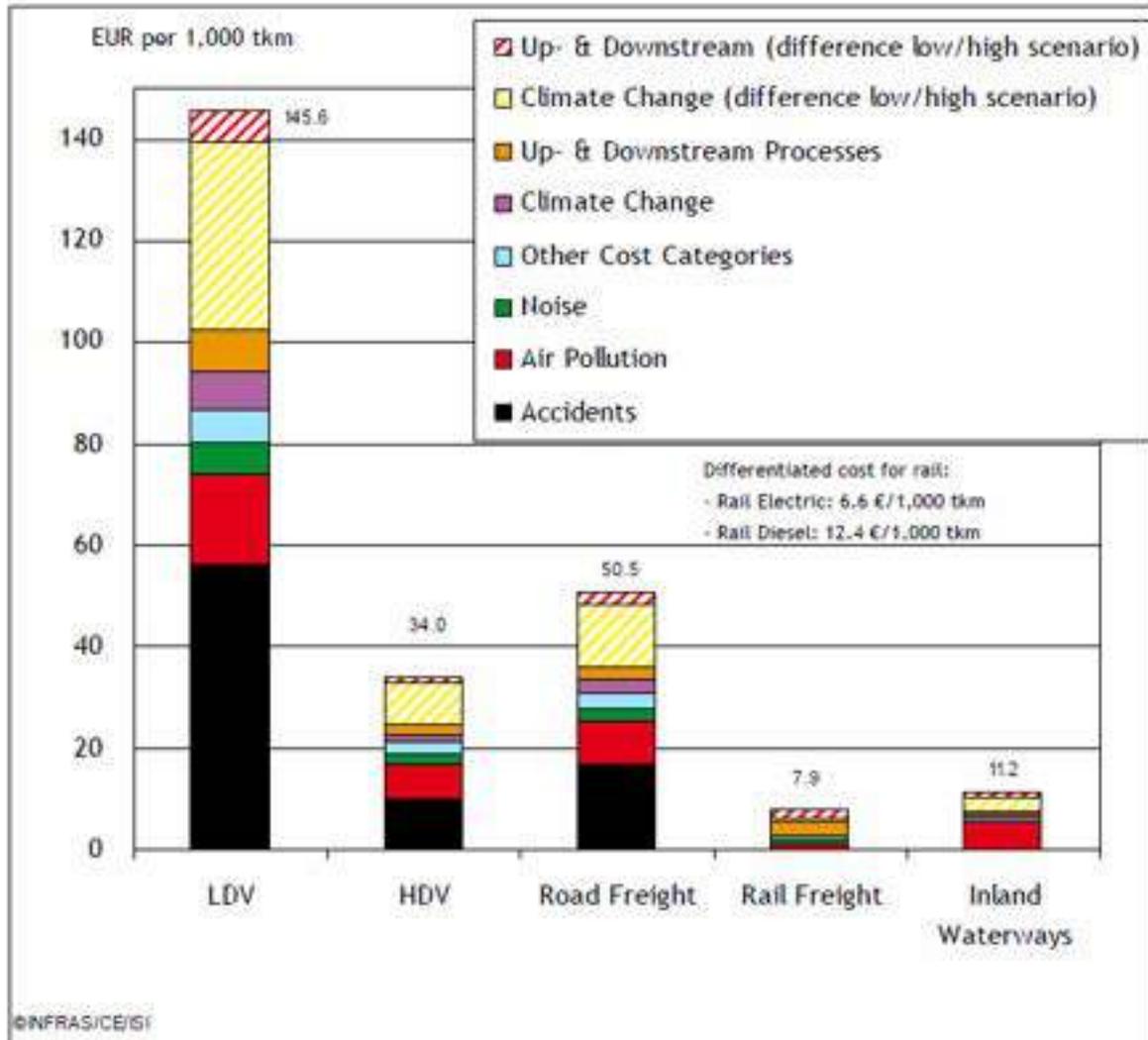
Other cost categories: Costs for nature & landscape, biodiversity losses (due to air pollution), soil and water pollution costs, additional costs in urban areas. Data do not include congestion costs.

* Data include the EU-27 with the exemption of Malta and Cyprus, but including Norway and Switzerland.

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Figura 22 - Esternalità: confronto tra le diverse modalità di trasporto merci

Average external costs 2008 for EU-27*: freight transport (excluding congestion)



Other cost categories: Costs for nature and landscape, biodiversity losses (due to air pollution), soil and water pollution costs, additional costs in urban areas. Data do not include congestion costs.

Road Freight Total: The weighted average of all road freight transport modes.

* Data include the EU-27 with the exemption of Malta and Cyprus, but including Norway and Switzerland.

Come rappresentato dalle figure, la modalità ferroviaria risulta essere quella che genera costi esterni minori rispetto a tutte le altre modalità, sia in riferimento al traffico passeggeri che al traffico merci, con maggiore evidenza se si considera il mezzo treno con trazione elettrica.

La valutazione economica delle esternalità derivanti dall'entrata in esercizio del Programma di Investimento finalizzato alla realizzazione della Tratta AV/AC Brescia-Verona-Padova è stata effettuata considerando per lo scenario "Con progetto" gli effetti dovuti alla diversione modale e quindi stimando:

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- la riduzione delle esternalità connesse al minor traffico merci e passeggeri su strada rispetto allo scenario “senza-progetto”
- l’incremento delle esternalità dovute al corrispondente incremento di traffico merci e passeggeri nella modalità ferro

Sono state prese in considerazione le cinque esternalità più diffusamente riconosciute in ambito trasportistico: inquinamento atmosferico, effetti sul cambiamento climatico, inquinamento acustico, incidenti e congestione. Oltre a queste sono stati considerati altresì i costi “esterni” derivanti dai processi upstream e downstream.

Per la determinazione delle esternalità connesse alle diverse modalità di trasporto si è fatto riferimento:

- alla metodologia indicata in “Guide to cost-benefit analysis of Investment Projects” – European Commission DG Regional Policy, 2014 ed in “Linee guida per la misura dei Costi Esterni nell’ambito del PON Trasporti 2000 – 2006 – anno 2008”
- ai valori suggeriti in “Update of the Handbook on External Costs of Transport - DG MOVE, 2014” che aggiorna il precedente studio “Handbook on estimation of external costs in the transport sector-IMPACT” (CE Delft et Al for EC DG TREN,2008) e si è tenuto conto altresì dei valori calcolati on “External Costs of Transport in Europe” (CE Delft, Infrac, Fraunhofer ISI, 2011).

Laddove disponibili si è fatto riferimento ai valori indicati per l’Italia, considerando un itinerario medio in prevalenza di tipo non urbano.

Per quanto riguarda il traffico passeggeri, se non diversamente specificato, i valori sono stati determinati prendendo come riferimento quelli proposti per le seguenti categorie di mezzi:

- AUTO: media auto benzina e auto diesel, di cilindrata media 1,4-2,0, considerando l’evoluzione del parco veicolare negli anni e quindi un sempre maggior peso dei veicoli Euro 6.
- TRENO a trazione elettrica

Per quanto riguarda il traffico merci sono stati considerati in modo opportuno i valori indicati per un automezzo pesante di tipo “HGV” di massa a pieno carico superiore a 32 tonnellate e per treno con trazione elettrica.

I valori monetari sono stati indicizzati negli anni sulla base dell’evoluzione stimata del PIL pro-capite in coerenza con le ipotesi utilizzate nello Studio di Trasporto.

Anche per le esternalità la quantificazione è stata effettuata in modo analitico con riferimento al periodo di esercizio a regime (dal 2028 in poi), considerando invece per gli anni transitori 2026 e 2027 valori pari al 50% di quelli risultanti per l’anno 2028.

Inquinamento atmosferico

Per la valorizzazione di tali costi si considerano gli impatti derivanti dalle emissioni nell’atmosfera delle seguenti tipologie di inquinanti, dovute ai processi di combustione:

- Ossidi di azoto (NOx);
- Biossido di zolfo (SO₂);
- Composti Organici Volatili Non Metanici (COVNM)
- Particolato (PM_{2,5});

Per il calcolo annuale delle esternalità da inquinamento si è fatto riferimento alle emissioni, espresse in tonnellate/veicolo.km, generate dalla circolazione dei veicoli stradali ed applicando il costo unitario per tonnellata emessa, secondo la seguente formula:

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*[emissioni in tonnellate per km * totale veicoli.km percorsi] * costo €/tonnellata emessa*

Per i fattori di emissione, espressi in grammi per veicolo.km, si è fatto riferimento alle fonti indicate in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", in coerenza anche con i dati utilizzati in "Studio di trasporto della linea AV/AC Milano-Venezia". In particolare sono stati stimati i seguenti valori medi al 2026 e 2050, e per gli anni intermedi si è ipotizzata un'evoluzione di tipo lineare.

Tabella 18 – Fattori medi di emissione per la modalità stradale

| Tipo di veicolo | Anno | Unità di misura | Fattori di emissione | | | |
|---------------------|------|-----------------|----------------------|-----------------|--------|-------------------|
| | | | SO ₂ | NO _x | COVNM | PM _{2,5} |
| Autovettura | 2026 | g/veicolo*km | 0,0012 | 0,2333 | 0,0433 | 0,0054 |
| | 2050 | g/veicolo*km | 0,0012 | 0,2200 | 0,0400 | 0,0038 |
| Veicoli Merci (HGV) | 2026 | g/veicolo*km | 0,0029 | 3,1967 | 0,0567 | 0,0338 |
| | 2050 | g/veicolo*km | 0,0023 | 3,1267 | 0,0467 | 0,0276 |

Le emissioni medie in g/vkm per autovettura e veicoli HGV sono state moltiplicate per le variazioni, stimate in diminuzione, dei veicoli.km su strada¹¹, determinando pertanto le emissioni totali annue evitabili grazie all'attivazione della nuova opera ferroviaria.

Infine si è proceduto alla valorizzazione monetaria dei risparmi di costo dal 2028 al 2050: a tal fine si è fatto riferimento ai valori unitari per tonnellata emessa rilevati per l'Italia, tratti da "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" e rappresentati in tabella.

Tabella 19 – Costi inquinanti: valori unitari per tonnellata emessa

| Tipologia di Inquinante | Costo Unitario (€ ₂₀₁₀ per tonnellata emessa) |
|-------------------------|---|
| NO _x | 10.824 |
| SO ₂ | 9.875 |
| COVNM | 1.242 |
| PM _{2,5} | |
| Urbano | 197.361 |
| Suburbano | 50.121 |
| Rurale | 24.652 |

I valori sono stati aggiornati a valori €2017 e indicizzati nel tempo in base all'evoluzione del PIL pro-capite a prezzi costanti fino al 2050.

Per il trasporto ferroviario a trazione elettrica, l'emissione di sostanze inquinanti è principalmente legata ai processi di produzione dell'energia elettrica utilizzata nella rete ferroviaria per consentire il movimento dei treni. Il relativo costo "esterno" incrementale è quindi considerato nell'ambito delle

¹¹ Come da scenari di traffico specificati nel capitolo 5.3

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esternalità connesse ai *Processi upstream e downstream*, più avanti valorizzate nella presente ACB.

Effetti sul cambiamento climatico (c.d. effetto serra)

Il c.d. effetto serra è principalmente determinato dalle emissioni dei seguenti gas:

- Anidride Carbonica (CO₂);
- Metano (CH₄);
- Ossido di diazoto (N₂O).

Per la stima dei fattori di emissione delle auto si è fatto riferimento al Regolamento (CE) n. 333/2014 che, modificando il Regolamento (CE) n. 443/2009, fissa un obiettivo di 95 g CO₂/veicolo.km per il livello medio di emissioni per il nuovo parco auto a decorrere dall'anno 2020. Pertanto al 2028 è stimato un parco veicolare costituito da veicoli con media emissioni pari a 98 g.v.km. Dal 2028 è ipotizzato un decremento delle emissioni unitarie del 1% e dal 2031 in poi un decremento dello 0,3%.

| 2028 | 2030 | Dal 2031 |
|------------|------------|-------------|
| 98 g. v.Km | 96 g. v.Km | -0,3% annuo |

Per la stima dei fattori di emissione dei veicoli merci HGV, espressi in g CO₂eq/veicolo.km, si è fatto riferimento ai dati suggeriti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE"¹², in particolare considerando il valore di emissione più alto suggerito per veicoli pesanti a trazione Diesel (HGV > 32 t), pari a 906 g CO₂eq/v.km (valore al 2008). Sulla base delle strategie delineate in ambito europeo¹³ il dato prospettico è stato stimato considerando una riduzione al 2030 pari al 20% dei valori TREMOVE rilevati nel 2008. Pertanto risultano i seguenti valori unitari:

| 2008 | 2028 | 2030 | Dal 2031 |
|-------------|-------------|-------------|-------------|
| 906 g. v.Km | 739 g. v.Km | 725 g. v.Km | -0,3% annuo |

Le emissioni in g/vkm per autovettura e veicoli HGV, sono state moltiplicate per il decremento dei veicoli.km su strada risultante negli scenari di traffico, determinando pertanto le emissioni totali annue evitabili grazie all'attivazione della nuova opera ferroviaria.

Per la valorizzazione monetaria dei risparmi di costo si è fatto riferimento al valore centrale proposto nello studio "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", pari a € 90 per tonnellata, rivalutata al 2017 ed indicizzata lungo l'orizzonte temporale di analisi sulla base della variazione del PIL pro-capite a prezzi costanti.

¹² I fattori di emissione presentati nell'Handbook sono basati su dati del modello TREMOVE 3.2.2.

¹³ COM/2014/0285 final "Strategy for reducing Heavy-Duty Vehicles fuel consumption and CO₂ emissions"

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Nel Progetto in esame non sono considerati treni a trazione diesel ma solo treni a trazione elettrica, pertanto i costi per cambiamento climatico della modalità ferroviaria (connessi alla produzione di energia elettrica) sono inclusi nell'ambito delle esternalità legate ai *Processi upstream e downstream*.

Inquinamento acustico

Per la monetizzazione dell'inquinamento acustico si è fatto riferimento ai costi marginali proposti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE" che richiama i valori dello studio "CE Delft et al. (2011)".

Per quanto riguarda il trasporto merci i valori sono stati stimati ipotizzando che gli spostamenti siano effettuati sia di giorno che di notte su percorsi in prevalenza non urbani.

Per quanto riguarda il trasporto passeggeri i valori sono stati definiti ipotizzando spostamenti in prevalenza diurni, su percorsi in prevalenza non urbani.

Tabella 20 – Inquinamento acustico: costi marginali unitari

| Costi per inquinamento acustico | | €ct / treno.km €ct / veicolo.km (€2010) |
|---------------------------------|----------------------------|---|
| Merci | Treno | 5,61 |
| | Trasporto su strada – HGV | 0,69 |
| Passeggeri | Treno | 2,03 |
| | Trasporto su strada - Auto | 0,05 |

I costi marginali unitari sono stati aggiornati a valori €2017 e indicizzati nel tempo in base all'evoluzione del PIL pro-capite a prezzi costanti fino al 2050.

Applicando tali valori alle variazioni di traffico su strada e ferrovia derivanti dallo Studio di Trasporto risulta un beneficio netto, dovuto a risparmi di costi per riduzione di traffico stradale superiori ai costi connessi all'incremento di traffico ferroviario.

Incidentalità

Per la stima di tale tipologia di costi esterni si è fatto riferimento ai tassi annui di incidentalità rilevabili da statistiche ufficiali per la modalità strada e per la modalità ferroviaria. Tali tassi, applicati alle variazioni di traffico indicate nel paragrafo 5.3, consentono di determinare il numero di eventi (incrementali per la ferrovia ed eventi evitati per la modalità stradale) che sono poi oggetto di valorizzazione monetaria attraverso l'applicazione di costi monetari unitari.

Nel caso del **trasporto stradale** i tassi di incidentalità, mortalità e lesività sono desunti dai dati AISCAT¹⁴, riferiti al traffico autostradale distinto tra veicoli leggeri e pesanti¹⁵

Ai fini della presente ACB sono stati utilizzati i tassi risultanti come media del quinquennio 2010-2014, mantenuti costanti lungo l'intero orizzonte di analisi.

¹⁴ Associazione italiana società concessionarie autostrade e trafori (AISCAT), Rapporto trimestrale 3-4/2015

¹⁵ Per veicoli leggeri si intendono i motocicli e gli autoveicoli a due assi con altezza da terra, in corrispondenza dell'asse anteriore, inferiore a 1,30m.; per veicoli pesanti si intendono sia gli autoveicoli a due assi con altezza da terra, in corrispondenza dell'asse anteriore, superiore a 1,30 m., sia tutti gli autoveicoli a tre o più assi.

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Tabella 21 - Tassi di incidentalità stradale, espressi in numero di incidenti, morti e feriti

| | Numero di eventi per milione di Veicoli.Km | |
|------------------------|--|-----------------|
| | Veicoli leggeri | Veicoli pesanti |
| Tassi di incidentalità | 0,092 | 0,072 |
| Tassi di mortalità | 0,003 | 0,004 |
| Tassi di lesività | 0,159 | 0,108 |

Fonte: elaborazione su dati AISCAT (media 2010-2014).

Per la definizione dei tassi di incidentalità del **trasporto ferroviario** si è fatto riferimento ai dati di traffico e ai dati sugli incidenti desunti dalla banca dati ISTAT¹⁶,
Ai fini della presente ACB sono stati utilizzati i tassi risultanti come media del quinquennio 2010-2014, mantenuti costanti lungo l'orizzonte di analisi.

Tabella 22 - Tassi di incidentalità ferroviaria, espressi in numero di incidenti, morti e feriti

| | Numero di eventi per milione di Treni.Km | | | | | |
|-------------------------------|--|-------|-------|-------|-------|--------------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | media |
| Tassi di incidentalità | 0,343 | 0,331 | 0,353 | 0,343 | 0,340 | 0,342 |
| Tassi di mortalità | 0,236 | 0,191 | 0,229 | 0,204 | 0,156 | 0,203 |
| Tassi di lesività (n° feriti) | 0,177 | 0,099 | 0,119 | 0,095 | 0,131 | 0,124 |

Fonte: elaborazione su dati ISTAT.

Per la valorizzazione monetaria sono stati utilizzati i valori di costo unitario per tipologia di danno (decesso, lesioni gravi e infortunio leggero) proposti per l'Italia nell'ambito dello studio "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", aggiornati a valori €.2017 ed indicizzati sulla base delle variazioni annue del PIL pro-capite.

Tabella 23 – Incidentalità: costi unitari sociali
(Valori in €.2010 per tipologia di danno)

| Decesso | Lesioni gravi | Ferite lievi |
|-----------|---------------|--------------|
| 1.916.000 | 246.200 | 18.800 |

Come suggerito in "Linee guida per la misura dei Costi Esterni nell'ambito del PON Trasporti 2000–2006", per l'applicazione dei valori monetari sopra specificati si ipotizza che il 20% dei feriti presenti delle lesioni gravi e l'80% riporti ferite lievi¹⁷.

¹⁶ L'Istat conduce dal 2004 una rilevazione sul trasporto ferroviario finalizzata a produrre informazioni statistiche sul servizio di trasporto fornito dalle imprese ferroviarie operanti sul territorio nazionale, in ottemperanza a quanto previsto nel regolamento del Parlamento europeo e del Consiglio n. 91/2003 e successive modifiche. Le elaborazioni ISTAT non prendono in considerazione i servizi metropolitani, tramviari e di metropolitana leggera. Inoltre è opportuno precisare che nella fattispecie incidente rientrano i seguenti eventi: collisioni, deragliamenti, incidenti a passaggi a livello, incendi al materiale rotabile, altri (incidenti classificabili come tipici), e incidenti con materiale in movimento (incidenti classificabili come atipici).

¹⁷ Ipotesi utilizzata anche in "Deliverable 12, Annex5 -The Pilot Accounts for Italy" (progetto UNITE, 2003).

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Applicando tali valori alle variazioni di traffico su strada e ferrovia derivanti dallo Studio di Trasporto risulta un beneficio netto, dovuto a risparmi di costi per incidenti su strada superiori ai costi connessi all'incremento di traffico ferroviario.

Congestione stradale

I costi connessi alla congestione consistono prevalentemente in costi legati all'aumento dei tempi di viaggio, oltre che maggiori costi operativi di utilizzo del mezzo stradale (maggiori consumi di carburante e usura in situazione di congestione).

Rispetto ad altre esternalità, la congestione è quindi caratterizzata dal fatto che i costi sono subiti in prevalenza dalla stessa categoria di soggetti che la causa.

In sostanza all'aumentare del flusso di veicoli su una data strada, ogni veicolo aggiuntivo non soltanto si trova ad operare ad un costo privato sempre più elevato, ma provoca un aumento di costo anche agli altri veicoli in circolazione.

L'ammontare di tali costi dipende dalla densità di traffico esistente sull'itinerario percorso e quindi dal contributo che il proprio veicolo apporta al congestionamento complessivo.

Nella presente ACB la congestione stradale, intesa come "disutilità pura da traffico", viene quindi quantificata considerando come indicatore principale la variazione nei tempi di percorrenza rilevabile tra lo Scenario di riferimento e lo Scenario con Progetto: a seguito della scelta di diversione modale di alcuni utenti si ha una diminuzione dei veicoli in circolazione e conseguentemente una generale riduzione della congestione stradale rappresentata da minori tempi di percorrenza. Di tale riduzione di tempi beneficiano gli utenti che continuano ad utilizzare la modalità stradale nello Scenario di Progetto.

Tali risparmi di tempo sono stati definiti a partire dai risultati dello Studio di Trasporto, distinti tra trasporto passeggeri e trasporto merci, come di seguito riportato in termini di veicoli.ora/anno:

Tabella 24 – Congestione: risparmi di tempo per utenti della strada

| <i>(Veicoli.Ora / Anno) – valori in migliaia</i> | |
|--|------------------------|
| Autovetture | dal 2028: 1.172 |
| Veicoli merci * | anno 2028: 72 |
| | anno 2050: 96 |

**Ai fini della presente ACB i valori degli anni intermedi sono stati stimati ipotizzando una crescita di tipo lineare tra il 2028 e il 2050.*

Per la valorizzazione dei risparmi di tempo del **trasporto passeggeri** si è proceduto all'applicazione dei valori monetari del tempo alle ore risparmiate in ciascun anno da parte dei passeggeri delle autovetture, distinti per i diversi motivi di viaggio.

Di seguito le ipotesi utilizzate:

- valore monetario del tempo come determinato al paragrafo 5.5.4 ;
- per il calcolo dei Passeggeri.Ora /Anno è stato applicato il coefficiente di occupazione pari a 1,5, in coerenza con quanto definito nello Studio di Trasporto;

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- per la ripartizione dei passeggeri per motivi di viaggio, come suggerito dal “Quaderno dei PON Trasporti n° 08/2008”, si è fatto riferimento ai valori stimati dal progetto di ricerca UNITE per la modalità strada:
 - spostamenti per motivi di lavoro: 18%
 - spostamenti per pendolarismo: 33%
 - spostamenti per altri motivi: 49%.

Per la valorizzazione dei risparmi di tempo del **trasporto merci** si è proceduto all’applicazione di un valore monetario del tempo pari a € 57,6 per Veicolo.Ora (espresso a valori €.2017), indicizzato negli anni sulla base delle variazioni del PIL pro-capite (elasticità 0.7¹⁸).

Il valore monetario è stimato sulla base di quanto previsto nel “Quaderno dei PON Trasporti n° 08/2008”, in particolare considerando il valore suggerito per i veicoli pesanti (HGV)¹⁹, e comprende sia il costo orario delle merci che il costo orario del conducente.

In conclusione la diversione modale, stimata a seguito della realizzazione della nuova linea AV/AC ferroviaria, consente di apprezzare un risparmio dei costi “esterni” connessi alla riduzione della congestione sulla rete stradale oggetto di studio.

Processi upstream e downstream

Incrementi di traffico determinano incrementi nella domanda di produzione di energia e di mezzi di trasporto che si traducono in maggiori costi esterni, principalmente costituiti da inquinamento atmosferico e maggiori costi di cambiamento climatico (effetti Upstream).

Parallelamente, il maggior volume di mezzi comporta una maggiore domanda di smaltimento e rottamazione, con i conseguenti effetti esterni “a valle” (effetto downstream)”

In particolare per la modalità di trasporto ferroviario, tali costi comprendono anche i costi connessi alla produzione di energia utilizzata nella trazione dei treni.

Per la quantificazione dei costi esterni associati ai Processi upstream e downstream si è fatto riferimento ai costi marginali suggeriti in "Update of the Handbook on External Costs of Transport, Final Report, 2014 - DG MOVE", calcolati sulla base del modello TREMOVE v.3.3.2.

In particolare i valori utilizzati nella presente ACB, specificati nella tabella seguente, sono stati calcolati considerando i valori medi dei veicoli circolanti in prevalenza su strade “non urbane” e i valori suggeriti per i treni a trazione elettrica

Tabella 25– Processi Up-and Downstream: costi marginali unitari

| Costi per Processi Up-and Downstream | | € per treno.km € per veicolo.km (€.2010) |
|--------------------------------------|----------------------------|--|
| Merci | Trasporto ferroviario | 1,81 |
| | Trasporto su strada – HGV | 0,032 |
| Passeggeri | Treni AV/AC | 1,30 |
| | Treni Regionali | 0,93 |
| | Trasporto su strada - Auto | 0,008 |

¹⁸ Come suggerito in “Guide to cost-benefit analysis of Investment Projects, DG Regional Policy, 2014”

¹⁹ Il Quaderno PON Trasporti fa riferimento ai valori indicati in “Progetto UNITE, D15”

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I valori sono stati aggiornati a valori €.2017 e indicizzati nel tempo sulla base della variazione del PIL pro-capite.

L'applicazione dei costi marginali unitari alle variazioni di traffico in termini di veicoli.km e treni.km, rilevabili tra Scenario di Riferimento e Scenario di Progetto, conduce alla individuazione di un incremento netto di costo derivante dal Progetto, essendo i costi incrementali della modalità ferroviaria superiori al risparmio di costi della modalità strada.

Determinazione dei Risparmi complessivi per costi "esterni"

Considerando la totalità delle Esternalità, si rileva che annualmente i Risparmi dei costi esterni per la modalità stradale risultano superiori ai Costi incrementali connessi alla modalità ferroviaria e pertanto l'effetto netto è inserito tra i Benefici del progetto, per intero a partire dall'anno 2028 e ridotto del 50% per il biennio 2026-2027.

Nella Tabella seguente sono rappresentati i risultati del calcolo dei costi "esterni" relativi all'intero orizzonte temporale 2026-2050, attualizzati al 2017 al tasso di sconto del 3%.

Tabella 26 - Valore Attuale dei Risparmi di Costi "esterni"

| | Valore Attuale 2017 (Milioni di euro) | % |
|---------------------------------------|--|---------------|
| Benefici netti da Esternalità: | 1.520,5 | 100,0% |
| Inquinamento atmosferico | 362,9 | 23,9% |
| Effetto serra | 705,0 | 46,4% |
| Inquinamento acustico | 54,2 | 3,6% |
| Incidentalità | 239,8 | 15,8% |
| Congestione | 291,5 | 19,2% |
| Processi Upstream e Downstream | -132,9 | -8,7% |

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6 Risultati dell'Analisi Costi-Benefici

L'impatto economico-sociale del progetto dipende dalla sua capacità di creare le condizioni per migliorare l'attrattività del modo ferroviario e dirottare verso di esso consistenti quote di traffico viaggiatori e merci dalla modalità strada.

Di seguito si riporta il valore degli Indicatori risultanti dalla presente valutazione economico-sociale:

- ❖ il Valore Attuale Netto Economico (VANE), ovvero la sommatoria dei saldi annuali tra costi e benefici generati dall'investimento, scontati secondo il tasso predefinito (3%) è pari a: **2.800,6** milioni di euro.
- ❖ il Tasso Interno di Rendimento Economico (TIRE), ovvero il valore del tasso che applicato come sconto ai saldi annuali costi-benefici rende il valore del VANE pari a zero, risulta: **5,3 %**.
- ❖ il B/C Ratio, ossia il rapporto tra Benefici attualizzati e Costi attualizzati è pari a **1,3**

Di seguito viene indicato il contributo di ciascuna voce alla composizione del VANE:

Figura 23 – Indicatori e Composizione del VANE

| | Milioni di euro | Composizione % Costi | Composizione % Benefici |
|--|-----------------|----------------------|-------------------------|
| Costi di Investimento al netto del Valore Residuo | -4.991,2 | 53,9% | |
| Manutenzione straordinaria al netto del Valore Residuo | -124,8 | 1,3% | |
| Costi gestione infrastruttura | -200,6 | 2,2% | |
| Costi esercizio ferroviario | -3.941,9 | 42,6% | |
| Benefici da Risparmi di costi operativi strada | 10.433,4 | | 86,5% |
| Benefici da Risparmi di tempo utenti ferrovia | 105,2 | | 0,9% |
| Benefici da Esternalità: | 1.520,5 | | 12,6% |
| VANE TOTALE (milioni di euro) | 2.800,6 | | |
| TIRE | 5,3% | | |
| B/C Ratio | 1,3 | | |
| Totale Benefici attualizzati | 12.059,1 | | 100,0% |
| Totale Costi attualizzati | 9.258,5 | 100,0% | |

I risultati dell'ACB indicano che il Programma di Investimento complessivamente considerato produce sostanziali vantaggi per la collettività e pertanto può considerarsi conveniente da un punto di vista economico-sociale.

Per dettagli circa i valori annuali stimati nella presente analisi economico-sociale si rimanda all'Allegato Piano pluriennale dei costi e dei benefici nel quale sono riportate, a valori economico-sociali, tutte le voci precedentemente descritte.

Analisi costi- benefici piano di implementazione ERTMS sull'infrastruttura ferroviaria nazionale

Gennaio 2021

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1. Introduzione

La presente relazione è redatta ai fini della valutazione delle possibili modalità di realizzazione dell'investimento "Implementazione ERTMS sull'infrastruttura ferroviaria nazionale" in considerazione del quadro normativo internazionale, nazionale e dei possibili programmi di investimento tecnologici in corso e di quelli previsti.

Il programma oggetto di valutazione riguarda l'*upgrade* tecnologico dei sistemi per la gestione, controllo e protezione del traffico ferroviario e del relativo segnalamento - sia sull'infrastruttura ferroviaria che a bordo dei rotabili - allo standard ERTMS/ETCS livello 2/3, in sovrapposizione o in progressiva sostituzione dei sistemi nazionali di sicurezza e segnalamento di classe B (di seguito "Programma").

Nell'analisi vengono confrontati differenti scenari di evoluzione tecnologica, ipotizzando diverse tempistiche di realizzazione, rispetto ai quali vengono valutate la sostenibilità tecnico-economica dell'investimento, l'efficacia delle azioni per il sistema ferroviario italiano nel suo insieme ed i benefici connessi all'implementazione del piano, tenendo conto delle esigenze e dei vincoli di tutti gli attori coinvolti.

1.1. Rimodulazione dell'analisi: dalla rev.N alla rev.O del Piano ERTMS

Il documento ha come obiettivo l'aggiornamento dell'"Analisi Costi Benefici del piano accelerato di implementazione ERTMS sull'infrastruttura nazionale italiana", rimodulata a seguito della revisione della proposta di pianificazione accelerata del piano di rinnovamento tecnologico della rete guidato da ERTMS (Piano ERTMS rev. O).

Si riportano di seguito i principali eventi che hanno condotto alla rimodulazione della pianificazione accelerata e della conseguente analisi costi-benefici.

Il 24 Marzo 2020, il "Piano di Sviluppo di ERTMS (ETCS e GSM-R) sulla rete RFI rev.N" e la relativa analisi costi-benefici sono stati trasmessi al Ministero delle infrastrutture e dei trasporti (di seguito "MIT").

In data 6 Aprile 2020, durante la riunione in videoconferenza a cui hanno partecipato i rappresentanti di Rete Ferroviaria Italiana SpA (di seguito "RFI") e del MIT, la Struttura Tecnica di Missione del MIT ha sottolineato come l'attuale situazione di emergenza sanitaria avrà inevitabili ricadute sul sistema economico a livello globale ed impegnerà grandi risorse nazionali per sostenere la ripresa delle attività. Pertanto, i rappresentanti del MIT hanno evidenziato come fosse opportuna una rimodulazione dei fabbisogni del Piano per il primo triennio, riducendo i km/annui di implementazione ERTMS rispetto quanto presentato nel Piano ERTMS rev.N.

RFI ha trasmesso una prima rimodulazione dei fabbisogni del Piano per il primo triennio in data 23 Aprile 2020, seguendo per la scelta delle linee da posticipare logiche di sincronizzazione degli investimenti infrastrutturali pianificati o di coerenza funzionale/commerciale. Tale

rimodulazione ha richiesto ulteriori affinamenti dal MIT trasmessi con nota del data 28 Aprile 2020.

Ritenendo condivisibili tali richieste, RFI ha rimodulato la propria proposta, accolta positivamente dal MIT a valle della riunione tenutasi il 14 Maggio 2020.

A seguito di tale riunione, RFI ha proceduto alla ripianificazione della restante rete nazionale, tendendo di apportare il minor numero possibile di modifiche rispetto il Piano ERTMS rev. N. Tali variazioni comportano minori spostamenti alle date di attivazione a seguito di approfondimenti interni, in ottica di compatibilizzare – laddove possibile – gli interventi infrastrutturali e tecnologici previsti sulle linee del Piano e di dividere in più anni l’attivazione ERTMS su linee caratterizzate da un elevata lunghezza.

Ai fini di non superare i *rate* di km/annui da attrezzare con ERTMS definiti nelle precedenti versioni del Piano, RFI ha ritenuto necessario posticipare il termine del Piano di un anno (2036 invece che 2035), mantenendo al contempo gli equilibri nella pianificazione delle linee condivisi con le IIFF e il rispetto degli impegni temporali presi a livello comunitario dell’attrezzaggio della rete TEN previsti dal vigente NIP.

In tale contesto, si inquadra la presente relazione, finalizzata all’aggiornamento dell’analisi costi-benefici sul piano di implementazione ERTMS sull’infrastruttura ferroviaria nazionale in funzione alle richieste trasmesse dal MIT.

2. Metodologia

Al fine di valutare gli impatti economici e sociali relativi ai differenti scenari possibili relativi all'implementazione ERTMS sulla rete nazionale è stata effettuata un'analisi costi-benefici (di seguito "ACB") in conformità con le indicazioni e le prescrizioni indicate nelle più recenti linee guida a livello europeo e nazionale, quali:

- *Linee guida per la valutazione degli investimenti in opere pubbliche del Ministero delle Infrastrutture e dei Trasporti (2017)*;
- *Guide to Cost-Benefit Analysis of Investment Projects, Commissione Europea (2014)*;
- *"Handbook on external costs of transport" (2019), Commissione Europea (2019)*.

Sono state, inoltre, considerate le prassi metodologiche seguite da RFI riconducibili alle più recenti analisi costi benefici effettuate per casi assimilabili.

In estrema sintesi, la metodologia adottata prevede il calcolo di una serie di indicatori socio-economici (e.g. valore attuale netto economico) volti a comparare i valori attualizzati degli scenari di configurazione tra loro.

2.1. Perché un'analisi costi-benefici

La necessità di quantificare anche i benefici di ERTMS esogeni alle pure economie in termini di gestione dell'infrastruttura – valorizzando i vantaggi per il sistema ferroviario nel suo complesso e per i suoi utilizzatori – è evidente nei diversi atti comunitari di riferimento, che menzionano i benefici in termini di sicurezza, capacità e interoperabilità del sistema (si veda, ad esempio, la Comunicazione della Commissione al Parlamento Europeo e al Consiglio sulla realizzazione del sistema europeo di segnalamento ferroviario ERTMS/ETCS, COM (2005) 298, ed i successivi atti normativi, MoU e Workplan relativi ad ERTMS).

I primi tentativi di valutare in modo esaustivo tali benefici, come nel caso dei compendi UIC relativi al sistema ERTMS (dal 2009 in poi), hanno evidenziato come i potenziali effetti positivi correlati all'implementazione del sistema ERTMS siano connessi al miglioramento della sicurezza, all'aumento di capacità ed efficienza operativa, nonché al raggiungimento degli standard di interoperabilità definiti a livello europeo.

Nel caso olandese, ad esempio, accanto a tali benefici sono stati considerati anche effetti correlati all'aumento di velocità commerciale, che in alcune tratte registrava un guadagno pari al 25%.

Lo stesso approccio è stato adottato in analisi più recenti, quale quella relativa all'implementazione del sistema ERTMS in Svezia¹, che – in particolare – quantifica e monetizza i benefici in termini di incremento di capacità e miglioramento dei tempi di viaggio, mentre delinea solo in modo qualitativo altri benefici per la collettività, in particolare quelli relativi al miglioramento della sicurezza.

¹ Trafikverket, *Cost effectiveness of ERTMS in Sweden*, 2016

Analogamente, negli studi effettuati sull'implementazione di ERTMS in Olanda², sono stati evidenziati e valorizzati impatti importanti – in termini di miglioramento dei tempi di viaggio e incremento delle frequenze di servizio – e benefici significativi anche in termini di riduzione dei consumi energetici, minori emissioni di gas serra (legate al punto precedente) e miglioramento della sicurezza.

L'importanza di presentare in modo completo gli effetti positivi dell'implementazione del sistema risulta del resto particolarmente rilevante anche alla luce delle considerazioni della Corte dei Conti Europea (ECA)³, che nell'esaminare le analisi effettuate dalla Commissione Europea ha rilevato la carenza di una valutazione dei benefici dell'implementazione dell'ERTMS rispetto ai costi che essa comporterà per gestori dell'infrastruttura o imprese ferroviarie (§43 del rapporto ECA).

Le analisi comparative sinora effettuate per confrontare i diversi scenari di implementazione di ERTMS sulla rete RFI hanno privilegiato l'approccio costi – efficacia, ed hanno quindi consentito di valutare gli effetti in termini di variazione di costi di investimento e di esercizio per il gestore dell'infrastruttura e per le imprese ferroviarie in relazione al raggiungimento di uno specifico obiettivo, al fine di abbinare ad una valutazione di efficienza basata su aspetti di natura economico-finanziaria (i costi) una misura di efficacia (i km contigui interoperabili ottenuti grazie all'investimento).

Tale approccio mantiene tutta la sua validità nel confrontare scenari di implementazione che hanno come fine primario il raggiungimento di un obiettivo definito anche in termini regolatori, valutando le modalità di attuazione più vantaggiose.

Tuttavia, come già menzionato, al fine di comprendere gli effetti complessivi di ERTMS su tutti gli attori coinvolti, e confrontare in tale prospettiva differenti scenari di implementazione della tecnologia, è opportuno fare ricorso all'analisi costi benefici.

2.2. Ipotesi alla base dell'analisi

Nella costruzione degli scenari in esame, sono state definite delle ipotesi alla base della migrazione del piano di implementazione di ERTMS relative, al sottosistema terra come al parco rotabile, oggetto di valutazione:

- l'analisi è svolta considerando un numero invariante di apparati di bordo (cabine), relative alle sole apparecchiature di ERTMS dei rotabili ad oggi circolanti già attrezzati con SCMT. Si ipotizza, infatti, che per i nuovi rotabili, le nuove cabine non determinino impatti finanziari aggiuntivi per il piano perché dovranno essere già attrezzate con il sistema di segnalamento ERTMS in virtù dell'obbligo derivante delle STI CCS 2016. Si sottolinea, inoltre, che dalle simulazioni del nuovo Piano industriale di RFI non sono previsti, nel medio periodo, incrementi del traffico merci così rilevanti da richiedere un aumento del materiale di trazione ad esso dedicato;

² Decisio B.V. and Systra, *Social Cost Benefit Analysis of implementation strategies for ERTMS in the Netherlands*, study for the Ministry of Transport, Public Works and Water Management, 2010; MuConsult, *Maatschappelijke Kosten-batenanalyse ERTMS*, 2014

³ European Court of Auditors, Special report no 13/2017: *A single European rail traffic management system: will the political choice ever become reality?*, 2017

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- l'anno in cui si considera adeguato l'intero parco rotabili dell'impresa ferroviaria corrisponde al 2035, anche senza nessuna tipologia di incentivo economico da parte dello stato;
 - l'ambito dell'analisi non è esteso al sistema AV, in quanto tali linee sono attualmente già attrezzate con la tecnologia ERTMS;
 - il perimetro di analisi non contempla l'attrezzaggio con ERTMS delle reti inserite nell'allegato A del decreto del Ministero delle infrastrutture e dei trasporti del 5 agosto 2016 e che sono assoggettate alle medesime norme in tema di sicurezza previste per il gestore dell'infrastruttura nazionale ferroviaria. L'estensione del piano di attrezzaggio a tali reti sarà oggetto di ulteriori approfondimenti;
 - gli effetti dell'implementazione del sistema ERTMS e delle relative tecnologie propedeutiche sull'ampliamento della capacità sono correlati in particolare all'installazione in alcune tratte di nodo di sistemi tecnologici innovativi – ERTMS L2 HD (High Density) – che rendono possibile un distanziamento tra i treni ridotto rispetto alla situazione attuale. Al fine di prendere in considerazione tale effetto, è necessario sviluppare degli approfondimenti ulteriori relativi alla quantificazione del numero massimo di treni che potranno essere gestiti con garanzia di elevati livelli di regolarità, in relazione al livello generale di puntualità dei sistemi afferenti e alla minore o maggiore omogeneità di velocità commerciali nelle tratte promiscue.

2.3. Pre-condizioni alla base del piano accelerato

Tra gli scenari oggetto d'analisi, si presenta la definizione di un piano accelerato per ottimizzare sia l'implementazione del sistema ERTMS sulla rete ferroviaria nazionale che gli investimenti tecnologici ad esso correlati. Tale scenario prevede l'attrezzaggio dell'intera rete con 14 anni di anticipo rispetto quanto stabilito in ottemperanza alle STI CCS 2016 e al NIP vigente del marzo 2017, che attualmente prevede l'implementazione del sistema ERTMS solo su rete TEN (circa 10.500 km di linea) entro il 2050⁴.

La fattibilità del piano è subordinata alla definizione delle seguenti pre-condizioni:

- si ipotizza che il programma di investimenti sia realizzato in un contesto *ad hoc* che preveda:
 - uno schema di incentivi con aiuti di stato compatibili per le imprese ferroviarie al fine di adeguare il proprio parco rotabili, con l'obiettivo di favorire la migrazione della maggior parte della flotta circolante in Italia entro il 2026;
 - l'autorizzazione per il gestore dell'infrastruttura a dismettere il sistema esistente (SCMT) prima del 2027, in coerenza all'adeguamento del parco rotabile che circola sulla rete già attrezzata;
- il possesso, da parte del gestore e dei fornitori e di tutte le aziende coinvolte nel processo, della capacità produttiva necessaria all'accelerazione del piano, con particolare riferimento ai tempi di approvvigionamento e di realizzazione dei lavori;

⁴ Per ulteriori dettagli si veda il paragrafo 3.2.

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- il piano di attrezzaggio ERTMS (sia a terra che a bordo treni) dovrà essere coordinato con quello degli impianti ACC/ACC-M e costituire una guida strategica per gli investimenti tecnologici di segnalamento di RFI.

3. Inquadramento del programma e descrizione del contesto socio-economico

La Rete ferroviaria italiana e le imprese ferroviarie autorizzate a circolare su questa, rappresentano un caso unico in Europa avendo già adottato sulla propria rete come su tutti i rotabili su di essa circolanti, la tecnologia SCMT, come anche il GSM-R da più di 10 anni.

Tale tecnologia ha previsto dal 2003 al 2010 (Programma Nazionale SCMT), l'utilizzo di componenti interoperabili che potessero essere poi riutilizzabili per la migrazione ad ERTMS sia per il sottosistema terra che, in particolare, per il sottosistema bordo di tutti i rotabili ad oggi già circolanti sulla rete RFI (la fase di *upgrading* è già iniziata per i rotabili circolanti sulla linea DD Firenze Roma dove verrà dal 2020 sostituito l'SCMT ed il Blocco Automatico a correnti codificate con ERTMS).

Adottando dal 2005, tra le prime in Europa, l'European Rail Traffic Management System/European Train Control System (ERTMS/ETCS) di livello 2 sulle nuove linee della rete ad Alta Velocità/Alta Capacità, le ferrovie italiane hanno accumulato un'ampia esperienza tecnica ed operativa con tale sistema.

Al 31 dicembre 2018, risultano attrezzati con ERTMS/ETCS Livello 2 circa 709 km sulle nuove linee alta velocità senza sovrapposizione con sistemi di segnalamento nazionale ed in assenza di segnali luminosi laterali. In aggiunta, la tecnologia ERTMS insieme a quella SCMT (STM SCMT) è stata installata su circa 250 rotabili circolanti sulle linee AV/AC. Tale numero è attualmente in aumento in funzione delle domande di nuove imprese passeggeri e merci che hanno richiesto di circolare sulla rete ferroviaria nei prossimi 2 anni.

In aggiunta, da più di 10 anni, è implementata la strategia di trasformazione delle stazioni e del loro telecomando da apparati elettromeccanici ad elettronici (ACC/ACC-M e SCC/SCC-M). I risultati di tale trasformazione hanno portato all'*upgrading* di circa 300 delle circa 1.700 stazioni/impianti presenti sulla rete RFI, potendo anche contare sulla presenza di 5 diversi fornitori autorizzati e sulla possibilità, da parte di RFI, di internalizzare le attività realizzative. Tale processo di modernizzazione delle stazioni e della centralizzazione delle condizioni di blocco della linea, è un elemento fondamentale nell'analisi in quanto propedeutico alla realizzazione del ERTMS/ETCS di Livello 2.

Il percorso di migrazione all'ERTMS, già avviato e realizzato in sovrapposizione sul sistema SCMT preesistente sui primi 1.200 km delle linee convenzionali di RFI, secondo quanto previsto dal NIP 2017, dovrà considerare questo contesto tecnologico di sistemi già realizzati o in fase di evoluzione, sia sull'infrastruttura che sui rotabili circolanti.

Uno dei principali elementi di valutazione della presente analisi è relativo all'evidenza che l'implementazione di ERTMS può essere considerata come l'elemento che, invece di sovrapporsi ad i sistemi esistenti, promuove una armonizzazione e razionalizzazione tecnologica a livello di sistema, offrendo le basi per una moderna digitalizzazione interoperabile.

3.1. Il sistema ERTMS

L'ERTMS è il sistema di gestione della circolazione e per la protezione della marcia del treno scelto dalla Commissione Europea per implementare il mercato unico dei trasporti nell'Unione, così da promuovere l'interoperabilità delle reti ferroviarie nazionali e il trasporto ferroviario transfrontaliero. Il sistema migliora le *performance* dell'infrastruttura ferroviaria, assicurando numerosi benefici tra i quali si evidenziano:

- **aumento della sicurezza nel trasporto ferroviario**, tramite l'introduzione della funzionalità di protezione delle manovre, l'incremento della protezione dei passaggi a livello, la disponibilità della funzione di protezione del peso assiale, il calcolo a bordo della velocità di rilascio e la progressiva sostituzione dei giunti meccanici con giunti elettrici che, per limiti tecnologici, non possono essere sviluppati sui sistemi in uso sulla rete nazionale (Classe B SCMT e SSC);
- **aumento dell'affidabilità e puntualità**, considerati valori cruciali per il trasporto di passeggeri e merci;
- **riduzione dei costi di manutenzione**, grazie ai risparmi nei costi di installazione dei segnali luminosi e cavi – non necessari con ERTMS livello 2/3 – e alla migliore performance delle apparecchiature elettroniche utilizzate;
- **sviluppo dell'interoperabilità**, i cui vantaggi sono prevalentemente connessi ad una riduzione di tempo di attraversamento delle frontiere e che costituiscono un fattore rilevante nel miglioramento dell'interconnessione tra reti nazionali e reti regionali;
- **aumento di stabilità e capacità nei nodi** poiché l'implementazione del sistema ERTMS HD (*High Density*) nei grandi nodi urbani, consentirà di rendere più fluida la circolazione e di aumentare la stabilità dell'orario offrendo soluzioni funzionali innovative, oltre che un incremento di capacità connesso alla riduzione del distanziamento dei convogli;
- **aumento della flessibilità e dell'efficienza** nell'implementazione di modifiche al layout di stazione in fase di upgrade tecnologico con ACC, grazie alla semplificazione tecnologica e normativa apportata dal sistema ERTMS;
- **impatti positivi per il gestore dell'infrastruttura e per le aziende coinvolte nell'indotto**, in termini di internazionalizzazione del mercato di riferimento, sviluppo e diffusione di know-how;
- **aumento dell'efficienza energetica con conseguente riduzione CO₂ e della regolazione della marcia** attraverso l'uso dell'ATO;
- **apertura all'utilizzo di nuove tecnologie integrabili con ERTMS** previste dal programma di ricerca Shift2Rail. Ad esempio, le applicazioni satellitari di posizionamento (GNSS) attraverso la costellazione Europea Galileo, dove l'Italia è al momento leader;

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- **maggior affidabilità nel rispetto temporale utilizzo Fondi CEF** attraverso la realizzazione simultanea e coordinata del sistema ERTMS e delle apparecchiature propedeutiche (es. ACC), consentendo di ricorrere in maniera più efficace ed estesa alle fonti di finanziamento europee (in particolare i fondi CEF), particolarmente sensibili al rispetto dei vincoli temporali imposti dai Grant.

3.2. Inquadramento normativo

La normativa UE sui sistemi di comando e controllo della circolazione, tramite il regolamento UE 2016/919, disciplina la progressiva implementazione del sistema ERTMS su tutta la rete ferroviaria italiana facente parte del sistema ferroviario trans-europeo (TEN-T).

In particolare, individua le specifiche tecniche di interoperabilità del sistema e delle sue principali parti componenti:

- ERTMS/ETCS per la gestione della circolazione e la protezione della marcia;
- GSM-R (*Global System for Mobile communications - Railways*) per le telecomunicazioni.

Relativamente al sottosistema di terra (SST), è previsto che l'attrezzaggio della rete TEN italiana sia realizzato secondo le tempistiche previste dal Regolamento (UE) N. 1315/2013 per 10.500 km:

- circa 6.000 km rete entro il 2030 (*core network*), con l'anticipazione dell'attrezzaggio di alcune tratte dei *core corridor* al 2021 (1.266 km compresi nel *Breakthrough program*);
- ulteriori 4.500 km rete *comprehensive* entro il 2050;
- nessuna richiesta di attrezzaggio della rete Off-Ten (circa 5.500 km di RFI).

In merito al sottosistema di bordo (SSB), l'implementazione di ERTMS è obbligatoria per tutti i nuovi veicoli, come definito dal piano STI CCS 2016, ad eccezione dei mezzi d'opera, delle locomotive di manovra e di veicoli adibiti ad uso nazionale non "alta velocità" non circolanti per più di 150km sull'infrastruttura ferroviaria sulla quale è già presente ERTMS o in realizzazione nei prossimi 5 anni, mentre, per quanto riguarda i veicoli esistenti, non sono fissate tempistiche per il *retrofitting* dei locomotori e l'obbligo vale solo per i veicoli intesi per l'alta velocità⁵.

Oltre alla suddetta normativa Europea, a livello nazionale, esiste "Il Piano nazionale di implementazione di ERTMS (di seguito "NIP")". Già a luglio del 2017, l'Italia ha adottato tale piano in conformità al punto 7.4.4 "Piani nazionali di implementazione" dell'Allegato al Regolamento (UE) N. 2016/919 della Commissione del 27 maggio 2016 (STI CCS).

In conformità al citato Regolamento, a marzo 2017 è stato redatto il Piano di implementazione ERTMS. Tale Piano per l'attrezzaggio della rete prevede:

- l'attrezzaggio di circa 1.266 km di rete (principalmente rete *core*), già finanziati da Contratto di Programma (di seguito CdP) 217.000.000 € entro il 2022;

⁵ Fonte: RFI, Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale

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- l'attrezzaggio di complessivi 4.000 km di linee (principalmente rete TEN-T *core*) entro il 2026;
 - il completamento del l'attrezzaggio della rete *core* - circa 6.000 km - entro il 2030;
 - l'attrezzaggio dell'intera rete TEN-T – 10.000 km – (rete *core* e *comprehensive*) entro il 2050.

Il Piano di implementazione ERTMS non definisce indicazioni circa la restante parte di rete Off-Ten (circa 5.500 km).

In aggiunta al quadro normativo Europeo sopra delineato, ad aprile 2019 l'ANSF ha trasmesso le modifiche al "Regolamento per la Circolazione Ferroviaria" - emanato con il decreto n. 4/2012 del 9/8/2012" - che stabilisce i principi e i criteri generali di sicurezza della circolazione sull'Infrastruttura Ferroviaria Nazionale, incluse le infrastrutture regionali interconnesse, sulle reti funzionalmente isolate dal resto del sistema ferroviario ed adibite unicamente a servizi passeggeri locali, urbani o suburbani e sui tratti di collegamento con le infrastrutture ferroviarie private utilizzate dal proprietario o da un operatore per le loro rispettive attività di trasporto merci o per il trasporto di persone per fini non commerciali.

In tale comunicazione sono riassunte le specifiche che gli attuali sistemi nazionali di segnalamento saranno chiamati a rispettare, alle quali, peraltro, corrisponderebbero ingenti costi di investimento e di sviluppo e gestione per adeguare gli attuali sistemi di classe B (SCMT ed SSC) in esercizio.

In tale contesto normativo, si inquadra la proposta del Piano Coordinato terra + bordo dell'implementazione ERTMS sull'infrastruttura ferroviaria nazionale, finalizzata a efficientare la migrazione del sistema ferroviario italiano alle nuove tecnologie (es.: apparati di stazione digitali, sistemi di protezione della marcia treno interoperabili e adeguati al quadro normativo, sistemi di telecomando e supervisione).

3.3. ERTMS nel resto dell'Europa

L'apertura del mercato, conseguente l'entrata in vigore del 4 pacchetto ferroviario, presuppone l'esigenza tecnica di eliminare le barriere tecnologiche e normative attraverso l'utilizzo di una tecnologia interoperabile per il comando ed il controllo dei treni. L'utilizzo di differenti sistemi nazionali a bordo treno, pur permettendo di sfruttare da parte delle IF mercati ferroviari differenti, associa un costo maggiore - in termini tecnologici ed operativi - rispetto all'utilizzo di un solo sistema di comando e controllo comune.

In tale contesto, l'operazione di accelerazione della realizzazione della tecnologia ERTMS sulle reti nazionali risponde ad esigenze che vanno oltre la sola interoperabilità che, come menzionato precedentemente, dovrà essere assicurata sulle reti *core* e *comprehensive*.

L'Italia, come le principali realtà europee, intravedono attraverso l'utilizzo di ERTMS una strategia e un'opportunità di rinnovamento tecnologico complessivo per la crescita del sistema ferroviario nazionale. Tale volontà di definire una strategia ottimale di migrazione verso l'ERTMS trova conferma nelle principali realizzazioni in esercizio, in corso o programmate di Piani di sviluppo tecnologici nazionali. In particolare, la Svizzera, l'Austria, l'Olanda, la Danimarca, la Norvegia ed il

Belgio sono in fase di implementazione, e la Germania e la Svezia sono in procinto di farlo, di un piano di realizzazione di ERTMS sulla totalità della rete nazionale.

In aggiunta, Olanda, Danimarca, Repubblica Ceca e Belgio hanno previsto ed ottenuto la possibilità di definire un piano di incentivi *ad hoc*, come aiuti di stato, per il sottosistema di bordo.

Allo stesso tempo, anche la Svizzera e la Norvegia – pur non essendo parte dell’Unione Europea – hanno programmato ed ottenuto incentivi specifici per la migrazione del parco rotabile verso l’ERTMS. La Germania, come anche l’Italia, invece, sono in fase di definizione di tale piano di incentivi.

RFI ha, inoltre, siglato un *Memorandum of Understanding* con gli stati confinanti con l’obiettivo di facilitare e velocizzare il traffico interoperabile transfrontaliero.

Tali strategie nazionali ed allo stesso tempo europee, avranno come diretta conseguenza l’apertura di mercati - non solo pregiati come l’alta velocità o il trasporto merci su assi fondamentali - ma anche del trasporto pubblico locale nei nodi urbani come sulle linee regionali a scarso traffico, dando un impulso importante a tutto il comparto europeo, in particolare, al fine di valorizzare il trasferimento modale su ferro.

4. Definizione degli obiettivi e descrizione dell'intervento

4.1. Stato dell'arte

Gli scenari analizzati sono sviluppati a partire dall'attuale stato di implementazione del NIP. Ad oggi, risulta pianificato e finanziato l'attrezzaggio ERTMS di 1.266 km di rete convenzionale.

Sulle linee che verranno attrezzate, in coerenza a quanto previsto dal NIP, è garantita la coesistenza con il sistema nazionale SCMT fino al 2026. La dismissione del sistema nazionale esistente potrà quindi essere effettuata a partire dal 1° gennaio 2027, con preavviso informativo delle IF, entro il 2024.

I 1.266 km di rete, finanziati nell'ambito del *Breakthrough program*, sono considerati in tutti gli scenari d'analisi e, quindi, definiti come invariante nel confronto.

4.2. Scenari d'analisi

Al fine di individuare la migliore modalità di migrazione del sistema ferroviario nel suo complesso (terra + bordo) verso la tecnologia ERTMS e dimostrare la convenienza economica delle diverse alternative misurando i benefici e rapportandoli ai costi da sostenere, sono stati individuati tre scenari di analisi che differiscono rispetto alla durata ed al periodo della migrazione (tempo necessario per completare l'attrezzaggio degli oggetti - infrastruttura e rotabili - previsti nel perimetro⁶).

Si riporta di seguito la descrizione degli scenari individuati come oggetto dell'analisi:

- **Scenario o - Obblighi di legge:** individuato come *baseline* dell'analisi. Tale scenario prevede:
 - l'estensione del sistema ERTMS all'intera rete TEN-T, in ottemperanza al Regolamento (UE) N. 1315/2013 ed al NIP 2017. In particolare, l'attrezzaggio dell'intera rete *core* entro il 2030 ed il completamento della rete *comprehensive* entro il 2050 per un totale di 10.688 km di rete;
 - la definizione di un piano ad *hoc* di rinnovo tecnologico della rete, da completare entro il 2035, in coerenza con il progresso tecnologico di RFI. Tale piano prevede l'improcrastinabile sostituzione per obsolescenza degli apparati di stazione elettromeccanici con apparati di stazione elettronici (ACC/ACCM) su tutta la rete nazionale. Tale migrazione tecnologica è tutt'ora in corso;
 - la possibilità di dismettere il sistema di Classe B dal 1° gennaio 2027 in coerenza con quanto definito dal NIP 2017;
 - lato sottosistema bordo, l'ipotesi che il parco rotabile circolante con SCMT (5.000 cabine) sia completamente attrezzato entro il 2035;

⁶ Fonte: RFI, Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale – Analisi Costi Benefici

- le seguenti ipotesi di attrezzaggio e dismissione della rete, in funzione degli anni del piano, per far fronte alla migrazione graduale del parco rotabile verso la tecnologia ERTMS:
 - 2022-2026: tutti i km di rete attrezzati durante questa fase del piano sono realizzati in doppio attrezzaggio ERTMS sovrapposto con il sistema Classe B nazionale;
 - 2027-2050: la dismissione del sistema nazionale esistente avviene contestualmente all'attrezzaggio delle linee in modalità ERTMS *alone*;
- il rinnovo per obsolescenza del sistema SCMT per i km di rete *comprehensive* non attrezzati entro il 2035 (3.601 km) e la totalità della rete Off-Ten (4.805 km). In relazione alla rete regionale (Off-Ten), i costi di rinnovo del sistema SCMT dovranno essere sostenuti due volte nell'arco temporale d'analisi, non prevedendo per tali km di rete la migrazione al sistema ERTMS e dovendo, quindi, mantenere in efficienza il sistema nazionale esistente per l'intero orizzonte temporale;
- **Scenario A – Intera rete non accelerato:** tale scenario è basato sulle logiche precedentemente descritte nello scenario 0, rispettando quanto previsto dal Regolamento (UE) N. 1315/2013, dal NIP e dal processo di rinnovo tecnologico di RFI. In aggiunta, tale scenario prevede una variazione del perimetro di attrezzaggio, estendendo il sistema ERTMS all'intera rete (15.493 km), proseguendo anche successivamente al 2050, con l'attrezzaggio delle reti Off-Ten con i sistemi *ERTMS Regional*;
- **Scenario B - Intera rete accelerato:** prevede, nell'ambito di un contesto nazionale normativo *ad hoc* (vedi paragrafo 2.3):
 - il completamento dell'attrezzaggio dell'intera rete TEN e Off-Ten entro il 2036 (15.493 km);
 - la dismissione del sistema di classe B contestualmente all'attrezzaggio della rete dal 2022;
 - a fronte di incentivi economici con aiuti di stato compatibili per le imprese ferroviarie, l'adeguamento dei sottosistemi di bordo nel più breve tempo possibile da parte delle IF, in coerenza con il piano di attrezzaggio dell'infrastruttura.

Su tali basi l'attrezzaggio dell'intera rete potrebbe concludersi con 14 anni di anticipo rispetto quanto previsto attualmente dal NIP, per un totale di 15.493 km e 5.000 cabine adeguati.

Il grafico che segue schematizza le caratteristiche di ciascuno scenario rispetto alle dimensioni di analisi sopra riportate.

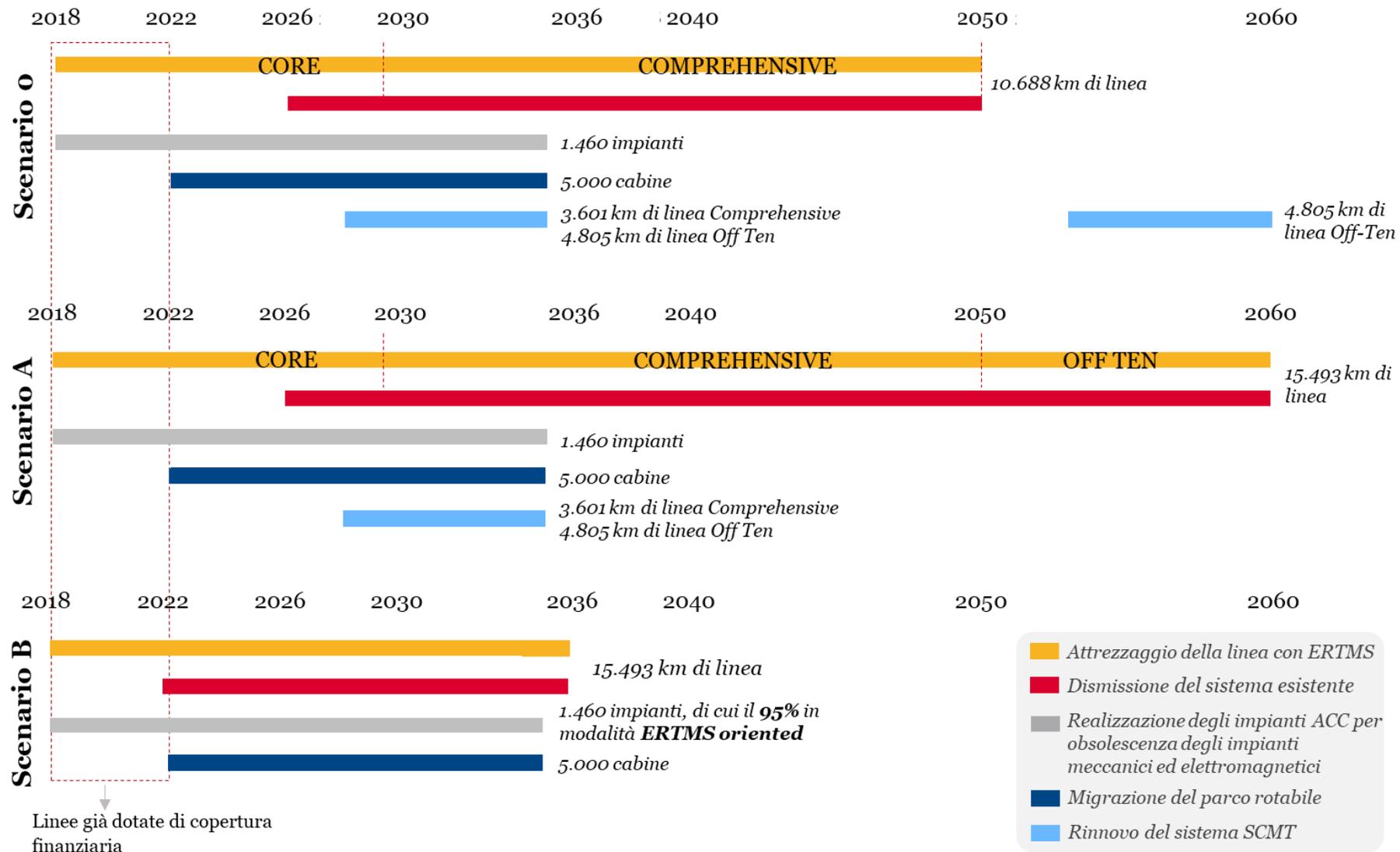


Grafico 1 - Definizione degli scenari d'analisi

*Le coperture finanziarie per l'adeguamento del parco rotabili sono da definire. Nello scenario B, il termine del 2026 è stato considerato in maniera indicativa ai fini delle elaborazioni, tuttavia una quota estremamente residuale di rotabili potrebbe adeguarsi successivamente perché circolanti esclusivamente su linee a bassa densità che vengono adeguate successivamente al 2026.

5. Analisi finanziaria

L'analisi finanziaria è stata effettuata in conformità alle indicazioni della guida *“Guide to Cost-Benefit Analysis of investment Projects (2014)”* e ha come obiettivo il confronto degli effetti finanziari correlati alla realizzazione del Programma.

In particolare, la metodologia applicata è quella dei Flussi di Cassa Attualizzati (*Discounted Cash Flow - DCF*), che prende in considerazione esclusivamente i flussi di cassa in entrata e in uscita. Non rientrano nell'analisi accantonamenti, ammortamenti e altre voci contabili che non corrispondono ad effettivi movimenti di cassa.

In linea con quanto raccomandato dalla guida *“Guide to Cost-Benefit Analysis of investment Projects (2014)”*, l'analisi è svolta al netto dell'inflazione, considerando valori costanti (espressi in € 2018) e un tasso di attualizzazione reale pari al 4%, al netto dell'inflazione.

Gli impatti finanziari che la realizzazione del Programma comporta per il gestore dell'infrastruttura sono suddivisi in due macro categorie:

- costi di investimento:
 - costi per l'attrezzaggio della rete con i sistemi di segnalamento ERTMS di livello 2/3;
 - costi per il potenziamento tecnologico della rete;
 - costi per l'upgrade del sistema SCMT;
 - costi di sovrapposizione e dismissione del sistema nazionale esistente;
 - costi interni del personale RFI;
 - costi addizionali o imprevisti;
- costi di gestione:
 - costi di manutenzione ordinaria;
 - costi di gestione rallentamenti, interruzioni ed emergenze
 - costi per il personale dedicato al controllo della rete;
 - costi per i rinnovi dei sistemi sulla rete.

La stessa analisi è sviluppata dal punto di vista delle imprese ferroviarie, considerando anche in questo caso la variazione degli impatti finanziari correlati alla realizzazione del Programma:

- costi di investimento:
 - costi per attrezzaggio del sottosistema di bordo;
- costi di gestione:
 - costi di manutenzione ordinaria.

5.1. Ipotesi alla base dell'analisi finanziaria

Alla base dell'analisi finanziaria proposta sono state considerate le seguenti ipotesi, valide sia per il gestore dell'infrastruttura che per le imprese ferroviarie:

- l'arco temporale della valutazione si estende fino al 2060, quale termine temporale della concessione a RFI per la gestione dell'infrastruttura ferroviaria nazionale;

- l'anno base per l'attualizzazione dei flussi è il 2018;
- la variabile inflattiva non viene presa in considerazione, poiché l'analisi verrà effettuata considerando costi stimati in valori costanti, che quindi richiedono l'impiego di tassi reali di sconto per la determinazione degli indicatori sintetici;
- il tasso di sconto utilizzato per l'analisi finanziaria corrisponde al tasso suggerito nella *“Guide to Cost-Benefit Analysis of investment Projects (2014)”* pari al 4%.

La tabella che segue presenta un riepilogo delle ipotesi alla base dell'analisi finanziaria.

Tabella 1 - Ipotesi alla base dell'analisi finanziaria

| Voci/Parametri | Ipotesi |
|------------------------------------|--------------------------|
| Tasso di attualizzazione reale | 4% |
| Anno base di attualizzazione | 2018 |
| Orizzonte temporale di valutazione | 2060 |
| Unità di conto | € 2018 a prezzi costanti |

5.2. Impatti finanziari per il gestore dell'infrastruttura

5.2.1. Costi di investimento

Costi per l'attrezzaggio della rete con il sistema ERTMS

L'implementazione del sistema ERTMS comporta l'upgrade/installazione dei seguenti componenti tecnologici:

- eurobalise, per trasmettere informazioni al treno;
- RBC (Radio Block Centre), per acquisire lo stato della linea (sezioni libere/occupate, itinerari), calcolare il distanziamento dei treni, inviare le Autorizzazioni di Movimento al treno tramite rete GSM-R, impostare rallentamenti, inviare emergenze, ecc.;
- BTS (Base Transceiver Station): sottosistema di ricetrasmisione del segnale radio, dotato di antenna, per gestire le comunicazioni tra il treno e il Radio Block Centre;
- cdb audiofrequenza;
- interfacciamento con gli Apparatì di Stazione (Apparatì Centrali): componenti in grado di gestire lo scambio dei comandi e controlli degli enti di linea e di piazzale (deviatoi, passaggi a livello, RTB, BCA o circuiti di binario)⁷.

Di conseguenza, i costi di investimento correlati per l'attrezzaggio del sottosistema terra, che dovranno essere sostenuti dal gestore dell'infrastruttura, includono:

- costi per l'attrezzaggio della linea con ERTMS, che comprendono i costi di installazione del sistema a terra e del cdb audiofrequenza per tutte le linee attualmente attrezzate con blocco automatico, anche al fine della progressiva sostituzione dei giunti meccanici, e per le linee di stazione attualmente attrezzate con il blocco conta assi;

⁷ Fonte: “Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale”

- costi per l'adeguamento e l'estensione del sistema GSM-R;

La tabella che segue riporta i costi unitari utilizzati ai fini dell'analisi finanziaria per ogni categoria di intervento.

Tabella 2 – Costi unitari di investimento per il sottosistema terra

| | Costo k€/km |
|---------------------|-------------|
| ERTMS terra | 100 |
| Cdb audiofrequenza | 150 |
| Estensione GSM-R | 50 |
| Potenziamento GSM-R | 25 |

Fonte: RFI

Nella tabella seguente sono riassunti i costi di investimento al termine del periodo di valutazione per ciascuno scenario d'analisi, considerate le differenti voci di costo.

Tabella 3 - Costi di investimento per il sottosistema terra

| | Scenario 0 | | Scenario A | | Scenario B | |
|---------------------|------------|-------------------|------------|-------------------|------------|-------------------|
| | km | Costo (k€) | km | Costo (k€) | km | Costo (k€) |
| ERTMS Terra | 9.422 | -942.220 | 14.227 | -1.422.703 | 14.227 | -1.422.703 |
| Cdb audiofrequenza | 5.923 | -888.690 | 6.530 | -979.426 | 6.530 | -979.426 |
| Estensione GSM-R | 1.575 | -78.769 | 4.844 | -242.177 | 4.844 | -242.177 |
| Potenziamento GSM-R | 7.489 | -187.232 | 9.026 | -225.649 | 9.026 | -225.649 |
| Totale | | -2.096.912 | | -2.869.955 | | -2.869.955 |

Nell'ipotesi di attrezzaggio dell'intera rete, il costo complessivo dell'investimento è stimato in 2,9 miliardi di euro.

Si riporta di seguito la curva dei costi di investimento per l'attrezzaggio del sottosistema terra con ERTMS che varia per gli scenari considerati in funzione della durata della migrazione.

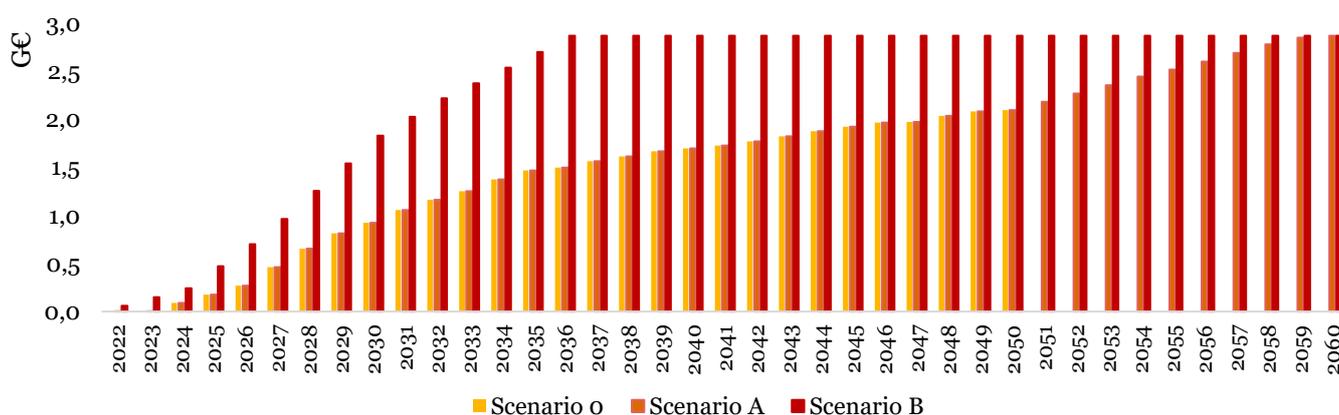


Grafico 2 - Curva dei costi di investimento per il sottosistema terra ERTMS + cdb Audio frequenza

Costi per il potenziamento tecnologico della rete

Per sfruttare appieno le potenzialità offerte dalle applicazioni ERTMS livello 2/3 è necessario ammodernare anche i sistemi di segnalamento che regolano la circolazione lungo la linea (sistemi di distanziamento) e negli impianti (apparat centrali e sistemi di supervisione).

Il Piano di implementazione di ERTMS deve essere pertanto coordinato con il piano tecnologico di sostituzione dei circa 1.460 apparati centrali di vecchia generazione (ACEI, ACE, ecc.) con i moderni apparati a tecnologia elettronica (ACC, ACC-M), in grado di controllare contemporaneamente anche più impianti di stazione e le relative tratte di blocco⁸. In particolare, nel programma di investimenti oggetto di analisi risulta inclusa la realizzazione di 1.405 impianti⁹. Si precisa che, in coerenza con il progresso tecnologico di RFI, la sostituzione per obsolescenza degli apparati di stazione elettromeccanici con apparati di stazione elettronici (ACC/ACCM) è comunque programmata su tutta la rete entro il 2035, indipendentemente dal perimetro di estensione della rete implementata con la tecnologia ERTMS.

I costi da sostenere per l'*upgrading* tecnologico di un impianto sono definiti come segue:

- realizzazione del Sistema di Comando e Controllo Multistazione (SCCM), costo da sostenere per l'adeguamento delle linee non telecomandate e l'adeguamento per l'interfaccia con ACCM ed ERTMS;
- realizzazione degli Apparati di stazione elettronici Multistazione:
 - ACC/ACCM, il cui costo medio è stimato in 4,5 M€ (con segnali luminosi ed SCMT -No ERTMS oriented-);
 - ACC/ACCM ERTMS oriented (senza segnali luminosi), realizzabili nell'ipotesi di implementazione delle nuove tecnologie (ACC+ERTMS) e contestuale dismissione dei sistemi di segnalamento nazionali di classe B (ACEI+SCMT). Gli apparati della rete convenzionale potrebbero essere realizzati con logiche "semplificate" simili a quelle attualmente adottate sulla rete Alta Velocità (assenza segnalamento laterale luminoso e ripetizione segnali continua) con la conseguente riduzione dei costi di investimento di circa il 30%, con un risparmio di circa 1,35 M€/ impianto.

La tabella che segue sintetizza gli interventi da effettuare per l'*upgrading* degli apparati ed i relativi costi unitari da associare ai km di linea ed al numero di impianti da adeguare per ogni scenario.

Tabella 4 - Costi unitari di investimento per il potenziamento tecnologico della rete

| Costo k€/km – k€/impianto | | |
|---|-------------------|---------------------|
| Realizzazione SCCM | | 160 |
| Costo impianti ACC/ACCM (No ERTMS oriented) | Linea (SCMT + BA) | 350 |
| | Impianti | 4.500 ¹⁰ |
| Costo impianti ACC/ACCM (ERTMS oriented) | Linea | 100 |
| | Impianti | 3.150 |

Fonte: RFI

La tabella seguente riporta per ogni voce di costo il totale associato ad ogni scenario.

⁸ Fonte: "Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale"

⁹ Sono stati esclusi gli impianti che risultano invariati per il programma, in quanto già finanziati e/o localizzati sulle linee attrezzate entro il 2021, nell'ambito del Breakthrough Program, già dotate di copertura finanziaria.

¹⁰ Non sono compresi i costi per la realizzazione di sottopassi nel caso in cui le stazioni non siano impresenziate.

Tabella 5 - Costi di investimento per il potenziamento tecnologico della rete

| | | Scenario 0 | | Scenario A | | Scenario B | | |
|------------------------|-----------------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|------------|
| | | km o impianti | Costo (k€) | km o impianti | Costo (k€) | km o impianti | Costo (k€) | |
| Realizzazione SCCM | | 14.227 | -2.276.325 | 14.227 | -2.276.325 | 14.227 | -2.276.325 | |
| Costo impianti | Linea | 3.134 | -1.096.849 | 3.134 | -1.096.849 | 44 | -15.461 | |
| ACC/ACCM ¹¹ | (No ERTMS <i>oriented</i>) | Impianti | 1.154 | -5.193.000 | 1.154 | -5.193.000 | 3 | -13.500 |
| Costo impianti | Linea | 3.440 | -343.992 | 3.440 | -343.992 | 14.183 | -1.418.286 | |
| ACC/ACCM | (ERTMS <i>oriented</i>) | Impianti | 251 | -790.650 | 251 | -790.650 | 1.402 | -4.416.300 |
| Totale | | | -9.700.815 | | -9.700.815 | | -8.139.872 | |

Costi per l'upgrade del sistema SCMT

Il contesto normativo delineato da ANSF (vedi paragrafo 3.2), impone un upgrade del sistema SCMT per adeguarsi alle nuove funzionalità richieste. Tale upgrade è connesso ad un costo di sviluppo e di implementazione del sistema lato terra, come bordo.

La stima di tale costo dovrà tener conto che nel mondo industriale esistente non è presente una competizione ed apertura del mercato per le modifiche identificate come necessarie sui sistemi attualmente in esercizio. Inoltre, essendo la tecnologia SCMT un sistema nazionale, non è considerato strategico in ottica futura e, di conseguenza, non genera interesse nelle multinazionali coinvolte.

Ai fini della semplificazione dell'analisi, sono considerati i – in modo conservativo – i soli costi di adeguamento del SCMT lato terra, escludendo lo sviluppo di tale sistema. Tale costo sarà sostenuto per ogni impianto ACC realizzato in modalità non ERTMS *oriented* prima del 2028, anno in cui si prevede che il sistema, se non sostituito con la tecnologia ERTMS, sarà rinnovato.

La tabella che segue sintetizza i costi unitari per l'*upgrading* del sistema SCMT da associare ai km di linea da adeguare per ogni scenario.

Tabella 6 - Costi unitari di investimento per l'upgrade del sistema SCMT

| Costo k€/km | | |
|--------------|-----|-----|
| Upgrade SCMT | BA | 20 |
| | BCA | 100 |

Fonte: RFI

La tabella seguente riporta il costo il totale associato ad ogni scenario.

Tabella 7 - Costi di investimento per l'upgrade del sistema SCMT

| | | Scenario 0 | | Scenario A | | Scenario B | |
|---------------|--|------------|-----------------|------------|-----------------|------------|----------------|
| | | km | Costo (k€) | km | Costo (k€) | km | Costo (k€) |
| SCMT + BA | | 3.369 | -67.378 | 3.369 | -67.378 | 946 | -18.925 |
| SCMT + BCA | | 3.360 | -335.988 | 3.360 | -335.988 | 364 | -36.374 |
| Totale | | | -403.366 | | -403.366 | | -55.299 |

¹¹ Gli apparati non ERTMS oriented saranno installati sulla rete attrezzata con ERTMS prima del 2026 e sulla rete che non verrà attrezzata con ERTMS. Assumendo un approccio conservativo, in tutti gli scenari sono stati inclusi i costi di realizzazione degli impianti ACC/ ACCM già stati finanziati localizzati sulle linee attrezzate tra il 2018 e il 2021 e non incluse nel Breakthrough Program.

Costi di adeguamento degli ACC

Per tutti gli scenari d'analisi sono da sostenere i costi di adeguamento degli impianti ACC attualmente presenti sulla rete. Tali costi di adeguamento sono pari a 200 k€/impianto e saranno sostenuti secondo le tempistiche di attrezzaggio della rete. La tabella che segue riporta i costi associati nei due scenari d'analisi.

Tabella 8 - Costi di adeguamento ACC

| | Scenario 0 | | Scenario A | | Scenario B | |
|--------------------------|------------|----------------|------------|----------------|------------|----------------|
| | impianti | Costo (k€) | impianti | Costo (k€) | impianti | Costo (k€) |
| Costi di adeguamento ACC | 149 | -29.800 | 165 | -33.000 | 165 | -33.000 |
| Totale | | -29.800 | | -33.000 | | -33.000 |

Costi di sovrapposizione e di successiva dismissione

Nel rispetto della normativa attuale, per tutte le tratte attrezzate in sovrapposizione con il sistema Classe B nazionale, dovrà essere sostenuto dal gestore dell'infrastruttura un costo di sovrapposizione dei sistemi ERTMS ed un successivo costo di dismissione, conseguente al progressivo attrezzaggio dei rotabili.

La tabella che segue riporta i costi di sovrapposizione del sistema SCMT con l'ERTMS, da sostenere nel caso in cui la dismissione non avvenga contestualmente all'attrezzaggio della rete, nonché i costi di dismissione da sostenere per la riconfigurazione e per il *decommissioning* del sistema SCMT per ogni impianto attrezzato in modalità non ERTMS *oriented*.

Tabella 9 - Costi unitari di sovrapposizione e dismissione

| | Costo k€/km – k€/impianto |
|---|---------------------------|
| Riconfigurazione classe B/Interfacciamenti con gli impianti esistenti | 150 |
| Impianti ACC | 200 |
| <i>Decommissioning</i> di SCMT (impianti) | 200 |
| <i>Decommissioning</i> di SCMT (linea) | 150 |

Fonte: RFI

La tabella che segue riporta, per ogni scenario d'analisi, i costi di sovrapposizione, dismissione e riconfigurazione associati.

Tabella 10 - Costi di sovrapposizione e dismissione¹²

| | Scenario 0 | | Scenario A | | Scenario B | |
|---|---------------|-------------------|---------------|-------------------|---------------|-----------------|
| | km o impianti | Costo (k€) | km o impianti | Costo (k€) | km o impianti | Costo (k€) |
| Riconfigurazione classe B/Interfacciamenti con gli impianti esistenti | 2.103 | -315.499 | 2.103 | -315.499 | 44 | -6.626 |
| Impianti ACC | 210 | -42.000 | 210 | -42.000 | 3 | -600 |
| <i>Decommissioning</i> di SCMT (impianti) | 818 | -163.600 | 1.299 | -259.800 | 103 | -20.600 |
| <i>Decommissioning</i> di SCMT (linea) | 3.369 | -505.372 | 3.369 | -505.372 | 1.310 | -196.499 |
| Totale | | -1.026.472 | | -1.122.672 | | -224.325 |

¹² L'analisi non include i costi di *decommissioning* degli impianti ACC/ ACCM non ERTMS *oriented* presenti sulla rete ferroviaria al 2018.

Costi interni del personale RFI

Nei differenti scenari d'analisi, sono stati considerati i costi interni del personale RFI addetto all'attrezzaggio della rete ed al potenziamento tecnologico degli impianti. Tali costi saranno sostenuti contestualmente all'implementazione di ERTMS sull'infrastruttura ferroviaria esistente e alla realizzazione e adeguamento degli impianti presenti su tutta la rete.

Il valore dei costi interni è connesso ad un incremento del personale per il gestore dell'infrastruttura addetto alla realizzazione degli interventi oggetto d'analisi. Tale costo – sulla base di esperienze pregresse del gestore dell'infrastruttura – è stimato pari a circa il 3% dei costi complessivi d'investimento sulla linea e pari a circa il 4% dei costi legati alla realizzazione degli impianti (inclusi i costi di *decommissioning* della linea e degli impianti).

La tabella che segue riporta, per ogni scenario d'analisi, i costi interni associati.

Tabella 11 - Costi interni

| | Scenario 0 | Scenario A | Scenario B |
|---------------|-------------------|-------------------|-------------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Linea | -68.588 | -91.779 | -82.513 |
| Impianti | -393.777 | -397.625 | -325.619 |
| Totale | -462.365 | -489.404 | -408.132 |

Fonte: RFI

Costi aggiuntivi o imprevisti

Ai fini di non trascurare i possibili costi connessi al rallentamento del piano o al verificarsi di imprevisti durante la realizzazione del Programma, nell'analisi sono considerati eventuali costi aggiuntivi da sostenere per il gestore dell'infrastruttura nel corso dell'arco temporale in esame. Tali costi saranno sostenuti contestualmente all'attrezzaggio della rete con il sistema ERTMS, per un ammontare complessivo di 600 mln€ nell'ipotesi di implementazione della tecnologia sull'intera rete nazionale.

La tabella che segue riporta per ogni scenario d'analisi i costi aggiuntivi associati.

Tabella 12 - Costi aggiuntivi

| | Scenario 0 | | Scenario A | | Scenario B | |
|------------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|
| | km | Costo (k€) | km | Costo (k€) | km | Costo (k€) |
| Costi aggiuntivi | 9.422 | -397.365 | 14.227 | -600.000 | 14.227 | -600.000 |
| Totale | | -397.365 | | -600.000 | | -600.000 |

Costi di investimento annui

Al fine di fornire un quadro completo dell'ammontare dei costi di investimento sopracitati per la realizzazione del piano oggetto di analisi, si riportano di seguito i *rate* d'investimento medi annui e cumulati da sostenere per l'intero orizzonte d'analisi (inclusi i costi già finanziati nell'ambito del Breakthrough Program).

| | Rate (G€) | | |
|-----------|------------|------------|------------|
| | Scenario 0 | Scenario A | Scenario B |
| 2018-2022 | -0,3 | -0,3 | -0,2 |
| 2023-2026 | -1,2 | -1,2 | -0,8 |
| 2027-2030 | -0,9 | -0,9 | -1,0 |
| 2031-2035 | -0,9 | -0,9 | -0,9 |
| 2036-2040 | -0,1 | -0,1 | -0,2 |
| 2041-2050 | -0,1 | -0,1 | 0,0 |
| 2051-2060 | 0,0 | -0,1 | 0,0 |

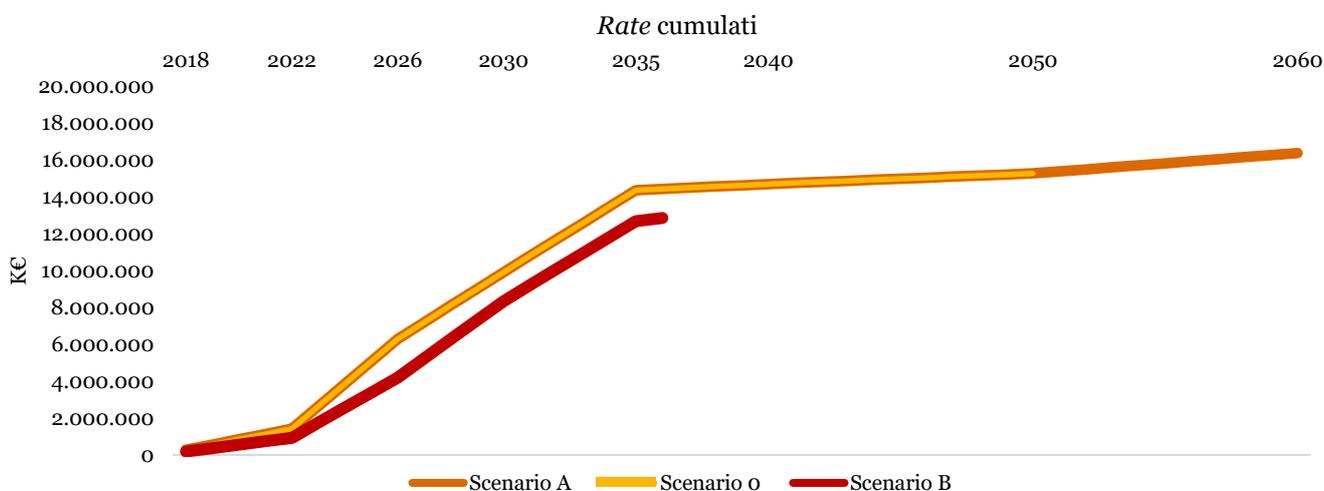
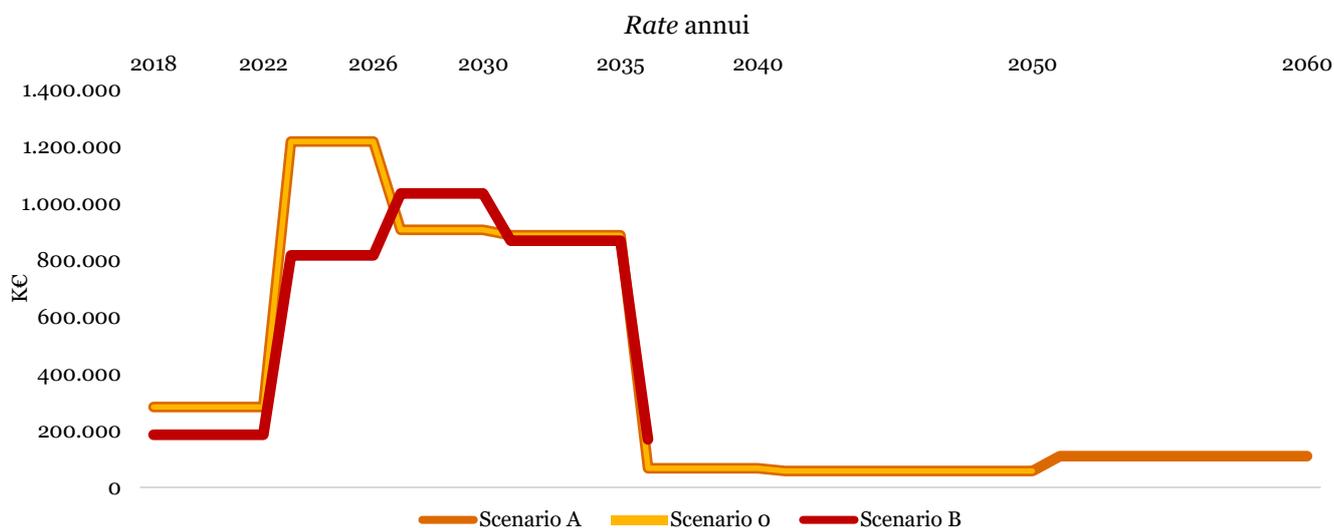


Grafico 3 - Rate d'investimento medi annui e cumulati

5.2.2. Costi di gestione

I costi di esercizio delle infrastrutture oggetto del Programma sono costituiti esclusivamente dai costi di manutenzione ordinaria, dai costi della gestione dei rallentamenti e dai costi del personale. Sono, infatti, trascurabili le variazioni per altri costi, non essendo rilevabili impatti rilevanti sui processi di gestione della circolazione.

Dall'analisi riportata nei paragrafi di seguito emerge che l'implementazione del Piano Accelerato assicura risparmi operativi complessivi nei costi di gestione dell'infrastruttura ferroviaria pari a circa 1,2 miliardi di euro (€ 2018) rispetto allo scenario 0, mentre la realizzazione degli investimenti secondo quanto definito dallo scenario A e riduce tali costi di circa 0,1 miliardi di euro in confronto allo scenario 0.

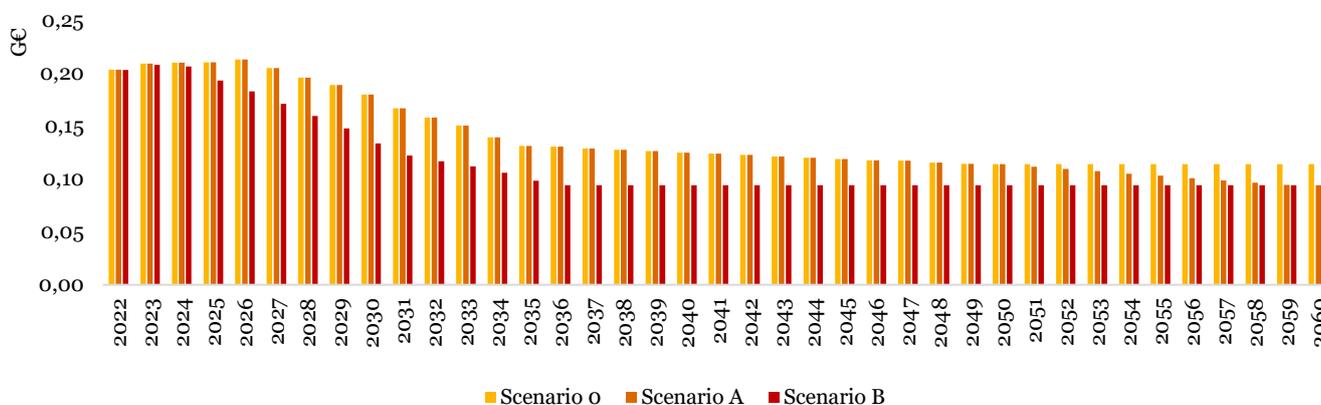


Grafico 4 – Costi operativi complessivi nella gestione dell'infrastruttura

Inoltre, sono valutati i costi di rinnovo del sistema ERTMS, come del sistema SCMT attualmente implementato sulla rete, in funzione dei differenti scenari.

Costi di manutenzione ordinaria

I costi di manutenzione ordinaria sono associati ad interventi ciclici finalizzati a mantenere l'integrità originaria del bene e la sua efficienza, a contenere il normale degrado d'uso e a far fronte a eventi accidentali.

Tali costi sono stimati sulla base degli oggetti da mantenere di cui è composta l'infrastruttura ferroviaria di nuova realizzazione e degli oggetti che saranno dismessi a seguito dell'attivazione delle nuove opere.

Il costo parametrico dei processi manutentivi per le lavorazioni afferenti al settore "Impianti di Segnalamento e Telecomunicazioni" varia per le differenti tipologie di linea, individuate in funzione dell'attrezzaggio tecnologico attuale e futuro¹³.

Nella tabella che segue è riportato il costo medio per le differenti tipologie di linea individuate in funzione dell'attrezzaggio tecnologico.

¹³ Fonte: "Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale"

Tabella 13 - Variazione unitaria dei costi di manutenzione ordinaria

| | Costi di gestione attuali (k€/km) | Risparmio ERTMS stand-alone (k€/km) | Maggiorazione costo SCMT + ERTMS (k€/km) |
|--------------------------|--------------------------------------|--|--|
| SCMT + BA ¹⁴ | 13,20 | -19,80 | -6,60 |
| SCMT + BCA ¹⁵ | 10,56 | -19,80 | -6,60 |

Fonte: RFI

I costi di manutenzione, cumulati per l'intero orizzonte d'analisi, sono riportati nella tabella che segue evidenziando i risultati per ogni scenario.

Tabella 14 - Costi di manutenzione ordinaria

| | Scenario 0 | Scenario A | Scenario B |
|---------------------------------|------------|------------|------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Costi di manutenzione ordinaria | -6.023.748 | -5.908.515 | -5.030.163 |

Le variazioni presentate evidenziano un risparmio nei costi di gestione collegato ad un aumento dei costi manutentivi negli anni di doppio attrezzaggio della linea. Tale costo è compensato da una riduzione dei costi connessa alla manutenzione del solo sistema ERTMS a seguito della dismissione del sistema SCMT esistente.

Costi per la gestione dei rallentamenti e delle interruzioni

L'utilizzo di ERTMS livello 2 semplifica e rende più efficiente la gestione dei rallentamenti e delle interruzioni.

La gestione di quest'ultimi con tecnologie tradizionali di protezione della marcia del treno necessita di attività di programmazione, posa in opera di elementi fisici e successiva rimozione in regime di interruzione. La gestione dei rallentamenti fatti in SCMT necessita di 3 cartelli di avviso, inizio e fine rallentamento e di 6 boe per binario prima da programmare a cura di personale dedicato e poi da posare a cura delle squadre specializzate quindi successivamente da rimuovere sempre in modalità di interruzione della linea¹⁶.

L'ERTMS livello 2/3 utilizzando, invece, la modalità centralizzata via radio di istituzione e rimozione rallentamenti, semplifica in modo significativo l'attività annullando totalmente i costi di gestione.

In base a quanto definito, nell'analisi sarà considerato come un "costo evitato" il costo medio interno per la gestione dei rallentamenti che è stato stimato dal gestore dell'infrastruttura in 100 €/km all'anno. Tale stima, ottenuta da un'analisi effettuata dal gestore dell'infrastruttura su tutta la rete, considera mediamente l'istituzione di cinque rallentamenti l'anno su una tratta di 200 km e un costo medio interno pari € 4.000 a rallentamento (incluso ore uomo, costi interruzione e materiali).

Nella tabella che segue sono riportati i costi, cumulati per l'intero orizzonte d'analisi, che conseguono alla gestione dei rallentamenti per i differenti scenari in analisi.

¹⁴ Blocco Automatico

¹⁵ Blocco Conta Assi

¹⁶ Fonte: "Piano di sviluppo ERTMS sulla rete RFI, vers G"

Tabella 15 - Costi per la gestione dei rallentamenti

| | Scenario 0 | Scenario A | Scenario B |
|---|------------|------------|------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Costi per la gestione dei rallentamenti | -37.270 | -34.424 | -16.733 |

Costi del personale

L'upgrade tecnologico delle linee oggetto di intervento, in particolare l'implementazione dei sistemi SCC/SCCM e lo sviluppo dell'intervaccia di comunicazione con gli impianti ACCM, consentono di gestire la circolazione in modalità telecomandata.

I costi del personale considerati nell'analisi derivano dalla possibilità di razionalizzare il personale impiegato su ciascuna delle linee attualmente non telecomandate che potrà essere destinato ad altre funzioni aziendali, in seguito all'installazione dei sistemi ACC/ACCM. Il costo recuperato per ciascun dipendente è stimato in 40.000 € annui, considerato il costo lordo medio di un dipendente.

Nella tabella che segue si riportano i costi relativi ad ogni scenario di analisi.

Tabella 16 - Costi per il personale

| | Scenario 0 | Scenario A | Scenario B |
|---------------------------------|------------|------------|------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Costi di recupero del personale | -225.440 | -225.440 | -227.040 |

Costi per i rinnovi

L'analisi effettuata valuta l'implementazione di un piano di interventi tecnologici, la cui vita utile è ipotizzata di circa 25 anni. Di conseguenza, durante l'orizzonte d'analisi saranno considerati i costi per i rinnovi di tali tecnologie, in particolare:

- SCMT – installato tra il 2003 ed il 2008 - che si ipotizza dovrà essere rinnovato entro il 2035. In caso il sistema SCMT sia dismesso prima di tale termine, si evita un costo medio a km pari a 120.000€¹⁷ o 200.000€¹⁷, rispettivamente per le linee attrezzate con SCMT + BA e SCMT + BCA . Tale costo include l'adeguamento del sistema SCMT alle nuove funzionalità imposte dal contesto normativo delineato da ANSF;
- ERTMS, stimati pari a 80.000 €/km che dovranno essere sostenuti dal gestore dell'infrastruttura al termine della vita utile del sistema, ovvero circa 25 anni dopo l'attrezzaggio della rete. Il costo di rinnovo ERTMS è stimato pari all'80% del costo di installazione del sistema (100.000 €/km).

La tabella che segue riepiloga i valori che definiscono i costi di rinnovo nei differenti scenari analizzati.

Tabella 17 - Costi per i rinnovi

| | Scenario 0 | Scenario A | Scenario B |
|---------------------|------------|------------|------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Costi per i rinnovi | -3.127.382 | -2.176.409 | -1.366.179 |

¹⁷ Fonte: dati RFI

Costi di gestione annui

Si riportano di seguito i *rate* medi per anno e cumulati relativi ad i costi operativi sopracitati da sostenere durante l'orizzonte d'analisi, inclusi i costi già finanziati nell'ambito del Breakthrough Program.

| | Rate (G€) | | |
|-----------|------------|------------|------------|
| | Scenario O | Scenario A | Scenario B |
| 2018-2022 | -0,2 | -0,2 | -0,2 |
| 2023-2026 | -0,2 | -0,2 | -0,2 |
| 2027-2030 | -0,3 | -0,3 | -0,2 |
| 2031-2035 | -0,4 | -0,4 | -0,1 |
| 2036-2040 | -0,1 | -0,1 | -0,1 |
| 2041-2050 | -0,1 | -0,1 | -0,1 |
| 2051-2060 | -0,3 | -0,1 | -0,2 |

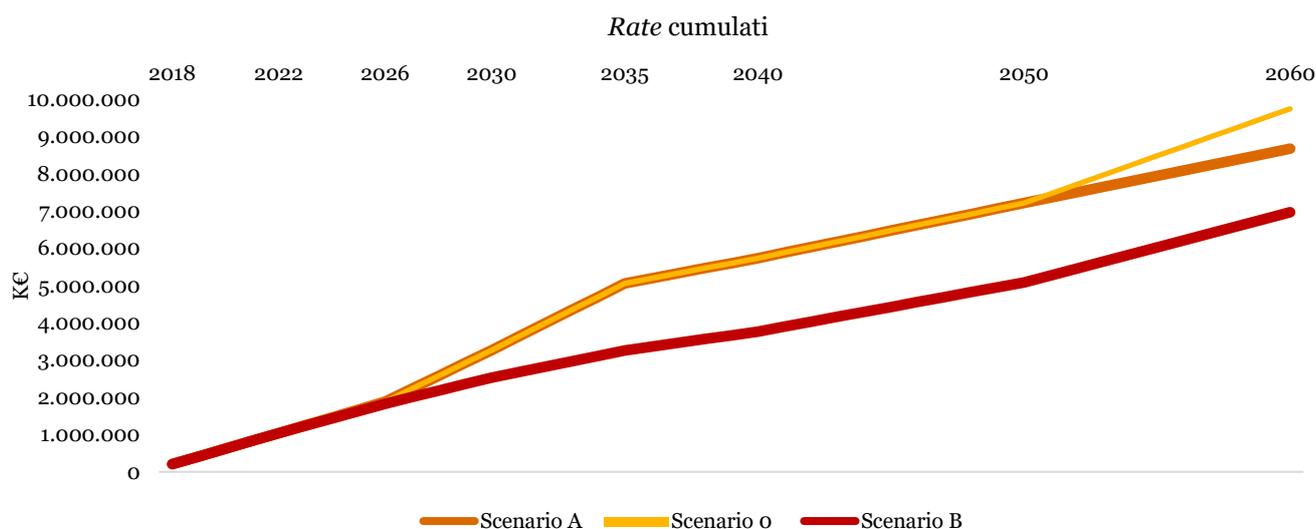
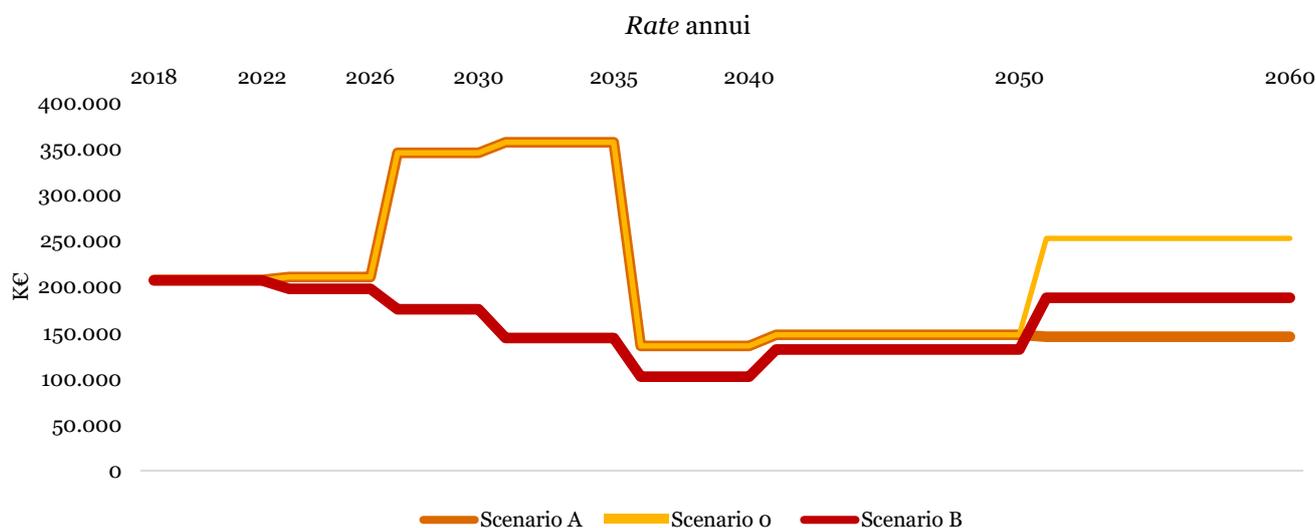


Grafico 5 - Rate di gestione medi annui e cumulati

5.3. Impatti finanziari per le imprese ferroviarie

5.3.1. Costi di investimento

I costi di investimento per le imprese ferroviarie sono rappresentati dall'attrezzaggio del sottosistema di bordo della flotta.

Sulla base di una analisi svolta dal gestore dell'infrastruttura, i costi di primo attrezzaggio dei sottosistemi di bordo sono stimati in circa:

- 250 k€/testa di serie per la progettazione e l'*upgrading* di una testa di serie;
- 60 k€/cabina per l'*upgrading* da SCMT a ERTMS + SCMT integrato;
- 300 k€/cabina bordo ERTMS + SCMT integrato ex novo.

Il costo dell'investimento per l'attrezzaggio dell'intero parco rotabile è stimato in 319 milioni di euro per tutti gli scenari d'analisi. Tale costo è connesso alla progettazione e all'allestimento di 100 teste di serie e all'*upgrading* del sottosistema di bordo per le restanti 4.900 cabine attualmente circolanti sulla rete ferroviaria nazionale.

Nonostante l'intero parco rotabile si ipotizza sia attrezzato entro il 2035 in tutti gli scenari in analisi, i *rate* annui di realizzazione degli investimenti variano in funzione dello scenario considerato.

Nel piano accelerato, si ipotizza che - a fronte di incentivi per le imprese ferroviarie - la maggior parte del parco rotabile (3.100 cabine) sia attrezzato entro il 2026. Per quanto riguarda gli scenari 0 ed A, si ipotizza, invece, una migrazione graduale del parco rotabile verso la tecnologia ERTMS da completarsi entro il 2035.

5.3.2. Costi di gestione

I costi di gestione per le imprese ferroviarie sono definita in funzione della variazione dei costi di manutenzione del bordo in caso di attrezzaggio con SCMT o di *upgrading* del sistema esistente.

Costi di manutenzione ordinaria

I costi di manutenzione ordinaria del materiale rotabile variano in funzione del sistema di segnalamento utilizzato. In particolare, l'attrezzaggio della cabina con doppio sistema di segnalamento, genera un aumento dei costi di gestione del 10% rispetto al costo di gestione di una cabina attrezzata con SCMT (circa 11.000 €/anno).

Sebbene comporti un aumento dei costi di gestione per le imprese ferroviarie, studi commissionati dalla UE hanno evidenziato la maggiore convenienza della strategia *dual on board*, selezionata come modalità di migrazione in tutti gli scenari d'analisi, dati:

- minori costi di attrezzaggio/gestione del doppio sottosistema di bordo rispetto al doppio sottosistema terra;
- minori tempi necessari per il retrofitting dell'intera flotta¹⁸.

¹⁸ Fonte: "Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale"

Le variazioni relative ai costi di manutenzione sono riportate nella tabella che segue evidenziando i risultati dell'analisi per ogni scenario.

Tabella 18 - Variazione dei costi di manutenzione ordinaria del parco rotabile

| | Scenario 0 | Scenario A | Scenario B |
|---------------------|-------------------|-------------------|-------------------|
| | Costo (k€) | Costo (k€) | Costo (k€) |
| Costi per i rinnovi | -2.001.921 | -2.001.921 | -2.111.874 |

5.4. Risultati dell'analisi finanziaria

Nella tabella che segue si riporta un quadro di sintesi dell'analisi finanziaria, dove ad ogni scenario d'analisi sono associati i costi attualizzati ed il Valore Attuale Netto.

Tabella 19 - Risultati dell'analisi finanziaria

| | Scenario 0 | | Scenario A | | Scenario B | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | VAN | € 2.018 | VAN | € 2.018 | VAN | € 2.018 |
| Costi di investimento linea | -1.189.870 | -2.096.912 | -1.371.666 | -2.869.955 | -1.857.866 | -2.869.955 |
| Costi di investimento ACC e sistemi correlati | -6.558.022 | -9.700.815 | -6.558.022 | -9.700.815 | -5.200.370 | -8.139.872 |
| Costi di sovrapposizione | -271.858 | -357.499 | -271.858 | -357.499 | -5.970 | -7.226 |
| Costi di adeguamento ACC | -17.929 | -29.800 | -18.698 | -33.000 | -21.400 | -33.000 |
| Costi di dismissione | -375.464 | -668.972 | -398.209 | -765.172 | -136.460 | -217.099 |
| Costi addizionali | -223.271 | -397.365 | -270.860 | -600.000 | -383.015 | -600.000 |
| Costi interni | -303.543 | -462.365 | -309.907 | -489.404 | -261.442 | -408.132 |
| Costi di upgrade del sistema SCMT | -323.819 | -403.366 | -323.819 | -403.366 | -48.684 | -55.299 |
| Costi di manutenzione ordinaria | -3.230.630 | -6.023.748 | -3.205.487 | -5.908.515 | -2.776.147 | -5.030.163 |
| Costi di gestione rallentamenti | -21.999 | -37.270 | -21.378 | -34.424 | -13.392 | -16.733 |
| Costi di rinnovo | -1.313.145 | -3.127.382 | -1.102.216 | -2.176.409 | -414.400 | -1.366.179 |
| Costi di recupero del personale | -188.745 | -225.440 | -188.745 | -225.440 | -192.445 | -227.040 |
| Totale infrastruttura | -14.018.295 | -23.530.934 | -14.040.865 | -23.563.999 | -11.311.591 | -18.970.698 |
| Costi per investimento rotabili | -222.778 | -319.000 | -222.778 | -319.000 | -237.857 | -319.000 |
| Costi di gestione rotabili | -790.169 | -2.001.921 | -790.169 | -2.001.921 | -869.233 | -2.111.874 |
| Totale IF | -1.012.947 | -2.320.921 | -1.012.947 | -2.320.921 | -1.107.090 | -2.430.874 |
| Totale piano | -15.031.242 | -25.851.855 | -15.053.812 | -25.884.920 | -12.418.681 | -21.401.572 |

I costi attualizzati del Programma – riportati nella tabella precedente – sono sintetizzati per ciascuno scenario d'analisi nei grafici che seguono.



Grafico 6 – Costi attualizzati del Programma per scenario d’analisi

Come si evince dalla tabella, i costi d’investimento e gestione connessi alla realizzazione del piano accelerato (scenario B) comportano rispetto allo Scenario inerziale (scenario 0) una riduzione di 4,4 miliardi di euro.

Il confronto tra lo scenario A e lo scenario 0 inerziale, invece, evidenzia un incremento dei costi d’investimento per il gestore dell’infrastruttura pari a 0,03 miliardi di euro, compensato però da un equivalente riduzione dei costi di gestione.

6. Analisi economica

I valori di costo ottenuti dai risultati dell'analisi finanziaria sono stati tradotti in valori economici tramite la sottrazione delle quote di trasferimento allo Stato che non costituiscono, sotto il profilo collettivo, consumo di risorse (es. imposte, oneri sociali, ecc.).

La metodologia utilizzata per la conversione da costi finanziari a costi economici viene proposta nei "Quaderni del PON Trasporti n. 2 - 2006", redatto dal Ministero delle Infrastrutture e dei Trasporti.

Considerando che i costi di investimento sostenuti da RFI sono al netto dell'IVA, nell'ambito dell'ACB si utilizzano i fattori di conversione da valori senza IVA riportati nella tabella che segue, sia per il gestore dell'infrastruttura che per le imprese ferroviarie.

Tabella 20 - Fattori di conversione costi d'investimento

| Voce di costo | Fattore di conversione (da valori senza IVA) | Note sul calcolo dei fattori |
|-------------------|---|--|
| Materiali | 1,000 | |
| Manodopera | 0,710 | Scorporo oneri sociali (valore 2016 per settore "costruzioni": 29%, fonte ISTAT, 2016) |

La tabella seguente definisce, invece, i fattori di conversione utilizzati nell'ambito dell'analisi per la variazione dei costi di gestione sostenuti dal gestore dell'infrastruttura come dalle imprese ferroviarie.

Tabella 21 - Fattori di conversione costi di gestione

| Voce di costo | Fattore di conversione (da valori senza IVA) | Note sul calcolo dei fattori |
|-----------------------------------|---|--|
| Manutenzione e altri costi | 1,000 | |
| Personale | 0,710 | Scorporo oneri sociali (valore 2016 per settore "costruzioni": 29%, fonte ISTAT, 2016) |

Si riporta la ripartizione percentuale tra le voci di costo, indicate nelle tabelle precedenti, considerate per i costi d'investimento ed i costi di gestione.

Tabella 22 - Ripartizione percentuale per voci di costo

| Costi di investimento | Voce di costo | |
|--|---------------|------------|
| | Materiali | Manodopera |
| <i>Costi di investimento ACC e sistemi correlati</i> | | |
| Realizzazione SCCM | 60% | 40% |
| Realizzazione ACC/ACCM - Linea | 40% | 60% |
| Realizzazione ACC/ACCM - Impianti | 50% | 50% |
| Realizzazione ACC/ACCM ERTMS oriented - Linea | 30% | 70% |
| Realizzazione ACC/ACCM ERTMS oriented - Impianti | 50% | 50% |
| <i>Costi di investimento linea</i> | | |
| ERTMS Terra | 60% | 40% |
| Cdb audiofrequenza | 70% | 30% |
| Estensione GSM-R | 60% | 40% |
| Potenziamento GSM-R | 60% | 40% |

| Voce di costo | | |
|---|------------------------------------|-------------------|
| <i>Costi di sovrapposizione</i> | | |
| Riconfigurazione Classe B/Interfacciamenti Impianti esistenti | 70% | 30% |
| Impianti ACC | 30% | 70% |
| <i>Costi di adeguamento ACC</i> | | |
| | 30% | 70% |
| <i>Costi di dismissione ACC</i> | | |
| Decommissioning SCMT (impianti) | 30% | 70% |
| Decommissioning SCMT (linea) | 70% | 30% |
| <i>Costi di upgrade SCMT</i> | | |
| SCMT + BA | 40% | 60% |
| SCMT + BCA | 40% | 60% |
| <i>Costi addizionali</i> | | |
| | 0% | 100% |
| <i>Costi interni</i> | | |
| Linea | 0% | 100% |
| Impianti | 0% | 100% |
| Costi di gestione | | |
| | Manutenzione ed altri costi | Personale |
| <i>Costi di manutenzione ordinaria</i> | | |
| SCMT + BA | 80% | 20% |
| SCMT + BCA | 80% | 20% |
| SCMT + BA (doppio attrezzaggio) | 80% | 20% |
| SCMT + BCA (doppio attrezzaggio) | 80% | 20% |
| ERTMS alone | 0% | 100% |
| <i>Costi di gestione rallentamenti</i> | | |
| SCMT | 80% | 20% |
| ERTMS | 100% | 0% |
| <i>Costi di rinnovo</i> | | |
| SCMT | 60% | 40% |
| ERTMS | 60% | 40% |
| <i>Costi di recupero personale</i> | | |
| SCMT | 0% | 100% |
| ERTMS | 0% | 100% |
| Bordi | | |
| Costi di investimento | | |
| | Materiali | Manodopera |
| <i>Upgrading (progettazione e allestimento TDS)</i> | | |
| | 100% | 0% |
| Costi di gestione | | |
| | Manutenzione ed altri costi | Personale |
| <i>Manutenzione ordinaria bordo</i> | | |
| Doppio attrezzaggio | 50% | 50% |
| ERTMS alone | 50% | 50% |

Fonte: RFI

6.1. Risultati dell'analisi economica

Nella tabella che segue si riporta un quadro di sintesi dei risultati dell'analisi economica, dove ad ogni scenario sono associati i costi attualizzati ed il Valore Attuale Netto, ottenuto sulla base di un tasso di attualizzazione pari al 3%.

Tabella 23 - Risultati dell'analisi economica

| | Scenario 0 | | Scenario A | | Scenario B | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | VAN | € 2.018 | VAN | € 2.018 | VAN | € 2.018 |
| Costi di investimento linea | -1.219.067 | -1.879.442 | -1.449.292 | -2.565.444 | -1.845.474 | -2.565.444 |
| Costi di investimento ACC e sistemi correlati | -6.170.730 | -8.308.450 | -6.170.730 | -8.308.450 | -4.942.106 | -6.942.895 |
| Costi di sovrapposizione | -261.534 | -321.525 | -261.534 | -321.525 | -5.653 | -6.528 |
| Costi di adeguamento ACC | -16.088 | -23.751 | -16.958 | -26.301 | -18.957 | -26.301 |
| Costi di dismissione | -383.308 | -591.794 | -409.143 | -668.466 | -137.841 | -195.822 |
| Costi aggiuntivi | -181.203 | -282.129 | -229.435 | -426.000 | -303.064 | -426.000 |
| Costi interni | -238.291 | -328.279 | -244.737 | -347.477 | -206.695 | -289.774 |
| Costi di upgrade del sistema SCMT | -282.203 | -333.180 | -282.203 | -333.180 | -41.480 | -45.677 |
| Costi di manutenzione ordinaria | -3.319.494 | -5.308.318 | -3.271.244 | -5.156.194 | -2.645.927 | -4.057.892 |
| Costi di gestione rallentamenti | -23.211 | -35.108 | -22.361 | -32.428 | -13.293 | -15.762 |
| Costi di rinnovo | -1.410.951 | -2.764.606 | -1.140.939 | -1.923.945 | -484.575 | -1.207.702 |
| Costi di recupero del personale | -139.694 | -160.062 | -139.694 | -160.062 | -142.111 | -161.198 |
| Totale infrastruttura | -13.645.774 | -20.336.644 | -13.638.270 | -20.269.472 | -10.787.176 | -15.940.995 |
| Costi per investimento rotabili | -242.714 | -319.000 | -242.714 | -319.000 | -255.084 | -319.000 |
| Costi di gestione rotabili | -837.355 | -1.711.642 | -837.355 | -1.711.642 | -910.581 | -1.805.652 |
| Totale IF | -1.080.069 | -2.030.642 | -1.080.069 | -2.030.642 | -1.165.665 | -2.124.652 |
| Totale piano | -14.725.843 | -22.367.286 | -14.718.339 | -22.300.114 | -11.952.841 | -18.065.647 |

I risultati dell'analisi economica riflettono quanto già evidenziato nell'analisi finanziaria, dimostrando come l'implementazione del piano accelerato comporti una riduzione dei costi totali pari a 4,3 miliardi di euro, mentre la realizzazione dell'investimento secondo quanto definito dallo scenario A è connesso a costi del piano per lo più equivalenti.

7. Analisi socio-economica

L'analisi socio-economica è stata effettuata in conformità alle indicazioni della guida *“Guide to Cost-Benefit Analysis of investment Projects (2014)”* ed ha come obiettivo la valutazione e monetizzazione degli impatti economici e sociali generati dalla realizzazione del piano *“Implementazione del sistema ERTMS sulla rete nazionale”*.

L'analisi è svolta al netto dell'inflazione, considerando valori costanti (espressi in € 2018) e un tasso di attualizzazione socio-economico pari al 3%.

7.1. Ipotesi alla base dell'analisi

Alla base dell'analisi socio-economica proposta sono state considerate le seguenti ipotesi, valide sia per il gestore dell'infrastruttura che per le imprese ferroviarie:

- l'arco temporale della valutazione si estende fino al 2060, anno terminale degli interventi di adeguamento della rete per tutti gli scenari presi in esame e anno di fine della concessione RFI;
- l'anno base per l'attualizzazione dei flussi è il 2018;
- la variabile inflattiva non viene presa in considerazione, poiché l'analisi verrà effettuata considerando costi stimati in valori costanti, che quindi richiedono l'impiego di tassi reali di sconto per la determinazione degli indicatori sintetici;
- il tasso di sconto utilizzato per l'analisi socio-economica corrisponde al tasso suggerito nella *“Guide to Cost-Benefit Analysis of investment Projects (2014)”* pari al 3%.

La tabella che segue presenta un riepilogo delle ipotesi alla base dell'analisi finanziaria.

Tabella 24 - Ipotesi alla base dell'analisi finanziaria

| Voci/Parametri | Ipotesi |
|------------------------------------|--------------------------|
| Tasso di attualizzazione reale | 3% |
| Anno Base di attualizzazione | 2018 |
| Orizzonte temporale di valutazione | 2060 |
| Unità di conto | € 2018 a prezzi costanti |

7.2. Analisi di traffico

L'analisi costi-benefici del Programma è stata effettuata, come anticipato al paragrafo 2.2, considerando invarianti il livello di capacità della rete¹⁹ e il modello di esercizio nell'orizzonte d'analisi considerato. Tale ipotesi è da considerarsi conservativa in relazione alla quantificazione dei benefici.

Il traffico giornaliero, classificato per categoria di treno, considerato nell'ambito dell'analisi - derivato dal sistema PIC treni programmati per il giorno 13 marzo 2019 - è riportato nella tabella seguente²⁰.

¹⁹ Come anticipato in premessa, l'impatto in termini di capacità, richiedendo ulteriori approfondimenti, verrà quantificato in una successiva versione dell'analisi costi benefici.

²⁰ Elaborazione PwC su dati di circolazione forniti da RFI

Tabella 25 - Traffico giornaliero per categoria treno

| Categoria treno | Treni/giorno |
|---------------------|---------------|
| Lunga percorrenza | 401 |
| Regionale | 9.133 |
| Merci ²¹ | 565 |
| Totale | 10.099 |

Al fine di monetizzare gli impatti socio-economici connessi ai benefici del Programma è necessario definire il traffico per tipologia di treno che, circolando sull'infrastruttura ferroviaria, usufruirà dei benefici garantiti dall'implementazione del sistema ERTMS.

Il traffico (espresso in termini di numerosità di treni circolanti) relativo alle sezioni di rete attrezzate con ERTMS è stato stimato applicando la seguente metodologia.

1. Definizione della curva cumulata di km attrezzati per anno, classificati per tipologia di attrezzaggio tecnologico (SCMT + BA verso SCMT + BCA).

I grafici che seguono riportano il dettaglio dei km di rete attrezzati per anno negli scenari d'analisi.

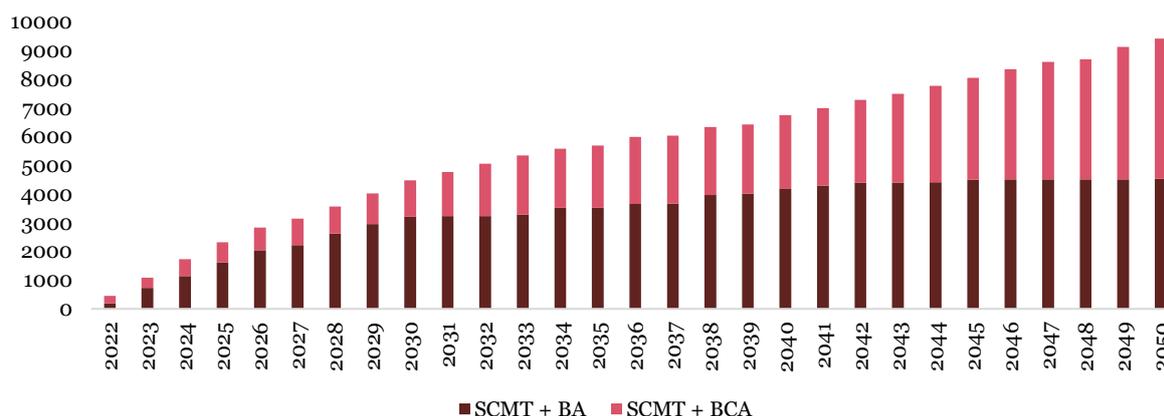


Grafico 7 - Curva cumulata di km attrezzati per anno classificati per attrezzaggio tecnologico – Scenario 0

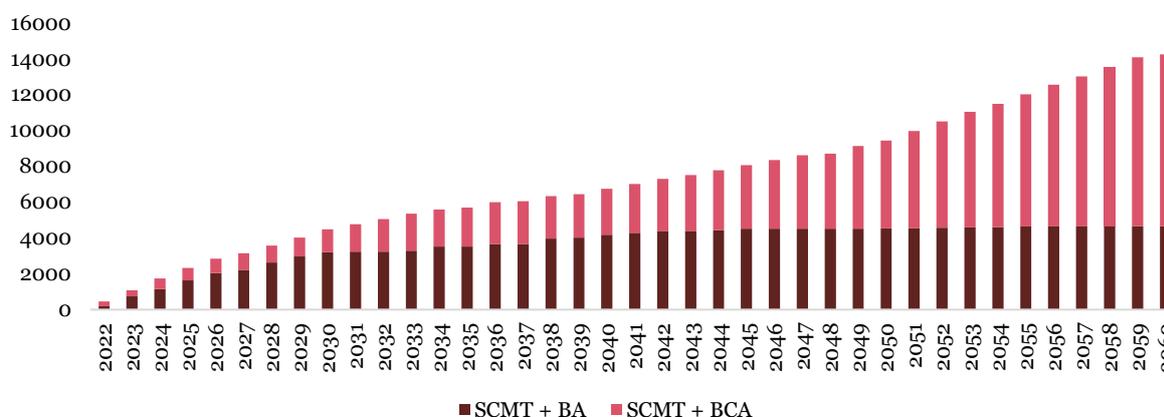


Grafico 8 - Curva cumulata di km attrezzati per anno classificati per attrezzaggio tecnologico – Scenario A

²¹ Il dato programmato dei treni merci è stato modulato in accordo con RFI, al fine di considerare l'impatto delle cancellazioni e dei treni straordinari.

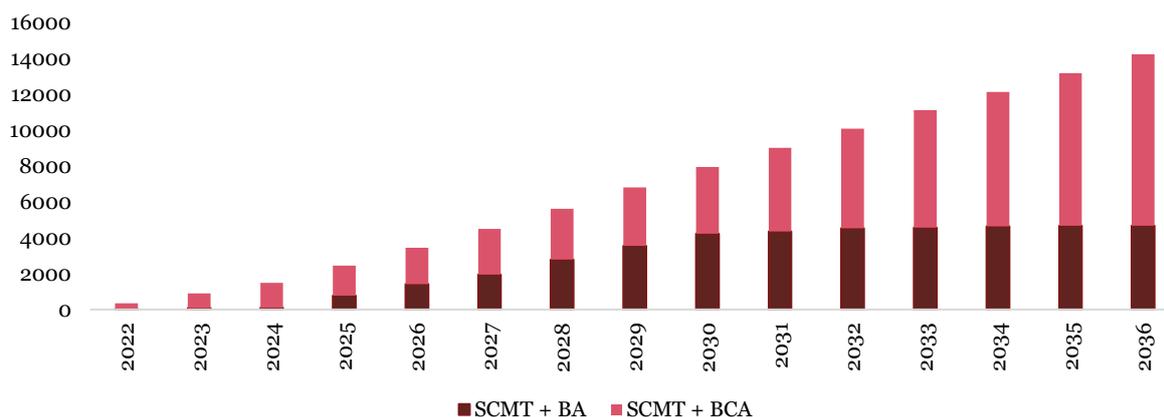


Grafico 9 - Curva cumulata di km attrezzati per anno classificati per attrezzaggio tecnologico – Scenario B
2. Calcolo della percentuale di attrezzaggio di km annua per attrezzaggio tecnologico.

Le tabelle che seguono definiscono la percentuale di attrezzaggio della rete con ERTMS rispetto all'estensione totale.

Tabella 26 - Percentuale di attrezzaggio di km annua per attrezzaggio tecnologico - Scenario 0

| Scenario 0 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| SCMT + BA | 8% | 13% | 29% | 36% | 44% | 53% | 63% | 71% | 74% | 74% | 75% | 77% | 82% | 84% | |
| SCMT + BCA | 3% | 4% | 4% | 7% | 9% | 11% | 13% | 14% | 16% | 18% | 21% | 23% | 23% | 24% | |
| | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | |
| SCMT + BA | 85% | 89% | 90% | 94% | 94% | 94% | 94% | 95% | 97% | 97% | 97% | 97% | 97% | 98% | |
| SCMT + BCA | 25% | 26% | 28% | 28% | 30% | 32% | 34% | 37% | 39% | 41% | 44% | 45% | 49% | 52% | |
| | 2050 | | | | | | | | | | | | | | |
| SCMT + BA | 98% | | | | | | | | | | | | | | |
| SCMT + BCA | 53% | | | | | | | | | | | | | | |

Tabella 27 - Percentuale di attrezzaggio di km annua per attrezzaggio tecnologico - Scenario A

| Scenario A | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| SCMT + BA | 8% | 13% | 29% | 36% | 44% | 53% | 63% | 71% | 74% | 74% | 75% | 77% | 82% | 84% |
| SCMT + BCA | 3% | 4% | 4% | 7% | 9% | 11% | 13% | 14% | 16% | 18% | 21% | 23% | 23% | 24% |
| | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
| SCMT + BA | 85% | 89% | 90% | 94% | 94% | 94% | 94% | 95% | 97% | 97% | 97% | 97% | 97% | 98% |
| SCMT + BCA | 25% | 26% | 28% | 28% | 30% | 32% | 34% | 37% | 39% | 41% | 44% | 45% | 49% | 52% |
| | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | | | |
| SCMT + BA | 98% | 98% | 98% | 99% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | | | |
| SCMT + BCA | 53% | 58% | 63% | 68% | 73% | 78% | 83% | 89% | 94% | 99% | 100% | | | |

Tabella 28 - Percentuale di attrezzaggio di km annua per attrezzaggio tecnologico - Scenario B

| Scenario B | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| SCMT + BA | 8% | 15% | 18% | 30% | 42% | 51% | 66% | 80% | 92% | 94% | 98% | 98% | 99% | 100% | |
| SCMT + BCA | 7% | 12% | 18% | 20% | 24% | 29% | 32% | 37% | 41% | 51% | 60% | 70% | 79% | 89% | |
| | 2036 | | | | | | | | | | | | | | |
| SCMT + BA | 100% | | | | | | | | | | | | | | |
| SCMT + BCA | 100% | | | | | | | | | | | | | | |

3. Elaborazione del numero dei treni giorno che ogni anno beneficiano dell'implementazione di ERTMS.

I grafici che seguono riportano, per tutti gli scenari d'analisi, il numero di treni giorno che, per ogni anno nell'ambito del periodo di valutazione, beneficeranno dell'implementazione del sistema ERTMS.

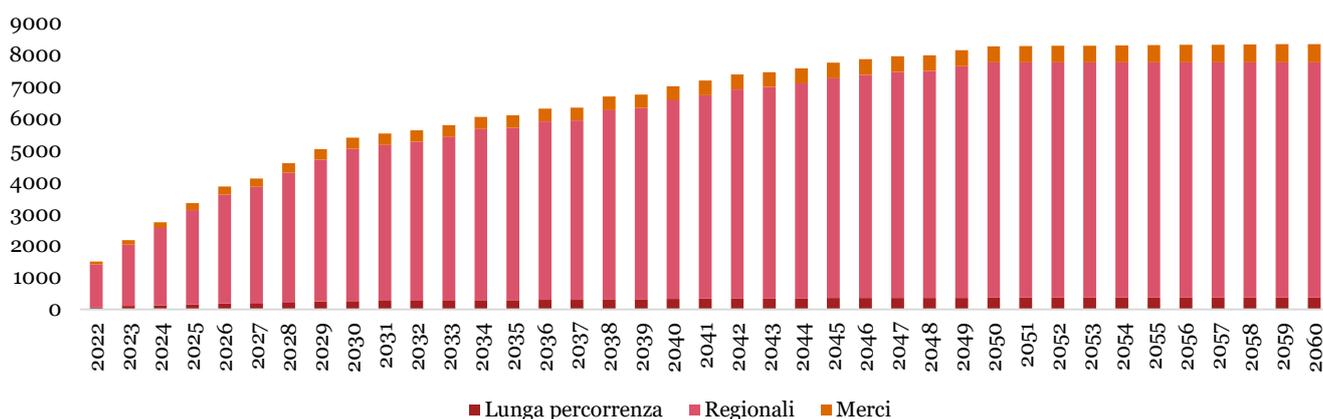


Grafico 10 - Treni giorno che ogni anno beneficiano dell'implementazione di ERTMS – Scenario 0

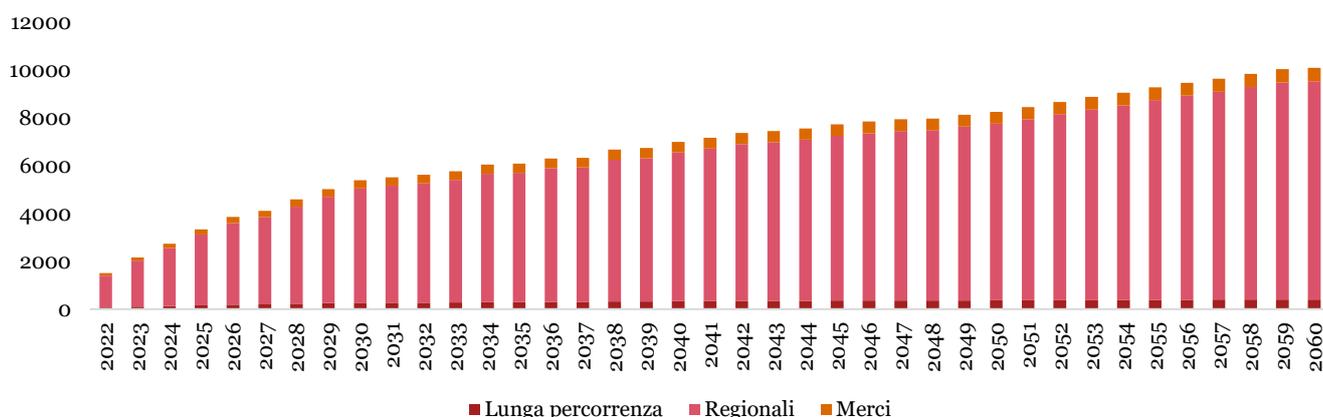


Grafico 11 - Treni giorno che ogni anno beneficiano dell'implementazione di ERTMS – Scenario A

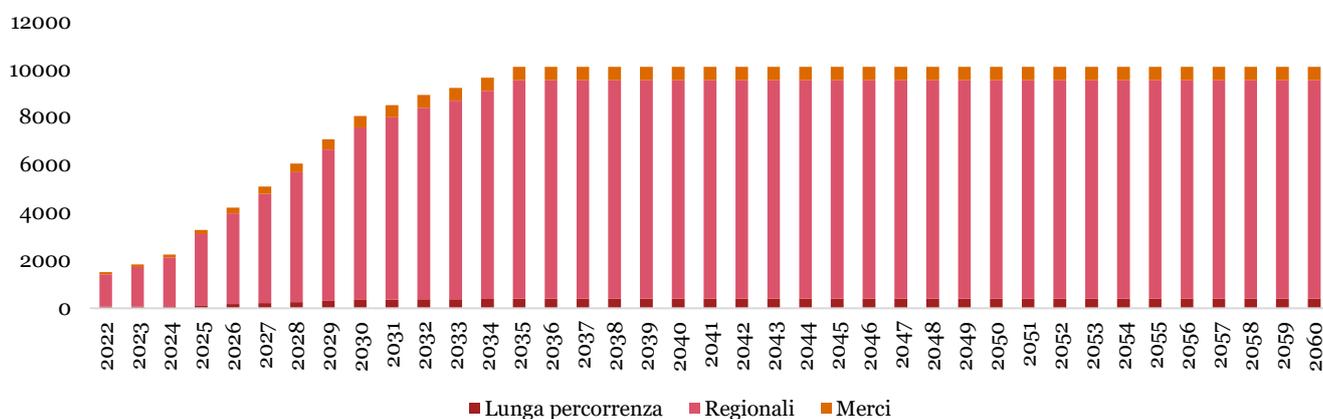


Grafico 12 - Treni giorno che ogni anno beneficiano dell'implementazione di ERTMS – Scenario B

4. Elaborazione del numero dei treni anno che beneficiano dell'implementazione di ERTMS.

Il numero di treni anno circolanti sull'infrastruttura ferroviaria è stato calcolato moltiplicando il numero dei treni giorno per i giorni d'esercizio.

Nella tabella che segue sono riportati i giorni di circolazione considerati nell'analisi in funzione delle categorie di treno.

Tabella 29 - Giorni d'esercizio ferroviario per categoria treno

| Categoria treno | Giorni d'esercizio/anno ²² |
|-------------------|---------------------------------------|
| Lunga percorrenza | 350 |
| Regionale | 320 |
| Merchi | 280 |

5. Elaborazione del numero di passeggeri e tonnellate anno che beneficiano dell'implementazione di ERTMS.

Il numero di passeggeri o tonnellate circolanti sulla rete nazionale è stato stimato moltiplicando il numero di treni anno per i *load factor*²³ riportati nella tabella che segue. Considerando che l'analisi è svolta ipotizzando traffico costante nell'intero orizzonte, i passeggeri e le tonnellate anno stimate sono ottenute sulla base di un modello d'esercizio invariato. Tale assunzione rende cautelativa la stima di passeggeri o tonnellate inclusi nell'analisi.

Tabella 30 - Load factor per categoria treno

| Categoria treno | pax/treno – t/treno |
|-------------------|---------------------|
| Lunga percorrenza | 243 |
| Regionale | 122 |
| Merchi | 500 |

7.3. Benefici quantitativi

Gli impatti socio-economici connessi all'implementazione del sistema ERTMS sono prevalentemente legati all'aumento di *affidabilità, puntualità e stabilità* offerto dal sistema rispetto alle tecnologie attualmente implementate sui 14.227 km di rete nazionale in analisi.

Tali impatti si traducono in benefici derivanti dal risparmio di tempo di viaggio degli utenti/operatori ferroviari direttamente coinvolti. L'indicatore è stato calcolato come prodotto del valore economico del tempo per la quantità di tempo risparmiato dalle persone e/o merci che attualmente utilizzano la rete ferroviaria italiana, essendo l'analisi svolta nell'ipotesi di traffico costante.

Per la quantificazione monetaria del risparmio dei tempi di viaggio occorre:

- stimare il tempo di percorrenza "senza" e "con" intervento;

²² Dati di circolazione RFI

²³ Fonte: Conto Nazionale Trasporti, 2018

- monetizzare i tempi di percorrenza.

Il grafico che segue sintetizza la metodologia utilizzata nell'analisi per la stima monetaria del risparmio economico connesso alla variazione del tempo di percorrenza.

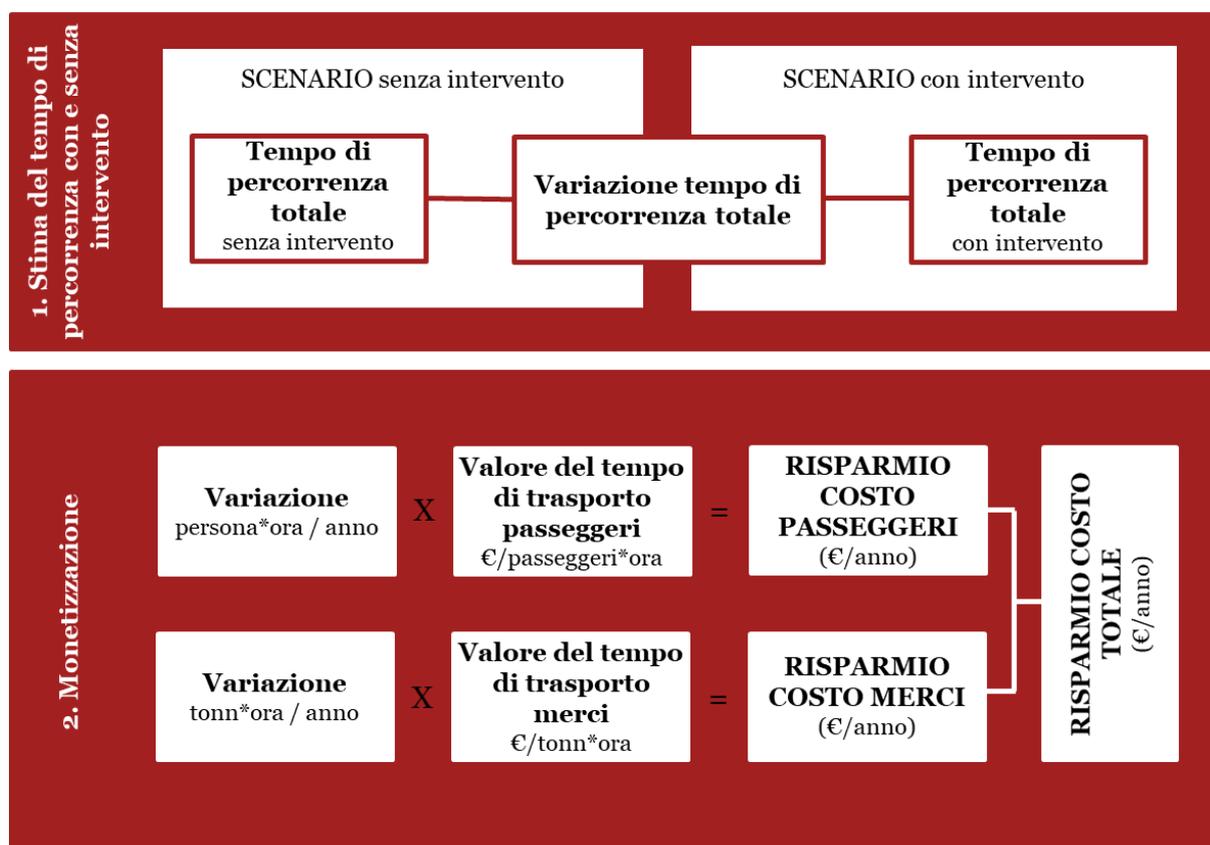


Grafico 13 - Metodologia di calcolo per la quantificazione monetaria del risparmio dei tempi di viaggio

Il valore economico del tempo è stato calcolato seguendo le indicazioni proposte dalle “Linee guida per la misura dei Costi Esterni nell’ambito del PON Trasporti 2000 – 2006”.

In sintesi, la monetizzazione dei tempi di viaggio avviene moltiplicando le variazioni attese (passeggeri*ora, tonnellate*ora) per i parametri sotto riportati.

Tabella 31 - Valori del tempo di trasporto

| Categorie di utenti | Motivi di spostamento | Proxy del valore monetario del tempo | Valore del tempo (€2018) |
|---------------------|----------------------------------|--|--------------------------|
| Passeggeri | Spostamenti per motivi di lavoro | Costo industriale medio della manodopera = Costo lavoro dipendente ²⁴ /Ore lavorative annue complessive | 23,45 € / h |
| | Spostamenti per pendolarismo | Salari orari netti medi nazionali = Reddito netto lavoro dipendente ²⁵ /Ore lavorative annue complessive | 8,79 € / h |
| | Spostamenti per altri motivi | Consumi orari pro capite nazionali = Consumi pro capite ²⁶ /Ore tempo libero medie per abitante ²⁷ | 4,91 € / h |

²⁴ Valori indicizzati sulla base del coefficiente di rivalutazione monetaria (Fonte: Rivaluta, Istat)

²⁵ Valori indicizzati sulla base del coefficiente di rivalutazione monetaria (Fonte: Rivaluta, Istat)

²⁶ Valore indicizzato sulla base del tasso d’inflazione (Fonte: IMF - International Monetary Fund)

²⁷ Valore indicizzato sulla base dell’aumento della produttività (Fonte: Eurostat)

| Categorie di utenti | Motivi di spostamento | Proxy del valore monetario del tempo | Valore del tempo (€2018) |
|---------------------|---|--------------------------------------|--------------------------|
| Merci | Spostamenti merci ²⁸ (tonn) | | 1,06 € / h |

Come definito nelle “Linee guida per la misura dei Costi Esterni nell’ambito del PON Trasporti 2000 - 2006”, i valori del tempo di trasporto verranno indicizzati nel tempo sulla base del valore effettivo o tasso effettivo di crescita del PIL pro-capite²⁹ a prezzi costanti.

Si riporta, inoltre, la ripartizione percentuale dell’utenza per motivo di spostamento³⁰ per tipologia di treno.

Tabella 32 - Ripartizione dell'utenza per motivo

| Categoria treno | pax/treno – t/treno |
|-----------------|---------------------|
| Lavoratori | 6% |
| Pendolari | 71% |
| Altri | 23% |

La metodologia definita è implementata per la monetizzazione dei seguenti impatti:

- maggiore affidabilità del sistema;
- minori ritardi nella notifica rallentamenti improvvisi;
- aumento della stabilità nei nodi.

²⁸ Valore indicizzato sulla base dell’inflazione (Fonte: IMF - International Monetary Fund)

²⁹ Fonte: data base International Monetary Fund

³⁰ Fonte: “Linee guida per la misura dei Costi Esterni nell’ambito del PON Trasporti 2000 - 2006” basato su indagine UNITE

Tali impatti, come riportato nei grafici che seguono, assicurano benefici totali per la collettività pari a 0,7 miliardi di euro nell'ipotesi di implementazione del piano accelerato.

| | Rate (G€) | | |
|-----------|------------|------------|------------|
| | Scenario 0 | Scenario A | Scenario B |
| 2018-2022 | 0,0002 | 0,0002 | 0,0003 |
| 2023-2026 | 0,0020 | 0,0020 | 0,0026 |
| 2027-2030 | 0,0044 | 0,0044 | 0,0066 |
| 2031-2035 | 0,0056 | 0,0056 | 0,0183 |
| 2036-2040 | 0,0078 | 0,0078 | 0,0226 |
| 2041-2050 | 0,0101 | 0,0101 | 0,0226 |
| 2051-2060 | 0,0108 | 0,0187 | 0,0226 |

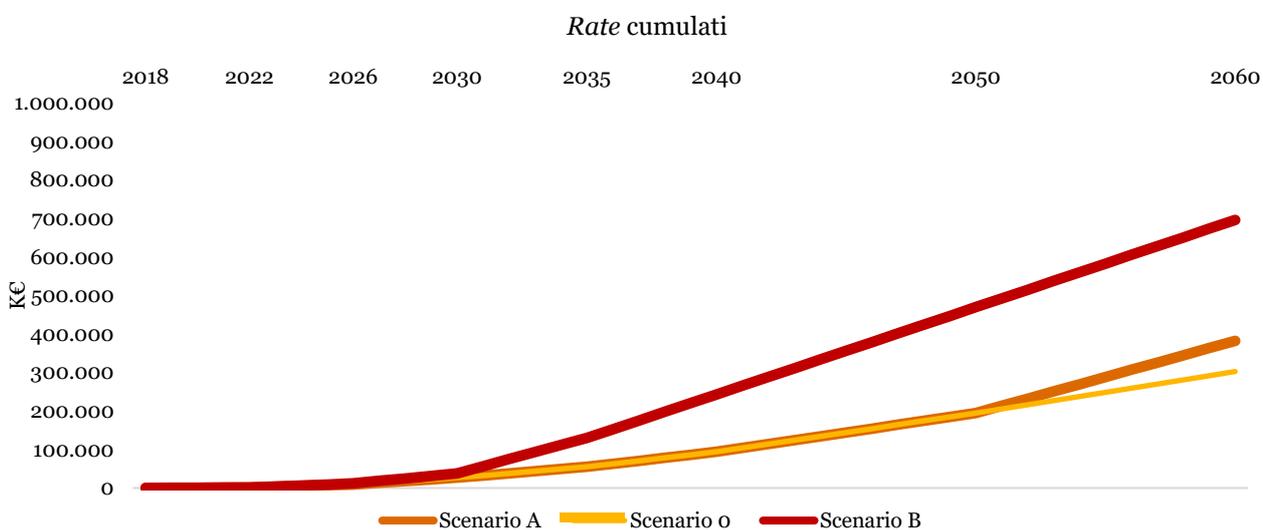
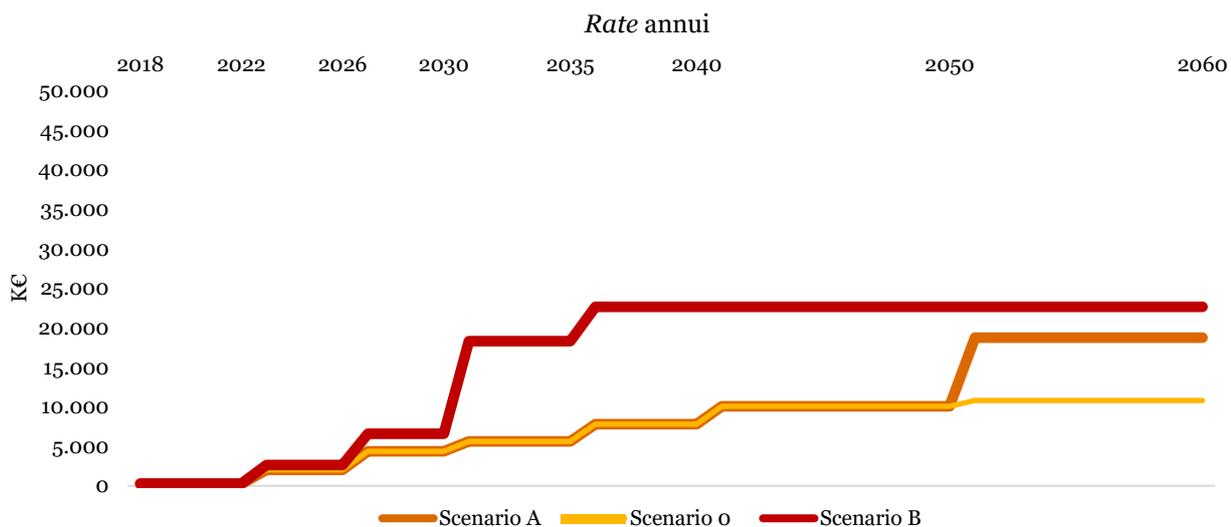


Grafico 14 - Rate dei benefici medi annui e cumulati

7.3.1. Affidabilità

Il sistema di segnalamento ERTMS assicura minori ritardi per maggiore *affidabilità* rispetto alle attuali tecnologie BA o BCA + SCMT.

La quantificazione di tale riduzione è stata stimata confrontando il numero di avarie relative ai guasti del sistema di distanziamento imputabili alla gestione dell'infrastruttura nel caso di reti attrezzate con differenti attrezzaggi tecnologici, in particolare BA + SCMT, BCA + SCMT ed ERTMS.

Le linee oggetto d'analisi sono state:

1. Roma – Firenze DD (BA +SCMT);
2. Ferrara – Rimini (BCA + SCMT);
3. Milano – Bologna AV (ERTMS).

La tabella che segue riporta, per le linee in esame, le avarie rilevate, i conseguenti ritardi ed il numero di treni coinvolti nell'analisi.

Tabella 33 – Minuti di ritardo dovuti ad avarie relative ai guasti del sistema di distanziamento³¹

| | Numero avarie | Ritardi dei treni coinvolti (min) | km | Numero treni coinvolti |
|---|---------------|-----------------------------------|-----|------------------------|
| <i>Milano – Bologna (AV) – ERTMS</i> | | | | |
| CdB | 30 | 1.551 | 250 | 492 |
| Posto Telecomandato | 4 | 171 | | |
| Punto informativo SCMT/ERTMS | 4 | 92 | | |
| Sala tecnologica sistema ACC | 9 | 214 | | |
| Stazione radio base (BTS) | 1 | 49 | | |
| Unità di elaborazione/Sottosistema | 1 | 18 | | |
| Unità gestione blocco radio | 3 | 286 | | |
| Unità periferiche - post. oper. | 1 | 290 | | |
| Unità gestione blocco radio | 2 | 1.272 | | |
| Totale | 55 | 3.943 | | |
| <i>Firenze – Roma (DD) – BA + SCMT</i> | | | | |
| Armadio relé/BA/alimentazione | 32 | 3.401 | 215 | 854 |
| Cassette smistamento/Cavi (Contenitore) | 2 | 60 | | |
| CdB | 18 | 1.123 | | |
| Garitta BA | 9 | 492 | | |
| Punto informativo SCMT/ERTMS | 8 | 383 | | |
| Segnale Ferroviario | 27 | 2.442 | | |
| Sezione BA | 38 | 1.770 | | |
| Totale | 134 | 9.671 | | |
| <i>Ferrara – Rimini – BCA + SCMT</i> | | | | |
| Armadio relé/BA/alimentazione | 6 | 354 | 125 | 143 |
| Cassette smistamento/Cavi (Contenitore) | 3 | 57 | | |
| Complesso BCA/DEAC | 28 | 2.054 | | |
| Pedali (Contenitore) | 7 | 507 | | |
| Totale | 44 | 2.972 | | |

³¹ Come indicazioni fornite da RFI

Metodologia

Partendo dalla analisi riportata, sono stati elaborati i valori definiti nella tabella che segue. In particolare, ad ogni avaria è stato associato il numero di treni interessato ed il conseguente ritardo per il singolo treno coinvolto.

Tabella 34 – Base dati minori ritardi per maggiore affidabilità

| Linea | Avarie/km | Treni/avarìa | Minuti di ritardo |
|------------|-----------|--------------|-------------------|
| SCMT + BA | 0,62 | 6 | 11 |
| SCMT + BCA | 0,35 | 3 | 21 |
| ERTMS | 0,22 | 9 | 8 |

Dal confronto dei valori definiti in tabella, avarie/km e minuti di ritardo, si considera che l'attrezzaggio della rete con il sistema ERTMS comporti:

- una riduzione del numero di avarie occorrenti sulla rete;
- una diminuzione dei minuti di ritardo per il singolo treno coinvolto nell'avarìa.

Ai fini di valutare l'impatto di tale beneficio è stata implementata la metodologia seguente.

1. Calcolo del numero di avarie evitate ed avarie di durata inferiore per anno d'analisi.

L'elaborazione del numero di avarie evitate e di inferiore durata è stata ottenuta in funzione delle avarie/km moltiplicate per i km di rete attrezzati con ERTMS annualmente, secondo le tempistiche definite dagli scenari d'analisi.

Ipotizzando l'implementazione del piano ERTMS secondo le direttive definite dallo scenario accelerato, il risultato di tale elaborazione è riportato nel grafico che segue.

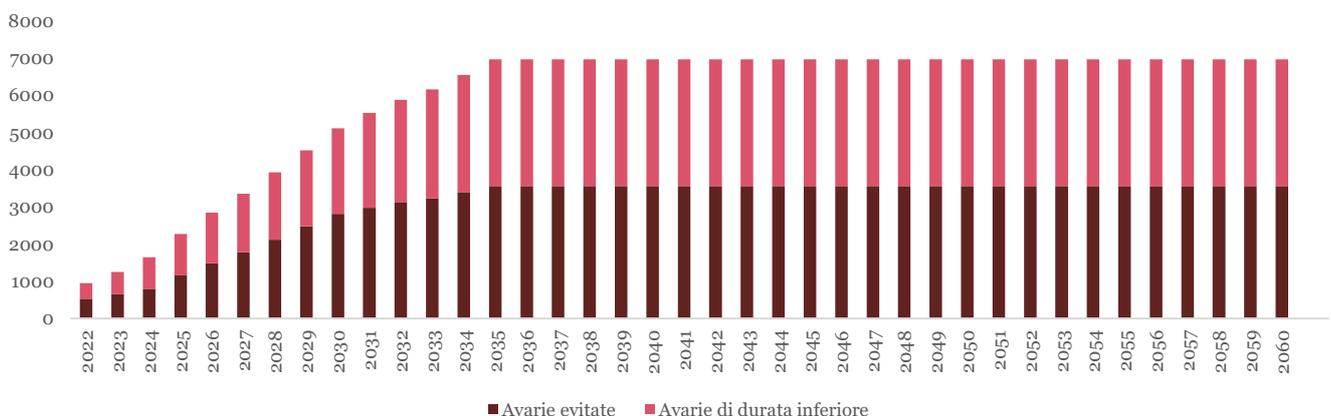


Grafico 15 – Avarie relative ai guasti del sistema di distanziamento – Scenario B

2. Definizione del numero di treni coinvolti nelle avarie per anno d'analisi.

Ad ogni avaria, relativa ai guasti del sistema di distanziamento, è stato associato il numero di treni coinvolto considerando i valori riportati in tabella 32, in relazione all'attuale attrezzaggio tecnologico.

Al completamento dell'attrezzaggio dell'intera rete ferroviaria nazionale, è atteso un risparmio di tempo per 31.291 treni all'anno.

La ripartizione percentuale³² utilizzata per stimare la categoria di treno circolante sulla rete nazionale, in funzione dell'attrezzaggio tecnologico, è derivata dal sistema PIC treni programmati per il giorno 13 marzo 2019. I risultati ottenuti si riportano nella tabella che segue.

Tabella 35 - Ripartizione percentuale per categoria treno ed attrezzaggio tecnologico

| | SCMT + BA | SCMT + BCA |
|-------------------|-----------|------------|
| Lunga percorrenza | 17% | 5% |
| Regionale | 57% | 84% |
| Merchi | 26% | 11% |

I grafici che seguono presentano il traffico distinto per categoria di treno che beneficia dell'upgrade del sistema di protezione della marcia a ERTMS, implementato secondo le tempistiche definite nello scenario B.

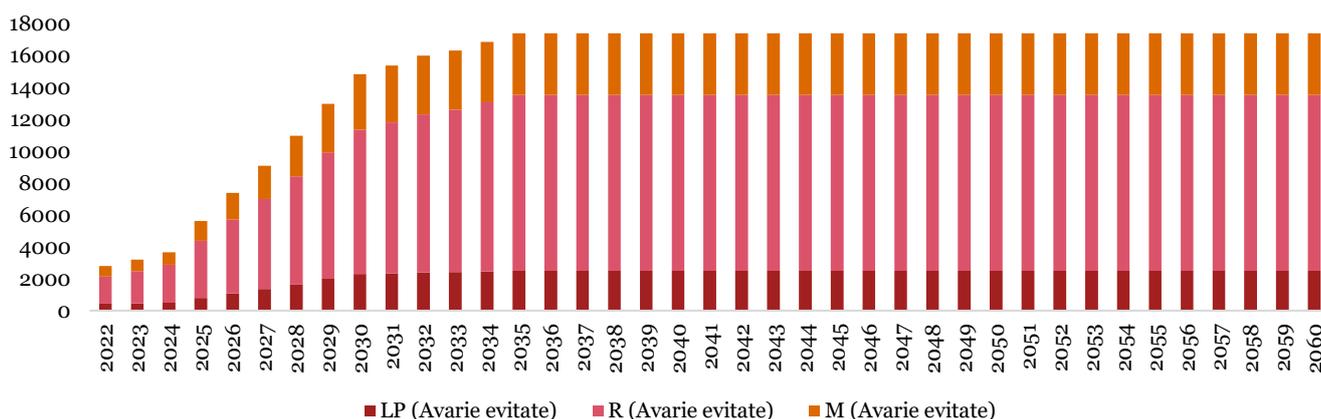


Grafico 16 – Treni coinvolti nelle avarie evitate - Scenario B

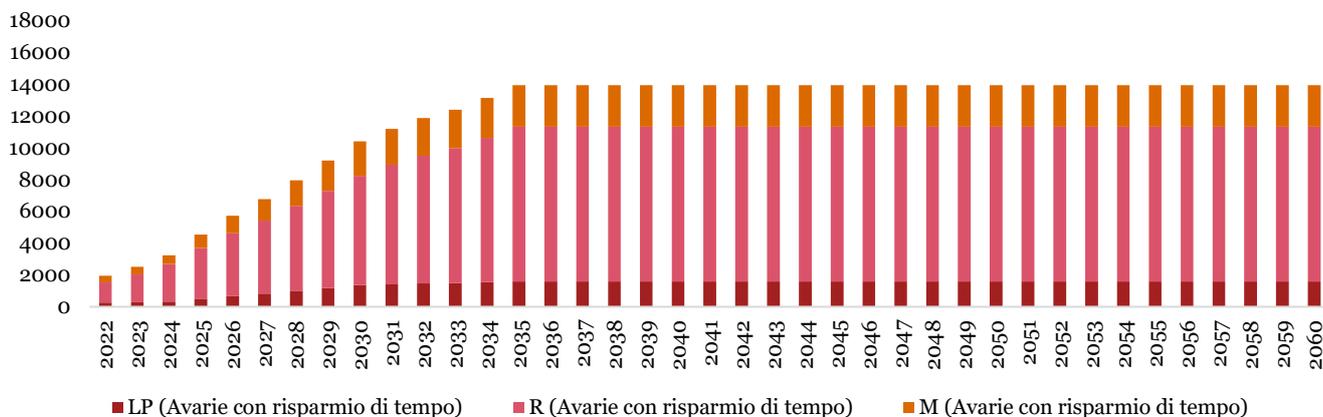


Grafico 17 - Treni coinvolti nelle avarie con risparmio di tempo - Scenario B

³² Elaborazione PWC su dati forniti da RFI

3. Definizione del numero di passeggeri o tonnellate coinvolti nelle avarie per anno d'analisi.

Attraverso l'applicazione dei *load factor* riportati in tabella 30 e della percentuale di ripartizione per categoria d'utente definita in tabella 32, sono stati calcolati il numero di passeggeri o tonnellate coinvolti nelle avarie in analisi.

Al completamento dell'attrezzaggio della rete ferroviaria nazionale con la tecnologia ERTMS, i risultati ottenuti consentono di registrare un risparmio di tempo per 3.523.426 passeggeri e 3.229.500 tonnellate di merce trasportata all'anno. In particolare, i risparmi di tempo sono connessi a 211.406 passeggeri che utilizzano l'infrastruttura ferroviaria per motivi di lavoro, 2.501.632 pendolari e 810.388 passeggeri che effettuano lo spostamento per altri motivi.

Risultati

L'implementazione della metodologia descritta nella sez. 7.3, con il fine di monetizzare la riduzione del tempo di percorrenza connesso all'implementazione di ERTMS, comporta benefici per l'utenza pari a circa 0,2 miliardi di euro nell'ipotesi definita dal piano accelerato.

I risultati ottenuti, distinti per tipologia di traffico e di utenza, sono riportati nella tabella che segue per gli scenari oggetto d'analisi.

Tabella 36 - Benefici connessi ai minori ritardi per maggiore affidabilità

| Categoria treno | Categoria utenti | Scenario 0 Benefici (k€) | Scenario A Benefici (k€) | Scenario B Benefici (k€) |
|------------------------|-------------------------|------------------------------------|------------------------------------|------------------------------------|
| Lunga percorrenza | Business | 6.086 | 6.246 | 7.299 |
| | Pendolari | 26.996 | 27.705 | 32.374 |
| | Altro | 4.886 | 5.014 | 5.859 |
| Regionale | Business | 14.351 | 15.501 | 22.074 |
| | Pendolari | 63.653 | 68.753 | 97.907 |
| | Altro | 11.520 | 12.443 | 17.719 |
| Merci | | 14.736 | 15.248 | 18.461 |
| Totale | | 142.228 | 150.910 | 201.693 |

7.3.2. Notifica dei rallentamenti improvvisi

L'implementazione del sistema ERTMS offre una riduzione dei ritardi dovuti alla *notifica dei rallentamenti improvvisi*. La quantificazione di tali minuti di ritardo è stata stimata sulla base di un'analisi condotta sulla rete in cui la tecnologia ERTMS non è attualmente implementata.

I risultati dell'analisi consentono di ascrivere circa 317 eventi anomali a rallentamenti improvvisi. Considerando tutti i treni coinvolti dai suddetti rallentamenti, il ritardo medio associato è di 6 minuti. È importante evidenziare che tale valore è rappresentativo del ritardo di tutti i treni, non solo il primo al quale viene notificato il rallentamento, e comprende anche il perditempo dovuto alla percorrenza della tratta "rallentata".

Di conseguenza, per quantificare il solo ritardo dovuto alla notifica del rallentamento, depurato dei perditempo, è stata utilizzata come riferimento la visualizzazione delle tracce treno (*train graph*) derivate da PIC.

Il valore calcolato, connesso al ritardo evitato, dovuto alla notifica di rallentamenti improvvisi, è di circa 5 minuti. Tale ritardo, per ogni evento anomalo verificatosi sulla rete, può coinvolgere la totalità dei treni circolanti sulla linea sulla quale si registra il rallentamento.

La tabella che segue riporta i parametri utilizzati per elaborare la monetizzazione di tale beneficio.

Tabella 37 - Minuti di ritardo dovuti alla notifica dei rallentamenti improvvisi

| Numero rallentamenti | Rallentamento/km | Treni coinvolti per rallentamento | Ritardi (min) per treno coinvolto |
|----------------------|------------------|-----------------------------------|-----------------------------------|
| 317 | 0,02 | 200 | 5 |

Fonte: RFI

Metodologia

La monetizzazione dell’impatto di tale beneficio sull’utenza dell’infrastruttura ferroviaria è stata elaborata applicando la seguente metodologia.

1. Calcolo del numero di eventi connessi alla notifica dei rallentamenti improvvisi evitati per anno d’analisi.

La definizione del numero di eventi anomali, caratterizzati dalla notifica di rallentamenti improvvisi, evitati attraverso l’implementazione del sistema ERTMS è stata ottenuta in funzione dei rallentamenti/km moltiplicati per i km di rete attrezzati per anno con il nuovo sistema. Nell’ipotesi di attrezzaggio della rete secondo le tempistiche definite dallo scenario accelerato, il numero di eventi connessi alla notifica dei rallentamenti improvvisi evitato per ogni anno, fino al completamento dell’attrezzaggio della rete, è riportato nel grafico che segue.

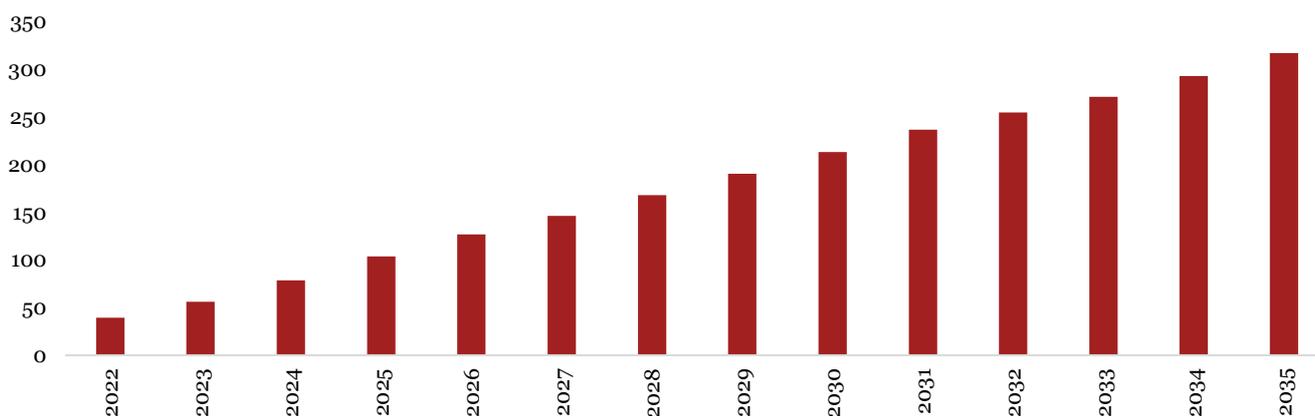


Grafico 18 – Eventi di notifica dei rallentamenti improvvisi evitati – Scenario B

2. Definizione del numero di treni coinvolti in eventi di notifica di rallentamenti improvvisi per anno d’analisi.

Durante ogni rallentamento notificato sull’infrastruttura ferroviaria si ipotizza possa essere coinvolto l’intero traffico circolante sulla linea in cui si verifica il rallentamento.

Nell'analisi è stato ipotizzato un numero di treni medio giornaliero valutato su una linea ad alta intensità di traffico. I risultati ottenuti comportano un risparmio di tempo per 63.400 treni all'anno, completato l'attrezzaggio dell'intera rete ferroviaria nazionale.

Il grafico che segue presenta il traffico che beneficia dell'upgrade del sistema di protezione della marcia ad ERTMS, implementato secondo le tempistiche definite nello scenario B. Come definito nella tabella 35, il traffico è stato ripartito per categoria treno in funzione dell'attrezzaggio tecnologico attualmente presente sull'infrastruttura.

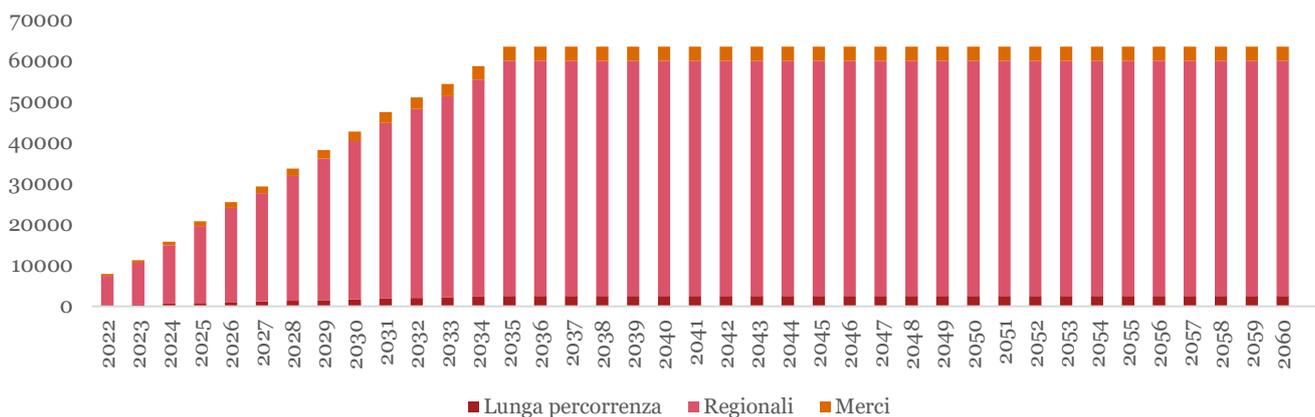


Grafico 19 - Treni coinvolti negli eventi di notifica dei rallentamenti improvvisi evitati – Scenario B

3. Definizione del numero di passeggeri e tonnellate di merce coinvolti in eventi di notifica di rallentamenti improvvisi per anno d'analisi.

Attraverso l'applicazione dei *load factor* riportati in tabella 30 e della percentuale di ripartizione per categoria d'utente definita in tabella 32 sono stati calcolati il numero di passeggeri e tonnellate di merce coinvolti negli eventi anomali in analisi.

I risultati ottenuti definiscono un risparmio di tempo per 7.616.243 passeggeri e 1.743.500 tonnellate all'anno una volta completato l'attrezzaggio della rete ferroviaria nazionale con la tecnologia ERTMS.

In particolare, i risparmi di tempo sono connessi a 456.975 passeggeri che utilizzano l'infrastruttura ferroviaria per motivi di lavoro, 5.407.532 pendolari e 1.751.736 passeggeri che effettuano lo spostamento per altri motivi.

Risultati

L'implementazione della metodologia per la stima monetaria del risparmio economico connesso alla variazione del tempo di percorrenza comporta benefici per l'utenza e gli operatori pari a circa 0,2 miliardi di euro.

Si riportano i valori connessi a tale impatto per gli scenari in analisi.

Tabella 38 - Benefici connessi a minori ritardi dovuti alla notifica dei rallentamenti improvvisi

| Categoria treno | Categoria utenti | Scenario 0 | Scenario A | Scenario B |
|-------------------|------------------|----------------|----------------|----------------|
| | | Benefici (k€) | Benefici (k€) | Benefici (k€) |
| Lunga percorrenza | Business | 1.422 | 1.554 | 2.304 |
| | Pendolari | 6.305 | 6.894 | 10.221 |
| | Altro | 1.141 | 1.248 | 1.850 |
| Regionale | Business | 16.147 | 17.655 | 26.175 |
| | Pendolari | 71.620 | 78.307 | 116.096 |
| | Altro | 12.961 | 14.172 | 21.011 |
| Merci | | 3.030 | 3.313 | 4.911 |
| Totale | | 112.626 | 123.142 | 182.567 |

7.3.3. Stabilità nei nodi

Il piano d'investimento connesso all'implementazione di ERTMS prevede l'introduzione del sistema tecnologico ERTMS HD (*High Density*) nei grandi nodi urbani, che consentirà di rendere più fluida la circolazione e di aumentare la stabilità dell'orario.

Gli effetti derivanti da tale integrazione tecnologica sono stati stimati attraverso l'analisi di un "case study" condotta sul nodo di Firenze, considerato rappresentativo dei nodi italiani, mediante una simulazione microscopica stocastica.

La stima degli effetti riconducibili all'introduzione di ERTMS HD è ottenuta dal confronto tra i due scenari perfettamente congruenti rispetto a:

- configurazione dei binari;
- orario;
- comportamento stocastico in ingresso del sistema.

In conclusione, i due scenari sviluppati, differiscono unicamente per le caratteristiche del *sistema di segnalamento*. Tale confronto è stato condotto con riferimento al ritardo medio.

In particolare, sono state analizzati, per entrambi i sensi di marcia, i treni regionali (R) ed i treni Alta Velocità (AV).

I treni AV – finora esclusi dal perimetro dell'analisi, in quanto già circolanti su linee dotate della tecnologia ERTMS – sono, invece, analizzati nell'ambito dell'installazione di ERTMS HD nei nodi, essendo tale tecnologia attualmente non implementata sui nodi alta velocità.

L'introduzione del sistema è stata modellata in termini di riduzione della lunghezza delle sezioni di blocco (fissate attorno ai 450m), di incremento della percentuale di peso frenato dei treni e di riduzione dei parametri di *reserve* e *release* degli itinerari.

Per condurre l'analisi secondo un approccio cautelativo, non sono state considerate le seguenti ulteriori caratteristiche derivanti dall'impiego di ERTMS HD come:

- velocità di rilascio calcolata a bordo e non fissa a terra di SCMT;
- maggior numero di contemporaneità d'itinerari;

- ATO per la regolazione della velocità consigliata;
- lunghezza delle sezioni di circa 250-300 m (ammesse nell'ipotesi di ERTMS HD).

La tabella che segue riporta i risultati di simulazione ottenuti, in termini differenziali tra i due scenari, nella fascia oraria del pomeriggio (16-22).

Per quanto riportato, i risultati ottenuti possono essere considerati cautelativi in relazione alla quantificazione dei possibili benefici attesi.

Tabella 39 - Variazione del ritardo connesso all'implementazione di ERTMS HD

| Categorie treno | Variazione ritardo medio per treno (sec) | Numero di treni coinvolti |
|-----------------|--|---------------------------|
| Treni AV | -40 | 93 |
| Treni regionali | -13 | 71 |

I risultati delle simulazioni ottenuti rispetto al nodo di Firenze sono stati ipotizzati come applicabili ai nodi di *Milano, Roma, Napoli, Genova e Torino* che - sulla base delle informazioni fornite da RFI - possono essere ritenuti simili per caratteristiche infrastrutturali e tipologia / intensità di traffico.

Metodologia

Ai fini di valutare l'impatto di tale beneficio è stata implementata la seguente metodologia.

1. Definizione del numero di treni entranti nei nodi in analisi per anno.

La stima del numero di treni entranti nei nodi di *Milano, Roma, Napoli, Genova e Torino* è ottenuta in funzione del traffico programmato dal gestore dell'infrastruttura³³ riportato nella tabella che segue.

Tabella 40 - Traffico per categorie nei nodi in analisi

| Nodo | Treni AV (treni/giorno) | Treni regionali (treni/giorno) |
|---------|-------------------------|--------------------------------|
| Milano | 84 | 473 |
| Roma | 253 | 1076 |
| Napoli | 125 | 521 |
| Firenze | 240 | 503 |
| Torino | 84 | 473 |
| Genova | 2 | 311 |

2. Definizione del numero di passeggeri o tonnellate entranti nei nodi in analisi per anno.

Attraverso l'applicazione dei *load factor* riportati in tabella 30 e della percentuale di ripartizione per categoria d'utente definita in tabella 32, sono stati calcolati il numero di passeggeri o tonnellate entranti nei nodi oggetto d'analisi. I risultati ottenuti definiscono un risparmio di tempo per 198.076.680 passeggeri, una volta completato l'attrezzaggio della rete ferroviaria nazionale con la tecnologia ERTMS. In particolare, i risparmi di tempo sono connessi a 11.884.599 passeggeri che utilizzano l'infrastruttura ferroviaria per motivi di

³³ Elaboraioni PwC su dati di circolazione forniti da RFI

lavoro, 140.634.442 pendolari e 45.557.638 passeggeri che effettuano lo spostamento per altri motivi.

Risultati

L'implementazione della metodologia esplicitata definisce benefici per l'utenza paria a circa 0,3 miliardi di euro, nell'ipotesi di scenario accelerato. Tali valori sono stati calcolati in funzione del traffico entrante nei nodi oggetto d'analisi e dalle tempistiche di attrezzaggio dei nodi con la tecnologia ERTMS HD.

I risultati ottenuti implementando la metodologia descritta nella sezione 7.3, organizzati per nodo e per tipologia di traffico, sono riportati nella tabella che segue.

Tabella 41 - Benefici connessi a maggiore stabilità nei nodi

| Categorie treno | Scenario 0 | Scenario A | Scenario B |
|-----------------|---------------|----------------|----------------|
| | Benefici (k€) | Benefici (k€) | Benefici (k€) |
| <i>Milano</i> | | | |
| Alta Velocità | 0 | 5.574 | 19.510 |
| Regionali | 0 | 4.683 | 16.389 |
| <i>Roma</i> | | | |
| Alta Velocità | 0 | 14.690 | 60.859 |
| Regionali | 0 | 9.320 | 38.613 |
| <i>Napoli</i> | | | |
| Alta Velocità | 23.848 | 23.848 | 32.143 |
| Regionali | 14.828 | 14.828 | 19.986 |
| <i>Firenze</i> | | | |
| Alta Velocità | 0 | 11.945 | 55.741 |
| Regionali | 0 | 3.735 | 17.428 |
| <i>Genova</i> | | | |
| Alta Velocità | 365 | 365 | 498 |
| Regionali | 8.467 | 8.467 | 11.545 |
| <i>Torino</i> | | | |
| Alta Velocità | 0 | 5.574 | 20.903 |
| Regionali | 0 | 4.683 | 17.559 |
| Totale | 47.508 | 107.711 | 311.175 |

7.4. Benefici qualitativi

7.4.1. Recupero della puntualità

L'implementazione del sistema ERTMS rende possibile un aumento della flessibilità in termini di *recupero della puntualità*. Gli effetti derivanti da tale upgrade tecnologico sono stati osservati attraverso l'analisi di un "case study" sulla tratta Roma Tiburtina – PM Rovezzano della linea DD.

L'implementazione della simulazione confronta il distanziamento ottenibile con il sistema di segnalamento attualmente in uso sull'infrastruttura ferroviaria, SCMT + BA, con ERTMS, le cui sezioni sono pari a circa 1.350 m.

L'obiettivo della simulazione è verificare la stabilità della circolazione lungo la linea DD Roma-Firenze in riferimento allo scenario di upgrade tecnologico oggetto di analisi.

La stima è ottenuta dal confronto tra i due scenari di simulazione:

1. Infrastruttura e orario attuale
2. Infrastruttura con sistema ERTMS e orario attuale

La fascia oraria di riferimento è l'intervallo compreso tra le 7 e le 11 di un giorno ferialo medio dell'orario 2016/2017.

Per le finalità della presente analisi, è stato considerato il senso di marcia pari sul quale, nell'intervallo considerato, circolano 40 treni.

Per valutare la stabilità della circolazione, in ciascuno dei due scenari sono state effettuate 30 simulazioni in condizioni di circolazione perturbata, assegnando ai treni, in modo random, ritardi nel punto di ingresso della simulazione (Roma Tiburtina).

Si riportano i risultati ottenuti dalle simulazioni effettuate e quindi attesi nello scenario di implementazione di ERTMS:

- il 58% dei treni recupera i ritardi imposti, rispetto al 42% attuale;
- il 40% ritardi imposti viene recuperato rispetto al 30% attuale.

In conclusione, il ritardo medio per treno, nel caso studiato, è definito da:

- circa 2,5 minuti nello scenario sviluppato ad infrastruttura ed orario attuali;
- circa 2 minuti nello scenario d'ipotesi di implementazione ERTMS.

In assenza di modelli di normalizzazione dell'impatto, tale beneficio, riferito ad una tratta specifica, con condizioni di traffico medio giornaliero elevato, ad un orario di punta della giornata, risulta non computabile economicamente sull'intera rete.

Per questo motivo, nell'analisi non sono considerati gli effetti economici connessi alla potenziale maggiore flessibilità in termini di recupero della puntualità. Tuttavia, la quantificazione di questi ultimi comporterebbe un ulteriore e significativo incremento dei benefici attesi del sistema.

7.4.2. Piano coordinato ERTMS-ACC

Come evidenziato nel corso dell'analisi, l'accelerazione dell'implementazione del sistema ERTMS si basa sulla sincronizzazione degli interventi di installazione delle tecnologie con il piano di ammodernamento degli apparati centrali.

La definizione di un piano che coordina entrambe le suddette attività permette non solo di abbattere i costi di investimento, ma allo stesso tempo di efficientare il processo d'installazione delle tecnologie.

L'azione coordinata definita dal piano in analisi permetterà di includere tutti gli interventi necessari alla realizzazione ed al funzionamento del sistema di protezione della marcia ERTMS, evitando rallentamenti imputabili alla mancata implementazione di interventi propedeutici all'attrezzaggio della rete.

In particolare, l'implementazione del piano tecnologico secondo le tempistiche definite nello scenario accelerato permetterà al gestore dell'infrastruttura di anticipare quanto richiesto dal Reg. UE 2017/6, il quale stabilisce il calendario per l'implementazione e la messa in esercizio del sistema europeo di gestione del traffico ferroviario nei corridoi della rete centrale, evitando di incorrere in ritardi di esecuzione del piano.

In aggiunta, il rispetto delle tempistiche definite dalla Commissione Europea permette al gestore dell'infrastruttura di richiedere e soprattutto mantenere i finanziamenti compresi nel *Connecting Europe Facility* (CEF), il programma dell'Unione Europea destinato a completare le reti transeuropee nei settori dei trasporti, dell'energia e delle telecomunicazioni, promuovendo investimenti pubblici e privati in questo ambito.

L'attrezzaggio con ERTMS dell'infrastruttura ferroviaria e dei treni è una delle priorità finanziate dalla CEF nel settore dei trasporti. Il programma finanzia con un contributo a fondo perduto fino al 50% dei costi ammissibili per l'installazione di ERTMS a terra e a bordo.

Nel periodo di programmazione 2014 – 2020, il gestore dell'infrastruttura ha ottenuto fondi per progetti connessi all'installazione dei ERTMS pari a 86,65 milioni di euro.

Considerato che nel prossimo periodo di programmazione si prevede che il programma CEF sia rifinanziato con 42,3 miliardi di euro, si stima che il gestore dell'infrastruttura possa ottenere un contributo pari a circa 100³⁴ milioni di euro per il finanziamento del progetto analizzato. In questo caso, considerando la sincronizzazione degli interventi, si suppone che si possano evitare rinegoziazioni del piano di realizzazione degli interventi oggetto di cofinanziamento.

7.4.3. Interoperabilità

Il sistema ERTMS è stato sviluppato per sostituire i differenti sistemi di segnalamento ferroviario esistenti in Europa con un sistema unico che permetta ai treni di viaggiare senza interruzioni attraverso paesi diversi e che, allo stesso tempo, promuova la competitività del trasporto su rotaia³⁵.

I vantaggi sono prevalentemente connessi ad una riduzione di tempo di attraversamento delle frontiere che, al giorno d'oggi, presentano discontinuità normative e tecnologiche.

Lo sviluppo dell'interoperabilità costituisce, inoltre, un fattore rilevante nel miglioramento dell'interconnessione sulla rete nazionale, superando le discontinuità tecnologiche tra reti nazionali e reti regionali gestite con doppi attrezzaggi.

Gli impatti in termini monetari di tale vantaggio, offerto dal sistema ERTMS, sono difficilmente quantificabili e, di conseguenza, non sono stati considerati nell'attuale perimetro di analisi.

³⁴ Valore calcolato assumendo una percentuale di assorbimento dei fondi CEF da parte del gestore dell'infrastruttura paragonabile a quella osservata per il periodo di programmazione 2014-2020

³⁵ Fonte: RFI, Piano di implementazione di ERTMS sull'infrastruttura ferroviaria nazionale – Analisi Costi Benefici

7.4.4. Innovazione del servizio ferroviario

Lo standard ERTMS/ETCS è attualmente considerato tra le più significative innovazioni introdotte nel panorama ferroviario, consentendo la circolazione di treni di diversa nazionalità.

Per questo motivo, lo sviluppo del sistema ERTMS, rappresenta una priorità per la Commissione Europea ed è al centro di grandi progetti volti ad incoraggiare la ricerca e l'innovazione nel settore ferroviario.

In particolare, il SHIFT2RAIL, definisce la prima grande iniziativa strategica europea mirata, che permetterà di sviluppare soluzioni richieste dal mercato e di ridurre i tempi per l'integrazione di queste nuove tecnologie avanzate in prodotti e servizi ferroviari innovativi.

I risultati che il programma si aspetta di ottenere sono:

- la riduzione dei costi del ciclo di vita del trasporto ferroviario (es: costi di investimento, funzionamento, manutenzione e di rinnovo delle infrastrutture come del materiale rotabile) fino al 50%;
- il raddoppio della capacità;
- l'aumento dell'affidabilità e della puntualità.

Il sistema europeo di gestione del traffico ferroviario (ERTMS), implementando le *performance* dell'infrastruttura ferroviaria, contribuisce al raggiungimento degli obiettivi del programma SHIFT2RAIL, gettando le basi dell'innovazione europea volta a sostenere la creazione di uno spazio ferroviario unificato e migliorare l'efficienza, aprendo al contempo significative opportunità commerciali per l'industria ferroviaria europea, sia all'interno che all'esterno dell'UE.

7.4.5. Risparmio energetico

L'introduzione del sistema di segnalamento ERTMS permette, infine, di aumentare l'efficienza energetica e la regolazione della marcia attraverso l'uso dell'ATO.

In letteratura, il risparmio energetico medio associato al caso di esercizio effettuato con ERTMS+ATO è di circa il 10%³⁶.

Di seguito sono riportati i dati fisici ed economici relativi all'energia di trazione delle reti 25 kV c.a. e 3 kV c.c. per l'anno 2019.

Tabella 42 – Energia di trazione, anno 2019

| Consumo Energia Elettrica | Esborso Netto |
|---------------------------|---------------|
| GWh | € |
| 5.680 | 157.000.000 |

Fonte: "Rapporto di Sostenibilità", Gruppo FS

³⁶ "Energy-Efficient Train Driving Strategy with Considering the Steep Downhill Segment", Wentao Liu, Tao Tang et al., 2019
"Energy efficiency on train control: design of metro ATO driving and impact of energy accumulation devices", M. Domínguez, A.P. Cucala et. al., 2011

A partire dalle informazioni riportate nella tabella precedente e supponendo un risparmio energetico di circa il 10%, si evince che in caso di esercizio effettuato con ERTMS+ATO, si ha un risparmio economico annuale complessivo per le IF pari a 15,7 €M.

Tale risparmio è contestualmente associato ad una potenziale riduzione delle emissioni di CO₂ pari a 179.710 ton CO₂ /anno³⁷.

Il grafico che segue riporta i valori cumulati, in termini di risparmi economici, per l'intero orizzonte d'analisi.

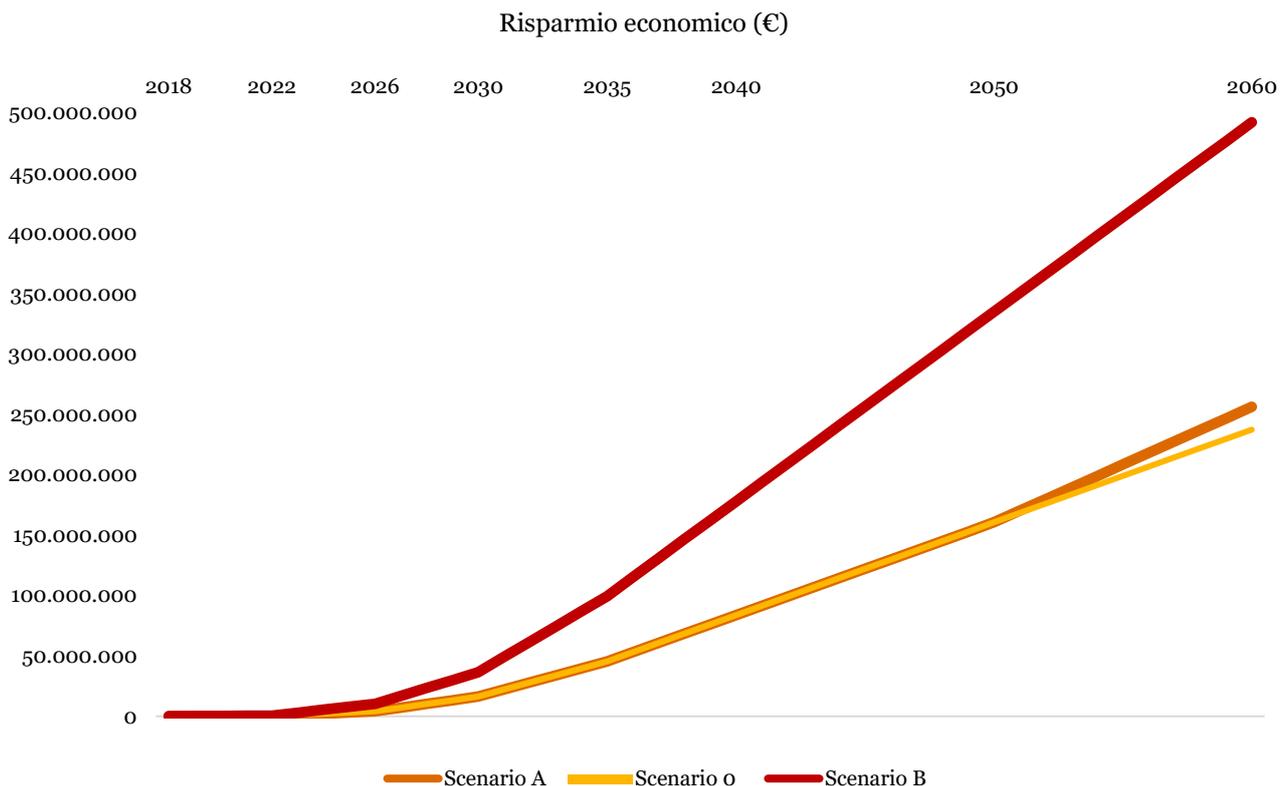


Grafico 20 - Rate dei risparmi economici connessi all'utilizzo di ERTMS + ATO medi cumulati

Come si evince dal grafico, la realizzazione del Programma oggetto d'analisi (Scenario B) comporterebbe benefici - in termini di risparmi economici - pari a 492 milioni di euro, per l'intero orizzonte d'analisi. Allo stesso tempo, tale beneficio si traduce in una potenziale riduzione delle emissioni di CO₂ pari a 5.631.741 ton nell'intero orizzonte d'analisi.

7.4.6. Adeguamento contestuale al Quadro Normativo richiesto da ANSF

Come anticipato nel paragrafo 3.2, ad aprile 2019 l'ANSF ha trasmesso le modifiche al "Regolamento per la Circolazione Ferroviaria" - emanato con il decreto n. 4/2012 del 9/8/2012" - che stabilisce i principi e i criteri generali di sicurezza della circolazione sull'infrastruttura ferroviaria.

³⁷ RFI

Le specifiche che gli attuali sistemi nazionali di segnalamento saranno chiamati a rispettare - riassunte in tale comunicazione – impongono di adeguare ove possibile, gli attuali sistemi di classe B (SCMT ed SSC) già in esercizio o in realizzazione (vedi caso delle Reti ferroviarie non RFI). Tale adeguamento non sarà del tutto realizzabile con gli attuali sistemi di Classe B.

In tale contesto, la realizzazione di ERTMS e la contestuale dismissione del sistema di Classe B preesistente consentono invece un allineamento veloce e completo al Quadro Normativo richiesto da ANSF, riducendo, per altro, gli extracosti necessari ad adeguare ove possibile, il sistema preesistente, oltre a elevare il livello di funzionalità di protezione allo stato dell'arte rappresentato dal ERTMS stand alone, con particolare riferimento ad alcune delle funzionalità richieste:

- protezione delle manovre (art 19.5bis art 19.21);
- incremento della protezione dei passaggi a livello (art 8.4);
- disponibilità della funzione di protezione del peso assiale;
- calcolo a bordo della velocità di rilascio (art 4.19 art. 4.21);
- progressiva sostituzione dei giunti meccanici con giunti elettrici.

8. Confronto tra scenari d'analisi

Come definito nella metodologia, i risultati dell'analisi derivano dal confronto tra i due scenari di evoluzione tecnologica definiti con lo scenario individuato come *baseline* dell'analisi.

I risultati ottenuti dall'analisi socio-economica sono riportati nella tabella e nel grafico che seguono.

Tabella 43 - Confronto tra scenario A e O

| Scenario A - Scenario o | |
|--|----------------|
| VAN – finanziario programma (k€) | -22.569 |
| VAN – economico programma (k€) | 7.503 |
| VAN – Affidabilità (k€) | 2.754 |
| VAN – Notifica rallentamenti improvvisi (k€) | 3.335 |
| VAN – Stabilità dei nodi (k€) | 19.068 |
| VAN – socio-economico programma (k€) | 32.660 |

Tabella 44 - Confronto tra scenario B e O

| Scenario B - Scenario o | |
|--|------------------|
| VAN – finanziario programma (k€) | 2.706.704 |
| VAN – economico programma (k€) | 2.858.599 |
| VAN – Affidabilità (k€) | 29.583 |
| VAN – Notifica rallentamenti improvvisi (k€) | 34.532 |
| VAN – Stabilità dei nodi (k€) | 121.270 |
| VAN – socio-economico programma (k€) | 3.043.983 |

9. Conclusioni

Dal risultato del confronto, proposto nella sezione precedente, si evince che l'attrezzaggio dell'intera rete nazionale presenta vantaggi consistenti se realizzato secondo le tempistiche dello scenario B (scenario accelerato), assicurando un VAN differenziale di realizzazione del programma positivo di circa 3.043.983 milioni di euro.

Lo scenario accelerato, infatti, risulta più vantaggioso in termini finanziari - essendo connesso a costi d'investimento e di gestione inferiori allo scenario inerziale - come economici, e permette di anticipare di 14 anni i benefici in termini di sicurezza ed adeguamento al quadro normativo imposto da ANSF, miglioramento delle performance, affidabilità e puntualità garantiti dall'implementazione di ERTMS.

Al contrario, lo scenario A risulta caratterizzato da costi superiori rispetto allo scenario individuato come *baseline* dell'analisi, dovuti ad un ampliamento del perimetro dell'investimento non supportato da un piano di coordinamento tra il rinnovo tecnologico - previsto dal gestore dell'infrastruttura - e l'implementazione di ERTMS. Nonostante ciò, il confronto tra i due scenari, in termini socio-economici, risulta leggermente positivo.

Infine, si sottolinea come i risultati presentati non tengano conto quantitativamente di una serie di impatti - positivi per il gestore dell'infrastruttura come per le imprese ferroviarie Off-Ten - quali ad esempio: l'aumento della sicurezza nel trasporto ferroviario, lo sviluppo dell'interoperabilità, l'aumento della flessibilità e dell'efficienza nell'implementazione di modifiche al layout di stazione in fase di upgrade tecnologico, l'aumento dell'efficienza energetica e della regolazione della marcia attraverso l'uso dell'ATO.

Glossario

| | |
|--------------|---|
| IF | Imprese Ferroviarie |
| CdP | Contratto di programma |
| SST | Sottosistema Terra |
| SSB | Sottosistema bordo |
| ERTMS | European Rail Traffic Management System |
| Cdb | Circuiti di binario |
| GSM-R | Global System for Mobile Communications – Railway |
| SCMT | Sistema Controllo Marcia Treno |
| SSC | Sistema Supporto Condotta |
| BA | Blocco Automatico |
| BCA | Blocco Conta Assi |
| SCCM | Sistema di Controllo e di Comando Multistazione |
| ACC | Apparato Centrale Computerizzato |
| ACCM | Apparato Centrale Computerizzato Multistazione |

Linee ERTMS da completare orizzonte 2024 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|---|------------------------|-----------------|
| BIVIO P.C. FENILONE - DIRAMAZIONE VR SC - VR PN | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| VERONA PORTA NUOVA SCALO - DEV. ESTREMO VR | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| BIVIO P.C. S.MASSIMO - VERONA QUADRANTE EUROPA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | Livello 1 | 3 |
| BIVIO P.C. S.MASSIMO - VERONA PORTA NUOVA SCALO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | Livello 1 | 3 |
| BIVIO P.C. FENILONE - VERONA QUADRANTE EUROPA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Scandinavia – Mediterraneo (RFC 3) | Livello 1 | 3 |
| DIRAMAZIONE VR SC - VR PN - VERONA PORTA NUOVA | "Tratto di linea di collegamento" | Non applicabile | Livello 1 | 3 |
| CHIASO SMISTAMENTO - BIVIO PC ROSALES (MO1) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MONZA - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO GRECO PIRELLI - MILANO CENTRALE (CHIASO) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| PIOLTELLO - BRESCIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| BIVIO MELLA - BRESCIA SCALO | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| BRESCIA SCALO - BRESCIA | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO P.C. TURRO - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| PORTOGRUARO - CERVIGNANO - TRIESTE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| TRIESTE C.LE GR SC. BARCOLA - TRIESTE C.LE GR SC. ROIANO | "Tratto di linea di collegamento" | Non applicabile | Livello 1 | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| TRIESTE C.LE GR SC. ROIANO - TRIESTE CAMPO MARZIO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| BIVIO D'AURISINA - VILLA OPICINA - CONFINE DI STATO ITA-SLO (LATO SEZANA) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | Livello 1 | 3 |
| MILANO LAMBRATE - TREVIGLIO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO CERTOSA - BIVIO MUSOCCO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO MUSOCCO - TRIPLO BIVIO P.C. SEVESO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| TRIPLO BIVIO P.C. SEVESO - BIVIO TURRO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| TRIPLO BIVIO P.C. SEVESO - MILANO GRECO PIRELLI | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - FIRENZE SMN | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (AV) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE SMN - FI. STATUTO (DD) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE STATUTO - FIRENZE CAMPO DI MARTE (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE CAMPO DI MARTE - P.M. ROVEZZANO D.D. (DD) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE CAMPO DI MARTE - FIRENZE ROVEZZANO (LL) | TEN-T Centrale Merci;TEN-T | Corridoio Scandinavia – Mediterraneo (RFC | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| | Centrale Passeggeri | 3) | | |
| FIRENZE SMN - FIRENZE RIFREDI (PISA) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - DEV.EST. FIRENZE STATUTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| FIRENZE RIFREDI - FIRENZE SANTA MARIA NOVELLA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA OSTIENSE - ROMA TUSCOLANA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE SANTA MARIA NOVELLA - FIRENZE CAMPO DI MARTE (LL) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA S.PIETRO - ROMA TUSCOLANA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| RONCHI DEI LEGIONARI SUD - RONCHI DEI LEGIONARI NORD | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | Livello 1 | 3 |
| MILANO LAMBRATE - TREVIGLIO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - QUADRIVIO P.C. TURRO (MERC) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| PADOVA - VENEZIA MESTRE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - BIVIO LAMBRO - PIOLTELLO (VENEZIA LL) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - MILANO ROGOREDO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - MILANO SMISTAMENTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO LAMBRATE - QUADRIVIO P.C. | TEN-T Centrale Passeggeri;TEN-T | Non applicabile | L2 sovrapposto | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|---|------------------------|----------|
| TURRO (Venezia) | Globale | | SCMT | |
| PADOVA - VENEZIA S.L. | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| BRENNERO - VERONA PORTA NUOVA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 sovrapposto SCMT | 3 |
| PADOVA FASCIO SECONDARIO - PADOVA INTERPORTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| VENEZIA MESTRE - VENEZIA MARGHERA SCALO | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 sovrapposto SCMT | 3 |
| MILANO ROGOREDO - VOGHERA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| VOGHERA - TORTONA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO GRECO PIRELLI - BIVIO P.C. MIRABELLO | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO P.C. MIRABELLO - MILANO PORTA GARIBALDI | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO P.C. TURRO - BIVIO P.C. MIRABELLO | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO P.C. FEGINO - BIVIO SUCCURSALE | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| GENOVA VOLTRI - GENOVA SESTRI PONENTE AEREOPORTO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| GENOVA SESTRI PONENTE AEREOPORTO - GENOVA SAMPIERDARENA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| BIVIO POLCEVERA - QUADRIVIO TORBELLA | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| QUADRIVIO TORBELLA - GENOVA SAMPIERDARENA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO SUCCURSALE - GENOVA CAMPASSO (*) | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| GE SAMPIERDARENA SMIST.TO - DEV.I.GE SAMP.SMIST.TO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|-------------------------------|---------------------|----------|
| BIVIO CASTELLUCCIO - GENOVA VOLTRI (BINARIO CASTELLUCCIO) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 sovrapposto SCMT | 3 |
| TORTONA - GENOVA PIAZZA PRINCIPE (esclusa la tratta Bivio Fegino - Genova Piazza Principe) | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| BIVIO SUCCURSALE - BIVIO POLCEVERA | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |

Nuove realizzazioni linee ERTMS orizzonte 2024 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|---------------------|----------|
| MILANO CERTOSA - TRIPLO BIVIO P.C. SEVESO (VIAGGIATORI) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| MILANO CENTRALE - MILANO GRECO PIRELLI (CIRCOLAZIONE) | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| FIRENZE CASTELLO - FIRENZE RIFREDI (LL) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROCCASECCA - AVEZZANO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CANICATTI' - SIRACUSA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MILANO SMISTAMENTO - PIOLTELLO-LIMITO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| MILANO SMISTAMENTO - MILANO ROGOREDO (Merci) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|-------------------------------|---------------------|----------|
| MILANO LAMBRATE - MILANO ROGOREDO (Cintura) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 sovrapposto SCMT | 3 |
| RHO - MILANO CERTOSA (Varese) | TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| ROMA TIBURTINA - ROMA TUSCOLANA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |
| DECIMOMANNU - CARBONIA STATO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| VILLAMASSARGIA-DOMUSNOVAS - IGLESIAS | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| CAGLIARI - ORISTANO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - FRASCATI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - ALBANO LAZIALE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CIAMPINO - VELLETRI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CALTANISSETTA XIRBI - ARAGONA-CALDARE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LERCARA DIRAMAZIONE - AGRIGENTO CENTRALE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| AGRIGENTO BASSA - PORTO EMPEDOCLE | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MERANO - DEV. ESTREMO BOLZANO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| ALCAMO DIRAMAZIONE - TRAPANI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| CAMPOLEONE - NETTUNO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MILANO CENTRALE(e) - MILANO LAMBRATE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 sovrapposto SCMT | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|-----------------------------------|-----------------|---------------------|----------|
| MILANO ROGOREDO DEV. I. - MILANO ROGOREDO DEV. U. | "Tratto di linea di collegamento" | Non applicabile | L2 sovrapposto SCMT | 3 |
| LAMEZIA TERME CENTRALE - CATANZARO LIDO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BARLETTA - SPINAZZOLA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MONZA - MOLTEÑO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LECCO - MOLTEÑO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| MERCATO S.SEVERINO - SALERNO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| S.CANDIDO - FORTEZZA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| TERNI - SULMONA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| SANTHIA' - BIELLA S. PAOLO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| BIELLA S. PAOLO - NOVARA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| ORISTANO - CHILIVANI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |

Nuove realizzazioni linee ERTMS 2024-2026 (da Piano Accelerato ERTMS rev.O)

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|----------------------------------|---------------------------------------|-----------------------------------|----------------|----------|
| CHILIVANI - OLBIA - GOLFO ARANCI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| TORINO (e) - SETTIMO - NOVARA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|----------|
| DEV.CHIL.LATO MACOM.(BRETELLA) - DEV.CHIL.LATO P.T.(BRETELLA) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| PISA CENTRALE - LIVORNO CENTRALE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| EMPOLI - PISA CENTRALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PISA CENTRALE - PISA DEV. TAGLIAFERRO | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| PISA DEV. TAGLIAFERRO - BIVIO MORTELLINI | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PADOVA - PADOVA CAMPO MARTE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Baltico – Adriatico (RFC 5);Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| PADOVA CAMPO MARTE - GS MONTA' | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| MILANO ROGOREDO - TAVAZZANO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| MILANO CENTRALE - P.M. PIACENZA OVEST | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| FIRENZE ROVEZZANO - TERONTOLA | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------------------------|----------|
| BIVIO S.DONATO - DOPPIO BIVIO RIMESSE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PRATO CENTRALE - FIRENZE CASTELLO (DD) | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| S.GIORGIO DI PIANO - BOLOGNA INTERPORTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | L2 Stand Alone L2 sovrapposto | 3 |
| BOLOGNA INTERPORTO - CASTELMAGGIORE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |
| CASTELMAGGIORE - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO BERTALIA - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOPPIO BIVIO P.C. BEVERARA - BIVIO TREBBO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5);Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| CASERTA - NAPOLI CENTRALE (Cassino) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|--|--|---|----------------------------------|----------|
| DEV. (EX P.M. RHO FIERA) - DEV. (EX P.M. RHO FIERA AV) BRETELLA AV/LS | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| CONFLUENZA UD-TS - G.S. MESTRE | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ARONA - RHO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| LAVENO-MOMBELLO - GALLARATE | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| LUINO - OLEGGIO | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| PRATO CENTRALE - FIRENZE CASTELLO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO MAROCCO - BIVIO PC SPINEA | TEN-T Globale | Corridoio Baltico – Adriatico (RFC 5) | L2 Stand Alone | 3 |
| P.M. BEVERA - STABIO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| LIVORNO CALAMBRONE - LIVORNO CENTRALE | Off TEN | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| LIVORNO CALAMBRONE - LIVORNO DARSENA | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| P.M. SALARIO ROMA SMISTAMENTO - ROMA SMISTAMENTO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| SALERNO - ARECHI | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| FIRENZE RIFREDI - EMPOLI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |
| BIVIO P.C. RENAI - BIVIO P.C. SAMMINIATELLO | TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone L2 sovrapposto | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|----------|
| VARESE - PORTO CERESIO | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TERMINI - COLLEFERRRO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| VOGHERA - PIACENZA | TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| CIVITAVECCHIA - ROMA S.PIETRO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| TERONTOLA - 1° BIVIO ORTE SUD (LL E INTERC.) | TEN-T Centrale Merci;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| OZIERI-CHILIVANI - PORTO TORRES MARITTIMA | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| FIUMETORTO - CALTANISSETTA XIRBI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOMODOSSOLA - ARONA | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| ARONA - VIGNALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| MODANE FOURNEAUX - QUADRIVIO ZAPPATA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| LA SPEZIA CENTRALE - PISA CENTRALE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| PISA DEV. TAGLIAFERRO - PISA DEV. NAVICELLI | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|---|----------------|-----------------|
| LA SPEZIA MIGLIARINA - VEZZANO LIGURE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Non applicabile | L2 Stand Alone | 3 |
| LA SPEZIA MIGLIARINA - LA SPEZIA MARITTIMA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| LA SPEZIA MARITTIMA - VEZZANO LIGURE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| NOVARA - PONTE TANARO ALESSANDRIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| PORTOGRUARO - VENEZIA MESTRE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| DEV.ESTR.VENEZIA - VENEZIA MARITTIMA | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ROMA OSTIENSE - FIUMICINO AEROPORTO | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TERMINI - ROMA PRENESTINA | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - DIRAMAZIONE VR SC - VR PN | TEN-T Centrale Passeggeri;TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - BIVIO P.C. FENILONE | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO P.C. S.LUCIA - BIVIO P.C. S.MASSIMO | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO P.C. FENILONE - BIVIO P.C. S.MASSIMO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|---|---|----------------|-----------------|
| P.M. CAB. C ROMA SMISTAMENTO - ROMA SMISTAMENTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| P.M. NORD ROMA SMISTAMENTO - ROMA SMISTAMENTO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO CALDERARA - BIVIO BERTALIA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| DOPPIO BIVIO RIMESSE - BIVIO CROCIALI | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO TAVERNELLE - BIVIO CALDERARA | TEN-T Centrale Merci;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| BIVIO CROCETTA - TORINO S. PAOLO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| TORINO ORBASSANO FASCIO ARRIVI - TORINO ORBASSANO MODALHOR | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| BIVIO PRONDA - DEV.ESTR. TO ORBASSANO | TEN-T Centrale Merci;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| QUADRIVIO ZAPPATA - TORINO SMISTAMENTO NORD | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Mediterraneo (RFC 6) | L2 Stand Alone | 3 |
| VENEZIA MESTRE - LIMITE FS (LINEA ADRIA) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| ROMA TIBURTINA - ROMA CASILINA (INDIPENDENTE) | TEN-T Centrale Merci;TEN-T Centrale Passeggeri;TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |

| LINEA | Classificazione TEN-T | Corridoio | Livello | Baseline |
|---|--|--|----------------|----------|
| NOVARA - NOVARA BOSCHETTO (TORINO) | "Tratto di linea di collegamento" | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. TOCE - BIVIO P.C. VALLE | TEN-T Centrale Merci;TEN-T Centrale Passeggeri | Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| COLLEFERRO - CASSINO | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| ROMA TUSCOLANA - ROMA TERMINI | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| BIVIO P.C. LAMBRO - MILANO CERTOSA | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| ROMA TUSCOLANA - ROMA CASILINA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| ALESSANDRIA - ALESSANDRIA SMIST.TO (PONTE TANARO) | Off TEN | Corridoio Mediterraneo (RFC 6);Corridoio Reno – Alpi (RFC 1) | L2 Stand Alone | 3 |
| MILANO ROGOREDO - MILANO S.CRISTOFORO | Off TEN | Non applicabile | L2 Stand Alone | 3 |
| VARESE - GALLARATE | TEN-T Globale | Non applicabile | L2 Stand Alone | 3 |
| GROSSETO - CIVITAVECCHIA | TEN-T Globale | Corridoio Scandinavia – Mediterraneo (RFC 3) | L2 Stand Alone | 3 |
| MACCARESE-FREGENE - PONTE GALERIA | Off TEN | Non applicabile | L2 Stand Alone | 3 |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT M3C2 - Intermodality and integrated logistics.

1. Description of the component

Summary box

Policy area/domain:

Ports, Airports and logistic supply chain

Objective:

The objectives of this component are to: (i) strengthen the competitiveness of the Italian port system through the updating of port planning and the competitive allocation of concessions; (ii) digitalize the logistic supply chain and air traffic management systems; (iii) reduce emissions linked to the movement of goods.

Investments focused on improving digital accessibility, will be combined with reforms aimed at increasing strategic planning, a single Customs portal an interoperable digital platform, and a review of the regulation regarding port concessions. The component includes investments in the digitalization of airports to manage air traffic in an environmentally sustainable way and investments in the digitalization of the logistic supply chain.

Reforms and/or Investments:

Outcome 1: Improve the strategic planning process of ports, the award of concessions in port areas and reduce GHG emissions by increasing electrification

Reform 1.1: Simplification of the procedures for the strategy planning process

Reform 1.2: Regulation defining the competitive award of concessions in port areas

Reform 1.3: Simplify the authorization procedures to provide electricity to piers

Investment 1.1: Interventions for the Environmental Sustainability of ports (Green Ports)

Outcome 2: Increase the digitalization of transport and logistic services, simplifying custom procedures

Reform 2.1: Implementation of a Single Customs Window (“Sportello Unico Doganale”)

Reform 2.2: Establishment of a National Strategic Platform for the network of ports, in order to introduce the digitalization of passenger and freight services

Reform 2.3: Simplification of logistics procedures and document digitization, through the adoption of an electronic "Convention relative au contrat de transport international de marchandises par route" (CMR) to freight shipments.

Investment 2.1: The digitalization of the logistic chain

Investment 2.2: The digitalization of air traffic management

Estimated cost overall:

EUR 0.63 billion to be covered by RFF

2. Main challenges and objectives

National strategic context

a) *The component is well aligned with the priorities of the National strategy for ports, which are outlined in the document “#ItaliaVeloce”, in particular with The digitalization of port logistics and ICT and with The energy efficiency and environmental sustainability of the ports. Main challenges*

- **The competitiveness of the Italian Port system:** according to the *Logistic Performance Index* elaborated by the World Bank – which considers the time and costs of logistic systems, as well as the transparency, quality and reliability of the services offered – in 2019 Italy ranked 19th in the World, with the first three countries being Germany, Sweden and Belgium. Even if in terms of distance to market, Italian ports could be competitive for trade between Europe and the Far East, over recent years they have lost market shares, also towards other Mediterranean ports. The perception among the big shipping companies is that Italian ports do not offer a reliable logistic system, which leads them to prefer other ports, even if located further away. The higher travel costs to these ports are compensated by the lower handling costs and times, and by better railway connections to the production/consumption centres.
- **The lack of an updated strategic plan:** In line with the provisions of Legislative Decree no. 169 of August 2016 "Reorganization, rationalization and simplification of the discipline concerning Port Authorities pursuant to Law no. 84 of January 28th, 1994", 16 Port System Authorities were created¹. However, the strategic plans of many of these Port Authorities have not been updated, which has not allowed to reap the benefits that were expected from a more integrated and coordinated system, in which ports could specialize according to their comparative advantages.
- **The need to upgrade the digital infrastructures and services at ports and airports:** the logistic inefficiencies of Italy have been estimated to have a cost of around EUR 70 billion per year², of which EUR 30 billion are linked to bureaucratic costs and digital delays. The development of digital systems is hence considered to be key to improve the efficiency of logistic operations and to allow an efficient management of the flow of information linked to the flow of goods. Over recent years Italian ports and logistic operators have established *Port Community Systems* (PCS), which manage the electronic flow of documents and commercial information related to port operations, facilitating the interaction between the various stakeholders (terminal and transport operators, and customs). Concerning airports, a higher level of digitalization could contribute to better traffic management, reducing the fuel consumption of airplanes and the related environmental impact.
- **The environmental impact and sustainability of ports:** it is necessary to reduce the environmental footprint and pollution caused by ports, which are often located close to city centres with a negative impact on air quality. This can be achieved, among by improving the energy efficiency of operations and increasing the renewable energy sources (“*Green ports*”).

² Study of CDP Think Tank, “*Can Italian ports still be strategic?*”, October 2020.

b) Objectives

The objectives of the component are to:

- i. strengthen the competitiveness of the Italian port system through the updating of port planning and the competitive allocation of concessions;
- ii. ensure the environmental sustainability and energy efficiency of ports;
- iii. digitalize the logistic supply chain and air traffic management systems;
- iv. reduce emissions linked to the movement of goods.

These objectives will be pursued by:

- offering an effective, digital and reliable logistic system for transport to/from final destinations;
- considering ports not only as transit points, but as integrated local development nodes, both for local industries and value chains as well as for tourism.

Twin transition:

The proposed investments in energy efficiency and renewable energy sources (Green ports) will result in a reduction of GHG emissions. In parallel, the digitalization of port and airport traffic flows and logistics will increase the productivity, predictability and efficiency of operations, hence reducing congestion and pollution levels.

Jobs and Growth:

The investments foreseen will have important spill over effects along the logistic value chains and are expected to safeguard local jobs and stimulate private investments (by terminal and logistic operators).

3. Description of the reforms and investments of the component

| | |
|------------|--|
| Outcome 1: | Improve the strategic planning process of ports, the mechanism for awarding concessions in port areas and reduce GHG emissions by increasing electrification |
|------------|--|

Reform 1.1: Simplification of the procedures for an update of the strategy planning process

Challenges: The planning tools of many port authorities are dated and do not take into account the reform of the Italian port system (carried out in 2016). Only a minority of the 16 Port Authorities have prepared or are preparing the System Strategic Planning Document (DPSS). The delays in the DPSS do not allow the respective Port Regulatory Plans (PRP) to be updated.

Objectives: it is necessary to introduce a system overview of the Italian port system by preparing the updating of port planning both at the strategic level with the Strategic System Planning Document (DPSS), and at the Port Regulatory Plan level (PRP).

In the DPSS, the development objectives and systemic planning contents of the port system authorities must be defined; the areas identified and outlined intended for strictly port and rear-port functions, the port-city interaction areas and the last-mile infrastructural connections of road and rail type with the individual ports of the system, and the crossings of the urban centre; defined the objectives and the choices made and the criteria followed in identifying the contents of the planning, in order to describe the territorial structure of the system, as well as ensuring a clear and unambiguous identification of the guidelines, the rules and the procedures for the preparation of the port regulatory plans.

Implementation: The Minister of Infrastructure and Transport will formulate a proposal to simplify the standard, to allow ports to adopt and adapt their plans quickly and flexibly and without procedural uncertainties. In particular, the MIMS will initiate some changes to the current regulatory text aimed at: (i) simplifying the procedures for approving the DPSS and better defining its contents; (ii) simplifying the procedures for the approval of PRPs; (iii) providing for a hierarchy of planning acts, which avoids the coexistence of several plans in the same perimeter; (iv) rationalizing the variants and the Technical-Functional Adjustments, reducing their types.

Target population: Port System Authorities.

Timeline: regulatory change by Q4 2022.

Reform 1.2: Implementation of a regulation defining the competitive award of concessions in port areas

Challenges: There are serious delays in the implementation of the reform dated 1994, which provides for the issue of a Regulation on concessions (envisaged by Article 18, paragraph 1 of Law no. 84/1994). This regulation is necessary to establish the criteria and conditions for a competitive assignment of concessions in ports and allow an efficient participation of the private sector in port activities.

Objectives: The objective of the regulation is to define the conditions relating to the duration of the concession, the supervisory and control powers of the granting authorities, the methods of renewal, the transfer of the plants to the new concession holder at the end of the concession, and the identification of limits minimum fees to be paid by licensees.

Implementation: The criteria for the awarding of concessions must be defined by a specific decree of the Minister of Infrastructure and Transport, in agreement with the Minister of Economy and Finance. To date, the MIMS issued a special circular on 5 February 2018, which established specific objective technical and economic criteria to be used by the Entities in the procedure for comparing the applications aimed at issuing the concession. These criteria were incorporated in the regulations for the use of the maritime domain by the port system authorities. The finalization of the regulation requires further iterations between MIMS and MEF.

Target population: companies in the maritime and intermodal transport sector.

Timeline: Q4 2022.

Reform 1.3: Simplify the authorization procedures to realize the cold ironing plants

Challenges: The current authorization procedures for the construction of energy transport infrastructures require numerous steps and timing that risk slowing down the development of the energy supply project to the ports. Currently, the necessary authorization times are approximately 2 years / 2 and a half year, if the interventions are not subject to environmental assessment; otherwise, the times could be significantly longer and even exceed 6/7 years.

Objectives: Approval of simplified procedures for the construction of energy transport infrastructures aimed at supplying electricity from land to ships during the mooring phase.

Currently, based on the voltage level of the works necessary for the connection of the *Cold Ironing*, there are two different authorization procedures: (i) one for the works falling on the NTG (voltage higher than 132 kV), subject to a single authorization issued by the Ministry of Economic Development agreement with the Ministry of the Environment and the Protection of the Territory and the Sea, subject to agreement with the Region or Regions concerned; (ii) another for works not falling within the NTG but falling within the User area (voltage lower than 132 kV), in this case the authorization process follows the rules set forth in regional authorization procedures.

In the particular case of *Cold Ironing*, the two authorization procedures, NTG and User, are therefore parallel and the obtainment of the authorization is conditioned by the slower one. Currently, the projects relating to the National Transport Network (NTG) are assessed centrally by the Ministry of Economic Development and the authorization times are due to high workloads, in relation to the scarce resources of personnel available to the ministerial office that deals with the assessment of the projects.

Implementation: MIMS will make a proposal to streamline the authorization process. In particular, it will be proposed to have the *cold ironing* projects evaluated by the territorial offices that report to the MISE, the UNMIG (National Mining Office for Hydrocarbons and Geo-resources), which could, in a shorter time, study the RTN projects and consequently authorize them. Moreover, in terms of the authorization process, a regulatory intervention could be envisaged that identifies a single authorization process (both for the NTG works part and for the User works part), in order to exploit the process synergies of a single authorization process. Finally, the non-submission to EIA and SEA of the works in question should be unequivocally clarified in consideration of the fact that the port structures are sites that have already been assessed for environmental impact purposes and as such are consequently “infrastructured”.

Target population: users and businesses of the 45 ports concerned.

Timeline: Q4 2022.

Investment 1.1: Interventions for the Environmental Sustainability of ports (Green Ports)

Challenges: Greenhouse gas emissions in ports (and other fossil fuel pollutants) come not only from ships and the quay, but also from the air conditioning of buildings and warehouses, from service vehicles, both land and naval, from cranes, and the lighting of open spaces.

Objectives: The main objective that the project aims to achieve is CO₂ emissions reduction of and air quality in port cities improvement, to be pursued through interventions improving energy efficiency and promoting the use of renewable energy in ports. The final target is to save 20% of CO₂ total annual emissions in the involved port area. The projects will be selected from those that the individual Port System Authorities have indicated in their Port Systems Environmental Energy Planning Documents (DEASP). Particularly, the main envisaged intervention categories are:

- Energy efficiency and production of energy from renewable sources (wind on land and on breakwaters, solar photovoltaic, solar thermal) and environmental monitoring of port areas;
- Purchase of electric or low-emission vehicles, boats or other means of transport to be used in ports;
- Replacement of inefficient port facilities from an energy point of view;
- Creation of infrastructures useful for the use of electricity on the quays (small boats, vehicles, means of transport, etc.);
- Centralized smoke treatment systems in port;
- Environmental quality monitoring systems.

In addition to reducing CO₂ emissions from fossil fuels, the "Green Ports" program will also achieve the abatement of other combustion pollutants, which are the main cause of deterioration in air quality in port cities.

Implementation: The project is developed on the ports of the 9 Port System Authorities of central-northern Italy. Otherwise, the projects presented under this program, together with other literature data, have provided an important reference for identifying the Green Ports project's intervention categories and related costs.

Many AdSPs have already drawn up their own DEASPs, which provide for an accurate initial photograph of the emissions of the port system, through the so-called "Carbon Footprint", in order to be able to promptly monitor the results of the interventions carried out, and measure their effectiveness for the reduction of CO₂ emissions. Each DEASP contains a ranking, based on the cost-benefit analysis of the interventions that the individual AdSPs intend to implement. In this way, each AdSP possesses the information for defining an integrated project, which will include interventions of different types located in the various ports of the Port System.

For the identification of the projects to be financed, the DG Mare e Coste of MiTE will start from the interventions foreseen in the DEASP, and the AdSPs will identify in a few days the priority ones for high feasibility and for better coordination with the port programs.

After the approval of the program by the EU, an invitation to express interest will be sent to the AdSPs, with the presentation of project proposals, and the MiTE will definitely select the projects to be financed, to which the resources will be allocated through the signing of specific MiTE-AdSP program agreements.

Target population: Users of the 9 Port System Authorities of the Center-North and citizens of the portual cities and neighboring populations

Timeline: Within Q2 2026.

State aid: The main interventions envisaged can be traced back to the Commission Guidelines on State aid for environmental protection and energy 2014-2020. The Green Ports Project plays a strategic role in reducing CO2 emissions in ports and other pollutants related to fossil energy combustion. The aim is therefore to effectively reduce climate-changing emissions and thus improve the state of our country's environment and natural heritage. It is believed that the project is also intended to contribute to the reduction of greenhouse gas emissions by 55% by 2030. The investments covered by the Green Ports Project will be carried out taking into account the “Environmental Energy Documents of port systems” (DEASP), drawn up by the AdSPs in compliance with the provisions of the D. Lgs. n. 169/2016, modified by Legislative Decree no. 232/2017, on the basis of the Guidelines adopted by MATTM (now MiTE) in agreement with MIT (Decree no. 408 of 17 December 2018). These guidelines, therefore, developed by this Ministry, contribute to the implementation of a careful and conscious environmental policy, which across the board involves all levels of planning, design and implementation.

| | |
|------------|---|
| Outcome 2: | Increase the digitalization of transport and logistic services, simplifying custom procedures |
|------------|---|

Reform 2.1: Implementation of a Single Customs Window (“Sportello Unico Doganale”)

Challenges: One of the reasons for the loss of market share of the Italian port system is that it has an average cost of logistics higher than the European average. A cost factor is the waiting times for the completion of customs procedures.

Objectives: Creation of a special portal serving the Single Customs Desk, which will allow interoperability with national databases and coordination of control activities by customs.

Implementation: on the proposal of the Ministry of Economy and Finance (MEF), a Decree of the President of the Republic (DPR) was drawn up, which defines the methods and specifications of the Single Customs Desk. To finalize this document, we are waiting for the relevant opinion of the Council of State.

Target population: users and companies in the maritime and intermodal transport sector.

Timeline: implementation of the One-stop shop by Q4 2021.

Reform 2.2: Establishment of a National Strategic Platform for the network of ports and freight villages, in order to introduce the digitalization of passenger and freight services.

Challenges: The IT systems developed by the various port authorities are not interoperable, and therefore do not allow the exchange of information necessary for an efficient management of port flows.

Objectives: Making the PCS of the individual Port System Authorities compatible with each other and with the national strategic platform UIRNET.

Implementation: The project will be implemented under the guidance of a control room established at the Ministry of Infrastructure and Transport (MIMS), in which representatives of UIRNET, of the Port System Authorities, and representatives of the Freight Transport categories participate. This

control room will draw up an agreement between the parties, which will outline the methods for implementing the coordination between the individual IT systems.

Target population: users and companies in the maritime and intermodal transport sector.

Timeline: Q2 2024.

Reform 2.3: Simplification of logistics procedures and document digitalization, through the adoption of an electronic "Convention relative au contrat de transport international de marchandises par route" (CMR) to freight shipments.

Challenges: The Logistics & Goods transport sector is experiencing a phase of profound global transformation due to the boom in the online sales market, which grew at an average annual rate of 22% between 2015 and 2018. The effect of e-commerce is the increase in international traffic, which in fact shifts the economic centre of gravity of international trade. The global logistics market has Asia-Pacific as its main region, followed by North America and Europe. The Mediterranean is increasing its central role in global maritime trade, with Italy and the South having the potential to act as a logistics hub for ships to and from the EU.

The waybill pertaining to the execution of an international transport contract for the transport of goods by road, established in 1956 by the CMR (*Convention des Marchandises par Route*) convention, signed by 58 countries, is a document that uniformly regulates almost all international transports and certifies their regularity.

In 2008, an additional Protocol to the CMR Convention was signed (entered into force on 5 June 2011), which provided for the dematerialisation of the waybill through an electronic document eCMR, with the aim of improving the quality of the distribution chain, through a greater efficiency and visibility, as well as a reduction in environmental impact by eliminating the use of paper.

The Protocol has so far seen the accession of numerous countries (including Spain, France, the Netherlands and Switzerland). It is deemed necessary to adopt it in Italy, to be implemented with a specific legislative measure, also to support road haulage companies in a growing market, such as the international one.

Objectives: The digitalisation of transport documents is a key element of the EU strategy for the mobility of goods in all modes of transport, as demonstrated by the recent Regulations 2020/1056 / EU, which aims to facilitate the exchange of electronic information, and 2020/1055 / EU, which introduces the possibility of using the eCMR as part of the controls on road cabotage operations.

The main benefits expected from the introduction of the eCMR in Italy are:

- greater security, speed and cost-effectiveness of information flows;
- simplification of information flows between the players in the logistics chain;
- reduction in emission costs, much lower than those of the printed CMR;
- less possibility of errors and discrepancies between the versions held by the sender, transporter and recipient of the goods;

- greater transparency and ease of control, with particular regard to the inter-modality and duplication of controls, by virtue of the constant monitoring of operations and the possibility of accessing information in real time;
- incentivisation of the competitiveness of Italian road haulage companies in the acquisition of contracts for international transport by companies of the States that already apply the aforementioned Protocol.

It should also be remembered that, among the “Proposals for the simplification and competitiveness of Italian logistics” presented a year ago by the CNEL which resulted in three specific draft laws (still in Parliament), the adoption of the eCMR is expressly included, as a concrete application of the dematerialisation of transport documents.

Implementation: it is necessary that the MIMS propose a legislative measure, on the model of those already adopted for the adherence to the previous protocols. The Central Committee for the Register of Road hauliers and the DG for road transport and intermodality should also participate in the drafting of the law. The actual implementation of the eCMR entails the definition of an agreement between MIMS, control bodies and associations of road haulage companies to define the objectives of the project and its operating methods.

In particular, it will be necessary to take into account the already existing initiatives, or the works of the “Working Group on Road Transport”, which is defining a support strategy for the promotion of the eCMR. The issues addressed include the creation of a common central platform, the definition of a common language between the parties in the supply chain, and the exchange of experiences between the countries concerned.

Target population: companies operating in the Logistics & Goods transport sector in Italy.

Timeline: Q2 2024.

Investment 2.1: The digitalization of the logistic chain

Challenges: The investment aims to meet the challenge of the digital revolution in the segment of goods transport and logistics at national level. Among the critical issues and specific needs of the sector in Italy, which can be addressed with the upgrade in the use of digital technologies, the following elements can be found:

- excessive bureaucracy in the procedures, still heavily dependent on paper documents;
- failure to actually launch the regulatory simplification processes;
- fragmentation of the IT systems implemented by the various entities and players in the logistics chain;
- waiting times for the loading / unloading of goods and for the usual controls that are not competitive compared to other European countries.

Objectives:

The “Digitalisation of the national logistics system” project aims to meet the specific needs at the national level and the more comprehensive challenges that the emergence of digital technologies poses in the goods transport and logistics sector.

The general objectives of the initiative consist in:

- increasing national logistics competitiveness through the creation of a digital ecosystem for goods transport and logistics;
- creating an interoperable digital system between public and private players able to simplify procedures, processes and controls by focusing on the de-materialisation of documents and the exchange of data and information;
- encouraging the digital transition in terms of intangible infrastructures of national companies operating in the goods transport and logistics sector, both on the end customer side and on the public administration side with which they interface.

Implementation: the implementation of investments in the digitalisation of logistics will be partly coordinated by PLN, for the relevant operations, and partly guided by the Port Authorities, in coordination with the logistics operators.

Target population: port users, logistics operators.

Timeline: by Q1 2026.

State Aids:

National Logistics Platform (PLN) - Uirnet Spa: the funding does not constitute a State Aid that falls within the scope of article 107 of the Treaty. The reforms and the investments concern the realization and implementation of the National Logistics Platform (PLN), that grants the interoperability and cyber security among all entities involved in the logistics chain. On the other hand, the funding also supports the development of the Port Community Systems (PCS) and interports ICT systems in order to grant the interoperability among ports, interports and the national logistic platform. Last, the funding is also aimed at financing freight and logistics companies in order to encourage the digitalization process in accordance with the criteria and standards stated by the National Logistic platform. More specifically, Uirnet is the implementing entity of the National logistic platform under control of Ministry of Infrastructure under article 61-bis of the decree n. 1/2012. In the new perspective, following the planned reforms and investments Uirnet will be also in charge of coordinating the digitalization process of all public and private stakeholders involved, through the adoption of standards and requirements that will ensure the cyber security and the full interoperability with the port community systems (PCS) and interports ICT systems.

Uirnet actually is in charge of setting minimum standards in order to coordinate the digitalization process of ports communities and interports although, on the other hand, the stakeholders in the logistic chain (ports and interports) remain obviously free to manage independently their digitalization process, but still in accordance with the standards and other requirements set by Uirnet. In this perspective, the aim is to avoid the overlap of different activities and the fragmentation of logistic operations and, at the same time, to prevent distortions of competition due to potential risk of lock-ins.

In this perspective, the existence of State Aid can be excluded, in accordance with the Notice on the notion of State aid taking into account that Uirnet operates the platform and coordinates access and the interoperability under law provision on the bases of a legal monopoly which excludes any possible competition to become the exclusive provider. Moreover the platform is made available to potential users on equal and non-discriminatory terms.

Uirnet scope and activity is under review and the Ministry is going to take all the necessary initiatives to proceed with the renegotiation of its mission and its work provisions in order to enhance public control of the use of public resources and, more generally, to exercise a control similar to that exercised over its own departments.

With reference to the implementation of the single customs window it's possible to confirm that investments and reforms in this area will be in full compliance with Regulation 1239/2019 on the implementation of the EMSWe, Regulation 1056/2020 on the eFTI and, where possible, also Commission Regulation 1305/2014. More specifically, the proposed reforms and investments are mainly aimed at implementing and increase the harmonisation of rules for the provision of the information that is required for port calls, in particular by ensuring that the same data sets can be reported in the same way. These measures also aims to facilitate the transmission of information between declarants, relevant authorities and the providers of port services in the port of call. Moreover, the aim of these measure fully shares and supports the objectives of the Regulation 1056/2020 as far as it encourages the digitalisation of freight transport and logistics in order to reduce administrative costs, improve enforcement capabilities of competent authorities, and enhance the efficiency and sustainability of transport.

Port Authorities Interports: it is covered by art. 56 of GBER. The amounts of funding for each interports are less than 10 mln and the interested interport has to submit an application that is evaluated on the bases of the project proposals. In the same perspective, as far as the funding also concerns the modernization of ports' digital infrastructure it is covered by article 56-ter of GBER.

Transport and logistic companies: The funding is covered by Regulation (EU) No 1407/2013 on the application of Articles 107 and 108 of the Treaty to de minimis aid.

Investment 2.2: The digitalization of air traffic management

Challenges: Air traffic management in airports is key to ensuring safe flight conditions and mitigating the environmental impact of aircraft. The “Single European Sky ATM Research” (SESAR) program aims to reduce the impact of air travel on the environment by 10 %.

Objectives: The digital innovation applied to the air transport sector allows an improvement in the sequencing of aircraft, both in the airspace en route and in the approach to airports, resulting in a reduction in aircraft fuel consumption. Moreover, the digital innovation of the sector will concern both the development of new tools that allow the digitalisation of aeronautical information, and the implementation of platforms and *unmanned* aircraft services. Lastly, “*Secure information sharing*” will allow the creation of a *new generation communication backbone*, which will connect the various operating sites of the flight assistance systems, guaranteeing the coverage of cybersecurity requirements and connecting Air Navigation. Service Provider (ANSP) with other stakeholders.

The projects, which will be carried out by ENAV SpA, will concern the following macro-categories:

- Development and connectivity of the *Unmanned Traffic Management System* - UTM;
- Aeronautical information digitalisation: APP (*Approach Control Service*) consolidation in ACC (*Area Control Centre*), New tower automation, AMAN (*Arrival Manager*), Green ENAV and Techno Sky infrastructures;
- *Secure Information Sharing*;
- *Cloud infrastructure* and virtualisation of operational infrastructures;
- New maintenance model.

Implementation: the entity implementing the investments in the digitalisation of airport services will be ENAV, in coordination with the airports selected in the TEN-T network.

Target population: airport users.

Timeline: by Q1 2026.

State aids: the funding does not constitute a State Aid that falls within the scope of article 107 of the Treaty. In the exercise of its official powers as a public authority relating to its sovereign prerogatives of organization of the means of provision and delivery of air navigation services in compliance with any applicable safety and security standards, the Italian State has designated ENAV to provide such services in Italy by operation of law, and specifically pursuant to article 691-bis of the Italian navigation code (“Codice della Navigazione”). The above-mentioned designation is exclusive both for the en-route air traffic services and for the terminal air traffic services relating to the airports entrusted to ENAV pursuant to the Programme Agreement (“Contratto di Programma”) entered into between ENAV and the relevant State authorities. We hence note that, as per the relevant articles of the EU “Guidelines on State Aid to Airports and Airlines” and related clarifications contained in the FAQs, public funding of such activities does not fall within the scope of State aid, nor it gives rise, in the case at hand, to any issue of undue discrimination. Certain investment initiatives that are entirely equivalent in nature and purpose to the ones presently envisaged with the New Airport Digital System Project for Roma and Bergamo Airports are, as of today, recipients of public funding according to other EU Programmes; this is the case, for instance, of the CEF Funding INEA/CEF/TRAN/M2016/1349619 Action number: 2016 EU TM-0117 M for Rome Fiumicino and Milan Malpensa Airports: having regard to the applicable rules as per paragraph (i) above, no issue of eligibility of the relevant costs or State Aid was ever raised in connection with such initiatives. The New Airport Digital System Project is going to improve the level of Safety and Security provided at local level, in line with “Guidelines on State Aid to Airports and Airlines”. The intervention concerned is going to improve the environmental sustainability of the airports where the intervention is taking place and will not have economic impact or produce economic compensation in other areas. The intervention will follow EU regulation on accounting and no cross-subsidisation will be performed following the financial aid. The New Airport Digital System Project at Rome Fiumicino and Bergamo is part of a larger modernisation initiative that will ultimately involve all 45 Italian Airports where ENAV currently provides air navigation services. The project started with the Airports presenting highest traffic rates, in order to reap higher benefits in terms of overall reduction of CO2 emissions, and is already completed at the Milan Malpensa and Milan Linate Airports. The New

Airport System Project at Rome and Bergamo Airports will not discriminate other airports (with the same traffic figures), since the same initiative was already completed in 2019 at the Milan Malpensa airport and in 2020 at Milan Linate. On the contrary, we note that, since all Italian Airports belong to one integrated system, each improvement delivered within a certain airport domain is beneficial to the overall Italian Airport network in terms of capacity and efficiency of operations, that ENAV is mandated to guarantee from the Member State. In conclusion, all interventions are deemed relevant in order to improve the safety of the operations delivered at airport level throughout the Italian territory.

4. Open strategic autonomy and security issues

Not relevant.

5. Cross-border and multi-country projects

Not relevant.

6. Green dimension of the component

The EU Regulation 2021/241 establishes, as a binding objective, that at least 37% of the total allocation of the NRP must be allocated to the green transition and the challenges deriving from it.

This Action includes around 49,84% of climate spending.

Please, see Table 2.

7. Digital dimension of the component

The EU Regulation 2021/241 establishes, as a binding objective, that at least 20% of the total allocation of the NRP must be allocated to the digital transition and the challenges deriving from it.

This Action includes 57,14% of expenses for the digital transition.

Please, see Table 2.

8. Do no significant harm

Please refer to “DNSH Table”.

9. Milestones, targets and timeline

Please refer to Table T1. Milestones and targets

10. Financing and costs

Please refer to Table T2. Green Digital & Costs

11. Loan request justification (if applicable)

Financial needs: Member States should explain the reasons for loan support, justified by higher financial needs linked to additional reforms and investments set out as regular components of the

recovery and resilience plan. Additional reforms and investments: For each of the components supported by a loan, Member States should describe them including all elements mentioned in part 2 sections 1 to 9 of the guidance.

Annex II: M/Ts of Component 2 of Mission 3

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|--|---|-------------------------------|--------------------|
| Q4-2022 | <p>Milestone: All port authorities should adopt their System Strategic Planning Documents (DPSS) and their Port Regulatory Plans (PRP) fully taking into account the reform of Italian ports systems of 2016 .</p> <p>The DPSS should as a minimum regulate the following elements,</p> <ul style="list-style-type: none"> • The development objectives of the port system authorities; • The areas identified and outlined intended for strictly port and rear-port functions, • The last-mile infrastructural connections of road and rail with ports, • The criteria followed in identifying the contents of the planning, • Make an unambiguous identification of the guidelines, the rules and the procedures for the preparation of the port regulatory plans. | | | |

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| Q4-2022 | <p>Milestone: Adopt a new Regulation which defines the framework conditions for the award of the concessions in ports. The Regulation should set out as a minimum,</p> <p>The conditions relating to the duration of the concession;</p> <ul style="list-style-type: none"> • The supervisory and control powers of the granting authorities; • The methods of renewal: • The transfer of the plants to the new concession holder at the end of the concession; • The limits minimum fees to be paid by licensees. | | | |
| Q4-2021 | <p>Milestone: Adopt a Decree which defines the methods and specifications of the Single Customs Desk in compliance with Regulation (EU) 1239/2019 on the implementation of the European Maritime Single Window and with the Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information (eFTI).</p> | | | |
| Q2-2022 | <p>Milestone: Streamline the authorisation process to reduce the authorisation time to a maximum of 12 months for the construction of energy transport infrastructures aimed at supplying electricity from land to ships during the mooring phase (in case of the interventions are not subjected to environmental assessment)</p> | | | |
| Q4 2022 | <p>Milestone: (Green Ports) Assignment of the works by at least 7 Port Sistem Authorities on the basis of the integrated projects</p> | <p>The name "Integrated Project" derives from the fact that each AdSP presents a set of proposals for intervention that may concern the efficiency of buildings, lighting, renewable sources, etc..., forming a single design aimed at reducing CO2 emissions.</p> | | |

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|---------|--|--|--|--|
| | | <p>The Port Sistem Authorities are:</p> <ol style="list-style-type: none"> 1. AdSP del Mar Ligure Occidentale - (porti di Genova, Prà, Savona e Vado Ligure) 2. AdSP del Mar Ligure Orientale - (porti de La Spezia e Marina di Carrara) 3. AdSP del Mar Tirreno Settentrionale - (porti di Livorno, Capraia, Piombino, Rio Marina, Portoferraio e Cavo) 4. AdSP del Mar Tirreno Centro Settentrionale - (porti di Civitavecchia, Fiumicino e Gaeta) 5. AdSP del Mare di Sardegna - (porti di Cagliari, Olbia, Golfo Aranci, Porto Torres, Oristano, Portovesme, Santa Teresa Gallura) 6. AdSP del Mar Adriatico Centrale - (porti di Ancona, Falconara, Pescara, Pesaro, San Benedetto del Tronto e Ortona) 7. AdSP del Mar Adriatico Centro-Settentrionale - (porto di Ravenna) 8. AdSP del Mar Adriatico Orientale - (porto di Trieste) 9. AdSP del Mar Adriatico Settentrionale - (porti di Venezia e Chioggia) | | |
| Q4 2025 | <p>Milestone: (Green Ports) Completion of the works by all the Port Authorities. At least 50% of investments are dedicated to energy efficiency and production of energy from renewable sources.</p> | <p>The main envisaged intervention categories are:</p> <ul style="list-style-type: none"> - Energy efficiency and production of energy from renewable sources (wind on land and on breakwaters, solar photovoltaic, solar thermal) and environmental monitoring of port areas; - Purchase of electric or zero emission vehicles, boats or other means of transport to be used in ports; - Replacement of inefficient port facilities from an energy point of view; | | |

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| | | <ul style="list-style-type: none"> - Creation of infrastructures useful for the use of electricity on the quays (small boats, vehicles, means of transport, etc ..); - Centralized smoke treatment systems in port; - Environmental quality monitoring systems. <p>In addition to reducing CO₂ emissions from fossil fuels, the "Green Ports" program will also achieve the abatement of other combustion pollutants, which are the main cause of deterioration in air quality in port cities. In any case, the solution that makes use of the best sustainable technologies available on the market will be financed.</p> | | |
| Q4 2026 | Target: (Green Ports) 20% of CO₂ annually saved in involved ports' area | CO ₂ saving measured by Carbon Footprint according to ISO rules | | |
| Q2-2024 | Milestone: Make the Port Community Systems of the individual Port System Authorities compatible each other and with the digital national strategic platform | | | |

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|---------|---|--|--|--|
| Q4-2023 | <p>Target: At least 13 sites: airports, approaches (APPs) and Area Control Centers (ACCs) will be equipped with a fully digitalized air traffic management system</p> | <p>The projects will concern the following macro-categories:</p> <ul style="list-style-type: none"> - APP (Approach Control Service) consolidation in ACC (Area Control Centre); - New tower automation; - AMAN (Arrival Manager). <p>Airports concerned are Rome Fiumicino and Bergamo, Approaches concerned are Lamezia, Ronchi, Bari, Verona, Torino, Genova, Napoli, Firenze, Palermo, ACCs concerned are Roma and Milano.</p> | | |
| Q1-2026 | <p>Target: At least 50% of the Port Community Systems should be consistent with National Logistics Platform standards</p> | <p>The Port System Authorities are 16 in total</p> | | |
| Q1-2026 | <p>Milestone: Availability of a) TOC (Technical Operations Center) and at least 2 ATM / SW applications systems b) implemented Group Cloud Enterprise Resource Planning (ERP) c) Implementation of Digitalised Aeronautical Information d) Implementation of UTM System and connectivity</p> | <p>The project concerns the availability of the following functionalities to improve digitalization of Air Traffic Services at airport and at central management level:</p> <ul style="list-style-type: none"> - Availability of digitalised Aeronautical information supporting improved information sharing at Air and Ground level - Development and connectivity of the Unmanned Traffic Management System – UTM, allowing better management of UTM, ATM with benefits at airport and central level - Implementation of Secure Information Sharing backbone, supporting digital information sharing among Air Traffic Units; - Implementation of Cloud infrastructure and virtualisation of operational infrastructures. | | |

| Mission | Componen Id | Name |
|----------------|--------------------|---|
| M3 | C2 | Ref1.1 Simplification of the procedures for the strategy planning process |
| M3 | C2 | Ref1.2 Implementation of a regulation defining the competitive award of concessions in port areas |
| M3 | C2 | Ref1.3 Simplify the authorization procedures to provide electricity to piers |
| M3 | C2 | Inv1.1 Green Ports |
| M3 | C2 | Ref2.1 Implementation of a Single Customs Window ("Sportello Unico Doganale") |
| M3 | C2 | Ref2.2 Establishment of a National Strategic Platform (UIRNET) for the network of ports |
| M3 | C2 | Ref2.3 Simplification of logistics procedures and document digitization |
| M3 | C2 | Inv2.1 Digitization of logistics systems |
| M3 | C2 | Inv2.2 Digital innovation of air traffic management |

DNSH assessment

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| Mission | M3 |
| Cluster | C2 |
| Related Measure (Reform or investment) | R1.1 Simplification of the procedures for the strategy planning process |
| Responsibility for reporting and implementation | MIMS - STM |
| Date | 21/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform aims to introduce a system overview of the Italian port system by preparing the updating of port planning both at the strategic level with the Strategic System Planning Document (DPS) and at the Port Regulatory Plan level (PRP). In this framework, this reform has not any significant impact on this objective | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The updating of port planning both at the strategic level with the Strategic System Planning Document (DPS) and at the Port Regulatory Plan level (PRP) will help to ensure programme and investment coherent with intervention designed to improve the climate resilience of port infrastructure | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The updating of port planning both at the strategic level with the Strategic System Planning Document (DPS) and at the Port Regulatory Plan level (PRP) will help to ensure a closer assessment of risk and potential negative impact especially on marine resources | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M3 |
| Cluster | C2 |
| Related Measure (Reform or investment) | R1.2 Implementation of a regulation defining the competitive award of concessions in port areas |
| Responsibility for reporting and implementation | MIMS - STM |
| Date | 21/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform aims to better define the conditions relating to the duration of the concession, the supervisory and control powers of the granting authorities, the methods of renewal, the transfer of the plants to the new concession holder at the end of the concession. In this framework, the reform has no foreseeable negative impact on this objective | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform, among other things, would help to monitor activities implemented by concession holders. In this respect, indirect positive impact can be reached in terms of a more stringent assessment of potential activities and investment related to adaptation measures implemented by concession holders | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform, among other things, would help to monitor activities implemented by concession holders. In this respect, indirect positive impact can be reached in terms of a more stringent assessment of potential activities and investment of the protection of marine resources implemented by concession holders | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M3 |
| Cluster | C2 |
| Related Measure (Reform or Investment) | R1.3 Simplify the authorization procedures to provide electricity to piers |
| Responsibility for reporting and implementation | MIMS - STM |
| Date | 19/04/2021 |

| | Step 1 | | Step 2 | | |
|---|---|---|---|--------|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objectives | | | | | |
| 1. Climate change mitigation | C. The measure 'contributes substantially' to an environmental objective, pursuant to the Taxonomy Regulation, and as such is considered compliant with DNSH for the relevant objective. | The reforms refers to the intervention field as defined in the Annex VI of the 2021 EU Regulation 027 as it supports enterprises that provide services contributing to the low carbon economy and aims to facilitate investment for infrastructure needed to promote cold ironing in Italian ports. The intervention field selected indicates that the measure supports 100% the climate change objectives. As a result, the construction of energy transport infrastructures aimed at supplying electricity from land. The reform planned will not affect general rules regarding environmental and climate assessment for new infrastructure project according to national and European regulation. Therefore, the reform has not any foreseeable impact on this objectives | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform planned will not affect the use and the protection of water and marine resources | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | | As indirect impact of the reform will be a more intensive use of hardware to produce eCMR. The equipment used should meet the requirements of the EU Ecodesign Directive |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSh assessment

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|---|---|
| Measure | 1 - Infrastructure for sustainable mobility |
| Cluster | 2 - Intermodality and Integrated Logistics |
| Related Measure (Action or Investment) | 1 - Green Ports |
| Responsibility for reporting and implementation | Mr. Roberto Bellarosa |
| Date | 10/20/2023 |

| Environmental objective | Step 1 | | Questions | Step 2 | |
|---|--|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective in accordance to support this objective? | Justification if A, Y or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with ODR for the relevant objective | <p>The interventions under the Measure are expected to reduce energy consumption in the user activities, reduce non energy efficient architectural solutions, improve the energy efficiency of the building, promote renewable power, collection and treatment of the air emission from ships at the pier.</p> <p>Most of the interventions mentioned fall in the art. 10 of the taxonomy regulation.</p> <p>The measure falls within the intervention fields identified with codes COB 02B 02B 02C 04B 07A as per Annex VI of the EU Regulation with a sufficient weight of 20% as well as 40%. The interventions considered here as that main purpose the reduction of CO2 emissions, it can therefore be considered that the foreseeable impact of the activity, regarding the measure on the environmental objective is negligible, in consideration of the direct and indirect effects during the life cycle.</p> | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with ODR for the relevant objective | <p>Based on carrying out the interventions included in the measure, no critical environmental degradation concerns related to the measure, in terms of environmental degradation concerns related to the protection of water bodies and water stress have been identified, since the installation of high saline devices or appliances that use water is not envisaged, also according to the measure nature.</p> | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with ODR for the relevant objective | <p>Based on carrying out the interventions included in the measure, no critical environmental degradation concerns related to the protection of water bodies and water stress have been identified, since the installation of high saline devices or appliances that use water is not envisaged, also according to the measure nature.</p> | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSh assessment | | <p>Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant performance in the direct or indirect use of any natural resource at any stage of its life cycle which are not remedied by adequate measures, or (iii) cause significant and long term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?</p> | NO | <p>The measure does not require a substantive DNSh assessment as it falls within the scope of the EU Taxonomy Regulation (Art. 10) and is not expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or to lead to significant performance in the direct or indirect use of any natural resource at any stage of its life cycle which are not remedied by adequate measures, or to cause significant and long term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy).</p> <p>DNSh Clean when</p> <ul style="list-style-type: none"> Incineration, the physical transformation of solid and semi-solid waste (particulate, glass, handling, service boats, etc.) from fossil fuel to electric systems, which are water port cities, is envisaged. By extension we consider the use of services to the PM88 regulation. Particulate of the vehicle against the scrapping of older the engine above or the engine carbon, an operation that must be carried out according to the principles of the circular economy, covering the use, recovery and recycling of parts, metal residues, plastics, liquid medium, etc. Measures to recycle to manage waste at the end of life of the means, including through reuse and recycling of batteries and electronics for particular critical materials (lithium, cobalt, nickel) in accordance with the waste hierarchy. Production reporting and feedback, and the scheme will not encourage the premature scrapping of trackable vehicles. In particular, the scheme requires that any scrapped vehicle is processed by an Authorized Treatment Facility (ATF), according to the end of life vehicles in Directive (EU) 2023/885, under Directive 2000/54/EC, implemented in Italy by the Decree 129/2020. Additionally, the measure will promote the reuse of parts for the ATFs for their closure or re-manufacturing. The public call for tenders will be issued dual provide for the timely execution of these operations. The measure does not require a substantive DNSh assessment as it falls within the scope of the EU Taxonomy Regulation (Art. 10) and is not expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or to lead to significant performance in the direct or indirect use of any natural resource at any stage of its life cycle which are not remedied by adequate measures, or to cause significant and long term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy). |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with ODR for the relevant objective | <p>The measure is not expected to lead to a significant emission of pollutants into the air, water or soil, since the implementation of the interventions aims to reduce CO2 emissions and pollutants emitted to the atmosphere of both CO2, SO2, PM10.</p> | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with ODR for the relevant objective | <p>The expected impact of the activity supported by the measure with regard to the environmental objective is negligible as it does not affect the parameters that characterize biodiversity and ecosystems, also in consideration of the direct and indirect effects over the entire life cycle.</p> | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union Interest? | | |

DNSH assessment

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| Mission | M3 |
| Cluster | C2 |
| Related Measure (Reform or Investment) | R2.1 Implementation of a Single Customs Window ("Sportello Unico Doganale") |
| Responsibility for reporting and implementation | MIMS - STM |
| Date | 21/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|---|--------|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | | is the measure expected to lead to significant GHG emissions? | NO | The planned reform has the aim to create a special portal serving the Single Customs Desk, which will allow interoperability with national databases and coordination of control activities by customs. The reforms could have an impact in terms of the materials needed for the digitalization. The equipment used for the digitalization process will be in line with Reference standard: 2019 Best Practice Guidelines for the EU Code of Conduct on Data Centre Energy Efficiency (URC). |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | As an indirect impact of this reform there is the management of waste used produced in the implementation of the special portal serving the Single Customer Desk. Even if this indirect impact can be considered marginal, the equipment used should meet the requirements of the EU Ecodesign Directive for servers and data storage products. -When electrical and electronic equipment reaches its end of service, the waste electrical and electronic equipment is collected and managed by an authorized operator and treated according to the waste hierarchy. The equipment used will comply with the requirements in the Ecodesign Directive (Directive 2009/125/EC). - Electrical equipment purchased will not contain the restricted substances listed in Annex II to Directive 2011/65/EU in any concentration values by weight in homogeneous materials exceeding the maximum values listed in that Directive (RoHS). - The procurement procedures will include the management of the assets at the end of their lifecycle, to minimise waste and favour the re-use and re-cycle of materials. at the end of the lifecycle, the disposal of the electronic equipment purchased for this investment will be performed at the end of its life according to the current legislation, which imposes the re-use, recovery or recycling operations, or proper treatment, as most appropriate (Annex VII to Directive 2012/19/EU (WEEE) on waste electrical and electronic equipment) |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental | It is expected that the planned reform has no impact on this objective | is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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|---|---|
| Mission | M3 |
| Cluster | C2 |
| Related Measure (Reform or Investment) | R2.2 Establishment of a National Strategic Platform (UIRNET) for the network of ports |
| Responsibility for reporting and implementation | MIMS - STM |
| Date | 21/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive Justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | The planned reform aims to make the PCS of the individual Port System Authorities compatible with each other and with the national strategic platform UIRNETs. The |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reforms will lead to a more efficient management of port flows, both in terms of passengers and good movements, with indirect positive impact on the protection of marine resources | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | As an indirect impact of this reform there is the management of waste used produced in the implementation of the new platform. Even if this indirect impact can be considered marginal, the equipment used should meet the requirements of the EU Ecodesign Directive for servers and data storage products. -When electrical and electronic equipment reaches its end of service, the waste electrical and electronic equipment is collected and managed by an authorized operator and treated according to the waste hierarchy The equipment used will comply with the requirements in the Ecodesign Directive (Directive 2009/125/EC). - Electrical equipment purchased will not contain the restricted substances listed in Annex II to |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective | The reforms will lead to a more efficient management of port flows, both in terms of passengers and good movements, with indirect positive impact on the protection of marine resources | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective | It is expected that the planned reform has no impact on this objective | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M3 |
| Cluster | M3C2 |
| Related Measure (Reform or Investment) | R2.3 Simplification of logistics procedures and document digitization |
| Responsibility for reporting and implementation | Giuliano Colangeli |
| Date | 19/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive Justification If NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | The planned reform aims to introduce eCMR to facilitate the exchange of electronic information and to improve controls on road cabotage operations. The reform and the related investment improve efficiency and productivity in the logistics value chain. Thanks to this optimization it would be possible, ceteris paribus, have a impact in terms of reduction of GHG emissions. In addition, since the new system is adaptable to any type of transport, and it does... |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The reform plans and rationalizes a series of interventions that do not involve a dependence on assets that compromise long-term environmental objectives and generates a significant positive impact for the environment, considering the dematerialization of a large amount of paper documentation; moreover, provides adaptation solutions that contribute in a substantial way to prevent or reduce the risk of negative effects of the current climate and the climate forecast for the future on biosphere, without increasing the risk of adverse effects. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Considering the nature of the planned reform, the expected impact on water and marine resources is not significant. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The reform is necessary to create an integrated national system for digitizing the information necessary for proper transport logistics reduces the production of waste (e.g. paper documentation) and supports, among others, the supply chain of secondary raw materials. The digital equipment will meet the requirements of the EU Ecodesign Directive for servers and data storage products. - When electrical and electronic equipment reaches its end of service, the waste electrical and electronic equipment is collected and managed by an authorized operator and treated according to the waste hierarchy. The equipment used will comply with the requirements in the Ecodesign Directive (Directive 2009/125/EC). - Electrical equipment purchased will not contain the restricted substances listed in Annex II to Directive 2011/65/EU in any concentration values by weight in homogeneous materials exceeding the... |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | The freight transport optimization involves the reduction of polluting emissions in the biosphere and helps to improve the level of air, water or soil quality in the areas where the economic activity takes place; it also minimizes the negative effects on human health and the environment deriving from goods transport activities. Additionally, as the index, the impact of the reform will be a... |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environment | Although this measure supports, somehow, sustainable forest management, it is possible to consider the expected impact as not significant | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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|---|---------------------------------------|
| Mission | M3 |
| Cluster | M3C2 |
| Related Measure (Reform or investment) | 3.1 Digitization of logistics systems |
| Responsibility for reporting and implementation | MIMS Giuliano Colangeli |
| Date | 19/04/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | The main objective of this investment is to improve digitizing processes, procedures and data exchange for logistic systems. It is expected to improve efficiency and productivity in the logistics value chain rationalizing the capacity of network infrastructures and exchange nodes. Thanks to this optimization it would be possible, <i>ceteris paribus</i> , have a impact in terms of reduction of GHG emissions. In addition, since the new system is adaptable to any type of transport, and it does not hinder the development and diffusion of low-carbon alternatives. | Is the measure expected to lead to significant GHG emissions? | | For the data management the following standards could be considered: Reference standard: 2019 Best Practice Guidelines for the EU Code of Conduct... |
| 2. Climate change adaptation | D. No, the measure requires a substantive DNSH assessment. | The planned intervention does not involve a dependence on assets that compromise long-term environmental objectives and generates a significant positive impact for the environment, considering the dematerialization of a large amount of paper documentation. Moreover, it also provides adaptation solutions that can contribute to prevent or reduce the risk of negative effects of the current climate and the climate forecast for the future on biosphere, without increasing the risk of adverse effects. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | NO | the following regulation will be taken into consideration for the procurement: REGULATION (EU) No 617/2013 on ecodesign requirements for |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Considering the nature of the planned intervention, the expected impact on water and marine resources is not significant. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The equipment used should meet the requirements of the EU Ecodesign Directive for servers and data storage products. -When electrical and electronic equipment reaches its end of service, the waste electrical and electronic equipment is collected and managed by an authorized operator and treated according to the waste hierarchy The equipment used will comply with the requirements in the Ecodesign Directive (Directive 2009/125/EC). - Electrical equipment The freight transport optimization involves the reduction of polluting emissions in the biosphere and helps to improve the |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | NO | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environment | Considering the nature of the planned intervention, the expected impact on water and marine resources is not significant. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | M3 |
| Cluster | M3C2 |
| Related Measure (Reform or investment) | 3.2 digital innovation of air traffic management |
| Responsibility for reporting and implementation | MIMS - ENAV |
| Date | 19/04/2021 |

| Environmental objectives | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Step 1 | Step 2 | | |
|---|---|--|---|--------|---|
| | | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The digital innovation applied to the air transport sector allows an improvement in the sequencing of aircraft, both in the airspace en route and in the approach to airports, resulting in a reduction in aircraft fuel consumption | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The planned intervention is not expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | Considering the nature of the planned intervention, the expected impact on water and marine resources is not significant. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The digital innovation applied to the Air Traccc system is not expected to lead to an increased adverse impact on circular economy, including waste prevention and recycling | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The measures implemented will see an optimisation of the infrastructures concerned (very few additional infrastructures will be introduced and replacement of very old equipment), with additional efficiency and a reduced energy consumption. The equipment used should meet the requirements of the EU Ecodesign Directive for servers and data storage products. When electrical and electronic equipment reaches its end of service, the waste electrical and electronic equipment |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The digital innovation applied to the air transport sector allows an improvement in the sequencing of aircraft, both in the airspace en route and in the approach to airports, resulting in a reduction in aircraft fuel consumption | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | The flight management optimization proposed involves the reduction of polluting emissions in the |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environment | Considering the nature of the planned intervention, the expected impact on water and marine resources is not significant. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

COMPONENT: M3C2 Intermodalità e logistica integrata

Azione: Digitalizzazione del sistema logistico nazionale (250 mln €)

1. Description

Summary box

Policy area: DIGITALIZZAZIONE NEI TRASPORTI

Obiettivi:

Obiettivi strategici:

a) Digitalizzazione del sistema logistico nazionale attraverso la realizzazione di una cabina di regia per l'interoperabilità digitale tra attori pubblici e privati (Piattaforma Logistica Nazionale), l'upgrading e l'incremento delle funzionalità dei sistemi ICT portuali ed interportuali e la diffusione delle nuove tecnologie abilitanti per le imprese di logistica.

Stima dei costi:

Il progetto complessivo "Digitalizzazione del sistema logistico nazionale" del costo totale di EUR 250 milioni è articolato in 3 macro attività:

- A) LogIN Center per un totale di EUR 30 milioni
- B) Rete dei porti e degli interporti per un totale di EUR 45 milioni
- C) LogIN Business per un totale di EUR 175 milioni

2. Main challenges and objectives

a) **Main challenges**

La componente M3C2 "Intermodalità e logistica integrata", progetto "Digitalizzazione del sistema logistico nazionale" intende rispondere alla sfida della rivoluzione digitale nel segmento del trasporto merci e della logistica a livello nazionale partendo da due considerazioni base:

- **la pervasività dell'applicazione delle nuove tecnologie digitali** appare ormai ineludibile anche nel settore dei trasporti e rappresenta un indubbio fattore competitivo e per il paese e per le single aziende, rappresentando una soluzione estremamente efficace nel semplificare e velocizzare i processi gestionali, le procedure amministrative e di controllo, nell'aggiungere nuovi livelli di interazione tra il sistema dell'offerta e l'utenza e quindi nel garantire servizi migliori e più affidabili per il cliente finale;
- **la limitata adozione delle tecnologie digitali in Italia** che, sulla base dell'ultimo rapporto DESI 2020 della Commissione Europea, risulta in 25° posizione su 28 Stati membri dell'UE, davanti solo a Romania, Grecia e Bulgaria, con un punteggio di ben 9 punti

inferiori alla media UE (43,6 vs 52,6) e con un deficit particolarmente evidente nelle voci relative alla “digitalizzazione delle imprese” e nella dimensione delle competenze digitali del capitale umano; nello specifico comparto merci e logistica, ove le nuove tecnologie digitali sono state implementate (in termini di sistemi per la gestione del traffico, di digitalizzazione dei processi amministrativi e delle funzioni di supporto logistiche), si riscontra una forte frammentarietà delle iniziative e la difficoltà nel creare soluzioni interoperabili che garantiscano il dialogo funzionale dei sistemi implementati dai diversi attori del comparto.

Ciò premesso, le criticità ed i fabbisogni a cui il progetto intende rispondere in modo organico ed integrato riguardano da un lato criticità e fabbisogni specifici del comparto trasporto merci e logistica a livello nazionale e dall’altro criticità e fabbisogni più generali tesi a mitigare i rischi congeniti nei processi di digitalizzazione che si realizzeranno nel corso della messa in esercizio della componente M3C2.

Tra le criticità ed i fabbisogni specifici del comparto in Italia, che possono essere affrontati con l’upgrade nell’uso delle tecnologie digitali, si possono rinvenire i seguenti elementi:

- **eccessiva burocratizzazione nelle procedure, tuttora fortemente dipendenti da documenti cartacei:** a tal proposito, da una ricerca effettuata da UIRNet nel corso del 2019, con il coinvolgimento di tutti gli stakeholders che operano con la gran parte delle Autorità di Sistema Portuale, è emerso che il passaggio dalla situazione attuale alla dematerializzazione dei documenti e standardizzazione dei processi fra porti e terminal comporterebbe, tra l’altro, un abbattimento del 40%-50% dei tempi di ingresso ai terminal e un risparmio fino al 50% dei costi variabili del trasporto;
- **mancato concreto avvio di processi di semplificazione normativamente previsti,** con riflessi importanti in materia di digitalizzazione, quali lo Sportello Unico Amministrativo (SUA) presso le AdSP ed il completamento dello Sportello Unico Doganale e dei Controlli (SUDOCO);
- a fronte di alcune lodevoli iniziative negli ultimi anni **si registra una estrema frammentarietà dei sistemi informatici implementati dai diversi enti ed attori della catena logistica** che risultano carenti di protocolli di interoperabilità sia versante pubblico-pubblico che pubblico-operatori privati; a fortiori, alcune piattaforme informatiche di medesimi enti (ad esempio i Port Community Systems delle Autorità di Sistema Portuale) risultano non omogenei in termini di condizioni di utilizzo, di interfacciamento sia con gli operatori lato mare e lato terra e di gestione, pur nel rispetto delle peculiarità delle singole realtà. Ove presenti, quindi, il proliferare di sistemi di raccolta, gestione e utilizzo dei dati e la mancanza di procedure comuni per la sicurezza, i test e dei requisiti di prestazione degli applicativi delle tecnologie rappresentano evidentemente un rischio per l’interoperabilità a lungo termine di tutto il sistema dei trasporti. L’interoperabilità non è unicamente legata alle infrastrutture ed alle infostrutture, ma altresì ai formati di scambio ed al trattamento dei dati.
- **tempi di attesa per il carico/scarico delle merci e per i controlli di rito non competitivi rispetto agli altri paesi europei.** A titolo esemplificativo, secondo lo studio Doing Business sempre della World Bank del 2015, nei porti italiani le operazioni di preparazione dei documenti, trasporto interno e movimentazione, sdoganamento, ispezioni e movimentazioni

al porto e al terminale richiedono in media complessivamente per le operazioni di esportazione 19 giorni mentre in Germania e nei Paesi Bassi richiedono rispettivamente 9 e 7 giorni. Più specificatamente, l'Italia evidenzia notevoli inefficienze nella fase di predisposizione della documentazione (per polizza di carico, dichiarazione doganale, fattura commerciale e certificati di standard tecnici/sanitari) dove servono complessivamente in media 11 giorni rispetto ai 4 di Germania, Francia, Olanda e ai 3 del Belgio. Per la movimentazione delle merci all'interno della zona portuale, sia sui moli che nei passaggi successivi in Italia servono 6 giorni invece dei 2/5 dei paesi più efficienti. L'ultimo report della World Bank (2018) che misura il Logistics Performance Index (LPI), colloca l'Italia al 19° posto su 160 paesi, dietro la Francia, Spagna e tanti altri paesi industrializzati, con un sistema probabilmente non all'altezza della seconda potenza manifatturiera d'Europa.

Tra le criticità ed i fabbisogni generali tesi a mitigare i rischi congeniti nei processi di digitalizzazione, si possono citare i seguenti elementi:

- **cybersecurity:** il crescente uso dei sistemi e delle tecnologie informatici solleva delle problematiche legate alla questione della sicurezza informatica. L'attacco informatico è quell'azione che colpisce sistemi informativi, infrastrutture, reti o dispositivi elettronici personali tramite atti illeciti finalizzati al furto di informazioni, al furto di dati o di know how aziendale, al loro spionaggio, danneggiamento o alla loro completa distruzione. Oppure mirano ad altri obiettivi, tra i quali, ad esempio, la continuità dei servizi erogati da parte del sistema preso di mira, interrompendolo momentaneamente oppure per sempre. Ad esempio, attacchi informatici potrebbero colpire terminal per la movimentazione delle merci, navi, treni o veicoli pesanti, rappresentando una grave minaccia per la sicurezza. I rischi informatici possono anche derivare da condizioni meteorologiche estreme che potrebbero causare la distruzione parziale o totale delle strutture informatiche di bordo. In tutti questi casi, la sfida consiste nel garantire che i dati siano sicuri e che i sistemi possano riprendere a funzionare correttamente in tempi rapidi attraverso consolidati sistemi di cybersecurity.
- **digital divide:** evidentemente la difficoltà da parte della micro o piccola impresa nello sviluppare investimenti software di pianificazione delle risorse aziendali o soluzioni di cloud computing e di big data, crea delle fratture tra i diversi attori in gioco sia in termini di fruibilità dei servizi che di possibilità di competere a pari livello. L'effetto è che questa divisione risalta la frattura che si frappone tra le aziende in grado di utilizzare/usufruire di queste tecnologie e la parte delle aziende che ne rimane esclusa, da cui ne deriva la necessità di promuovere un sistema di penetrazione delle tecnologie digitali con regia pubblica.

b) Objectives

Il progetto "Digitalizzazione del sistema logistico nazionale" è esattamente finalizzato a rispondere ai fabbisogni specifici a livello territoriale nazionale ed alle sfide più onnicomprensive che l'emersione delle tecnologie digitali pongono nel comparto del trasporto merci e della logistica.

Gli obiettivi generali dell'iniziativa consistono in:

- **auumentare la competitività logistica nazionale** sia a livello paese che a livello di singola impresa attiva nel comparto attraverso la realizzazione di un ecosistema digitale per il trasporto merci e la logistica;

- **creare un sistema digitale interoperabile** tra attori pubblici e privati in grado di semplificare procedure, processi e controlli puntando sulla dematerializzazione documentale e sullo scambio di dati ed informazioni;
- **favorire la transizione digitale in termini di infrastrutture immateriali delle aziende nazionali** attive nel comparto del trasporto merci e logistica sia lato clienti finali che lato pubbliche amministrazioni presso cui si interfacciano.

Gli obiettivi specifici dell’iniziativa consistono in:

- **incrementare l’efficienza del trasporto merci e della logistica** attraverso la digitalizzazione dei processi, delle procedure e lo scambio di dati con impatto sull’ottimizzazione dei carichi, nel miglioramento degli indici di efficienza e produttività degli attori della catena logistica e nella razionalizzazione della capacità delle infrastrutture di linea (strade e ferrovie) e sui nodi (porti, interporti ed aeroporti);
- **incrementare i livelli di “customer experience”** attraverso migliori tecnologie per il tracking e tracing delle merci e dati in tempi reali sulle consegne che dovrebbero sostanzialmente incrementare i livelli di soddisfazione dei servizi logistici e di trasporto nazionali nei confronti dei clienti finali;
- **incrementare la sostenibilità ambientale** del trasporto merci attraverso la riduzione dei gas serra e dell’inquinamento atmosferico grazie ad una migliore efficienza dei trasporti (ottimizzazione dei carichi viaggianti);
- **favorire il bilanciamento modale** grazie a servizi logistici e di trasporto meglio integrati, più fluidi e “paperless” che rendono attrattive anche modalità di trasporto alternative al tutto strada con vantaggi anche dal punto di vista di risparmio delle esternalità negative prodotte;
- **incrementare dei livelli sicurezza** grazie all’incremento di efficienza dei carichi che dovrebbe causare una diminuzione tendenziale dei veicoli necessari al trasporto dei prodotti, allo shift modale verso ferrovia e servizi intermodali ed all’adozione di tecnologie di route planning dinamico;
- **riduzione della congestione** attraverso gli incrementi di efficienza dei carichi e la riduzione delle tonnellate km percorse e l’adozione di tecnologie di dynamic routing planning;
- **incrementare i livelli di qualifica, occupabilità e di know-how in materia di tecnologie digitali del personale** dedicato ad operazioni che potrebbero essere automatizzate con importanti impatti occupazionali;

3. Description of the reforms and investments of the component

For Investments

A titolo di premessa, vale la pena sottolineare che il progetto “Digitalizzazione del sistema logistico nazionale” è un’iniziativa operativa che corre di pari passo con le previsioni normative contenute nella sezione Riforme del PNRR - Componente 3.2 Intermodalità e logistica integrata, vale a dire con le previsioni di “rendere i port community system (PCS) delle singole Autorità di Sistema Portuale compatibili fra loro e con la piattaforma strategica di livello nazionale” e di procedere con la “semplificazione delle procedure della logistica e della digitalizzazione dei documenti, con

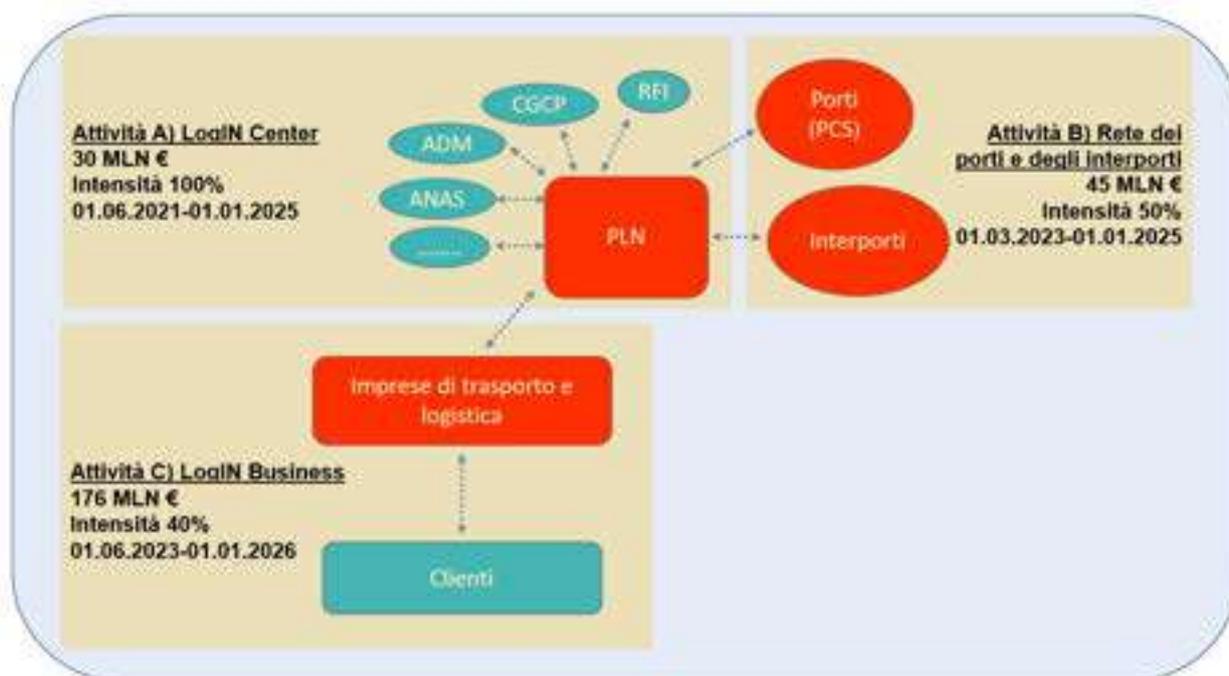
particolare riferimento all'adozione della CMR elettronica, alla spedizioni merci, alla individuazione dei laboratori di analisi accreditati”.

Il progetto è articolato sostanzialmente in 3 macro attività interdipendenti tra loro ma che possono essere scomposte in 3 macrocomponenti progettuali autonome dal punto di vista della realizzazione operativa.

Si riconosce innanzitutto priorità assoluta a quattro ambiti fondamentali:

1. dematerializzazione della documentazione legata al trasporto, con particolare riferimento alle lettere di vettura CMR e alla gestione autorizzativa e amministrativa dei trasporti in condizioni di eccezionalità e per le merci pericolose;
2. efficientamento della gestione digitale dei porti e degli interporti italiani, relativamente alle transazioni sia B2B sia B2G, attraverso il raggiungimento di una efficace implementazione di port community systems (PCS) in tutti i porti italiani, omogenea per requisiti funzionali e con spiccate caratteristiche di interoperabilità sia orizzontale sia verticale, e di sistemi informativi analoghi presso gli interporti;
3. informatizzazione delle relazioni tra soggetti pubblici e privati, identificando una centrale di standardizzazione dei linguaggi e dei moduli (PLN) ed una serie di piattaforme informatiche pubbliche e private federate con la centrale;
4. riconoscimento che la messa a sistema “centralizzata” di informazioni sul trasporto merci e la logistica rappresenti un necessario passo per la creazione di valore, per il monitoraggio della politica dei trasporti e per lo sviluppo di politiche innovative.

In sintesi, e come rappresentato graficamente, l'Attività A) consiste nella definizione e realizzazione della Piattaforma Logistica nazionale (PLN), intesa quale repository pivot del sistema digitale del trasporto merci e della logistica e quale ente di emanazione dei requisiti funzionali di interoperabilità con tutti gli enti coinvolti nella catena logistica. A latere, l'Attività B) è tesa a supportare la realizzazione di progetti di sviluppo, potenziamento e interoperabilità dei PCS portuali e dei sistemi ICT degli interporti tra sé stessi e con altri sistemi informativi e/o telematici per il trasporto merci e la logistica, coerentemente con i requisiti funzionali definiti dal progetto complessivo di sistema. In definitiva, l'Attività C) consiste nell'erogazione di contributi alle imprese di trasporto merci e logistica al fine di incrementare la dotazione e l'utilizzo di strumenti digitalizzati operativi e di interconnessione con gli indirizzi forniti da PLN (dematerializzazione, federazione delle piattaforme informatiche con PLN, gestionali per i rapporti con i clienti, sistemi di AI per ottimizzazione carichi e route planning).



Si riporta di seguito il breakdown delle 3 macro attività con una descrizione sintetica dei tasks, dell'ente attuatore, delle sotto-attività previste, delle risorse preventivate e del cronoprogramma di attuazione.

Attività A) – LogIN Center

La prima attività consiste nella creazione di una cabina di regia per la digitalizzazione della catena logistica nazionale sotto l'egida della Piattaforma Logistica nazionale, al fine di realizzare un ecosistema digitale per il trasporto merci e la logistica in grado di definire le specifiche tecniche per rendere interoperabili le piattaforme informatiche dei diversi enti pubblici e privati in gioco, di realizzare un centro di cybersecurity e di elaborare uno standard di comunicazione per lo scambio di informazioni che sostituisca il modello cartaceo e che possa integrare informazioni obbligatorie codificate in modo omogeneo con altre informazioni liberamente organizzate per le specifiche finalità di ciascun stakeholder. Da ultimo, verranno implementate le attività preparatorie all'Attività B, focalizzate sui porti ed incentrate sull'analisi e definizione delle specifiche e degli standard dei PCS, sulla definizione delle relative interfacce informatiche e sull'estensione delle funzionalità dell'attuale piattaforma informatica per le comunicazioni di dati ed informazioni tra porti e Ministero vigilante.

L'attività viene realizzata per la quasi totalità delle sue sotto-attività da parte della Piattaforma Logistica nazionale e si articola come segue:

| ID | Sotto attività | Risorse PNRR | % fin. PNRR | Durata | Ente attuatore |
|-------|--|--------------------|-------------|--------------------------------|----------------|
| A.1 | Specifiche tecniche di interoperabilità del sistema | 8.500.000 € | 100% | 01.06.2021 - 31.12.2024 | PLN |
| A.1.1 | Analisi e definizione delle specifiche e degli standard della PLN con gli attori del trasporto merci e della logistica | 1.000.000 € | 100% | 01.06.2021-01.03.2022 | |

| | | | | | |
|------------|---|---------------------|-------------|--------------------------------|------------|
| A.1.2 | Definizione delle interfacce e progettazione dei moduli di interoperabilità | 2.000.000 € | 100% | 01.03.2022 - 01.03.2023 | |
| A.1.3 | Testing, validazione ed implementazione | 2.000.000 € | 100% | 01.03.2023 - 01.06.2023 | |
| A.1.5 | Scaling up | 3.500.000 € | 100% | 01.06.2023 - 31.12.2024 | |
| A.2 | Sistema di cybersecurity | 3.500.000 € | 100% | 01.06.2021 - 01.06.2023 | PLN |
| A.2.1 | Progettazione del sistema | 1.000.000 € | 100% | 01.06.2021 - 01.03.2022 | |
| A.2.2 | Realizzazione del sistema | 2.500.000 € | 100% | 01.03.2022 - 01.06.2023 | |
| A.3 | Specifiche tecniche e sistemi per la dematerializzazione documentale | 14.000.000 € | 100% | 01.06.2021 - 01.01.2025 | PLN |
| A.3.1 | Analisi e definizione legale e tecnica del perimetro di azione (CMR, DDT, autorizzazione merci pericolose e carichi eccezionali, etc...) | 1.000.000 € | 100% | 01.06.2021 - 01.01.2022 | |
| A.3.2 | Analisi sistemistica dei processi (caratteristiche essenziali delle applicazioni e loro collocazione presso i sistemi delle imprese e presso una unità centrale) | 1.000.000 € | 100% | 01.01.2022 - 01.06.2022 | |
| A.3.3 | Elaborazione dello standard di comunicazione riconosciuto tra i sistemi aziendali e sistemi pubblici | 2.000.000 € | 100% | 01.06.2022 - 01.01.2023 | |
| A.3.4 | Definizione delle caratteristiche di unità di Business Intelligence al servizio delle aziende che fornisca un DSS a riguardo della ottimizzazione delle funzioni di trasporto | 2.000.000 € | 100% | 01.01.2023 - 01.06.2023 | |
| A.3.5 | Progettazione di una unità di Business Intelligence Centrale | 2.000.000 € | 100% | 01.06.2023 - 01.01.2024 | |

| | | | | | |
|---------------|--|---------------------|-------------|--------------------------------|-----------------|
| A.3.6 | Sviluppo dell'applicazione centrale in grado di distinguere tra semplice ricezione della comunicazione, validazione automatica con incrocio con basi dati pubbliche, discrezionale con necessità del coinvolgimento di operatori di enti diversi | 6.000.000 € | 100% | 01.12.2024 - 01.01.2025 | |
| A.4 | Attività preparatorie alla "Rete dei Porti" | 4.000.000 € | 100% | 01.06.2021 - 01.03.2023 | |
| A.4.1 | Analisi e definizione delle specifiche e degli standard dei PCS | 1.000.000 € | 100% | 01.06.2021 - 01.03.2022 | PLN |
| A.4.2 | Definizione delle interfacce PCS-PLN | 2.000.000 € | 100% | 01.03.2022 - 01.03.2023 | |
| A.4.3 | Implementazione della esistente Piattaforma dei Porti | 1.000.000 € | 100% | 01.06.2021 - 01.06.2022 | MIMS/RAM |
| Totale | | 30.000.000 € | 100% | | |

Attività B) – Rete dei porti e degli interporti

L'attività consiste nello sviluppo dei PCS, ove non presenti, e nell'omogeneizzazione funzionale dei sistemi informatici già esistenti presso le Autorità di sistema portuale, al fine di promuovere servizi standard di interfaccia con gli operatori marittimi, gli operatori a terra, i gestori di infrastrutture nodali e lineari di connessione (gestori dell'infrastruttura ferroviaria, interporti e retroporti ed aeroporti) e sviluppare i moduli di interoperabilità con la Piattaforma Logistica nazionale coerentemente ai requisiti funzionali definiti nelle sub-attività A.4.1 e A.4.2. Una linea di finanziamento ad hoc riguarderà anche altri interventi in materia di digitalizzazione e quindi di smart ports quali progetti per la digitalizzazione degli accessi ed uscite dai varchi portuali, l'implementazione di sistemi di cybersecurity nelle AdSP e l'informatizzazione dei processi amministrativi rientranti nell'ambito di operatività dello Sportello Unico delle AdSP.

Parallelamente, ed al netto di RFI ed altri infrastructure managers di natura privata, l'attività prevede il **cofinanziamento di sistemi informatici per gli interporti di rilevanza nazionale** secondo gli standard funzionali definiti dalla PLN e con particolare riguardo all'interconnessione con i PCS portuali.

L'attività viene realizzata dalle 16 AdSP e dagli interporti di rilevanza nazionale che rispondono ad un bando del rispettivo ente vigilante, competente per la raccolta delle proposte progettuali, per la valutazione delle application, per l'allocazione delle risorse sulla base dei fondi disponibili, per il monitoraggio delle spese e la verifica delle spese di rendicontazione.

| ID | Sotto attività | Risorse PNRR | % fin. PNRR | Durata | Ente attuatore |
|------------|---|---------------------|-------------|--------------------------------|----------------|
| B.1 | PCS porti | 21.000.000 € | 50% | 01.03.2023 - 01.01.2025 | |
| B.1.1 | Progettazione ed adeguamento dei moduli PCS alle specifiche tecniche di | 5.000.000 € | 50% | 01.03.2023 - 01.01.2024 | AdSP |

| | | | | | |
|---------------|--|---------------------|------------|--------------------------------|--|
| | interoperabilità alla PLN | | | | |
| B.1.2 | Realizzazione dei moduli interoperabili | 16.000.000 € | 50% | 01.01.2024 - 01.01.2025 | |
| B.2 | Altri interventi di digitalizzazione nei porti (digitalizzazione varchi, sistemi di cybersecurity, SUA digitale etc...) | 14.000.000 € | 50% | 01.03.2023 - 01.01.2025 | AdSP |
| B.3 | Piattaforme ICT interporti | 10.000.000 € | 50% | 01.03.2023 - 01.01.2025 | |
| B.3.1 | Progettazione ed adeguamento dei moduli alle specifiche tecniche di interoperabilità alla PLN ed ai PCS | 3.000.000 € | 50% | 01.03.2023 - 01.01.2024 | Interporti di rilevanza nazionale |
| B.3.2 | Realizzazione dei moduli interoperabili | 7.000.000 € | 50% | 01.01.2024 - 01.01.2025 | |
| Totale | | 45.000.000 € | 50% | | |

Attività C) – LogIN Business

La terza macro attività è tesa ad includere nel sistema digitalizzato, che nelle attività A e B ha riguardato prevalentemente la componente pubblica, la dimensione privata delle aziende di trasporto e logistica. **L'attività si pone l'obiettivo di incrementare la dotazione digitale e l'utilizzo delle tecnologie abilitanti da parte delle imprese nazionali di trasporto merci e logistica al fine di favorire da un lato il dialogo informatizzato tra queste e gli enti pubblici e tra queste e le aziende caricatori e dall'altro lato nel favorire l'adozione di sistemi di pianificazione e programmazione dei carichi e di route planning anche attraverso la formazione del capitale umano all'uopo dedicato.**

L'attività prevede, previa indizione di un bando da avviare una volta che PLN abbia concluso le sub attività di “definizione delle interfacce e progettazione dei moduli di interoperabilità” e di “definizione delle caratteristiche di unità di Business Intelligence al servizio delle aziende che fornisca un DSS a riguardo della ottimizzazione delle funzioni di trasporto”, il cofinanziamento pubblico fino al 40% per gli investimenti in progettazione ed acquisto da parte delle imprese in:

- piattaforme digitali di scambio informazioni, gestione, monitoraggio e tracking della merce con i caricatori ed i clienti finali e con la PLN;
- sistemi digitali di ottimizzazione dei carichi attraverso l'utilizzo di tecnologie di intelligenza artificiale e sistemi di dynamic route planning;
- piattaforme digitali e strumentazione per la dematerializzazione documentale secondo gli standard definiti da PLN;
- spese di e-learning ed attività di formazione correlate agli investimenti in tecnologie digitali.

I bandi di selezione adotteranno come premialità la presentazione di proposte da parte di piccole e medie imprese che adotteranno forme di collaborazione a rete, favorendo quindi meccanismi di

aggregazione e partecipazione congiunta, contribuendo almeno in parte al superamento della storica frammentazione del mercato del trasporto merci e della logistica in Italia.

Le strutture ministeriali coinvolte nella redazione del bando saranno responsabili della raccolta delle proposte di investimento, della valutazione delle application, dell’allocazione delle risorse sulla base dei fondi disponibili e delle fasi di monitoraggio e di rendicontazione delle spese.

Si stima che delle circa 64.000 imprese attive in Italia al 2018 nel comparto trasporto stradale merci, un 30% possa essere interessata a tale tipologia di investimenti, ricevendo quindi mediamente un contributo pubblico di circa 9.000 euro che genererebbe un investimento di 22.500 euro ciascuna.

| ID | Sotto attività | Risorse PNRR | % fin. PNRR | Durata | Ente attuatore |
|---------------|--|----------------------|-------------|--------------------------------|--|
| C.1 | Piattaforme ICT connessione clienti e PLN | 65.000.000 € | 40% | 01.06.2023 - 01.01.2026 | Imprese trasporto e logistica |
| C.1.1 | Progettazione | 10.000.000 € | 40% | 01.06.2023 - 01.01.2024 | |
| C.1.2 | Realizzazione | 55.000.000 € | 40% | 01.01.2024 - 01.01.2026 | |
| C.2 | Sistemi digitali di ottimizzazione dei carichi e route planning | 30.000.000 € | 40% | 01.06.2023 - 01.01.2026 | Imprese trasporto e logistica |
| C.2.1 | Progettazione | 5.000.000 € | 40% | 01.06.2023 - 01.01.2024 | |
| C.2.2 | Realizzazione | 25.000.000 € | 40% | 01.01.2024 - 01.01.2026 | |
| C.3 | Piattaforme e attrezzature per la dematerializzazione | 65.000.000 € | 40% | 01.06.2023 - 01.01.2026 | Imprese trasporto e logistica |
| C.3.1 | Progettazione | 10.000.000 € | 40% | 01.06.2023 - 01.01.2024 | |
| C.3.2 | Realizzazione | 55.000.000 € | 40% | 01.01.2024 - 01.01.2026 | |
| C.4 | E-Learning e formazione | 15.000.000 € | 40% | 01.06.2023 - 01.01.2026 | Imprese trasporto e logistica |
| Totale | | 175.000.000 € | 40% | | |

| Società del Gruppo | Titolo Progetto | Descrizione | Benefici/elementi qualificanti | Fase progettuale | Stima Costi |
|--------------------|--|---|---|------------------|--------------|
| ENAV | Consolidamenti APP/ACC | In accordo all'attuale piano industriale ENAV, gli attuali servizi di avvicinamento radar verranno transitati negli centri di controllo d'Area (ACC). Nel periodo di piano verranno consolidati gli APP di Lamezia (RM), Ronchi (PD), Bari (BR), Verona (MI), Torino (MI), Genova (MI), Napoli (RM), Firenze (RM), Palermo (RM). Questo progetto copre lo spostamento, con i relativi aggiornamenti hardware e software nell'ACC di destinazione, e la redistribuzione dell'equipaggiamento radio e le connessioni, nonché tutte le attività di avvio di formazione del personale operativo e la messa in operazioni. | * Ottimizzazione nella gestione delle porzioni di stazio aereo in Rotte e di quelle in Avvicinamento, facilitando le attività Free Route e l'alimentazione dei livelli di volo di avvicinamento verso gli aeroporti | Esecuzione | 42.480.000 € |
| ENAV | Nuova automazione TWR | Il progetto prevede l'implementazione su alcuni aeroporti (Roma FCO e Bergamo) di un sistema ATM di aeroporto di nuova generazione | * Miglioramento del sistema ATM di Aeroporto per completa digitalizzazione delle operazioni ed un aumento della efficienza e capacità aeroportuale | Esecuzione | 4.410.000 € |
| ENAV | Cloud infrastrutture e Virtualizzazione infrastrutture operative | Il progetto prevede la realizzazione di un sistema Cloud ERP di gruppo che permetta di innovare e digitalizzare i processi gestionali del Gruppo ENAV elevando i livelli di standardizzazione, business continuity e sicurezza in un quadro complessivo di efficienza, semplificazione e cost saving. L'attività sui sistemi gestionali sarà accompagnata da un'attività di virtualizzazione delle infrastrutture operative nei Centri di Controllo d'Area che permetterà di ottimizzare le infrastrutture operative e centralizzerà i processi operativi relativi alla gestione delle configurazioni, gli addestramenti e l'introduzione di nuovi concetti operativi per il miglioramento delle performance di sistema. | * Il progetto Cloud infrastrutture e Virtualizzazione infrastrutture operative contribuisce al potenziale di crescita e competitività del settore dell'aviazione civile italiana generando un aumento della scalabilità e flessibilità sia delle attività gestionali sia delle attività di configurazione operativa dei maggiori Centri di Controllo d'Area nazionali. La scalabilità e l'integrabilità delle soluzioni cloud sono garantite dall'adozione di modelli tecnologici e standard di interoperabilità che permettono la veloce realizzabilità delle soluzioni (time to market) e l'integrazione con altri sistemi. In tema di integrazione, risulta particolarmente importante evidenziare la possibilità di integrare sistemi e modelli evoluti di manutenzione e logistica (ad es. Digital Twins, IoT Asset Monitoring & Predictive Maintenance, Edge Computing, supportati da Big Data Platform & Advanced Analytics e algoritmi di AI/ML). | In avvio | 12.000.000 € |
| ENAV | Secure information sharing | Il progetto prevede la realizzazione di un backbone di comunicazione di nuova generazione che metterà in comunicazione i siti operativi ENAV abilitando servizi che necessitano di elevata capacità di banda garantendo la copertura dei requisiti di cybersecurity e mettendo in comunicazione ENAV con altri stakeholder con i quali scambiare informazioni all'interno di una schema di System Wide Information Management. L'infrastruttura permetterà di implementare una policy sicura per l'information sharing ed in particolare per la costituzione di un ISAC (Information Sharing and Analysis Center) italiano per l'aviazione che permetterà la condivisione sicura di informazioni di cybersecurity tra operatori dell'aviazione in Italia. | * Il beneficio principale è relativo al numero dei servizi supportati dal backbone di comunicazione, servizi abilitati tramite le politiche stringenti di cybersecurity adottate e grazie agli apparati di nuova generazione inseriti nell'implementazione del progetto. L'ISAC permetterà agli operatori dell'Aviazione Civile che accederanno alla piattaforma di information sharing, di acquisire informazioni a valore aggiunto per il miglioramento dei servizi forniti e della relativa esperienza dell'utente finale. | In esecuzione | 9.500.000 € |
| D-FLIGHT | Sviluppo piattaforma UTM | Sviluppo della piattaforma e dei servizi per la gestione del traffico aereo dei mezzi a pilotaggio remoto al di là della linea visiva ed in modalità autonoma (U-Space) e la necessaria integrazione nel sistema aeronautico nazionale | * ottimizzazione dell'utilizzo delle piattaforme unmanned con maggiore efficienza dei trasporto e sostituzione di attività svolte con mezzi aerei/terrestri a maggiore impatto di CO2 | Esecuzione | 8.000.000 € |
| D-FLIGHT | Connettività sistema UTM | Studio e prototipazione di un infrastruttura terrestre nazionale per la continuità della connettività radio del servizio di comando e controllo dei mezzi a pilotaggio remoto BRLOS e autonomi | * possibilità di utilizzo dei servizi unmanned aerei anche in zone remote, con utilizzo per processi di sorveglianza infrastrutture, soccorso, ottimizzando l'uso di mezzi aerei tradizionali | Da avviare | 8.000.000 € |
| IDS AIRNAV | Digitalizzazione informazioni aeronautiche | Sviluppo di nuovi tool per la digitalizzazione informazioni aeronautiche, miglioramento della efficienza operativa e della qualità delle informazioni aeronautiche prodotte e scambiate tra i vari stakeholder e per il monitoraggio degli impatti ambientali del traffico aereo | * ottimizzazione dei processi interni degli stakeholder e introduzione di parametri di ottimizzazione ambientale del disegno degli spazi aerei | In avvio | 8.000.000 € |

Digital Innovation

| | | | | | | |
|--|-------------------|---------------------------|---|--|----------|--------------|
| | TECHNO SKY | Nuovo modello manutentivo | Formazione e conversione organizzativa per uso strumenti avanzati per la digitizzazione del processo manutentivo, con ottimizzazione delle squadre, efficienza impianti, miglioramento sicurezza, uso realtà aumentata, utilizzo di droni per survey impianti | * ottimizzazione dei processi manutentivi, riduzione consumi | In avvio | 10.000.000 € |
|--|-------------------|---------------------------|---|--|----------|--------------|

| | | | | | | |
|--|--|--|--|--|--|----------------------|
| Digital Innovation - Sub Totale A | | | | | | 102.390.000 € |
|--|--|--|--|--|--|----------------------|

| | | | | | | |
|----------------|-------------|-----------------------|---|--|------------|-------------|
| Green Infrastr | ENAV | AMAN Extended Horizon | L'attività prevede l'implementazione di un sistema di Arrival Manager, per un miglior sequenziamento in arrivo degli aeromobili, sulla Area terminale di Roma e Milano. | * Aumento della capacità aeroportuale, miglioramento del sequenziamento degli aeromobili in avvicinamento e ottimizzazione del profilo di volo per gli utenti con riduzione dei consumi carburante | Esecuzione | 7.665.000 € |
|----------------|-------------|-----------------------|---|--|------------|-------------|

| | | | | | | |
|--|--|--|--|--|--|--------------------|
| Green Infrastructure - Sub Totale B | | | | | | 7.665.000 € |
|--|--|--|--|--|--|--------------------|

| | | | | | | |
|---------------|--|--|--|--|--|----------------------|
| TOTALE | | | | | | 110.055.000 € |
|---------------|--|--|--|--|--|----------------------|

MISSION 4 – EDUCATION AND RESEARCH

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 1 - ENHANCEMENT OF THE SUPPLY OF EDUCATION: FROM NURSERIES TO UNIVERSITIES

1. Description of the component

Policy area / scope: Extending and upgrading of nurseries and kindergartens, along with recourse to full time in primary schools; combating drop-out rates in secondary schools; increasing the number of enrolled students and graduates in ITS, whilst reforming their mission; overhauling the organisation of the school system and fostering technological innovation; supporting access to University, easing transitions into the labour market and strengthening orientation; reforming teachers' recruitment and training systems; strengthening the scientific, technological and language skills of students and teachers, with specific reference to communication and problem-solving; reforming and extending Ph.D. programmes, whilst continuously assessing their quality.

Objective: the objectives of this component, developed with the proposed projects, are broken down into four areas of intervention:

- a) Improving the quality and extending the reach of education services
- b) Improving teachers' recruitment and training systems
- c) Development of skills and upgrading of infrastructures
- d) Reform and extension of Ph.D. programmes

Reforms and Investments

Area of intervention 1: Improving the quality and extending the reach of education services

Investment 1.1) Plan for nurseries and preschools and early childhood education and care services

Investment 1.2) Plan for the extension of full-time

Investment 1.3) School Sports Infrastructure Enhancement Plan

Investment 1.4) Extraordinary intervention aimed at the reduction of territorial gaps in I and II cycles of secondary school and at tackling school drop-out

Reform 1.1) Reform of Technical and Professional Institutes

Reform 1.2) Reform of the tertiary vocational training system (ITS)

Investment 1.5) Development of the tertiary vocational training system (ITS)

Reform 1.3) Reorganisation of the school system

Reform 1.4) Reform of the “Orientation” system

Investment 1.6) Active orientation in school-university transition

Reform 1.7) Reform of student housing regulation and investment in student housing

Investment 1.7) Scholarships for University access

Reform 1.5) University degree groups reform

Reform 1.6) Enabling university degrees reform

Area of intervention 2: Improving teachers’ recruitment and training systems

Reform 2.1) Teachers’ recruitment

Reform 2.2) Tertiary advanced school and compulsory training for school managers, teachers, administrative and technical staff

Investment 2.1) Integrated digital teaching and training on the digital transformation for school staff

Area of intervention 3: Development of skills and upgrading of infrastructures

Investment 3.1) New skills and new languages

Investment 3.2) School 4.0: innovative schools, wiring, new classrooms and workshops

Investment 3.3) School building security and structural rehabilitation plan

Investment 3.4) Teaching and advanced university skills

Area of intervention 4: Reform and extension of Ph.D. programmes

Reform 4.1) Ph.D. Programmes Reform

Investment 4.1: Extension in number and career opportunities of PhDs (Research-oriented, Public Administration and Cultural Heritage)

Estimated overall cost: € 19.436 million to be covered by RRF.

2. Main challenges and objectives

a) Main challenges

Improving and qualifying the performance of school and university systems is an essential condition for fostering smart, inclusive and sustainable growth. Therefore, the interventions aim to respond to the conditions outlined below.

- **Structural shortcomings in the provision of primary education and education services.** In the lower education cycles, the gap with European standards is evident. For example, the ratio between available places in pre-schools and the number of children aged between 0 and 2 years in our country averages 25.5% - with significant territorial disparities - or 7.5 percentage points below the European target of 33% and 9.6 percent below the European average. The lack of educational services for children, combined with the unfair distribution of family workloads, negatively affects the supply of female labour and reduces the participation rate of women in the labour market. In turn, these factors lower the demand for educational services for children, generating a socially inefficient balance, where the low supply of educational services for children corresponds to a reduced demand, especially in the South. To overcome this challenge, it is, therefore, necessary to act both on the supply side and on the demand side of infrastructure and services. The NRRP measures act on the supply side, while national policies (in particular, the forthcoming launch of the universal allowance for children aims to make it possible to use the new services in all areas of the country). Moreover, the way primary education services are provided fails to meet the demand of families. For example, 46.1% of Italian families ask for full-time services in primary schools, with the highest rates in Piedmont, Emilia-Romagna and Lazio. In this case, the shortage of services offered is due in large part to the reduced infrastructure and lack of space necessary for full-time education.
- **Gaps in basic skills, high school dropout rates and territorial disparities.** According to a recent survey by the Ministry of Education (MIUR DGCASIS), the school dropout rate reaches 3.8% in lower secondary school. It is strongly correlated with income inequalities and a higher rate of poverty. It also increases considerably in higher education. In Italy, the percentage of young people aged between 18 and 24 who have a level of education no less than upper secondary education is 14.5%, while the European average (corresponding to the target set in the ET2020) is 10%. Fifteen-year-old Italian students rank below the OECD average in reading, mathematics and science. However, there are large territorial differences with better performance than the OECD average in the North but much lower in the South. The two problems - early school leaving and skill gaps - are strongly connected, because the failure to acquire basic skills is one of the main causes of early dropouts. Furthermore, upper-secondary students particularly lack preparation in communication and debating skills, in understanding the logic underlying information technologies and in the ability to solve problems. For example, Emma Castelnuovo's methods for teaching mathematics and

for introducing subjects that are not part of the traditional curriculum can address these deficiencies.

- **A low percentage of adults with tertiary qualifications.** Further and consequent shortcomings are highlighted in the statistics relating to tertiary education. The percentage of the population aged between 25 and 34 with a tertiary level qualification is 28% compared to the 44% average in OECD countries. This gap is also - though not exclusively - due to the lack of provision of advanced vocational training, guidance and transition services from secondary school to university. Contributing to this gap are the underdevelopment of residential services for university students as the percentage of university students using public residential services is 3% compared to the European average of 18%. An additional factor is the existence of economic obstacles as university students receiving a scholarship is 12% compared to a European average of 25% and those exempt from paying university fees is 13% compared to a European average of 30%. The number of doctorates conferred in Italy is among the lowest among EU countries and has been steadily declining in recent years (-40% between 2008 and 2019). According to Eurostat, only 1 in 1000 people in the 25-34 age group complete a doctorate programme in Italy each year, compared to an EU average of 1.5 (2.1 in Germany). In addition, almost 20% of those with a doctorate in Italy move abroad each year.
- **Skills mismatch between education and labour demand.** In the face of this outflow of highly qualified human capital, around 33% of Italian businesses complain of recruitment difficulties, while 31% of young people up to the age of 24 do not have a job but are looking for one. At the same time, only 1.7% of tertiary students take advantage of vocational training courses, which have produced significant employment results in recent years (more than 80% employment rate within one year after graduation).

b) Objectives

The overall objective of this component is to eliminate or to substantially reduce the structural gaps that are listed under a) by displaying a comprehensive strategy that involves interventions over the entire spectrum of education services, from nurseries to Universities.

More specifically, the objectives of this component are the following:

- ✓ qualitative improvement and quantitative expansion of education and training services;
- ✓ improvement of teacher recruitment and training processes;
- ✓ expansion of skills and upgrading of infrastructures;
- ✓ reform and expansion of PhD programs.

To pursue these objectives, a mix of new investments and reforms is envisaged, each of which has its own set of specific objectives which are internally consistent.

3. Description of the reforms and investments of the component

Area of Intervention 1: Improving the quality and extending the reach of education services

The tangible and intangible investments envisaged for this line of action and the numerous enabling reforms, which aim to redefine the regulatory and institutional framework so that the investments themselves can be effective, involve NRRP funding of 11.01 billion euros. They cover the entire spectrum of educational and training services.

Investment 1.1) Plan for nurseries and preschools and early childhood education and care services

Challenges. In its overall demographic picture, for years Italy has had a total fertility rate among the lowest in the European Union (1.29 children per woman against 1.56 in the EU) and a continuous decline in births. Specifically, the gap between births and deaths is increasing, with only 67 birth for 100 deaths (down from 96 per 100 ten years ago). Significant territorial differences remain: the decline in the population is concentrated mainly in the South (-6.3 per thousand) and to a lesser extent in the Center (-2.2 per thousand). On the contrary, the population keeps growing in the North (+1.4 per thousand). According to the latest estimates, the Italian population is expected to decline from 60.3 million in 2020 to 51.4 million in 2100 (Eurostat, 2019). The COVID-19 emergency is likely to have a further negative impact.

The Country Specific Recommendation (CSR) issued to Italy in 2019 found that in 2017 only 28.6% of children under the age of three were placed in formal early childhood education facilities. Today the available slots in early childhood services are on average 25.5%, 7.5 percentage points below the European target of 33%, and 9.6 percentage points below the EU average (35.1%). There is a significant variability: in Calabria only 10% of children attend a nursery, while in Valle d'Aosta the figure is up to 47.1%.

The demand for childhood education and care – and the yearly demand in particular – are not adequately covered in terms of quality and quantity, with serious territorial disparities.

The implementation of the 2015 school reform for "an integrated education and training system from birth to six years" aimed at increasing coverage and reducing territorial differences. The national resources allocated so far, including those from the 2020 budget law, are strengthening the financial support to the entire educational sector in the 0-6 range and are supporting families with children in this age group.

However, further efforts are needed to increase the quality of services and facilities for children in the 0-6 age group and to enhance the experimentation, which is already ongoing with some success, of the so-called "Spring classes" (for 2-year-old children). "Spring classes" are a bridge which would help to bring forward the educational offer for early childhood, which is currently not fully matching the demand.

Investing in early childhood educational services also has a significant social impact. In order to take care of children, 11.1% of women with at least one child have never been in a job, a figure which is much higher than the European average (3.7%). In the South, one woman in five failed to ever have a job for the same reason. Work-family balance proves difficult for more than a third (35.1%) of the workers with caring responsibilities for children, men or women. 38.3% of working mothers stated that they had made at least one change in their working conditions (e.g.: reduction of working hours), while the same statement was made by just 11.9% of working fathers. For working mothers of children between 0 and 2 years, the percentage is up to 44.9%, while for fathers with children in the same age group it is just under 13%. Children also put women out of work, in a percentage which varies according to their number (11% in the case of a single child; 17% in the case of 2 children; 19% in the case of 3 or more children).

Goals. The investment plan for the 0-6 age group is aimed at building, renovating and ensuring the safety of nurseries and preschools, to ensure an increase in the educational offer and the available slots for the 0-6 age group, and thus improve teaching quality by innovating learning environments. Particular emphasis is put on the experimental “Spring classes” (for 24 to 36-month-old children). The plan also aims at bridging the gap between early childhood education services (0-3 years) and services for the 3-6 age group, including by setting up childhood centers, pursuant to Art. 3 of the legislative decree no. 65 of 2017, in order to build a unified educational path which is adapted to the characteristics and training needs of boys and girls belonging to the 0-6 age group. The investment plan is estimated to have the potential to create 228,000 new slots, of which approximately 152,000 for children in the 0-3 range and 76,000 for children in the 3-6 range.

This will allow to achieve the target for services to early childhood, set at 33% by the Barcelona European Council of 2002.

This target is of strategic importance in order to:

1. Increase the birth rate in Italy;
2. Invest in the education and well-being of children in their early years, ensuring particularly significant socio-economic return;
3. Encourage labour market participation by women, by ensuring a better work-family balance.

It is understood that the continuous decline in births, as highlighted above, will not nullify the investment included in this plan, but will rather amplify its effects and benefits, since the educational offer for the 0-6 age group will, in time, gradually meet the demand from families.

Implementation. The plan is managed by the Ministry of Education, in partnership with the Family Department of the Prime Minister’s Office, and is implemented by the local authorities owning the buildings used as nurseries and preschools.

This plan complements the measure currently being implemented under Article 1, paragraph 59, of the Law no. 160 of 2019, allocating 700 million Euros for the years 2021-2025 to the building and renovation of nurseries, primary schools and multifunctional family centers. The

plan also complements the investments in the integrated plan for the 0-6 age group by the Ministry of Education and under the Solidarity Fund of the Ministry of the Interior for the management of integrated services for children.

Costs. The estimated cost for the RRF is € 4.6 billion.

Target group. Children from 0 to 6 years of age.

Timeline. The duration of the project is estimated to be 5 years (until 2026).

Investment 1.2) Plan for the extension of full-time

Challenges. Full-time education constitutes a growing need both in terms of the requests of families and of the need to expand the educational offer of schools and make them increasingly open to the territory beyond school hours.

According to enrolment data for the 2021/2022 school year, there is an increase in the demand for full-time education, especially in primary schools. About 46.1% of families ask to be able to use it. The highest percentages concern the regions of Lazio, Piedmont and Emilia Romagna. One of the most critical issues in the implementation of full-time education is the lack or inadequacy of existing facilities: according to the data of the National Register of School Buildings, 26.2% of schools in the first cycle do not have a canteen and 17.1% of schools in the first cycle do not have gyms or sports facilities.

It is clearly important to bridge this gap and gradually increase the supply of full-time education, starting with the greater availability of facilities.

An extension of school time is also conducive to policies aimed at combating early school leaving, especially in the most disadvantaged areas of the country. In fact, it is not only a matter of extending school time, but also of rethinking the entire educational offer of a school open to the territory, also by introducing activities to strengthen the transversal skills of students, especially in the first cycle of education.

Goals. The investment plan intends to implement a gradual implementation of full time, in order to ensure an increase in the educational offer and a strengthening of school facilities, which can promote an increase in school time and an opening of the school to the territory beyond school hours.

The plan aims at constructing or structurally adapting about 1,000 buildings to be used as facilities, also to combat school drop-outs in the most disadvantaged areas.

In fact, in line with the objectives of the strategic framework for European cooperation in education and training (“ET 2020”), it is essential to implement actions and plans that promote greater openness of schools in order to improve the quality and effectiveness of education and training, promote equity, social cohesion and encourage creativity and innovation.

Implementation. The plan is managed by the Ministry of Education and is implemented, with regard to the construction and upgrading of school facilities, by the local authorities that own the relevant buildings.

The plan is in continuity with the measures provided by the 2014-2020 PON "Per la Scuola" National Operational Programme for schools in regions lagging behind in development and with the additional resources that will become available for the 2021-2027 Programme, in order to bridge the gap that currently exists and guarantee all schools the same opportunities for extending school time.

The plan is also in continuity with the investments and actions of the Ministry of Education authorised within the framework of the Fund for the enrichment and expansion of the educational offer and for equitable interventions, as per Article 1 of Law No. 440 of 18 December 1997, which allow for the implementation of extracurricular projects and activities.

Costs. The estimated cost of the RRF is € 0,96 billion.

Target group. Students in the first cycle of education.

Timeline. The estimated duration of the project is 5 years (until 2026).

Investment 1.3) School Sports Infrastructure Enhancement Plan

Challenges. The aim is to strengthen sports infrastructures and promote sports activities, starting with the first classes of primary schools. In fact, it is important to enhance the skills related to motor and sports activities in primary schools because of their transversal values and for the promotion of healthy lifestyles, in order to combat school drop-out, ensure social inclusion, encourage feeling good with oneself and with others, discovering and guiding personal aptitudes, for the full development of the potential of each individual in harmony with the provisions of the National Indications for the curriculum of pre-school and first cycle of education, as per Decree of the Minister of Education, University and Research no. 254 of 16 November 2012.

According to data from the National Register of School Buildings, 17.1% of schools in the first cycle alone do not have gyms or sports facilities. The percentage rises to 23.4 % in the so-called 'less developed' regions of the South and further to 38.4 % if second cycle schools are also taken into account.

Main institutions with no buildings with a gymnasium or used as a gym:

| AREA | I cycle | II cycle | Total |
|----------------|---------|----------|-------|
| Less developed | 23,4% | 15,1% | 38,4% |
| More developed | 13,3% | 8,7% | 22,0% |
| In transition | 16,8% | 9,3% | 26,1% |

| | | | |
|-------|-------|-------|-------|
| Total | 17,1% | 11,0% | 28,2% |
|-------|-------|-------|-------|

It is therefore necessary to bridge this gap, gradually increase the supply of sporting activities, starting with the greater availability of facilities, and reduce territorial disparities in order to provide students with uniform training and development opportunities throughout the country. This also favours the possibility of extending full-time education, allowing schools to be open beyond curricular hours, and it also favours policies linked to combating early school leaving, mainly in the most disadvantaged areas of the country. In fact, it is not only a matter of extending school time, but of rethinking the entire educational offer of a school open to the territory, also introducing activities to strengthen the transversal skills of students, especially in the first cycle of education.

The implementation of sports facilities attached to schools makes it possible to achieve a twofold objective: to promote sport and motor activities in schools and to make these new or upgraded sports facilities available to the entire local community outside school hours through conventions and agreements with the schools themselves, local authorities and local sports and amateur associations.

Goals. The investment plan intends to implement a gradual implementation and upgrading of sports facilities and gyms attached to schools, in order to guarantee an increase in the educational offer and an upgrading of school facilities, which can favour an increase in school time and an opening of the school to the territory also beyond school hours and an enhancement of sports and motor activities. The implementation of sports facilities and gyms is first and foremost an investment in the school and in the transversal skills of students, but it is also an investment for local authorities and individual localities. It also makes it possible to redevelop urban areas and spaces attached to schools and to open up schools to the local area to the benefit of the entire local community.

The plan aims to construct or structurally adapt around 400 buildings to be used as gyms or sports facilities, also to combat school drop-outs in the most disadvantaged areas. These buildings will also be equipped with all the necessary modern and innovative sports equipment, including, where possible, a high-tech component, to make them immediately usable and usable by schools and the local area.

In fact, in line with the objectives of the strategic framework for European cooperation in education and training ("ET 2020"), it is essential to implement actions and plans that promote greater openness of schools in order to improve the quality and effectiveness of education and training, promote equity, social cohesion and encourage creativity and innovation.

Implementation. The plan is managed by the Ministry of Education and is implemented, as regards the construction and upgrading of gyms, directly by the local authorities that own the relevant buildings, on the basis of guidelines and a national committee that can guarantee the technical quality of the projects.

This plan is in synergy with the strategy of the OP "Per la Scuola", aimed at pursuing the quality and equity of the education system and allowing for an expansion and strengthening of the

curricular offer. The consolidation of the motor and sports culture determines the understanding of the value of body language, facilitates the assimilation of the principles of healthy eating, respect for rules and others, the acquisition of a healthy lifestyle.

The additional actions envisaged by the 2014-2020 "Per la Scuola" National Operational Programme - European Fund for Regional Development - for schools in regions lagging behind in their development and the additional resources that will become available for the 2021-2027 programming period, will make it possible to intervene synergistically to bridge the gap that currently exists and guarantee all schools the same opportunities for investment, for enhancing the educational offer and also for extending school time.

The plan is also in continuity with the investments and actions of the Ministry of Education authorised within the framework of the Fund for the enrichment and expansion of the educational offer and for equitable interventions, as per Article 1 of Law no. 440 of 18 December 1997, which allow for the implementation of extracurricular projects and activities.

Both the OP - European Social Fund - and the national resources will also allow the sustainability and the management continuity of the whole plan through the possibility to invest additional resources for the management of sports facilities beyond school hours through the involvement of schools, local authorities and local sports and amateur association

Costs. The estimated cost of RRF for gyms and sports facilities is EUR 300 million.

Target group. students, with particular reference to first cycle education, and local communities who will be able to benefit from new and upgraded spaces.

Timeline. The duration of the project is estimated at 5 years (until 2026).

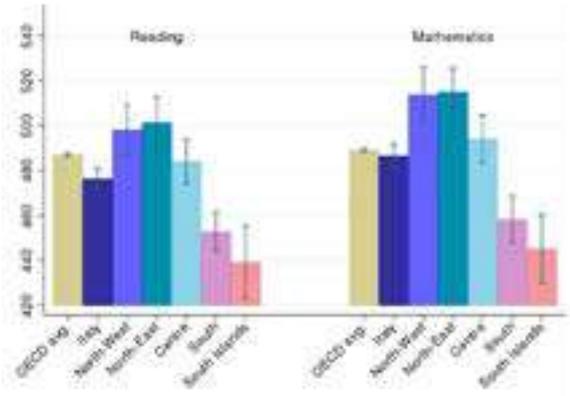
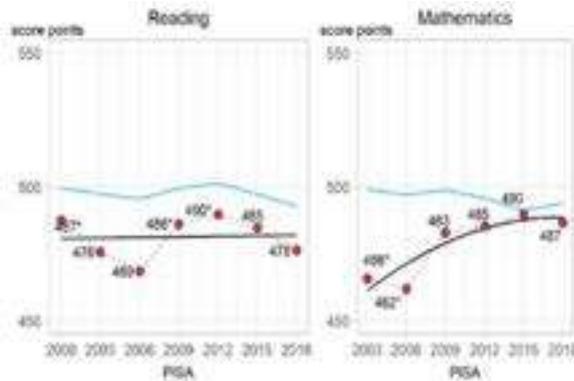
Investment 1.4) Extraordinary intervention aimed at the reduction of territorial gaps in I and II cycles of secondary school and at tackling school drop-out

Challenges. National and international research clearly and unequivocally shows that the possession of good basic skills (understanding of the teaching language, mathematics and English) is a very strong predictor of the educational success of young people. According to the Program for International Student Assessment (PISA), 15-year-old Italian students rank below the OECD average in reading, mathematics and science, with large territorial differences. In the North Italian student rank above the OECD average while in the South rank much lower. Similar evidence - as shown in Figure II 4.1 - occurs for Italian adults, for whom the International Assessment of Adult Skills Program (PIAAC) indicates a constant worsening of results compared to the OECD average.

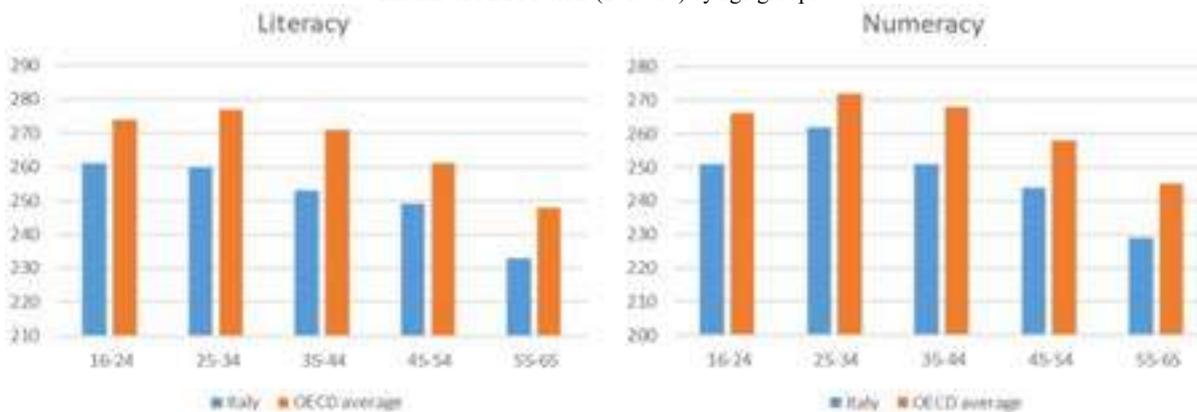
FIGURE : THE LEVEL OF BASIC KNOWLEDGE IN BOTH SCHOOLCHILDREN AND ADULT POPULATION SHOWS A STRONG GAP COMPARED TO THE OECD AVERAGE

Results on school learning measured by OECD “PISA” tests show a gap for Italy.

... a gap that largely depends on the North-South divide in terms of educational results.



Results of PIACC tests (2013-16) by age groups



Source: OCSE.

Although the National Guidelines for school curricula already set satisfactory targets to guarantee the achievement of these learning levels, there are still obstacles in reaching a sufficiently large share of students (potentially all students).

Another equally crucial challenge concerns the issue of early school leaving, a phenomenon that can be divided in two different cases: a) students who leave their studies prematurely already in the secondary school period and b) young people who are subject to early school leaving according to the European parameters of the ET2020 strategy (18-24 years).

a) In 2019, the Ministry of Education published the results of a survey on early school leaving according to which the average dropout rate in secondary school is around 3,8% (while it is 1,17% in the primary school). From the Ministry’s (MIUR DGCASIS) survey, it is “clear that where there are greater inequalities in income, a higher risk of poverty and material deprivation, the dropout rate is high”. Likewise, “the inverse link between early school leaving and

participation in work is evident, demonstrating the fact that low employment and social exclusion can also have negative impacts on the participation of children in education and training”.

b) Early leavers from education and training, formerly referred to as early school leaver, refer to people aged 18 to 24 who have completed secondary education at the most and are not involved in further studies or training. The indicator “Early leaving from education and training” is expressed as the percentage of people aged between 18 and 24 who find themselves in this situation compared to the total population aged between 18 and 24 years; According to Eurostat, the dropout rate for Italy is 14,5%. (above the ET 2020 parameter which by 2020 should not have exceeded 10%)

Goals. A plan is envisaged for the enhancement of “basic skills” which, starting from the analysis of students’ outcomes – that shows large gaps within the Country –, will be developed over 4 years with the goal of guaranteeing adequate basic skills for at least 1.000.000 students per year, also through the development of a single national portal for online training. Particular attention will be paid to schools that have experienced greater difficulties in terms of performance – thus customizing interventions on students’ need – where there will be a support intervention by the school manager with external tutors as well as, in the most critical cases, the availability of at least one additional staff unit per subject (Italian, Mathematics and English) and for a minimum of two years. In particular, mentoring and training actions (even remotely) are envisaged for at least 50% of teachers and the strengthening of the number of teachers (4) and experts (2) for at least 2000 schools. A pilot project to be carried out in the first semester of 2021 will be financed by the PON school funds already available.

In order to develop a strategy to structurally fight early school leaving and since the investment on basic skills is strongly linked with the need of prevention (basic skills gap are one of the main causes of early school leaving), the project has also to define intervention and compensation measures. In this sense, the project includes an investment specifically aimed at fighting early school leaving, promoting educational success and social inclusion, with specific programs and initiatives for mentoring, counselling and active and vocational guidance that prevent premature abandonment of studies already in the period of secondary school (about 120.000 students to be involved) and make it possible to reduce the phenomenon of early school leaving to the European parameters of the ET2020 strategy (age group 18-24, about 350.000 young people to be involved). In particular, for situation a) (age group 12-18), online mentoring will be aimed both at young people at risk and at those who have already dropped out, with a teacher / student ratio equal to 1:1 for interventions of support and recovery of learning for a total of 20 hours each (3h of mentoring and 17h of teaching). To this end, teachers from the class or school attended, or even from other schools, chosen by the children themselves, will be involved according to their willingness to take on the position. The additional commitment for teachers would be carried out beyond ordinary working hours, for a maximum of 6 hours per week, payable as additional teaching activities (with the option – depending on teachers’ choices – of partial or total relief of contribution charges). As for situation b) (age group 18-

24), the support activities consist of 10h of mentoring, or consulting interventions aimed at reintroducing the young person into the training circuit.

Finally, the project also aims to promote social inclusion and to ensure Integrated Digital Education for people with sensory and/or intellectual disabilities or from disadvantaged areas.

Implementation. The program is managed by the Ministry of Education; INVALSI, schools and Territorial Support Centers (*Centri Territoriali di Supporto*, CTS) will be involved in the implementation for those with sensory and/or intellectual disabilities or from disadvantaged areas.

The actions envisaged have a structural effect that goes beyond the time horizon of the RRF, since the reduction of the dispersion of training outcomes is achieved through the increase in the teaching and methodological skills of teachers. These skills will be consolidated within the teaching system, which will benefit permanently. The structural nature of the project is also measured by the reduction of territorial disparities in basic skills, with positive repercussions that would occur over time even at the highest levels of education.

The Ministry of Education intended to link this project to the entire design system present in the RRF, with a global impact vision that continues beyond the Plan.

More precisely, Investment 1.4. Extraordinary intervention aimed at the reduction of territorial gaps in I and II cycles of secondary school. To tackle school dropout expands into the broader continuous training project of all school staff Tertiary advanced school (University - INDIRE) and compulsory training for school managers, teachers, administrative and technical staff, is perfected with the Integrated digital teaching project teaching and continuous training of school staff in order to guarantee the broadest and most qualified structural professional training of the education system, and continues in the investment dedicated to learning environments with Investment 3.2. School 4.0: innovative schools, wiring, new classrooms and workshops.

Furthermore, a more precise guidance and professional qualification system will make it possible to affect the percentage of students who drop out of the school system through rapid placement in the world of work with adequate preparation required, with a consequent response also to the technical demand of the market due to a lack of figures professional quality.

The RRF measure contributes to the structural reduction of territorial disparities caused mainly by early school leaving, school drop-out and gaps in students' learning of key competences. The aim is to raise the overall capacity of the system so as to consolidate it at a level that can be handled by the new European programming. The intervention is coordinated with the OP funds, which will make it possible to broaden the scope of the measure and extend its impact over time. In fact, the Ministry of Education will enhance the effects and intensify the duration precisely through a synergy with the structural funds. Coordination between the funds will make it possible to intervene with the RRF funds in schools in the second cycle of education as early as 2021, while with the resources of the OP 2021-2027 it is intended to target schools in the first cycle of education and continue investments beyond 2024 within the duration of the next programming period. In this way, coordination between the different instruments is ensured in

order to guarantee the fruitful use of resources. An international scientific committee will be set up to provide guidance and the necessary monitoring of the objectives. After 2026, the aim is to integrate the training offering in a manner consistent with the results achieved.

Costs. The estimated cost related to the RRF is equal to 1.5 billion euro.

Target group. Schools, students, young people who have abandoned their studies.

Timeline. The intervention will start in 2021 and will last until 2024.

Reform 1.1) Reform of Technical and Professional Institutes

Challenges. The current system of Technical and Professional Institutes offers training programmes which are now obsolete with the needs of the labour market, as well as disconnected from the territories. As a consequence, the social and economic impact of the crisis is deepened by an insufficiently prepared human capital unable to face the challenges of the labour market and to contribute to the country's development and innovation.

Goals. The reform project of the Technical and Professional Institutes aims to invest in human capital in a targeted and specific approach tailored to the geographical, economic and social conditions of the territory, with direct short- and long-term benefits on the country's growth potential, as well as the promotion of new entrepreneurial settlements, to foster employment and development. The reform aims to orient Technical and Professional institutes towards the innovation output of the National Industry 4.0 plan as well as the profound digital innovation in place in all sectors of the labour market. The high quality of the offered curriculum will encourage the graduates' employability thanks to the adoption and harmonization of training programmes according to the needs of each territory and the labour market.

Implementation The program is managed by the Ministry of Education.

Costs. The estimated cost related to the RRF is equal to 0. The reform does not envisage any investment, since the intervention is only of an ordinal system and is implemented without additional financial resources to those already allocated annually to the education system.

Target groups. Technical and Professional Institutes.

Timeline. The process will start in 2021; the Promulgation of the rule is expected in 2022. Full implementation is expected in 2025 through accompanying actions.

Reform 1.2) Reform of the tertiary vocational training system (ITS)

Challenges. The Vocational Training Institutes, (*Istituti Tecnici Superiori - ITS*), configured as "Participation Foundations", they create forms of integration between public and private resources, in partnership with companies (over 43.1% of the associate partners) in decentralized governance contexts, universities / scientific and technological research centres, local authorities, school and training system aimed at highly specialized technical and technological

training. The ITS activate job-oriented tertiary courses for the training of technicians who manage highly complex systems and processes, mostly digitized, paying particular attention to the integration between design, technologies and organization, in six articulated areas: Energy efficiency; Sustainable mobility; New technologies of life; New technologies for the Made in Italy (Business services, Agri-food system, Home system, Mechanical system, Fashion system); Innovative technologies for cultural heritage and related activities; Information and communication technologies. The ITS are distinguished from other educational channels as they are mainly focused on employment, being able to guarantee to the 83% of their graduates a job one year after graduation (92% of cases compatible with the followed curriculum) linked to the real demand of the labour market (ITS national monitoring, Indire 2020). They represent a different training model capable of intercepting the real need for new skills that the productive world requires. They offer teaching traced by educators with direct experience in the labour market (70%), by internships (43%), by hours of theory carried out in business and research laboratories (25,5%). With educational design modalities (locations and timing) according to the technological areas. ITS graduates particularly appreciate these courses, even though data on ITS enrollments (7.831 enrolled in courses launched in 2019, Indire) show that the goal of structuring a reliable channel of vocationally oriented tertiary education, competitive with the University, remains to be achieved. Often despite high demand from the labour market, the “technical training” option appears to be a second choice. Alongside this critical element, there is one more factor: to date, 11% of ITS seem to need improvement actions; some of them fail to provide educational paths continuously, thus giving families an image of a unstructured training channel. ITS have always obtained a negative result in the 2015-2020 monitoring and given their location and structural difficulties, they are more exposed to the social and economic impact of the crisis.

Goals. The ITS have been so successful that they need to be more widespread throughout the country in order to satisfy the ever-increasing demand from businesses. At the moment, the critical points identified consist mainly in the small number of ITS on the territory, in the partial misalignment of the paths with the needs of businesses, in the lack of knowledge of these paths by potentially interested students and their families.

With the reform, it is intended to strengthen the tertiary vocational training system by extending the organizational and teaching model to other training contexts (supporting the training offer, introducing rewards and widening the paths for the development of enabling technological skills - Enterprise 4.0), the positioning of Vocational Training Institutes in the legal system of job-oriented Tertiary Education and rebalancing the quality of the connection with the entrepreneurs' network in the regions.

The reform provides for the simplification of ITS governance in order to increase the number of institutes and enrollees in a manner related to the territory for productive impact. The investment concretely realizes the implementation action of the institutes themselves with the primary purpose of bridging the mismatch between labor supply and demand.

Implementation The program is managed by the Ministry of Education.

Costs. The estimated cost related to the RRF is equal to 0.

Target group. Vocational Training Institutes (ITS), students.

Timeline. The process will start in 2021; the Promulgation of the rule is expected in 2022. The implementation is linked to the investment project 1.5).

Investment 1.5) Development of the tertiary vocational training system (ITS)

Challenges. The proposed project allows full implementation of the reform to strengthen the education offer of Vocational Training Institutes (ITS), inspired by models established in other European countries. By working in network with companies, universities/scientific and technological research centres, local authorities, the education and training system, it will be possible to respond to the current unemployment crisis, reducing Italy's significant backlog in the field of non-academic tertiary training, as well as the mismatch between the demand and the supply of work that is at the root of much youth unemployment.

Goals. The project intends to increase the educational offer of the Vocational Training Institutes, enhancing the supplies and logistics needed and increasing the participation of the enterprises in the educational processes for a better connection with the entrepreneurs' network. In particular, the project aims to significantly increase the number of ITS and at the same time to strengthen laboratory structures (introducing innovative technologies 4.0) and on the other to invest on the skills of teachers involved on targeted paths aligned with the needs of local companies. Of course, the goal is to increase the number of enrolled students in ITS (+100% min- currently there are 15.000) and consequently the number of graduates (currently 8000 per year). Furthermore, it is foreseen to activate a national digital platform that allows students to know the job offers for those who obtain a professional qualification. The proposal helps to reduce the mismatch between the qualifications required by companies, i.e. the needs identified by the world of production, and those available (skills mismatch), offering training opportunities with high standards and adapted to the promotion of the competitiveness of the country's economy in relation to the innovations of Enterprise 4.0 and the green and digital transition of the nation. The implementation of training courses and the dissemination of the training model would allow the enhancement of the fully specialized training chain linked to the Energy 4.0 and Environment 4.0 areas and therefore functional to the adaptation of 4.0 skills to strategic development sectors.

Implementation. The program is managed by the Ministry of Education with Vocational Training Institutes for its fulfilling. It is specified that consultation with the local authorities for the territorial localisation of the interventions is under way), while the process of identifying the sector will be carried out through a process of comparison with the regions on the basis of a "top-down" dimension. As regards the two-way connection with the university system (in particular with the so-called professionalising degrees), it is assured that this connection will be provided for by the reform, allowing the passage through a system based on training credits.

Costs. The estimated cost related to the RRF is equal to 1.5 billion euro.

Group target. Vocational Training Institutes (ITS), young people, students.

Timeline. The intervention will start in 2021 and will last until 2025.

Reform 1.3) Reorganisation of the school system

Challenges. The number of pupils enrolled in state schools will fall sharply over the next few years as a result of the so-called demographic phenomenon that is affecting our country. This will lead to a reduction in the number of school staff and a consequent reduction in the costs of running schools. Over the next fifteen years, it is estimated that there will be a 15% reduction in the resident school-age population, corresponding to more than 1.1 million fewer students in state schools. The reduction in the need for school staff will be 64,000 fewer teachers over the next fifteen years.

These figures therefore provide an opportunity to rethink the reorganisation of the school system with a view to providing concrete solutions to two issues in particular: reducing the number of pupils per class and resizing the school network. The aim is to overcome the (demographic) class/classroom identity, also with a view to revising the nineteenth/nineteenth-century school model. This will make it possible to deal with situations that are complex in many respects (e.g. mountain schools, inland areas, valley schools, etc.).

The number of pupils per class is currently established, for each type and grade of education, by Presidential Decree n. 81 of 2009, as follows:

| School levels* | minimum n. | maximum n. | Up to a maximum of |
|----------------|------------|------------|--------------------|
| Nursery | 18 | 26 | 29 |
| Primary | 15 | 26 | 27 |
| Secondary I | 18 | 27 | 28 |
| Secondary II | 27 | 30 | |

**Except in the case of the initial classes of each order and grade, which receive pupils with disabilities, that are normally made up of no more than 20 pupils.*

Statistical comparisons present us with an Italian situation which on average is no different from that of other countries. Nevertheless, in Italy there are many cases where the presence of pupils in the classroom far exceeds the national average.

As far as 'sizing' is concerned, this too is linked to 'parameters' established by law. The number of pupils required for a school to be assigned a headmaster and a director of general and administrative services, with an open-ended appointment, is currently set at a minimum of 600, reduced to 400 for mountain municipalities, small islands and areas characterised by linguistic specificities, pursuant to paragraphs 5 and 5 bis of Article 19 of Decree-Law n. 98 of 2011, converted with amendments by Law n. 111 of 2011. The need to revise these 'criteria' found a first partial response in the last Budget Law for 2021 (paragraph 978 of Law no. 178/2000), which reduced the minimum number of pupils required for schools to be autonomous from 600 to 500, but only for the 2021/2022 school year. For institutions on small islands, in mountain

municipalities and in geographical areas with specific linguistic features, the number is further reduced to 300. In order to cope with the extraordinary consequences of the pandemic, as well as with the progressive demographic decline described above, which is destined to change the numbers and geography of Italian schools, it is necessary to return to the discipline of sizing the school network in an organic manner.

On the one hand, a different class size encourages the creation of flexible learning groups, aimed at personalisation and improving the quality of learning processes. The issue of class size brings us back to the possibility of offering personalised attention to individual pupils, particularly the most fragile and certainly pupils with disabilities, whose presence must be a matter of attention for the whole "class" group.

In addition, a revision of the "parameters" to be used to identify the educational institutions with a headmaster and headmistress, which refer to the school population of the regional territory, rather than that of the individual school, would allow the Regions - given the "shared competence" between the state and the regional level - to assess, in relation to specific territorial needs, the possibility of maintaining educational institutions even with reduced school population criteria.

Goals.

1) Adjustment of the number of pupils per class. In view of the population decline and in order to reduce the number of pupils per class and gradually improve the ratio between the number of pupils and the number of teachers on common positions, the number of teaching staff will be set at the same level as in the 2020/2021 school year. This intervention will be implemented with the same number of buildings available and therefore with the same number of resources for school buildings, while improving the pupil/teacher ratio per class. This will make it possible to give personalised attention to individual pupils, particularly to the most vulnerable and certainly pupils with disabilities. Moreover, in the current emergency context, overcrowding of classrooms negatively affects both the management of teaching time and learning levels and the concrete implementation of anti-conviction measures.

In detail, while the school-age population is gradually decreasing, a parallel decrease in pupils enrolled in state schools of all levels is expected. The final result of the improvement in the pupil/teacher *ratio* will be a reduction in the average number of pupils per class, to the benefit of teaching quality and with the same number of staff, but also of available school buildings and thus of resources for school buildings.

2) Reviewing the rules on the size of school buildings. The proposal aims to take the school population of the regional territory as the "effective parameter" for identifying the educational institutions with a headmaster and a headmistress, rather than the population of the individual school, as provided for by current legislation. In this way, it will be possible to evaluate, in relation to specific territorial needs, the possibility of school institutions with reduced numerical parameters of school population, also taking into account that in some realities, such as

mountain municipalities or small towns, the concept of class-room-age identity will have to be overcome.

Implementation. The implementing body is the Ministry of Education.

Costs. Covered by the effects of denatality.

Target group. School staff and pupils/students.

Timeline. The regulatory process will be started and completed in 2021.

Reform 1.4) Reform of the “Orientation” system

Challenges. According to UNICEF's October 2019 report, based on ISTAT data, in Italy there are 2,116,000 NEET (Not in Education, Employment, or Training) persons between the age of 15-29 years old, representing 23.4% of young people present on the territory (in the first place, Sicily accounts for 38.6% of the population share, followed by Calabria with 36.2% and Campania with 35.9%). 38% of the more than 2 million NEET are 20-24 years old (i.e. over 800,000 NEET). 49% of them have obtained a secondary school diploma, while 40% have completed a lower cycle of education and 11% hold a university degree.

In this context, "Orientation" is not only just a tool for managing the transition between school, higher education and labour market but also a lasting value in the life of each person, ensuring development and support in decision-making processes to promote active employment, economic growth and social inclusion.

Goals. The regulation aims to introduce orientation modules - not less than 30 hours per year - in upper secondary schools (for students in the IV and V years) in order to promote increased levels of education. The introduction of formative orientation modules are included within the overall annual curriculum. Further, it is also intended for the creation of a digital orientation platform, related to the tertiary educational offer of Universities and Vocational Training Institutes (ITS), easily accessible by youngsters. The proposal favours the growth potential by targeting the most fragile front of the young population, subject to the risk of dispersion and unemployment in the future, preventing the NEET phenomenon. The proposal also promotes growth potential by investing in the creation and development of human capital in line with the actual demands of the labour market. The intervention of orientation out of the education system is linked to the incoming intervention of the university system.

The intervention aims at producing a stabilising effect over time, in order to make the guidance action in schools with courses already part of the regulations a practice. The objective is twofold: to match the school exit targets with the entry requirements of the post-diploma pathway (University, high qualification courses, etc.); to focus on the course most suited to the individual characteristics with maximum attention to the employability, also considering the time factor for obtaining the qualification.

The training of teaching staff is of priority importance and for this reason the professionalism of university teachers is required in the orientation process, whose role is to act correctly on the training paths of school teachers and to put the education-university systems in synergy with experts from the world of employment, also providing full knowledge of the courses offered.

It is the intention of this Ministry to extend the experimentation of four-year high schools and technical high schools, which currently involves 100 classes in as many schools throughout Italy, in order to stabilise a four-year upper secondary education instead of five years as is currently the case.

The extension envisages the involvement of a further 1,000 classes in an equal number of schools, which will be able to make an active contribution to the experimentation process previously launched, with a much broader spectrum of authentic experience.

It is therefore planned to set up a Technical Scientific Committee with internationally renowned figures, which will have the task of evaluating the experimentation underway and proceeding with the possible implementation of the measure. The budgetary impact will continue beyond the time horizon of 2026, being stable in the years to come.

The proposal goes in the direction of strengthen other investment in a strategic approach (to fight early school leaving and gender gap in STEM disciplines, to strengthen ITS, etc.).

Implementation. The program is managed by the Ministry of Education.

Costs. The estimated cost related to the RRF is equal to 0.

Target group. Students in the iv and v year of upper secondary schools

Timeline. The process will start in 2021. Promulgation of the rule is expected in 2022.

Investment 1.6) Active orientation in school-university transition

Challenges. In line with reform 3.3 (Reform of the “Orientation” system), it is appropriate to implement actions of active orientation to connect youth with the academic world, also through the reinforcement of specific teachings, to increase the awareness as well as the motivation to grasp economic and social opportunities of higher education. According to the 2019 Education at a Glance report by OECD, Italy has the highest share, among OECD countries, of youth who are neither employed nor in education or training (NEET). While the OECD average sets to 14%, the Italian share of 18-24 year-olds NEET equals 26%. Particularly critical is the situation for women, with 29% of the 20-24 year-olds (compared for 28% of men) and 37% of the 25-29-year-old (compared to 26% for men) being NEET. This phenomenon can be compensated by a better and more engaging orientation, stimulating youth to pursue education paths more aligned with the job market requests. According to OECD, youth can face barriers to enter in the labour market transitioning from school, but higher educational attainment increases their likelihood of being employed and is associated with higher incomes. Across OECD countries, the average employment rate in 2019 was 85% for 25-34-year-old people with tertiary

education, 78% for those with upper secondary or post-secondary non-tertiary education, and 61% for those without upper secondary education. In Italy, the shares are 68% for tertiary attainment, 64% for upper secondary or post-secondary non-tertiary, and 53% for below upper secondary. Having a tertiary degree also carries a considerable earnings advantage; in Italy, 25-64-year-old people with a tertiary degree with income from full-time, full-year employment earned 37% more than full-time, full-year workers with upper secondary education (2016 data).

Goals. The investment aims at elevating the transition from secondary school to university and, at the same time, tackling university dropouts in the following years, contributing to laying the foundations to reach the strategic goal of increasing the number of university graduates. The investment contributes to the qualification of the education system through a rise in the success indicators (% school attendance, % improvement of learning levels, % number of students admitted to the following academic year, etc.) and the mitigation of gender gaps, both in terms of employment and participation to higher education in all fields. This initiative is part of a broader set of initiatives creating a link between the school and the higher education systems. On the one hand, interventions described under Reform 2.2 and Investments 2.1 and 3.1 will be aimed at creating a better orientation of students towards STEM disciplines, and digital preparations, at all levels of the school system, by training the teaching staff. Investment 1.5, will be dedicated to creating a better vocational path in the higher education system.

This project of active orientation will provide courses to all students at high schools, starting from the third years, enhancing competencies for the choice of tertiary education, facilitating a better fit between preparation and vocational track, by creating an explicit bridge, and helping students getting oriented in the school-university transition. Lectures will be delivered by higher education professors and delivered to students in the third, fourth and fifth year of higher secondary school. Sustainability will be achieved by extending training to high-school professors such that, following this three-year program, orientation will be available with the internal staff of high schools.

As far as the decision on the investment of future resources is concerned, this initiative will be evaluated together with reform 1.7 and investment 1.7, jointly aimed at an increase in the number of university students. The following evidence, in particular, will be considered: impact on the school-to-university transition rate; impact on the university dropout rate; impact on the share of university students residing in regions under objective 1.

Given the current distribution of students over the country (see Table below here), this initiative will distribute some 38.7% of resources in the Southern Regions and the Islands.

Table. *Distribution of secondary school students across Italian macro-regions (Source: data provided by the Ministry of Education, MIUR open data 2020).*

| Territory | Number of students | Percentage |
|------------|--------------------|------------|
| North-west | 518,153 | 24.3% |
| North-east | 355,111 | 16.7% |

| | | |
|--------------|------------------|---------------|
| Centre | 431,748 | 20.3% |
| South | 575,686 | 27.0% |
| Islands | 250,250 | 11.7% |
| Italy | 2,130,948 | 100.0% |

Implementation. The implementation is managed by the Ministry of University and Research, through active engagement of university professors and researchers as main providers of the contents. This investment is strongly connected and synergistic with Reform 1.4 (Reform “Orientamento”), managed by the Ministry of Education. The cooperation between the two Ministries will guarantee the proper involvement of both parties: schools and universities. Details on the reform process will be provided.

As for State-aid compliance no issues related to State-aid under Investment 1.6. are identified. This measure will support public universities, on the basis of agreements with public schools for the implementation of active orienting activities. Both State and Non-State universities (that are assimilated by the Italian current regulatory framework as non-profit entities) will benefit from the implementation of these measures.

Costs. The estimated cost related to the RRF is equal to 0.25 billion euro.

Target group. Students.

Timeline. The intervention will start in 2021 and will last until 2026.

Reform 1.7) Reform of student housing regulation and investment in student housing

Challenges. The European market for student housing is generally characterized by a demand that overcomes the offer. Moreover, the majority of the existing structures is managed by the Universities themselves or by no profit and religious entities. The huge demand makes the sector attractive also for private investors. Despite this potential interest, the current legislative framework does not allow private investors to fund the renovation of buildings to be dedicated to student accommodation services.

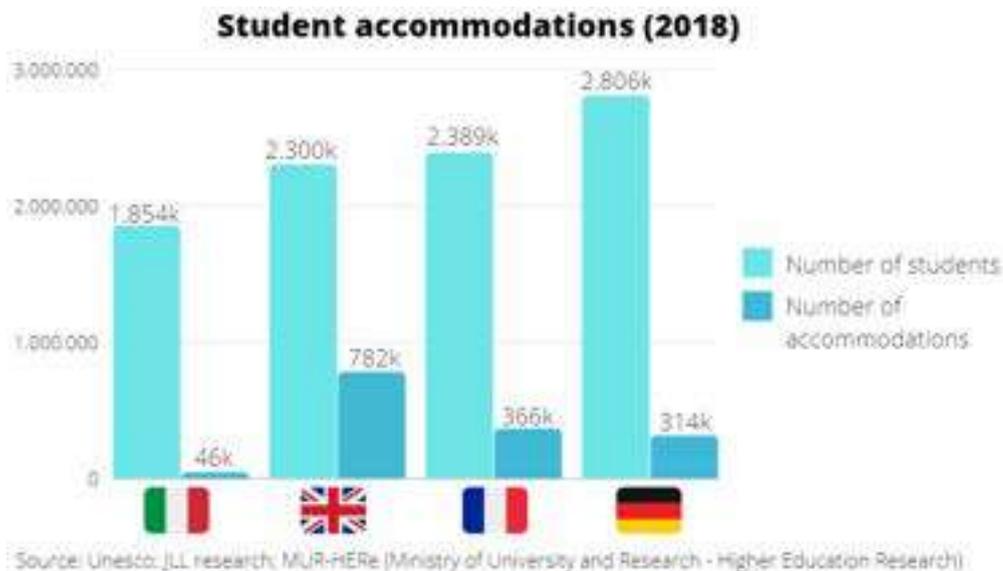


Figure. The student accommodation offering in key countries.

Extending the right to study to attract deserving young people, in difficult socio-economic conditions, to advanced training by removing barriers to education access is one of the main challenges for an education system being both attractive and inclusive. In Italy, participation in higher education is not widespread; the percentage of young people who decide to undertake a university course and manage to finish it, is among the lowest in Europe (27.7% of the population 25-34 years, in 2019), with particularly critical areas in some regions of the South. There are several reasons linked to both the education accessibility of certain social groups and to the degree of diversification of the offered training.

Goals. There is a need to update the current law representing the foundation to define the rules for student housing, namely the law 338/2000 and the Legislative Decree 68/2012. This reform will take place in two steps.

First, a revision through a Ministerial decree with the following goals:

1. Fostering the restructuring and renovation of structures instead of new green-field buildings (with a greater percentage of cofunding, currently at 50%), with the highest environmental standard to be ensured by the presented projects;
2. Simplifying, also thanks to the digitalization, the presentation and selection of projects and, therefore, the implementation timing;
3. Provision by law for a derogation from the criteria set out in Law no. 338/2000 with regard to the percentage of co-financing that can be granted.

Second, a broader reform will be implemented, by introducing in the Italian regulatory framework for student housing financing the following major changes:

4. Opening up the participation to the funding also to private investors (according to the scheme described in the implementation), also allowing public-private partnerships

where the university will make use of the available funding to support the financial equilibrium in real-estate investments for student housing;

5. Ensuring the long-term sustainability of the private investments by guaranteeing a change in the taxation scheme from the one applied for hotel services to the one applied for social housing, by constraining the use of the new accommodations for student housing purposes during the Academic Year, but allowing the use of the structures when they are not needed for student hospitality. This will, in turn, help the supply of a new range of accommodation at affordable rents;
6. Conditioning the funding as well as additional tax allowances (e.g. the equal treatment with the social housing) **on the use of the new accommodations for student housing** during the overall investment horizon and the compliance **with the agreed upper bound in the rents charged to students** even beyond the expiration of special funding schemes that may contribute to trigger the investment by the private operators;
7. Redefining the standards for student accommodations, by redetermining the law requirements regarding the common space per student available in the buildings in exchange for better equipped (single) rooms;

The investment foreseen in this measure, along these lines of reform, aims at ensuring a widespread access to housing facilities so that a reasonable number of students may afford advanced education in their preferred field and location regardless of their socio-economic background. It aims to add 65,500 of sleeping accommodations to the current 40,000, thus significantly reducing Italy's gap with the EU average regarding the share of students provided with housing facilities (18% against the current 3% in Italy). Moreover, this measure will help to fill the student accommodation gap despite the planned increase in the number of enrolled students, which the measure itself would support.

Implementation. The reform will be managed by the Ministry of University and Research. The changes to be introduced will be managed through Decrees, starting from the modifications that can be applied faster (e.g., points 1, 2, and 3 above) by the end of 2021. The complete reform is expected to be implemented by the end of 2022.

While pursuing the objective of creating investments in student housing, the funding scheme channels the resources for creating additional private investments covering the cost of the accommodation services for at least 3 years, rather than contributing to construction and renovation costs directly. The local universities, through the funds that will be recognized by the MUR with this intervention, agree with the owners of these student residences to cover for three years from the commissioning of the affiliated residence, the almost all of the rent linked to the use of these accommodations.

In this way, it aims at mitigating the demand risk perceived in specific locations, thus implicitly providing a guarantee in the actual use of renovated buildings. It will consequently stimulate other public or private initiatives to expand the student accommodation offer, as well as to increase the quality of the existing ones. As described in *Figure* below, the measure aims to

provide financial sustainability to the investment in student accommodations, by complementing the revenues over years 1-3 with a form of remuneration of a contract granting accommodation availability, ensuring private entities of sustainability. In other words, while law 338/2000 regulates the use of public funds for the constructions of accommodations, the new framework regulates the use of public funds as temporarily committed revenues (up to 3 years), through a commitment to host students. As such, the investment cannot be considered as structural, given that after the number of student houses has reached an equilibrium, further financial support would not be required. Indeed, further needs of student accommodations may be supported by alternative resources, once evaluated the effectiveness and the efficacy of this measure.

Student Housing: financial structure

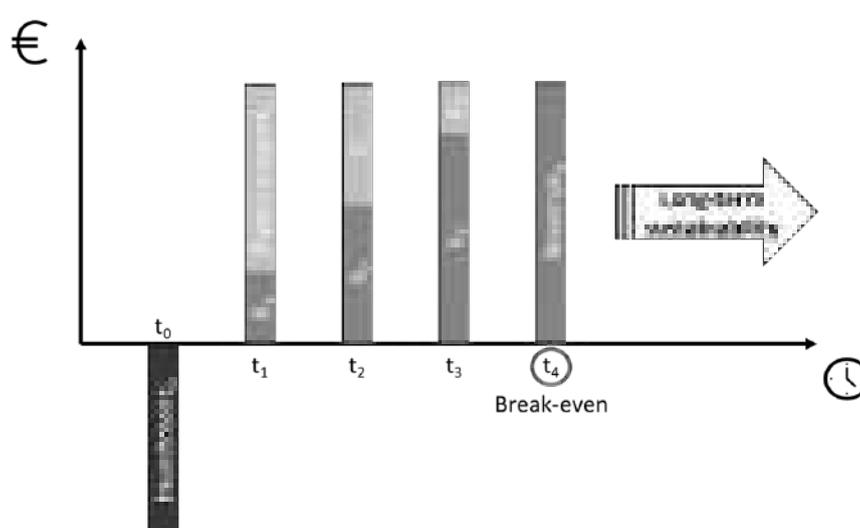


Figure. The financial structure provided by Reform 1.7

The private initiative may come from specialized infrastructure developers and investors, also through Public-Private Partnerships (PPPs) and leasing instruments: the presence of the public commitment to rent an agreed share of sleeping accommodations at the local market rental rate will stabilize the expected cashflows, thus mitigating the risk regarding the repay of the initial investment on the long term.

The unit rent per sleeping accommodation is negotiated with the property pole (private or public) and should be commensurate with the observed cost of the residential services on the local markets.

The development of new accommodation facilities location will be guided by the distribution of the excess demand across the cities where the Universities are located; accordingly, it is a priority to provide equal opportunities for access to the accommodation services across the University students enrolled in the different regions of the country. The rent-based design of the initiative allows satisfying a higher demand for affordable housing with equal resources

committed. In fact, it virtually acts to de-risk the economic returns of the investment autonomously made by the property by ensuring a proper and stable rate of coverage of the new supply of accommodations at the agreed unit rate. The measure takes advantage of the current favourable conditions for investment in the market, given the historically low cost of financing, the fiscal favour for energy efficiency improvement and restructuring of the existing buildings and the attractiveness of the limited offer of student housing against a largely unserved demand.. Another desirable side effect of the measure comes from the incentives to energy efficiency and the renovation of the existing buildings as in M2C3. In this respect, the investment plan foresees an agreement with local industrial players for the renovation and improvement of the energy efficiency of existing infrastructures. The project aims to achieve a significant moderation of energy demand, in accordance with European Union priorities as stated in the “Energy Performance in Building Directive” (EPBD). The project aims to catalyse private investments mainly remunerated through annual consumption savings.

The investment program, to be developed along these lines of reform, is managed by the Ministry of University and Research and by local universities. The implementation of the intervention will start in 2021, and will be accompanied by the reform of the current regulatory framework for student housing regulation, to be implemented by the end of 2022. Notice that, while reforms needed for implementation will not be ready, in 2021 and 2022, resources will support student housing following the procedure provided by Law 338/2000 primarily through the renovation and restructuring of existing buildings, in line with the DNSH principle. Starting from 2023, resources will finance student housing through the financing scheme provided by the reform.

As a result of the several dimensions affecting the sustainability of the investment in student housing, the rent-based measure works as a trigger mechanism for structurally enlarging the supply of accommodations. Although providing a temporary frontloaded coverage of the developers’ rental revenues for just 3 years, it significantly affects the expected payoff of the investment in the standard horizon for the student housing (around 15 years) against the current low costs of financing. Moreover, in the period the ensuing impact on the University enrolment rate and drop-outs will be strictly monitored. In case a comfortable evidence is found, the measure will be re-financed by national resources in order to keep expanding the supply of student accommodations; otherwise, the measure will be gradually discontinued, and the service cost paid by students will somewhat increase.

Indeed, the measure can be designed so that it may be suspended with a limited impact on the student housing supply and rents. Depending on conditions of the local rental markets as well as on the investment financial costs and the schemes of various allowances, the public commitment to frontload the the developers’ accommodation revenues over the first 3-year period may be coherent with the housing supply to remain economically sustainable at the students’ affordable rents even in the medium term.

As far as the decision on the investment of future resources is concerned, a criterion needs to consider that this initiative (as well as those provided in investment 1.7 and 4.1) is aimed to

support the planned increase in university students. The identification of the impact of each instrument on the number of students is difficult, as it is also going to be affected by Reforms 1.5 and 1.6, and the best prospects of remuneration of human capital thanks to the actions on research provided in the Component 2 of Mission 4. The starting point will be the analysis, at the end of the three-year experimental period, of the impact on the school-to-university transition rate, as well as on the reduction in the university dropout rate. Additional evidence will be provided with respect to the contrast to social selection factors, e.g. an increase in the share of university students with family incomes in the first two deciles, and of those residing in regions under objective 1. Finally, evidence on increased mobility between university and accommodation will be considered, as further evidence in support of this measure, and its impact on the development of skills and, more extensively, of student cultural flexibility.

This investment will have a significant impact on the development of Southern regions. An estimate can be developed based on the territorial distribution of accommodations and students. In particular, the following table reports the regional and territorial coverage of the currently available accommodations with respect to the number of applying students (according to 2020 data provided by the Ministry of University and Research). The lower coverage rate in Southern regions suggests a stronger development of the student housing systems in Southern Italy (See Table below).

Table. Distribution of available accommodations for students, and coverage of applying students' demand, by Italian region (Source: data provided by the Ministry of University and Research, MIUR open data 2020).

| Territory | Available accommodations | Applying students | Coverage (%) |
|-----------------------|--------------------------|-------------------|--------------|
| NORTH-WEST | 12,931 | 52,569 | 25% |
| Liguria | 1,015 | 4,450 | 23% |
| Lombardia | 9,399 | 31,259 | 30% |
| Piemonte | 2,517 | 16,692 | 15% |
| Valle d'Aosta | 0 | 168 | 0% |
| NORTH-EAST | 9,024 | 51,842 | 17% |
| Emilia-Romagna | 3,535 | 23,777 | 15% |
| Friuli-Venezia Giulia | 1,190 | 6,035 | 20% |
| Trentino-Alto Adige | 1,848 | 6,196 | 30% |
| Veneto | 2,451 | 15,834 | 15% |
| CENTRE | 11,607 | 51,978 | 22% |
| Lazio | 2,550 | 24,471 | 10% |

| | | | |
|----------------|---------------|----------------|------------|
| Marche | 3,247 | 5,912 | 55% |
| Toscana | 4,760 | 16,465 | 29% |
| Umbria | 1,050 | 5,130 | 20% |
| SOUTH | 6,246 | 61,566 | 10% |
| Abruzzo | 391 | 6,024 | 6% |
| Basilicata | 95 | 1,292 | 7% |
| Calabria | 2,311 | 11,105 | 21% |
| Campania | 1,476 | 23,520 | 6% |
| Molise | 0 | 808 | 0% |
| Puglia | 1,973 | 18,817 | 10% |
| ISLANDS | 2,924 | 33,041 | 9% |
| Sardegna | 1,157 | 10,562 | 11% |
| Sicilia | 1,767 | 22,479 | 8% |
| ITALY | 42,732 | 250,996 | 17% |

Finally, the selection of the student housing projects will be based on environmental standards requirements (already included in former call for applications based on the law 338/2000) as described in the DNSH principle evaluation, i.e.:

- considering a climate and environmental proofing for climate change mitigation;
- where installed, the specified water use for the following water appliances are attested by product datasheets, a building certification or an existing product label in the Union, in accordance with the technical specifications:
 - (a) wash hand basin taps, kitchen taps and showers have a maximum water flow of 6 litres/min;
 - (b) WCs, including suites, bowls and flushing cisterns, have a full flush volume of a maximum of 6 litres and a maximum average flush volume of 3,5 litres;
 - (c) urinals use a maximum of 2 litres/bowl/hour. Flushing urinals have a maximum full flush volume of 1 litre.

To avoid impact from the construction site, environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed, in accordance with a water use and protection management plan, developed in consultation with relevant stakeholders.

- At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC) generated on the construction site is prepared for re-use, recycling and other material recovery, including backfilling

operations using waste to substitute other materials, in accordance with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. Operators limit waste generation in processes related to construction and demolition, in accordance with the EU Construction and Demolition Waste Management Protocol and taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste.

Building designs and construction techniques support circularity and in particular demonstrate, with reference to ISO 20887 or other standards for assessing the disassemblability or adaptability of buildings, how they are designed to be more resource efficient, adaptable, flexible and dismantlable to enable reuse and recycling.

- Building components and materials used in the construction do not contain asbestos nor substances of very high concern as identified on the basis of the list of substances subject to authorisation set out in Annex XIV to Regulation (EC) No 1907/2006 of the European Parliament and of the Council.

Building components and materials used in the construction that may come into contact with occupiers emit less than 0,06 mg of formaldehyde per m³ of material or component and less than 0,001 mg of categories 1A and 1B carcinogenic volatile organic compounds per m³ of material or component, upon testing in accordance with CEN/TS 16516 and ISO 16000-3 or other comparable standardised test conditions and determination methods

Where the new construction is located on a potentially contaminated site (brownfield site), the site has been subject to an investigation for potential contaminants, for example using standard ISO 18400.

Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.

- Compliance with the request that at least 80% of all timber products used in the renovation for structures, cladding and finishes must have been either recycled/reused or sourced from sustainably managed forests as certified by third-party certification audits performed by accredited certification bodies, e.g. FSC/PEFC standards or equivalent.

As for State-aid compliance no issues related to State-aid under Reform 1.7 are identified. Please consider that this initiative directly supports education providers, because funding will be made available to State universities, or Non-state universities, assimilated by the Italian current regulatory framework as non-profit entities. This initiative indirectly supports student-accommodation operators, as funds will be employed for the acquisition of services at market conditions, granting transparent procedures.

As far as education providers are concerned, they are either State universities, or Non-state universities, assimilated by the Italian current regulatory framework as non-profit entities.

As far as student-accommodation operators are concerned, this investment provides for:

- a) fund receivers are either state universities, or non-profit entities
- b) under the new regulatory framework, competitive selection and service acquisition at market conditions will be granted.

If the funds intended for this intervention are not used within a certain period, they will be used for the intervention intended for the construction of housing and university residences pursuant to law no. 338/2000.

Costs. The estimated cost for the reforms related to the RRF is equal to 0. The investments to be implemented along these lines of reform are related to estimated cost for the RRF equal to 0,96 billion euro (300 million during 2021-2022, under the current law scheme, revised for compliance with the DNSH principle; 960 million following the implementation of the full reform). The MUR will also monitor opportunities to further extend the action (i.e. by application to the European Investment Bank).

Target group. Students. Universities, Private investors.

Timeline. A revision of current law is expected by the end of 2021. The full reform is expected to be implemented in the Italian system by the end of 2022. The measure will be first implemented during 2021-2022 according to the revision of the current law 338/2000. Starting from 2023, the new financing scheme will be adopted until 2026.

Investment 1.7) Scholarships for university access

Facing the challenges. In line with the Commission's initiatives to encourage the creation of a European education area, the measure responds to the same challenges as the “Student accommodation” project with which it is closely integrated.

Goals. The objective is to help enhance the access to tertiary education for talented students both in socio-economic difficulties and with a relatively high opportunity cost of advanced studies against an early transition on the labour market. For this purpose, the measure pursues the integration of contribution policies with those for study support through:

- scholarships increase by 700 euros, up to 4,000 euros (on average) per student;
- scholarships funding for a larger number of students, thus significantly reducing the gap with the EU average share of students with a grant (around 25 per cent against just 12 currently registered in Italy), despite the planned increase in the enrolment and retention rates in Italy;

The measure is strategic and fully coherent for the achievement of the planned increase in the number of students regularly enrolled in advanced education, which is, in turn, a key

requirement to fill the structural gap of Italy against the EU reading in the share of 25–34-year people concluding a tertiary degree. In addition to the aggregate target, the measure is particularly urgent in order to spur a widespread diffusion of high-quality competencies across regions and socioeconomic groups, which is the compelling opportunity for raising innovation propensity and productivity also in sections of the business sector, institutions and territory that lag more behind the frontier. Accordingly, very much in line with the Country Specific Recommendations for Italy, the measure provides the necessary support to tackle the structural factors long dragging the growth and employment potential of the Italian economy as well as its social cohesion, thus the resilience and the ability to react to negative shocks. The measure is recurrent in nature with regards to the actions on scholarship, which however address an unsustainable gap in the attractiveness of the Italian tertiary education system compared with the EU average, even more so compared with single partners such as Germany and France. In this context, the measure is worth being re-financed beyond the NGEU horizon, especially if it proves by 2026 to be essential as expected to fuel widespread access to tertiary education, namely a compelling target under any respect to drive Italy out of the stagnation trap apparently in place over the last twenty years. However, even in case the measure was suspended beyond 2026, it would provide a persistent impact on the stock of human capital in Italy, which will structurally benefit from the strong injection of new young with a tertiary degree.

As far as the decision on the investment of future resources is concerned, this initiative will be evaluated together with Reform 1.7 and investment 1.6, as jointly aimed at an increase in the number of university students. The following evidence will be considered: impact on the school-to-university transition rate; impact on the university dropout rate; impact on the share of university students with family incomes in the first two deciles and of those residing in regions under objective 1.

Implementation. The program is managed by the Ministry of University and Research. The implementation of the intervention will be accompanied by a Ministerial Decree reform on scholarships regulation. Details will be provided.

This investment will have a significant impact on the development of Southern regions. The following table shows the distribution of scholarships per region and zone of the country from 2020 data provided by the Ministry of Education, University and Research. The data shows that the increase in the scholarship will involve 30% of resources in the Southern Regions and the Islands (See Table below).

Table. *Distribution of the number of applications, scholarship and coverage of request, by Italian region (Source: data provided by the Ministry of University and Research, MIUR open data 2020).*

| Territory | Number of applications | Number of scholarships | Coverage of requests | Territorial coverage of scholarships |
|-------------------|------------------------|------------------------|----------------------|--------------------------------------|
| NORTH-WEST | 75,568 | 52,087 | 69% | 21% |
| Liguria | 4,937 | 4,450 | 90% | 2% |

| | | | | |
|--------------------------|----------------|----------------|------------|-------------|
| Lombardia | 48,565 | 30,777 | 63% | 13% |
| Piemonte | 21,889 | 16,692 | 76% | 7% |
| Valle d'Aosta | 177 | 168 | 95% | 0% |
| NORTH-EAST | 79,637 | 51,571 | 65% | 21% |
| Emilia-Romagna | 31,168 | 23,777 | 76% | 10% |
| Friuli-Venezia Giulia | 6,035 | 6,035 | 100% | 2% |
| Trentino-Alto Adige | 8,259 | 6,196 | 75% | 3% |
| Veneto | 34,175 | 15,563 | 46% | 6% |
| CENTRE | 80,320 | 51,978 | 65% | 21% |
| Lazio | 40,137 | 24,471 | 61% | 10% |
| Marche | 8,326 | 5,912 | 71% | 2% |
| Toscana | 24,499 | 16,465 | 67% | 7% |
| Umbria | 7,358 | 5,130 | 70% | 2% |
| SOUTH | 51,490 | 43,399 | 84% | 18% |
| Abruzzo | 9,225 | 6,024 | 65% | 2% |
| Basilicata | 1,436 | 1,292 | 90% | 1% |
| Calabria | 15,073 | 11,057 | 73% | 5% |
| Campania | 23,520 | 23,520 | 100% | 10% |
| Molise | 1,118 | 753 | 67% | 0% |
| Puglia | 1,118 | 753 | 67% | 0% |
| ISLANDS | 39,585 | 28,319 | 72% | 12% |
| Sardegna | 13,122 | 10,562 | 80% | 4% |
| Sicilia | 26,463 | 17,757 | 67% | 7% |
| ITALY | 364,981 | 245,418 | 67% | 100% |

Costs. The estimated cost related to the RRF is equal to 0.50 billion euro. This intervention will benefit from additional resources (0.45 from React EU and 0.6 billion euro allocated in the Budget Law).

Target group. Students.

Timeline. The intervention will start in 2022 and will last until 2024.

As for State-aid compliance no issues related to State-aid under Investment 1.7 are identified. The measure is aimed at supporting students, through scholarships individually assigned based on merit and wealth.

Reform 1.5) University degree groups reform

Challenges. Society and economic trends show an articulation and complexity that makes almost obsolete the current disciplinary classifications used to define and limit the various scientific fields in the prevailing organizational models of universities and institutions. The emergency we are experiencing has shown us that there cannot be simple answers to complex issues. The growing complexity requires constant assessment between different disciplines, which is essential to face new challenges and in line with new educational paradigms that could enhance more advanced, transversal and multidisciplinary skills. Hence, the link to the issues of digital transformation and environmental sustainability is unmistakable. *Goals.* The reform foresees the update of the present method used for constructing the didactic orders of the University degree courses, reducing the existing rigid boundaries which severely limit the possibility of creating cross-disciplinary curricula. The goal is to introduce a higher degree of flexibility, removing unnecessary constraints in the definition of assigned credits to the different disciplinary areas, in order to facilitate the construction of new, transversal formation paths, as well as rapidly adapt existing programmes. This change will respond, on the one side, to the natural evolution of the disciplines themselves and, on the other, to the evolving societal needs, which require not only multidisciplinary skills, e.g. on digital technologies and in the environmental field, but also the development of soft-skills. The reform will also expand the possibility to implement vocational training programs, by introducing innovative job-oriented degree classes.

Implementation. The program is managed by the Ministry of University and Research.

Costs. The estimated cost related to the RRF is equal to 0.

Target group. University.

Timeline. The reform will be implemented through D.M. to be adopted in 2021, for the application of updated teaching regulations starting from the academic year 22/23. First steps in this direction have already been taken with two recently issued Ministerial Decrees: a) the D.M. 446/2020, which has introduced the new class of vocational degrees in technical professions; b) D.M. 133-2021, which has significantly simplified some of the pre-existing rules for the definition of the University second-level degree courses, enhancing their flexibility.

Reform 1.6) Enabling university degrees reform

Challenges. In Italy too few young people, after completing their schooling, decide and have the opportunity to continue investing in themselves, pursuing a university degree. The key indicators of the European Commission, based on OECD and Eurostat data, show that early leavers from education and training (age 18-24) are 13.5%, well above the EU average of 10.2% and the EU 2020 target of 10%. These rates vary widely across regions (9.6% in the North-East to 16.7% in the South), genders (15.4% boys vs. 11.3% girls) and nationality (32.5% foreign-born vs. 11.3% natives). This, in turn, determines a serious and enlarging gap between the

growing request of high-level competencies to face the emergence of new societal challenges and the actual availability of human capital with the required expertise. This issue will be tackled through both specific reforms of the university system, aimed at simplifying the existing procedures, making them more flexible, and investments to increase its interdisciplinarity and internationalization.

In addition to problems related to accessibility conditions, such as student housing as well as general costs, for which specific interventions are proposed in reform 1.7 and investment 1.7, the barriers to going to university are also linked to its attractiveness: the perception of the usefulness of acquiring a university degree in terms of better job opportunities and more active participation in social and cultural spheres it is also influenced by the complexity of the process of entering the labour market, making the investment fruitful. This is particularly true for those professions where, after completing the university courses, further formal steps (e.g., internships, habilitation exams) are required before the enrolment on professional orders is authorized, according to procedures which often are badly harmonized, with temporal gaps and different local rules.

Goals. The reform foresees the simplification of the procedure for accessing professions that require the enrolment on professional orders, harmonizing the final degree national examination, thereby providing general and clear rules, on a well-specified time scale, simplifying and speeding up the access to the labour market for graduates.

Implementation. The program is managed by the Ministry of University and Research.

Costs. The estimated cost related to the RRF is equal to 0.

Target group. University.

Timeline. The intervention, already applied to some professions, will be completed by 2021 through a legislative provision and extended to interested graduates starting from 2022. In particular, the draft law AC 2751 “Provisions on qualifying university degrees” was presented to the “Camera dei Deputati” on 27 October 2020. The draft law was assigned to the Committees “II Justice” and “VII Culture” and is currently following a fast track due to its connection to the financial law. The Committee on Budgets examined the text on 25 November 2020 and confirmed its nature of draft law linked to the financial law.

Area of intervention 2: Improving teachers’ recruitment and training systems

Strengthening the training offer relies on an improvement in the teaching staff skills, starting from recruitment. To this end, the reform of the teacher recruitment system redesigns the competition procedures for placing teaching staff. It innovatively reinforces the year of training and testing through a more effective integration between disciplinary and laboratory training with professional experience in educational institutions. The skills enhancement process is completed by a reform introducing a system of compulsory in-service training for all school

staff. Through training modules, school staff can acquire professional training credits which can be used for career advancement.

Reform 2.1) Teachers' recruitment

Challenges. The current system for recruiting new teachers requires a thorough overhaul in order to ensure several purposes. The first one is to put in place a selective mechanism that will allow the positions that have become available to be filled with tenured and not substitute teachers on a regular basis. The relative simplification of the induction procedure and the enhancement of teachers' professionalism require further adjustments. First, there is a need to rethink the training process for aspiring teachers. Consideration needs to be given to how to extend ex-ante training by requiring a broadening of qualifications for access to teaching in secondary schools (along the lines of primary schools). This allows the problem of raising the quality of new recruits to be strongly addressed before the recruitment procedure. This does not diminish the importance of post-recruitment training, which in many ways remains an unimplemented legislative provision. In order to promote ongoing training and refresher courses in practice, we need to devise a system of incentives based on the idea of career progression for teachers based on the measurement of performance and the willingness to improve it through self-assessment, evaluation and personalised skills development. Having selected tenured teachers with a high level of ex-ante training who are willing to accept the challenge of measuring merit and constantly adjusting skills is a necessary path to redeveloping the very collective identity of the teaching profession. This aspect is crucial in order to create an attraction towards this profession of the best prepared young people coming from all the territorial areas of the country and not only those in which the labour market is lacking on the supply side. This, together with a better planning of the need for teachers, will make it possible to tackle the chronic territorial mismatching. Investment in systems that enable more qualified teachers to teach young people how to meet the challenges of work in the near future is crucial. This increase in quality is aimed at guaranteeing students adequate access to knowledge, interpersonal skills and methodological-application skills, which are not sufficiently guaranteed by the current school system. For this challenge, it is necessary to envisage overcoming the old figure of the teacher formed during the 1970s-1980s, in order to definitively access the one present in the best practices of the EU informed by the professional model.

Goals. The reform, which is structural in nature, aims to establish a new model for recruiting teachers, linked to a rethink of their initial training and throughout their careers. This measure has the strategic objective of bringing about a significant improvement in the quality of our country's education system, which cannot fail to pass through an increase in the professionalism of school staff. In particular, the current public competition procedures will be simplified. The idea is to structure the procedure as follows. On the basis of the evaluation of cultural and service qualifications and the performance of a computer-based test, a ranking list is formed, which is initially used to fill all vacant and available posts. Successful candidates are then given a year of on-the-job training and testing, after which there is a final test. The successful

completion of these further tests determines the teacher's permanent appointment. The final test is only a qualifying test and does not alter the ranking list, so that the teacher is confirmed in the post in which he/she has been placed, since he/she must remain there for at least three years. It should be pointed out that the confirmation tests will play a crucial role. Giving the school in which the teacher will work in the following years this task provides an incentive to be properly selective. The school has every interest in retaining a good candidate, while it has an equal incentive not to confirm people who have not performed well. This mechanism, by simplifying the ordinary competition, ensures that it is carried out consistently over time, thus making it possible to draw seamlessly (this has been a chronic problem) from the lists of previous winners to cover the coverage of annual substitutions which, once the procedure is completed, are transformed into permanent contracts. Training and testing using innovative methodologies will allow a selection process based not only on the level of knowledge but also on the teaching methods acquired and the ability to relate to the educational community. Since the so-called cultural titles will play an important role in the ranking of the winners, in particular, for secondary schools, in addition to the appropriate qualification for the competition class, the method of acquiring additional CFU (now 24) in psycho-pedagogical disciplines and teaching methodologies should be reconsidered, revising their content and the institutions accredited to award them. This is to guarantee quality and to overcome the current deterrent structure whereby access to this qualification requires only the payment of a certain amount of money. The need to strengthen training throughout a teacher's career calls for a thorough rethink of the position of teachers. By linking the evaluation of skills and their improvement also through individualised paths to a career and economic progression of teachers, detached from the current mechanism centred only on seniority, concrete incentives are created to have a school staff that does not "suffer" training as a burden but pursues training as a useful opportunity to improve its professional condition and with it its status. This part of the reform is closely linked to the role that will be assigned to the Tertiary advanced school.

The programme is managed by the Ministry of Education. The regulatory process will be launched in 2021; it is planned to publish the first public competition applying the innovative selection method in 2022 when the reform law is first implemented. The reform is covered by ordinary budgetary resources and annually available hiring powers.

Implementation. The programme is managed by the Ministry of Education.

Costs. The estimated cost related to the RRF is 0.

Target group. Teachers to be recruited.

Timeline. The regulatory process will be launched in 2021; the first public competition applying the innovative selection method is expected to be published in 2022 when the reform law is first implemented.

Reform 2.2) Tertiary advanced school and compulsory training for school managers, teachers, administrative and technical staff

Challenges. The continuous professional development of all school staff (managers, teachers and administrative and technical staff) is needed to ensure that the education of the new generations meets the challenges imposed by the rapid changes - not only technological - of our times. In other words, professional training is indispensable for an adequate and efficient school system as a whole. With regard to the multiple functions of school leaders of great complexity and strategic importance in the context of school autonomy, it is necessary for them to be regularly updated so that they can improve the management of complex systems and tackle new problems. On the other hand, teacher training is the decisive lever for improving the national education and training system. In view of society's rapid development, it is a priority to provide pedagogical and didactic training which, together with in-depth subject knowledge, makes it possible to effectively meet the challenge of transmitting methodological, digital and cultural skills as part of high-quality teaching. The professional condition of teachers shows an inadequate exploitation of the training paths envisaged by the National Digital School Plan and the National Teacher Training Plan, a fragmentation of training objectives and a discontinuity of training modules and, finally, a low rate of participation in in-service training courses. Finally, administrative, technical and auxiliary (ATA) staff suffer from the absence of constant professional training that is consistent with technological progress and regulatory changes. ATA in-service training is also characterised by an inadequate definition of programmes within the Three-Year Plans of the Educational Offer pursuant to Article 1 paragraph 12 of Law 107/2015.

Goals. The reform, taking note of the complexity of the system that targets the widest range of public employees in Italy, aims at building a quality training system for school staff in line with continuous professional and career development through the establishment of a qualified body in charge of school staff training guidelines in line with European standards, the selection and coordination of training initiatives, possibly linking them to career progressions, as provided for in the recruitment reform. In-service training is already mandatory under Law 107/2015, art. 1, paragraph 124.

Implementation. The programme is managed by the Ministry of Education, also with the technical support of INDIRE - now a research body governed by public law, pursuant to Article 19 of Decree-Law 6 July 2011, and which, pursuant to Article 2(4) of the Statute, has the objective of "looking after the in-service training of school staff, in close connection with the processes of technological innovation, through activities of accompaniment and professional requalification both in presence and in e-learning mode".

The Tertiary advanced school, conceived as an "Agency of the Ministry of Education", with the aforementioned tasks of guidance, coordination and development of the complex system, will be endowed, in accordance with its function, with a technical-scientific committee of high professional profile (indicatively Presidents of INDIRE, INVALSI, Lincean Academy dei Lincei, OECD and UNESCO representatives, Coordinator of the University Departments of

Pedagogy who will participate by reason of their assignment and without additional charges). The Tertiary advanced school will carry out functions of direction and coordination of training activities. Not only Indire and Invalsi but also Italian and foreign universities will be involved.

The administrative functions will be guaranteed by the Department for the school system and training will be provided, within the guidelines of the Tertiary advanced school, with the budgetary resources ordinarily allocated in the budget of the Ministry of Education. The Director of the General Directorate in charge of training of the Ministry of Education performs the functions of Secretary General of the Tertiary advanced school, without additional charges due to the position.

The training courses certified according to the standards defined by the school will be an integral part of the verification process for newly hired staff, as provided for in the recruitment reform.

Costs. The estimated cost for the RRF is EUR 0.034 billion. The Tertiary advanced school is a new institution, therefore the cost estimate is focused on unrecorded costs related exclusively to a light and qualified structure (of maximum 5 units) in charge of guiding, strategising and coordinating training initiatives.

Target group. School staff.

Timeline. The intervention will start in 2021; the promulgation of the law is expected in 2022; the full implementation of the reform will take place by 2025 with the finalisation of the related investment project).

Investment 2.1) Integrated digital teaching and training on the digital transformation for school staff

Challenges. Weak learning performance, particularly in key competences, is one of the major vulnerabilities of the Italian school system. The country-specific recommendations for Italy (COM(2020) 512 final of 20.05.2020) underline that the current emergency shows the need to improve digital learning and competences, in particular with regard to working-age adults and distance learning, and that investment in skills is crucial to promote a smart and inclusive recovery and to stay on track towards the green and digital transition. There is therefore a need for multi-dimensional tools to foster the development of digital learning as a key factor in smart recovery, starting with skills upgrading and retraining of school staff to enable them to acquire relevant skills to promote an equitable transition to a more digital and sustainable economy. The creation of a system combining e-learning and e-transition training of school staff, aligned with the European e-skills frameworks (DigComp 2.1 for e-learning of students and DigCompEdu for teacher training), can help to structurally address delays in acquiring the competences and skills needed for the future. The digital transition can only be sustained through a structural change in the school curriculum, capable of defining digital competences both in the transversal use of technologies for the construction of disciplinary and interdisciplinary learning and in the targeted development of digital competences and skills for

the professions and for the exercise of digital citizenship, accompanied by a permanent strategy of training school staff and teachers in digital innovation. The system for the promotion of digital teaching and training of school staff, correlated with the "In-service training for school staff" reform, therefore aims to strengthen the growth potential of the digital economy by improving digital and teaching skills in the short, medium and long term.

Goals. The aim of the line of intervention is the creation of a permanent system for the development of digital didactics and digital and teaching skills of school staff, as preconditions and enabling factors of the process of continuous improvement of the performance of the Italian school system. In particular, the line of intervention is divided into two measures:

1. The creation of a multidimensional and strategic system of continuous training of teachers and school staff for the digital transition, which includes:
 - the development of an Italian national hub on digital education for the training of teachers and school staff, in order to develop innovative and digitalised models for managing the training of school staff consistent with the European reference frameworks on digital competences (DigComp 2. 1 and DigCompEdu), monitoring, self-assessment, evaluation and certification of the competences achieved, also through an "open badge" system, management of training courses at national and international level, delivered in physical and/or virtual mode, in particular on the most advanced aspects of digital didactics relating to learning-teaching of computational thinking, artificial intelligence, robotics, the use of information and big data, in synergy with the National Institute for Documentation, Innovation and Educational Research (INDIRE) and the National Institute for the Evaluation of the Educational System of Education and Training (INVALSI);
 - the creation of an integrated network of territorial training hubs, set up in collaboration between schools, provincial adult education centres, regional school offices, universities and research centres, in line with the provisions of the European Digital Education Action Plan 2021-2027 and in coordination with the national hub;
 - the activation of a catalogue of around 20,000 training courses on the use of digital teaching in all the disciplines of the school curriculum and for the learning of computational thinking and artificial intelligence, in pre-school, in the primary and secondary school, and in adult education;
2. The adoption of a national reference framework for integrated digital teaching, in order to promote the adoption of digital competence curricula in all schools, declined in the following actions:
 - the creation of a platform on the content of digital education and innovative teaching methods for use by teachers, students and families, also aimed at continuous on-the-job training of teachers, the exchange of good practices, mutual learning between teachers of learning-teaching techniques and methods, the follow-up of training courses in the training system, the presentation of information, support and accompaniment courses for students' families;

- the creation of inclusive and sustainable "Pacts for digital education and competences for the future", also thanks to the use of assistive technologies, capable of making schools a territorial "crossroads of innovation", with the active participation of local authorities, businesses, associations, for the growth of communities of practice of educational and digital innovation, through the activation of widespread and intergenerational training courses for teachers, students, adults.

The line of action envisages the training of approximately 650,000 teachers and school staff, the creation of approximately 20,000 training courses over the five-year implementation period, and the establishment of local training centres. All of the more than 8,000 educational institutions in Italy will be involved in the training projects, which will be planned nationally, while the reference framework and its implementation tools will make it possible to create digital competence curricula in all educational institutions, reaching all students and involving their families.

Implementation. The intervention line is managed by the Ministry of Education.

Costs. A total investment of EUR 0.8 billion is expected from RRF. The investment in integrated digital teaching and digital transition training for school staff is intended to enhance the digital competences of school staff and thus of students. There is no overlap with other national and European funding, as it was intended to use RRF funds to finance the overall training of all school teaching and administrative staff. The structural funds related to the residual resources of the 2014-2020 OP will be allocated to training on strengthening the administrative and planning capacity of schools, while the resources of the 2021-2027 OP will be allocated to: a) didactic, relational-motivational aspects and new organisational approaches for combating school drop-out, for the inclusion of students with special educational needs, for adult education, in particular in the geographical areas and in the schools with the highest indices of discomfort; b) learning-teaching processes for the increase of key competences (linguistic, mathematical and scientific), in particular in the areas of the country, where territorial gaps in learning outcomes are stronger; c) professional retraining of technical-administrative staff. In particular, training on digital transition will be integrated with the use of technologies that will be implemented in schools also thanks to the resources of the 'Schools 4.0' measure.

With reference to the way in which the activities will be delivered, please note the following. The intervention, which is organic and comprehensive, will be carried out under the close coordination of the Tertiary advanced school and will include:

- integrated national training courses in physical, virtual and mixed modes, both synchronous and asynchronous, in particular for the theoretical-practical aspects of didactic and digital innovation in schools (courses, seminars, meetings with experts, etc.) for the training of trainers;
- postgraduate and master's courses, recognised by the Ministry of Education and carried out in collaboration with universities, capable of training teachers and administrative staff with innovative, specialised and certifiable skills;

- training courses abroad and training mobility at national and international level of teachers and administrative staff for the exchange and sharing of teaching and organisational experiences in schools;
- summer schools, also in the summer periods when school activities are suspended, of a residential and immersive type;
- training workshops in the field, through tutoring/mentoring, coaching, supervision, shadowing, real use of teaching technologies, also during work or in innovative learning settings; this action is coordinated with the "Scuola 4.0" intervention line, thanks to the availability of environments and technological equipment for teaching that can be used in the field for training purposes;
- learning communities and peer learning, through the promotion of networks and communities of teachers and administrative staff for the exchange of experiences and digital content;
- definition of the training through polo schools (identified through a selective procedure) in order to guarantee a widespread implementation of the training courses throughout the country and in all schools.

Organisational flexibility in the use and provision of training will be pursued in order to allow all staff to attend the courses, reconciling them with their working hours and commitments (asynchronous training that can be used independently, on-the-job training, summer schools, etc.). These are therefore initiatives that can be reconciled with ordinary activities.

Target group. School principals, teachers, directors of general and administrative services, ATA staff (administrative, auxiliary, technical staff), families, students.

Timeline. The implementation of the measure covers a 6-year period, from 2021 to 2026. In 2021, the executive planning of the activities, the drafting of legal act of entrustment of services for the creation of the Italian national hub on digital education for the training of teachers and school staff and the activation of the platform on digital education content and innovative teaching methodologies, the preparation of one or more public notices for the establishment of national and territorial hubs, distributed throughout the country on the basis of the number of schools, teachers and students. The start-up of the initiatives of the two measures is planned for 2022, with the systemisation of the actions, the payment of advances to the beneficiaries and the start of the training phases, which will continue over the next four years. The conclusion of the activities is foreseen in 2026, after monitoring, evaluation and reporting of the actions.

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| Area of intervention 3: Development of skills and upgrading of infrastructures |
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The quality of teaching and learning is highly dependent on the improvement and innovation of learning environments. The measures presented below aim at enhancing digital **education** and **at spreading education in STEM** disciplines and multilingualism, both in school and at universities. At the same time, major infrastructural investments are expected, both to digitize learning environments and to fill the gaps in school buildings in terms of safety and energy efficiency.

Investment 3.1) New skills and new languages

Challenges. The measure concerning STEM disciplines does not refer to the mere disciplinary pathway of the subjects of purely scientific interest but acts on a new transversal educational paradigm of a methodological nature. The aim is to create in schools the scientific 'culture' and the 'forma mentis' necessary for a different mental approach to the development of computational thinking, even before the specific disciplines are taught. The measure therefore acts at an early age, from pre-school onwards, in a transversal didactic way and relies on the empirical method and learning by discovery in direct situations, in order to create the key competences in the school of the future and to strengthen young people's competences in the entrepreneurial field to prepare them for high-tech jobs. Therefore, the action on the lower age groups of pre-primary and primary schools is of a purely methodological nature, specifically focused on STEM teaching (e.g. IBL Inquiry Based Learning, Problem Solving, etc.), with recourse to teaching actions not based only on the frontal lesson, which does not require dedicated budgets in addition to those ordinarily provided.

The action described is specifically dedicated to achieving the full overcoming of gender stereotypes and to supporting female students' participation in STEM education.

The challenges that the investment project takes up are those already indicated, with a focus on multilingualism, an equally strategic challenge for new generations to fully achieve a European citizenship, promoting intercultural contamination through the mobility of students and teachers. The National Institute for Documentation, Innovation and Educational Research (INDIRE) has allocated approximately 38 million euros for the in-service training of school staff and approximately 90 million euros for partnership projects between schools for students' mobility in the framework of the current Erasmus 2014-2020 program. This allocation covers only about 40% of the demand. On the other hand, the Erasmus+ Program represents an excellent investment in human capital with a relatively fast "return" for society. All the surveys and analysis in recent years show that those who participate in this project acquire skills that can be rapidly used in their careers. For example, an impact study conducted by the European Commission in 2019 shows that 80% of university students with international mobility experiences are able to get a job within 3 months of graduation. The same study reveals that 40% of students who did an Erasmus traineeship received a job offer from the host company, while 75% developed a strong spirit of self-employment and therefore the idea to start a business.

Goals. The intervention consists in the integration, among curricular disciplines, of activities, methodologies and contents designed to develop and strengthen STEM, digital and innovation skills, for all school cycles, starting from kindergarten to secondary school, focusing on female students, and with a full interdisciplinary approach. The intervention aims at guaranteeing equal opportunities and gender equality in terms methodological approach and STEM orientation activities. This initiative aims to incentive upskilling and re-skilling processes in digital education and to the full integration in current school curricula of such methodologies, contents and activities oriented to:

- “Digitalisation and Innovation”, for the development of computer science skills that are necessary for the school system the play an active role in the transition towards jobs of the future;
- STEM, for the development of training programs and a culture oriented to scientific disciplines (science, technology, engineering and mathematics) especially for female students in order to promote equal opportunities in sectors still characterized by male over-representation.

A further goal is to activate a skills development/enhancement program, in cooperation with the business sector, in order to support teachers and schools in the training and research activities for improving the students’ educational and employment success rate.

Furthermore, a national program for sustainable orientation is envisaged to balance young people’s expectations with socio-economic transformations, promoting equal opportunities in terms of access to scientific careers.

Finally, the project aims to strengthen multilanguage skills in students and teachers through a series of actions. Among these, a widening of consulting and information programs on Erasmus+ with the support of the Erasmus+ National Institute for Documentation, Innovation and Educational Research (INDIRE) and its ambassadors’ network. In particular, the project is expected to pursue:

- activation of courses to increase language skills for students through curricular activities for kindergarten, extra-curricular activities for primary school and lower secondary school and a period of study abroad for students of the upper secondary school (through an initial grant of scholarships for the first year);
- the internationalization of the Italian school system by investing in incoming mobility;
- language and methodological courses for teachers.

A digital system will be developed to monitor language skills at the national level with the support of respective certifier entities.

Implementation. The program is managed by the Ministry of Education, in cooperation with the Department for Equal Opportunities of the Presidency of the Council of Ministers for the reinforcement of STEM and digital skills and the orientation activities for girls and young women. In the implementation phase, schools will also be involved. As for the strengthening of multilanguage skills, the National agency INDIRE will be involved.

Costs. The estimated cost related to the RRF is equal to € 1.1 billion. For short and long-term mobility of male and female students, the principle of complementarity provided for in the Erasmus+ Regulation will be applied. In fact, RRF funds will be used to finance mobility projects not financed by ordinary Erasmus+ resources, thus widening the overall number of beneficiaries.

Target group. Schools, students and teachers.

Timeline. The intervention will start in 2022 and will last until 2025.

Investment 3.2) School 4.0: innovative schools, wiring, new classrooms and workshops

Challenges. The current learning environments, with their rigid structures inspired by a traditional view of the process of teaching and learning, a perspective no more sustainable if confronted with the present scenarios of daily life and work, represent one of the major threat to the effectiveness of the process of teaching and learning.

The line of intervention “School 4.0” aims at transforming the spaces inside the schools, formerly dedicated to frontal teaching processes, into innovative, adaptive, flexible and connected learning environments, fully integrated with state of the art digital technologies; at the same time, another key objective of the intervention lies in the enhancement of the potentialities of school labs focusing on a job-oriented learning process. It is through such action that supporting a large-scale transformation into digital of the country’s human capital is possible and sustainable, coherently with the key action provided for by the Digital Education Action Plan 2021-2027 recently launched by the European Commission. In fact, transforming the schools’ physical spaces, labs and classes merging them with learning virtual spaces represents a key factor in fostering the changes of teaching and learning methodologies, as well as to the development of digital competences crucial to the access to the new jobs in the fields of digitalization and artificial intelligence.

The investment aims to modernise and innovate all Italian school environments and classrooms, equipping them with technologies useful for digital teaching. Since the investment in training for the digital transition of school staff concerns all teaching and administrative staff in schools, it is clear that everyone will benefit from the digital technologies that will be implemented in schools and made available.

In this regard, it should be noted that both national and European resources have been allocated in the last year, but they have been used for the upgrading of individual students' digital devices. So far, more than 432,000 digital devices have been purchased by schools and loaned to poor students.

With the budgetary resources already allocated in 2020, all the individual digital devices (notebooks, tablets, routers, etc.) needed by poorer students to connect to integrated digital education from home have been secured, which in the post-pandemic phase will be used as BYOD (Bring your own device) teaching tools both in the classroom and remotely. RRF resources will be invested in the creation of workshops for training on advanced digital technologies in all secondary schools (artificial intelligence, robotics and augmented reality workshops) and in improving classroom learning environments with innovative digital teaching equipment in primary and secondary schools. React-Eu funds are invested in the internal wiring of schools, digitisation of school secretariats and equipping all classrooms with interactive digital whiteboards. ERDF funds from the 2021-2027 OP for the school sector will be particularly targeted at strengthening schools' vocational laboratories in the fields of mechanics, mechatronics, construction, chemistry and biotechnology, transport, fashion, graphics, electronics, sustainable energy, green economy and other professions, and innovative environments for nurseries.

Goals. Purpose of the present line of intervention is the digital transition of the Italian school system through four important measures:

- a) the transformation of approximately 100.000 traditional classrooms into innovative learning environments by arranging classrooms' settings and providing learners and students with adequate digital tools and devices;
- b) the creation of laboratories focusing on development of the professions of the future in secondary schools, in strict connection with innovative local industries, universities and research centres;
- c) the digitalisation of school administrations with the updating of their equipment for a full digital transition of the schools' administrative and organizational procedures;
- d) completing and enhancing the internal Lan and Wlan cabling of approximately 40.000 school buildings, securing within each single school complex with a network, together with its digital devices, which would enable the whole school compound to work in full efficiency with its classes and labs, also granting the safety of data circulation.

The internal Lan and Wlan cabling is an extra measure referring to the sub Mission 2 Component 3 actions, since the resources for the measure are dedicated to the upgrading and the enhancement of the network infrastructure, as well as to prepare the different school classrooms and spaces in order to ensure the full implementation of blended teaching and learning practices.

The resources aimed at schools' structural redevelopment, viewed also in terms of energy efficiency, or for the construction of new school buildings, have an impact mainly on external structures and its infrastructures, including those digital, essential to bring ultrabroadband to the door of each school, especially for the new buildings.

Mission 4 intervenes, therefore, in a punctual and capillary fashion on the learning environments after the redevelopment of the infrastructure has had its course of action, to allow an optimal use of all the digital equipment of schools and their training offer.

Implementation. The Ministry of education is responsible for the present line of intervention.

Costs. This investment is financed by € 2.1 billion of RRF, plus € 900 million from React-Eu.

Target group. Schools and training institutions.

Timeline. The implementation of the action shall cover the course of six years, from 2020, until the end of 2025. Starting with the projects in their course of action in 2020, with a potentiation of the availability of digital personal devices, the action provides for - in 2021 and 2022 - the start of the administrative procedures (public calls, award decrees, first grant payment, public procurement for supply of digital devices); in 2023 and 2024 the laboratories and learning environments and the digital administration shall be completed, a phase characterised by a regular support to the school and a check on the progress of the procedures. All the administrative procedures in terms of financial reporting of the expenses, with a final phase of monitoring of the interventions, will terminate by the end of 2025.

Investment 3.3) School building security and structural rehabilitation plan

Challenges. The Italian school building stock is made of 40.238 units, currently used for teaching and learning activities, all surveyed within the Ministry of Education School Building Registry. Its data are defined in agreement with the different regional administrations.

From the analysis of the overall data the following scenario emerges:

- 52,98% of existing school buildings was built before 1975;
- 42,9% of the buildings is located in high seismic hazard zones; only 23% of school buildings located in such areas were planned or later adapted according to anti-seismic regulations;
- 56.8% of school buildings was either built or renovated applying measures aimed at reducing energy consumption;
- 25,4% of school buildings is equipped with photovoltaic solar panels.

Since 2014, Italy has been investing consistent resources to grant its public schools adequate safety and to its students the right to study in safe and equitable learning environments. Despite such remarkable investments, which have contributed to a significant improvement of statistical data regarding school safety, it is crucial to grant investment policies a steady continuity: the quality of teaching and learning is highly dependent on the redevelopment and innovation of learning environments. Too many buildings still present with deficiencies in terms of safety and energy efficiency (only 38% of school buildings are equipped with double glazing windows; only 12 % present with insulation in their external walls and slightly over 25% are equipped with photovoltaic solar panels).

As a consequence of the above considerations, the investment shall focus predominantly on the renovation, safety and energy redevelopment of these buildings, together with the digitization of learning environments. The programme makes sure the competences of local authorities and of the different levels of government are respected. The involvement of the regional governments in the definition of the planning steps and in the identification of the criteria for the admission to funding in fact preserves the planning role of the regional governments, and also that of the local authorities, which own the public buildings. The Municipal authorities usually own the buildings for the schools of the first cycle of education (ISCED 1-2). Provinces and Metropolitan City Areas governments own schools of the second cycle of education (ISCED 3-4). Those local public bodies and authorities will be the final beneficiaries of the resources and will be entrusted with the task of implementing school building interventions. The programme also aims to rebalance differences in the country in terms of development: a particular attention shall be given to the most disadvantaged areas with the aim of contrasting and eliminating economic and social imbalances.

Goals. The main objective is to implement a scheme for seismic adaptation and general safety and energy efficiency of part of school buildings; the scheme also includes the digitization of school learning environments, with the aim of favouring a progressive reduction of energy consumption and thus benefit the process of climate recovery. The main objectives in detail are:

- reduction of emissions;

- improvement of buildings' energy classes;
- increase in buildings' seismic safety and digitization of learning environments.

In addition, the programme will promote processes of participatory and collaborative planning, thus involving all the parties (teachers, students and school communities) who live on their premises the daily issues connected to school building: the development of the territory and the valorisation of the services to the community, as well as the benefits in terms of occupation growth on the enterprises of the field.

The ratio of surface renovation of the school buildings which is to be realized amounts at about 2,400,000 square meters, equal to roughly 2,100 interventions on existing assets. The redevelopment plan proposed here represents part of the reform focusing on the renovation of the existing school building stock, a reform launched in 2012 with the establishment, as part of the Ministry of Education budget, of the Single Fund for School Buildings (*Fondo Unico per l'Edilizia Scolastica*), which continued its course of action with the creation of the three-year programmes based on annual plans implemented by the regional governments, following the requests submitted by those local authorities owning the properties. To date, investments for over 8 billion euros were encouraged, thus implying the implementation of more than 14,000 interventions throughout the national territory. It must be remarked that the Italian state's interventions in the field of school buildings are not limited to the above-mentioned actions; further resources are already provided for in the Ministry's budget for the years 2027 to 2033: this represents an important follow up to the multiannual scheme for the redevelopment of the existing school building stock. The proposed redevelopment plan aims to renovate an overall area of 2,400,000.00 sqm. of school buildings. Such renovations will result in a reduction in primary energy consumption (T.O.E.) of at least 20%, from 40,029.06 toe per year to 32,023.25 toe per year with a saving of 8,005.81 toe per year, with an increase of the total volume renovated to approximately 8.5 million cubic meters by 2026.

Energy savings achieved shall reduce annual greenhouse gas emissions by 21,349.22 tCO₂.

Implementation: The Ministry of Education is responsible for the present renovation scheme. The Ministry shall in detail manage the process of authorization, monitoring and factual and financial reporting of all interventions. The implementation of the interventions and works shall take place under the responsibility of the local authorities (Municipalities and Provinces) owning of the public school buildings. Those local bodies are also responsible for the implementation of a monitoring system for the data to be loaded on the information system. The Ministry of Education, in view of the ongoing investments, has already defined an information monitoring and reporting system (GPU) based on the model already in use for the factual and financial reporting of the European Funds, both ESF and ERDF. In addition to the interventions' physical progress, procedure and financial data, the information system also records the pre and *post operam* project indicators and is linked to the National Registry of School Buildings and other national databases (e.g. BDU, BDAP). On site controls checks and controls are also provided as concerns the reporting and monitoring of work: this process shall

be implemented by expert technicians part of the School Building Task Force of the Agency for Territorial Cohesion.

The implementation procedures provided for are:

- Ministerial act defining the interventions for building new schools eligible for funding;
- The award of tenders regarding works on interventions eligible for funding formalized by local authorities with a public act;
- Start-up phase of works and of construction sites with report compiled by the local authority beneficiary of the grant;
- Conclusion of the works with final report compiled by the local authority beneficiary of the grant;
- Phase of testing and regular carrying out of the interventions with certification by the local authority beneficiary of the grant.

The intervention does not entail State aid as it falls within the provision of point 14 of the Guiding template: Energy efficiency in buildings. The buildings subject to safety and energy efficiency interventions are public property of local authorities, which are therefore the beneficiaries of the resources. Moreover, the aforementioned buildings are only used to ensure the right to education for female and male students and, therefore, are not used for economic activities.

Costs. The estimated cost of the Recovery and Resilience Fund amounts to € 3.9 billion. Moreover, a contribution of € 50 Million is provided for by the REACT EU programme resources, a quota also aimed at granting the structural renovation of buildings.

Target group: Public School buildings. The renovation of private-owned building is not part of the present scheme.

Timeline: Implementation is expected to start in 2021 and will run throughout 2026.

Investment 3.4) Teaching and advanced university skills

Challenges. Emerging economic and social challenges for the future (primarily, environmental sustainability and digital diffusion) require adequate training courses consistent with the skills demanded by society and the labour market. In this perspective, Italian universities, and the education system, in general, must be the driving force for the widespread adaptation of knowledge and organizational models to the continuous advancement of technology and the culture of change and integration.

In line with the initiatives to contribute to the creation of a European education area and with the Action Plan for digital education (2021-2027), measures aimed at rethinking education and training for the digital age, encouraging international openness and cooperation, and at promoting the dissemination of the culture of innovation, assume particular importance.

Goals. According to the highlighted challenges above, the project aims to qualify and innovate university programs (comprising PhD programs), through three strategic objectives: a) digitization; b) “culture of innovation”; c) internationalization, acting:

- on the promotion of open-access digital training courses of excellence, synergistic between universities and businesses.
- on strengthening the role of Superior University Schools for high-merit and cutting-edge training in a new dimension of strong collaboration with universities and the business world, contributing to the dissemination of the culture of innovation.
- on the strengthening of scientific cooperation, on the circulation and attraction of talents, stably structuring training programs abroad, defining programs to support strategic partnerships to innovate the international dimension of the Italian university system, funding initiatives for the internationalization of research.

In details the following sub-measures will be implemented:

T1) up to 500 PhD students will be enrolled in 3 years (100+200+200) in programmes devoted to digital and environmental transitions. The programmes will be established through joint national initiatives with the involvement of universities, research bodies and companies. Companies will establish agreements with universities to host the training activities of the students but will not receive direct funding. A fraction of the budget will be allocated to initiatives to be carried out in Southern Italy.

T2a) Teaching learning centres. 3 TLC will be established across the country to improve the teaching competencies (including digital competencies) of the faculty members in the universities and the teachers in the schools, in all disciplines, comprising traditionally less digital-oriented disciplines. Each TLC will carry out courses and tutoring activities to all the personnel involved in the teaching activities (professors, tutors, phd students) to support them in implementing new learning schemes as well as adopting digital technologies in the teaching activities. The TLCs will be established as university networks, who will detail the action programmes that will be assessed by the MUR. One TLC will be established in each of the macro-regional areas of Italy (Northern, Central, Southern Italy and Islands).

T2b) Digital education hubs. 3 DEH will be established across the country to improve the capability of the higher-education system to offer digital education to university students and workers. Each DEH will be a university consortium located in the macro-regional areas (Northern, Central, Southern Italy and Islands) and will support the universities in offering digital education activities to university students, professionals, and companies. The DEH will improve the availability of MOOCs and will support the universities to release education programmes to professionals, companies as well as the public sectors, to improve the up-skilling and re-skilling initiatives. Further, the DEH will facilitate the activation of inter-university teaching programs through reciprocal teaching exchange. Cooperation programmes involving universities located in different areas of the country will be promoted. The private companies and workers will contribute in the first period supporting the DEH in the definition

of the education needs but they will not receive financial aid and will access the DEH resources for their upskilling and reskilling needs.

T3) The Superior University Schools will strengthen their role in the higher-education systems with two activities: i) offering courses and training activities to PhD students enrolled in other institutions, to share their experiences and competencies with the whole higher education system, ii) strengthening their role in the school-to-university transition, by means of orientation activities for the school students. The detailed action programmes will be developed by the Superior University Schools and assessed by the MUR. The Superior University Schools will play the role of higher education hubs for the PhD and the post-graduate specialization courses, in all areas of the country. They will carry out high-quality courses and training activities in the area of economics, engineering, science, technology, and others. These activities will improve the mobility of these students and enlarge their learning opportunities.

T4) Transnational education initiatives. 10 TNE initiatives will be implemented in cooperation with the Ministry of Foreign Affairs and International Cooperation, to establish permanent higher-education centres abroad and improve the internationalization of the Italian universities. The TNE initiatives will be based outside of Europe, with a focus on developing areas in the world and will be implemented by consortiums of universities. The detailed action programmes will be developed by these consortiums and assessed by the MUR.

T5) internationalization activities of artistic and musical higher education institutions (AFAM). The initiative will fund 5 internationalization projects of the AFAM institutions, to promote their role abroad in preserving and promoting Italian culture. The detailed action programmes will be developed by networks of the AFAM institutions and assessed by the MUR.

All the sub-measures here presented and designed are new and innovative, going into the direction of supporting the overall objectives of digital and green transition, by also creating opportunities to leverage on complementarities and expertise coming from different institutions at the national and international level.

Implementation. The program is managed by the Ministry of University and Research, which will constitute a control room for effective management of the sub-measures, enhancing the synergies.

The implementation of TLC and DEH will be synergic with the high-tech partnerships for digital skills (fiche distributed by the EC to the Member States in January 2021), which aims at strengthening the offer of specialised education and training in digital domains, including via cross-border cooperation. Investment 3.4 will allow this project to have a national component, linked at a multi-country level with a light governance structure, modelled on the implementation of the Digital Europe Programme, i.e. through consortia that will be identified through a dedicated tender. This collaboration will allow higher education institutions to pool resources and expertise in digital areas, strengthen capacity, increase the number of people trained in highly demanded fields, with the aim of training, retaining and attracting the best digital experts.

The investment is connected with other investments under the component 2 of Mission 4. In particular, it will be synergistic with investment 1.3 “Partnership extended to universities, research centres, companies and funding of basic research project” which will allow better cooperation of companies with universities enabling the identification of relevant skills to be provided to professionals through digital courses offering. Moreover, the sub-measure T1 aimed to the creation of 500 PhD students with advanced green and digital skills will go through a similar path of the PhD students that will be funded thanks to investment 3.3 “Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote hiring of researchers by companies”, under component 2, and the “Green and digital PhDs and research projects”, funded through REACT-EU, but with a differentiated final career path.

This investment will have a significant impact on the development of Southern regions. In particular, under T1, 30% of PhD students are expected to be enrolled by Southern Italy and Islands’ universities, with the objective to increase the current distribution of PhD students across the country (see Table below); under T2a, one of the three TLC will be established in Southern regions; under T2b, one of the three DEH will be established in Southern regions; under T5, at least one of the initiatives will be promoted by Southern Italy AFAM institutions.

Table. *Distribution of PhD student across Italian macro-regions (Source: data provided by the Ministry of University and Research, MIUR open data 2020).*

| Territory | Number of PhD students | Territorial distribution |
|--------------|------------------------|--------------------------|
| North-west | 7,260 | 24.41% |
| North-east | 6,780 | 22.80% |
| Centre | 9,067 | 30.49% |
| South | 4,728 | 15.90% |
| Islands | 1,906 | 6.41% |
| Italy | 29,741 | 100.00% |

As for of State-aid compliance no issues related to State aid under Investment 3.4 are identified. Both State and Non-State universities will benefit from the implementation of these measures. Please consider that Non-State universities are assimilated by the Italian current regulatory framework as non-profit entities.

As for the implementation of measures sub T1, companies involved will establish agreements with universities to host the training activities of the students but will not receive direct funding.

Costs. The estimated cost related to the RRF is equal to 0.50 billion euro.

Target group. Students, university.

Timeline. The intervention will start in 2021 and will last until 2026.

| |
|---|
| Area of intervention 4: Reform and extension of Ph.D. programmes |
|---|

The measures presented below aim to reform programmes for Ph.D. researchers, opening paths involving subjects from outside the university setting and financing the expansion of grants for Ph.D. researchers and Ph.D. holders whose work relates to upgrading the public administration and in the field of cultural heritage.

Reform 4.1) Ph.D. Programmes Reform

Challenges. An economy and a society built on knowledge imply an enhancement of the role of the Ph.D. programme so that it can provide the right training to undertake a university career as well as high-level activities in firms. Ph.D. graduates need to contaminate the ruling class of the country, in the private sector as well as in the offer of public services, stepping out of the boundaries of the academic world, activating channels of knowledge and expertise spill-over which are usually built in the university environment, contributing to the spreading of the organisational conditions that allow for the inclusion of high-level skills even in those areas of the production world which currently show significant delays in their capabilities to innovate and compete.

Goals. The reform provides the update for the regulation on Ph.D. programmes, simplifying the procedures for the involvement of companies, research centres, national and international, in Ph.D. programmes, to strengthen those measures dedicated to the building of programmes that are not aimed at the academic career. The proposed reform has clear integrations with all the investments related to Ph.D. programmes in the target domain “Education and research”.

The reform is a key ingredient to the fully effective implementation of investment 4.1 by helping a better interaction between the competencies developed in the PhD programmes and those required by firms and institutions, both currently and in the perspectives driven by the rapid technical progress, intense international integration and new challenges and opportunities connected with the digital and environmental transitions. Achieving the strategic target of progressively closing the competence mismatch between supply and demand of advanced competencies, mostly by raising the currently low demand as a driver to enhanced investment in higher education, is going to significantly and positively affect productivity and the potential growth of the Italian economy.

Implementation. The program is managed by the Ministry of University and Research.

Costs. The estimated cost related to the RRF is equal to 0.

Target group. University.

Timeline. The reform will be presented with the Ministerial Decree, which is currently under preparation, and ultimate in 2021, becoming effective for the cycles that will start in 2022.

Investment 4.1) Extension in number and career opportunities of PhDs (Research-oriented, Public Administration and Cultural Heritage)

Challenges. The number of PhD awarded in Italy is currently among the lowest across the main partners of the country, following a steady reduction in recent years (by around 40% in ten years between 2008 and 2019). According to the harmonized statistics by Eurostat, the flow of students completing every year a PhD programme is currently made of just 1 person out of 1000 mature young (in the age range of 25 to 34 years), against the EU average of 1.5 (2.1 in Germany). In addition to the limited number of degrees awarded, ISTAT finds that almost 20% of people completing every year a PhD programme moves abroad, while those remaining in Italy suffer from a deep skill mismatch between the high level of advanced competencies they offer and the low level of professional content they find on the job. Accordingly, the growth potential of the Italian economy, as well as the quality of social and cultural relationship in the country, could strongly benefit from actions aiming at enlarging the supply of PhD programmes both to feed basic research and to support the propensity to innovate by the business sector as well as by institutions.

Moreover, the quality of public services in Italy is disappointing according to the standards of main partners. According to the Worldwide Governance Indicators regularly released by the World Bank, the effectiveness of actions by the Public Administration ranks well below the readings of countries such as France, Germany, Spain, The Netherlands (they belong or are very close to the first decile against a median position of Italy across more than 100 countries considered). The main weakness in the action of the Public Administration in Italy traces mostly back to the overwhelming share of graduate workers in the field of humanities and law studies against a much more limited share in STEM, with the result that the scores of Italian general government employees recorded in the OECD programme PIAAC are by large lower compared with those recorded in France, Germany and Spain.

Goals. Two actions are provided under this investment, in order to increase the stock of human capital dedicated to research-oriented activities (Action A), to Public Administration and Cultural Heritage (Action B).

A) The project aims at increasing by 3600 units the PhDs by activating three cycles since 2021, each of them endowed with 1200 grants. The target is set to largely make up the loss in PhD fellowships suffered in recent years, as an intermediate step towards a further extension in their number in a longer horizon.

This investment will be coordinated with investment, on innovative green and digital PhDs. This project, however, is aimed at research-oriented PhDs with an academic orientation, and implementation will be therefore carried out leveraging on adequate governance and procedures for a research-based valorization.

The measure is meant to be temporary, in order to support the stock of PhDs potentially employable in Italy in a three-year period, leaving a further extension in the number of traditional PhDs as an open option for the future.

As far as the decision on the investment of future resources is concerned, the following evidence will be considered: impact on the total number of PhDs graduate per 1,000 inhabitants.

B) In line with the CSRs addressed to Italy by the European Commission in order to raise the country's productivity and potential growth, the measure aims at enhancing the efficiency of the Italian general government by developing the advanced competencies especially needed in the organization and management of the provision of public services that match the high timeliness and quality demanded by the productive system, workers and the society as a whole.

Key areas regard the enhancement of the propensity to innovate the organization models and the operative practices, the ability to select the right priorities in the provision of public services in a framework of rapid technical progress and the new challenges in the digital and environmental transitions, the development of a responsible and autonomous spirit of initiative and the related reward system, the regular assessment of the results achieved and the reasons of possible failures.

The measure activates three cycles of new PhD programmes specifically designed for the needs of the general government under close cooperation with the Public Administration Ministry and by interacting with the SNA, the high school currently dealing with the skill development of the fresh public employees. Each PhD cycle is endowed with 1,000 grants, thus implying a total of new 3,000 PhDs. The target may prove undersized compared with the extent of the efficiency gap of the Italian public administration, but it needs to be tested against the actual attractiveness of the public job for the new PhDs. In this respect, introducing reforms aimed at allowing special career paths in the public employees prove crucial. A regulatory framework, to be implemented in collaboration with the Ministry of Public Administration, will provide for the features of PhD programs to be supported by this investment. PhD in Public Administration may be offered in different classes of PhDs identified by the CUN, Consiglio Universitario Nazionale (e.g. 12 - Law, 13 - Economics and Statistics, 14 - Political and Social Sciences), as far as aimed at further qualify the candidate to contribute to the development of enhanced government systems.

The measure also starts PhD programmes especially devoted to the efficient management and development of the huge Cultural Heritage of the country, also by seizing the new opportunities opened by the digital transition. Some fellowships may be reserved for the competencies required by AFAM, also in cooperation with Universities. The design of this class of PhD, which are organized in three cycles endowed with 600 grants, is to be defined under close cooperation with the Culture Ministry, (e.g in the class 10 – Antiquities, Philology, Literary Studies, Art History, and 11 - History, Philosophy, Pedagogy and Psychology, as identified by the CUN, Consiglio Universitario Nazionale).

Implementation. The implementation is managed by the Ministry of University and Research, supported by an active engagement of host Universities. An active engagement of the Public Administration Ministry (PhD for the PA) and the Culture Ministry (PhD for the Culture Heritage) is needed, in order to provide future career opportunities for PhDs in these areas.

This initiative will be implemented within a common framework with other initiatives aimed at creating PhD positions, namely: a) sub-measure T1, in Investment 3.4, aimed at creating 500 PhD student position for advanced green and digital skills; b) “Green and digital PhDs and research projects” funded through REACT-EU, but with a differentiated final career path.

In all PhD initiative, attention will be dedicated to the criteria for selection, aimed at granting, on the one hand, the best selection process in terms of quality of students; on the other, criteria will take into account the specific needs of these PhD groups, and will be detailed together with the interested stakeholders.

The initiative will have a significant impact on the development of Southern regions. In particular, Table 3, above here, reports the territorial distribution of the PhD students enrolled in PhD programs in the Academic Year 2019/2020. Given the current distribution of PhD students, Southern Regions and the Islands, currently the territories with the lowest share of PhD students, will benefit from the largest increase in PhDs. At least 30% of resources are expected to be distributed in the South and to the Islands.

As for State-aid compliance no issues related to State aid under Investment 4.1 are identified. This measure will benefit State universities through the ordinary funding formula (Fondo di Finanziamento Ordinario).

Costs. The estimated cost related to the RRF is equal to 0.432 billion euro. A similar investment to Action A is supported with REACT EU funding. RRF actions are “additional” to the baseline, such that they provide an “extension” in the number of supported students, and PhDs with respect to those already in place and documented, both in quantity and in terms of career paths. Thus, there will have no overlap with the measures in the REACT programme as they will enforce each other by adding additional PhD positions and extending the number of PhD courses and cycles.

Target group. Graduate students.

Timeline. The intervention will start in 2021 and will last until 2025.

4. **Open strategic autonomy and security issues**

[Omissis]

5. **Cross-border and multi-country projects**

[Omissis]

6. **Green dimension of the component**

Please see the enclosed file (Tagging in Table 2).

7. **Digital dimension of the component**

Please see the enclosed file (Tagging in Table 2).

8. **Do no significant harm**

Please see the enclosed files.

9. **Milestones, targets and timeline**

See Table 1

10. **Financing and costs**

See Table 2

Cost estimation methodology

Investment 1.1) Plan for nurseries and preschools and early childhood education and care services

On the basis of the safety works on school buildings, as monitored over the last four years, the costs/sqm for the implementation of projects similar to those covered by this funding can be set as follows:

- from a minimum of 1,300 Euro/sqm to a maximum of 2,400 Euro/sqm for new buildings;
- from a minimum of 500 Euro/sqm to a maximum of 1,300 Euro/sqm for seismic and energy efficiency renovations;
- from a minimum of 200 Euro/sqm to a maximum of 600 Euro/sqm for the issuing of a certificate of occupancy.

In the case of nurseries and preschools, the standard cost of a new building per pupil was found to vary from 16,000.00 Euros to € 19,000.00 Euros for nurseries and from € 11,000.00 to € 16,000.00 for preschools.

For other types of intervention, the standard cost per student can vary from 2,000.00 Euros to 13,000.00 Euros for a radical renovation.

The differences are due to the fact that the square meters per pupil vary. According to the technical regulations in force for preschools, the surface per pupil must be 7 square meters, while for nurseries the surface per pupil is 10 square meters; also, the required spaces for preschools are different than those for nurseries.

Therefore, considering an average nursery with 100 children, an area of at least 1,000 square meters would be needed, with an average cost, based on the above parameters, of 1,850.00 Euros/square meter for a new building. Therefore, the operation will cost 1,850,000.00 Euros, with a standard cost of 18,500.00 Euros per pupil.

In the case of a primary school with 100 pupils, on the other hand, an area of 700 square meters would be needed. Therefore, with the same average cost of 1,850 Euros/square meter, this will lead to a total cost of 1,295,000.00 Euros in case for a new building, with a standard cost of 12,950.00 Euros per pupil.

For safety works, assuming a school with 100 pupils and applying an average cost of 600 Euros/sqm, we would have an average cost of 600,000.00 Euros for a nursery and 350,000.00 Euros for a preschool, with a standard cost per pupil of € 6,000.00 for nurseries and € 3,500.00 for preschools.

The total resources available are 3.7 billion Euros, including the resources which are already available under the legislation in force (about 100 millions of which are allocated to supplementary services for children). 66 percent of the said resources will be allocated, for territorial rebalancing, to disadvantaged areas of the country where 0-6 educational services are lacking.

Applying the above parameters, and given the lack of services for the 0-6 age group, the creation of approximately 228,934.81 new slots is deemed possible, thus reaching the European target of 33% for the 0-3 range.

From a quantitative point of view, the current resources are estimated to allow the financing of 1,800 safety renovations and new buildings, based on an average cost of € 1,572,500.00 per intervention.

It should be clarified that the creation of new slots in the educational offer for the 0-6 age group will be achieved not only by building new facilities, but also by safety renovations and regenerations. The latter will allow for the recovery of additional usable spaces, also through their functional redistribution.

As for to the management of education facilities for the 0-6 age group, the financial sustainability of the increase in the number of available slots will be ensured by the supplementary funding for the 0-6 age group by the Ministry of Education and by the Solidarity Fund of the Ministry of the Interior. The average cost per child is, based on data on the current management by municipalities, 6,500 Euros net of any family contributions for the 0-3 age

group and 6,000 Euros for the 3-6 age group. Therefore, the management costs for the additional slots that will be created can be partly sustained by the national contributions already established by the legislation in force for the same purposes, net of the expenditure incurred by the local authorities.

With respect to the recurrent expenditures generated by the investment which are supported by the municipalities, we point out that, on the current side, the resources provided for by current legislation amount for the years from 2022 to 2026 to 900 million euros. From 2026 onwards, resources are provided under national legislation.

In addition, it can be observed that the average cost per child, with the respect to 0-3 age group, amount to € 6.500, net of family contributions, or equal to euro € 6.000 for 3-6 age group.

As recalled in the description of the component, we again point out that the creation of around 228,000 places for nurseries and kindergartens is an objective to be achieved through the new infrastructure. In this regard, we need on current side an amount of resources approximately equal to 1.4 billion euros per year. The sustainability of this intervention is already ensured financially by two measures:

1. The first is represented by the resources provided by the Municipal Solidarity Fund. The intervention of the last budget law reinforces the resources provided for equalization with respect to local authorities for the function of nursery. This is made through an intervention with a financial provision from 2022 to 2026 to 900 million euros, of which 300 million euros each year covered by national legislation.

With the regulations in force foresee a precise monitoring activity regarding the correct use of these resources and penalties in the event of violation of the constraints placed by the regulations on the resources themselves. The resources are bound for municipalities to increase in percentage terms and within the limits of the Essential Levels of Performance (LEP), the amount of places available in nurseries, in proportion to the population aged between 0 and 2 years, in municipalities in which the aforementioned ratio is lower than the LEP.

2. The second is provided from the integrated 0-6 months system. These resources are routinely provided in the financing system managed by the Ministry of Education.

In addition, we highlight that that the municipalities can potentially manage the cost of the service either on their own or under contract. Consequently, this becomes more affordable. However, in this case, in order to avoid the cost being passed on entirely to the poorest families, the Government is already working on one of the interventions provided by the reform of family policies (Family Act) approved by the Council of Ministers no. 51 of 11 June 2020, namely the Single and Universal Allowance for each dependent child (Child Benefit).

This is an economic contribution that the State will offer to families for each dependent child, with proof of means and therefore calibrated with respect to the Indicator of the Equivalent Economic Situation (Isee) of the family nucleus. Therefore, the benefit will increase as the Isee indicator decreases, offering a more substantial contribution to families in greater economic difficulty, also with the aim of combating child poverty. For further information, see the

description in the section 'Investment 1.3) Plan for nursery schools and early childhood education and care services (code ACC)'

Investment 1.2) Plan for the extension of full time

Part of the resources of the plan for the extension of full-time education will be allocated to the construction of facilities that can favour the extension of school time, especially in the South and where the problems related to school drop-outs are higher. In this regard, it is also important to highlight the effects of denatality. In fact, in terms of School staff, the effects of denatality make it possible to reallocate a significant part of the teachers to full-time classes, especially in the South where there are greater territorial disparities. Infrastructural intervention is therefore essential to create the necessary conditions for reducing territorial disparities. In fact, over the next fifteen years, there will be a 15% reduction in the resident population of school age, which corresponds to more than 1.1 million fewer students in state schools. As a consequence, there will be a reduction in the need for school personnel, with 64,000 fewer teachers over the fifteen years, and in the expenditure for the operation of schools, which will be reduced by 29 million over the same period.

The calculations and estimates of the reduction in the number of students were carried out on the assumption that the students in state schools would be reduced by the same percentage as the population.

| | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Nursery</i> | - | -3.3% | -5.4% | -6.4% | -5.9% | -5.5% | -5.1% | -4.7% |
| <i>Primary</i> | - | -2.5% | -5.0% | -7.7% | -10.3% | -12.4% | -14.0% | -15.0% |
| <i>Secondary I</i> | - | -0.5% | -2.1% | -3.9% | -6.4% | -8.6% | -11.2% | -13.2% |
| <i>Secondary II</i> | - | 0.5% | 0.9% | 1.0% | 0.9% | 0.1% | -1.0% | -3.0% |
| | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 |
| <i>Nursery</i> | -4.3% | -3.8% | -3.5% | -3.1% | -2.9% | -2.7% | -2.5% | -2.2% |
| <i>Primary</i> | -15.4% | -15.0% | -14.6% | -14.3% | -13.9% | -13.6% | -13.2% | -13.0% |
| <i>Secondary I</i> | -15.7% | -18.4% | -20.2% | -20.9% | -20.5% | -20.2% | -19.9% | -19.6% |
| <i>Secondary II</i> | -5.0% | -7.4% | -9.6% | -12.2% | -14.6% | -16.6% | -18.0% | -19.0% |

What is, on the whole, an ever-decreasing trend in the school-age population, will have 'peaks' of reduction in the number of students in different years depending on the level of education.

Nursery will lose students until 2024, and then recover in the following years, though without ever rising again to the 2021 level. Primary school will lose students until 2029, but then recover slightly. Secondary school will lose an increasing number of students until 2032, after which there will be a slight recovery. The reduction in the number of students in secondary school will continue at least until 2036.

The trend is also uneven geographically. In particular, the South will see a reduction in pupils almost double that of the North, in relation to the population:

| | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>North-West</i> | - | -1.0% | -2.0% | -3.1% | -4.1% | -5.3% | -6.4% | -7.5% |
| <i>North-East</i> | - | -1.0% | -2.0% | -3.2% | -4.3% | -5.5% | -6.8% | -8.0% |
| <i>Center</i> | - | -1.1% | -2.2% | -3.3% | -4.5% | -5.8% | -7.1% | -8.4% |
| <i>South</i> | - | -1.7% | -3.5% | -5.3% | -6.8% | -8.4% | -9.9% | -11.4% |
| <i>Islands</i> | - | -1.5% | -3.0% | -4.5% | -5.8% | -7.1% | -8.3% | -9.6% |
| | | | | | | | | |
| <i>North-West</i> | -8.6% | -9.4% | -10.1% | -10.6% | -10.9% | -11.0% | -10.9% | -10.6% |
| <i>North-East</i> | -9.2% | -10.3% | -11.1% | -11.9% | -12.3% | -12.6% | -12.6% | -12.5% |
| <i>Center</i> | -9.6% | -10.7% | -11.6% | -12.4% | -12.9% | -13.2% | -13.2% | -13.1% |
| <i>South</i> | -12.8% | -14.2% | -15.5% | -16.6% | -17.6% | -18.5% | -19.3% | -20.1% |
| <i>Islands</i> | -10.9% | -12.1% | -13.3% | -14.3% | -15.2% | -16.1% | -16.9% | -17.6% |

In absolute terms, this is more than 1,100,000 fewer students, distributed more than proportionally over the secondary school:

| | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| <i>Nursery</i> | - | -28,916 | -47,317 | -56,079 | -51,698 | -48,193 | -44,688 | -41,183 |
| <i>Primary</i> | - | -59,601 | -119,201 | -183,570 | -245,555 | -295,619 | -333,764 | -357,604 |
| <i>Secondary I</i> | - | -8,061 | -33,854 | -62,873 | -103,175 | -138,642 | -180,557 | -212,799 |
| <i>Secondary II</i> | - | 13,176 | 23,716 | 26,351 | 23,716 | 2,635 | -26,351 | -79,053 |
| | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 |
| <i>Nursery</i> | -37,678 | -33,297 | -30,668 | -27,163 | -25,411 | -23,658 | -21,906 | -19,277 |
| <i>Primary</i> | -367,140 | -357,604 | -348,068 | -340,916 | -331,380 | -324,228 | -314,691 | -309,923 |
| <i>Secondary I</i> | -253,102 | -296,629 | -325,647 | -336,932 | -330,484 | -325,647 | -320,811 | -315,975 |
| <i>Secondary II</i> | -131,756 | -194,998 | -252,971 | -321,483 | -384,726 | -437,428 | -474,320 | -500,671 |

The effect on school staff. In compliance with the criteria established by the current legislation and on the basis of a micro-simulation at the level of plexus, address and year of course, the above-mentioned expected reductions in the number of students will lead to the following lower need for teaching staff of the curriculum:

| | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Nursery</i> | - | 1,280 | 2,422 | 2,962 | 2,753 | 2,576 | 2,462 | 2,353 |
| <i>Primary</i> | - | 1,143 | 3,778 | 6,300 | 8,806 | 11,261 | 12,825 | 13,655 |
| <i>Secondary I</i> | - | -67 | 1,462 | 3,078 | 5,704 | 7,853 | 10,411 | 12,439 |
| <i>Secondary II</i> | - | -1,680 | -2,438 | -2,477 | -2,405 | -1,114 | 878 | 4,530 |
| | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 |
| <i>Nursery</i> | 2,280 | 2,100 | 1,953 | 1,794 | 1,873 | 1,677 | 1,640 | 1,558 |
| <i>Primary</i> | 14,273 | 13,580 | 13,606 | 13,012 | 12,849 | 12,271 | 12,181 | 11,889 |
| <i>Secondary I</i> | 14,875 | 17,584 | 19,278 | 20,010 | 19,608 | 19,489 | 19,165 | 18,699 |
| <i>Secondary II</i> | 8,020 | 11,828 | 15,850 | 19,961 | 24,234 | 27,892 | 30,249 | 31,807 |

In fifteen years, in 2036, almost 64,000 fewer teachers will be needed than today. These are teachers of the curriculum who, with the same number of teachers, will be shifted to full time. Considering that from 2024 it will be the first-cycle school that will record the greatest reduction

in the number of students and, consequently, also in the number of teachers, it is conceivable that the sustainability of the intervention on the full-time extension plan could be sustained in part with the resources requested in the framework of this same plan for projects to expand the educational offer, with the teachers that may be freed as a result of the birth rate, and also through the contributions of local authorities and the contributions of families with respect to access to the facilities.

Finally, given that the data currently available in the National Register of School Buildings show that it is the schools in the so-called 'less developed' regions that have the greatest shortage of facilities, as well as being those with the highest rate of child mortality, it is clear that the measure in question will tend to have the greatest impact in the southern regions.

Percentage of main establishments with no buildings equipped with canteens

| AREA | I cycle | II cycle | Total |
|-----------------------|--------------|--------------|--------------|
| Less developed | 39,1% | 31,4% | 70,4% |
| More developed | 18,7% | 26,5% | 45,2% |
| In transition | 21,1% | 32,2% | 53,3% |
| Total | 26,2% | 28,6% | 54,8% |

Assuming that the total resources available are allocated to facilities on the basis of the data from the school building register, which show a greater need for facilities in schools in the first cycle of education, it would be possible to intervene on approximately 1,340 public buildings (including new buildings and the adaptation of existing buildings), allocating a higher percentage of the resources to the so-called "less developed" regions precisely in order to reduce the territorial disparities.

Investment 1.3) School Sports Infrastructure Enhancement Plan

A review of new construction and safety works in school buildings used as canteens and gymnasiums, monitored in recent years, showed the following costs/sq.m. incurred for the implementation of projects similar to those covered by this funding:

- GYMS
- average cost for new construction: 2,000.00 euro/sq.m;
- average cost for making safe: 600.00 euro/sq.m;
- average size: 576 sqm.

In the case of gyms and/or sports facilities, the average cost ranges from €1,152,000.00 for new construction to €345,000.00 for renovation and safety works, with an average cost per intervention estimated at €748,500.00. A further 50,000 euros should be added for sports equipment.

With the available resources, about 400 gyms or sports facilities could be renovated.

Investment 1.4) Extraordinary intervention aimed at the reduction of territorial gaps in I and II cycles of secondary school and at tackling school drop-out

The intervention costs are estimated in the following way:

- Video production, platform for education management and online tutoring: € 10.000.000,00
- Online tutor: € 2.000.000,00
- 4 additional teachers (on average) for about 2.000 schools (average cost € 30.000,00); total annual € 240.000.000
- 2 experts for 2.000 schools (average cost € 10.000,00); total annual = € 40.000.000,00

In addition to these costs, there are others which are specific to the intervention (B), estimated in the following way:

- Equipment and Licences for 6.000 schools € 4.000 per school = € 24.000
- For the target a) additional teaching hours € 35 (gross cost State € 46,45) + Additional hours functional to teaching € 17,5 (State gross cost € 23,23) x 120.000 students x 20h of intervention (tutoring learning recovery and learning recovery) of which:

$$120.000 \text{ students} \times 3\text{h} \times 23,23, = € 8.362.800$$

$$120.000 \text{ students} \times 20\text{h} \times 46,45 = € 94.758.000$$

$$\text{Total for one year} = € 103.120.800$$

$$\text{Total for two years} = € 206.241.600$$

- For the target b) additional hours functional to teaching € 17,5 (State gross cost € 23,23).
350.000 youngsters x 10h of intervention (tutoring) x € 23,23 = € 81.305.000
- 3.500 post-diploma courses for a maximum of 100 youngsters each (x 200 cad.) €70.000.000
- Training intervention for the teaching personnel € 1.000.000
- Total for 2 years € 141.000.000

- Intervention for accessibility (Sign Language, Braille, subtitling): € 500.000
- Operating expenses Territorial Support Centers (Centri Territoriali di Supporto, CTS), with a number of 3 seconded operators (i.e. 6 in partial exemption)
35.000 x 3 = 105.000 euro per year for each CTS

Investment 1.5) Development of the tertiary vocational training system (ITS)

Details to be provided

Investment 1.6) Active orientation in school-university transition

The action implies the introduction of a decree on agreements and course contents (Milestone), definition of 6,920 school-university agreements (Target 3), involving the delivery of some 50,000 courses per year (Target 2) involving some 1.000,000 students and their teachers (Target 1).

Each course will require 10-hour teaching, with an estimated cost of 100 euro per hour, to each of the 50,000 groups. Therefore, starting from 2022 till 2026, 50 million euro will be allocated yearly evaluated as 50,000 courses*10 hours*100 euro per hour.

Reform 1.7) Reform of student housing regulation and investment in student housing

In the first two years of the RRF, resources will be dedicated to the funding of the current law 338/2000, by favouring renovation and restructuring over green-field investments, so to guarantee a faster provision of places. We estimated that almost one-third of the resources (300 million) will be devoted to the funding of the current scheme, and particularly favouring renovation and restructuring over green-field investments (creating some 7500 new accommodations over the two years). Starting from the second half of 2023, following the promulgation of the Decree described in the Reform 1.7, the new funding scheme will be adopted, allowing the provision of a higher number of accommodations. With a target of 58000 new accommodations, considering a cost of 4000 euro per accommodation per year sustained with the resources provided by RRF, the investment in the new student housing scheme will require some 700 million. The value of the investments is based on an estimation of the average annual cost per assigned sleeping accommodation being equal to 4,000 euro (which corresponds to $\frac{3}{4}$ of the average annual fee, of 5,500 euro per year, the amount needed by a private investor to cover at least the fixed costs according to preliminary consultations). Under the target of adding some 58,000 accommodations available to students, the measure costs 700 million over three years. The actual increase in accommodation supply may vary depending on the conditions of the local rent markets as well as on the combination of fiscal allowances that the developers can benefit under the concurrent programme for energy efficiency and building renovation.

Investment 1.7) Scholarships for university access

The estimated cost, which is on top of the current scholarship expenditure (unit grant of 3300 euro awarded to 12 per cent of regular students), takes into account the progressive increase in the number of regular students planned as a result of the whole component M4C1 and it is made of two blocks: a) around 320 mln cover the cost of augmenting the grant awarded according to the current legislation (up to 4000 euro for a share of 12 per cent of students); b) around 180 mln cover the cost of a unity grant of 4000 euro awarded to the additional share of 8% of regular students required to get closer to the target of 20% of students endowed with a grant.

Reform 2.2) Tertiary advanced school and compulsory training for school managers, teachers, administrative and technical staff

The estimated costs of the tertiary advanced school have been calculated by considering 100 university professors at the average cost of € 50.000, giving a total of € 5.000.000 per year for a period of 5 years.

The operating expenses including the offices, fees, utilities, personnel costs of Boards, President, General Manager, and 15 administrative employees amount to € 1.000.000 per year.

The first year, besides the € 6.000.000 of the necessary costs for the operations, also € 4.000.000 for the furniture startup, € 2.000.000 for the preparation of educational workshops, and € 2.500.000 for other technological equipment (distance learning platforms, computer equipment, etc.)

Investment 2.1) Integrated digital teaching and training on the digital transformation for school staff

The estimated total cost is equal to € 420 mln, of which 10 mln are intended for the training of school managers, 290 mln for the training of teachers, 127 mln for the training of the administrative and technical staff (Personale Tecnico, Amministrativo e Ausiliario, ATA), and 3 mln for the platform of the professional portfolio and open badges management. These costs, which will allow for the training of 1.000.000 people among school managers, teachers, and administrative staff, are going to be managed by the Central Administration through calls for tenders at public evidence and School-Centers (Scuole Polo) for training, as well as individual scholastic institutions.

Investment 3.1) New skills and new languages

The estimated total costs include the following costs concerning the STEM domain:

- € 40.000.000 for teachers training
- activation costs of experimental projects on 61.100 classes (€ 91.650.000)
- costs related to the update of teaching equipment on 309.000 classes (€ 463.500.000), to the implementation of the digital platform supporting the training of teachers and teaching activities (€ 8.850.000)
- costs related to promotion and orientation actions intended for upper secondary schools which are oriented towards the STEM domain as well as towards university education and tertiary vocational training, for both students and families (96.000.000).

The reasonings that underlie the costs are mainly linked to:

the number of classes of lower and upper-secondary school (about 370 thousand)

the cost of training 100.000 teachers considering 60 hours annually on average (integrated online and in presence) of groups of 30 teachers, with the involvement of universities (€ 8.000 for 5.000 courses = € 40.000.000)

the budget assigned for the implementation of the compulsory STEM and information technology projects in each class (about € 1.800 per project on average)

the budget assigned for the implementation of projects related to the orientation for the development of STEM and information technology skills in each school, with particular emphasis on the equal opportunity guarantee (about 11.000 euro for each of the 8.000 schools on average).

In terms of the multilingualism scope, it should be noted that the National Institute for Documentation, Innovation and Educational Research (INDIRE) has allocated on the Erasmus 2014-2020 programme a total of 38mln euro for the training in service of the school staff and about 90mln euro for partnership projects between schools with students mobility. This has allowed satisfying about 40% of the request. In addition to the budget necessary to cover 100% of the request, also the budget for curricular and extra-curricular courses for students needs to be considered.

Investment 3.2) School 4.0: innovative schools, wiring, new classrooms and workshops

Details to be provided

Investment 3.3) School building security and structural rehabilitation plan.

Costs defined on the basis of national three-year programs and annual plans drawn up by the Regions. three-year programming of the Ministry of Education.

Following an examination carried out on the safety interventions on school buildings monitored over the last four years, the costs per sqm. sustained for the implementation of projects similar to those covered by the present measures resulted as follows:

- For interventions implying the construction of new buildings, min. € 1500 per sqm, max. € 2400 per sqm.;
- For interventions solely concerning adaptations to anti-seismic regulations, min. € 800 per sqm., max. € 1200 per sqm.;
- For interventions concerning adaptations to anti-seismic regulations and increase of energy efficiency, min. € 1300 per sqm., max. € 1700 per sqm.;
- For interventions solely concerning adaptations to increase energy efficiency, min. € 600 per sqm., max. € 1000 per sqm.;
- For solutions focusing on energy saving, min. € 200 per sqm., max. € 500 per sqm.

To date, in the context of the interventions so far authorized, the types of intervention admitted

to financing can be traced back, for most of the interventions, to the first three types indicated: new construction (with building replacement), interventions of seismic adaptation only or seismic adaptation with energy redevelopment for which on the basis of the above data the average cost obtainable is equal to about € 1,600/sqm.

Therefore, with a total investment of € 3.9 billion, we believe we shall be able to renovate a total surface of school buildings of approximately 2,4 sqm.

Resources are allocated in accordance with the regional governments and the local administrations, taking into account for the definition of the allotment ratio indicators such as the school population, the number of existing school buildings, the overcrowding of the single buildings and the seismic risk level of each territory.

Therefore, applying the allocation criteria already shared and used in the national planning of school buildings, the following regional allocation is provided for, with a possible number of interventions and an area to be restored in terms of square meters, as follows:

| Region | (a) Total resources | (b) sqm to be restored (unit renovation cost 1600 euros/sqm) | (c) Average surface of buildings (source: National Register for School Building) | Nr. of Interventions Estimation of the number of interventions calculated as in (b/c) |
|------------------------------|-------------------------|--|---|---|
| Abruzzo | 108.151.827,86 | 67.594,89 | 994 | 68 |
| Basilicata | 65.720.903,12 | 41.075,56 | 785 | 52 |
| Calabria | 185.752.486,35 | 116.095,30 | 559 | 207 |
| Campania | 422.781.380,54 | 264.238,36 | 884 | 298 |
| Emilia-Romagna | 256.837.041,93 | 160.523,15 | 1028 | 156 |
| Friuli-Venezia Giulia | 88.280.800,50 | 55.175,50 | 1200 | 45 |
| Lazio | 349.269.158,95 | 218.293,22 | 1078 | 202 |
| Liguria | 87.252.178,55 | 54.532,61 | 1209 | 45 |
| Lombardia | 503.543.735,28 | 314.714,83 | 2000 | 157 |
| Marche | 116.457.458,05 | 72.785,91 | 969 | 75 |
| Molise | 36.792.093,21 | 22.995,06 | 704 | 32 |
| Piemonte | 254.083.550,33 | 158.802,22 | 1165 | 136 |
| Puglia | 280.413.361,98 | 175.258,35 | 1448 | 121 |
| Sardegna | 141.429.054,44 | 88.393,16 | 940 | 94 |
| Sicilia | 373.506.560,89 | 233.441,60 | 1011 | 230 |
| Toscana | 240.844.860,28 | 150.528,04 | 2000 | 75 |
| Umbria | 77.616.653,19 | 48.510,41 | 765 | 63 |
| Valle D'Aosta | 10.294.824,97 | 6.434,27 | 800 | 8 |
| Veneto | 300.972.069,59 | 188.107,54 | 800 | 94 |
| Totale | 3.900.000.000,00 | 2.437.500,00 | 20339 | 2158 |

As concerns energy saving actions, the following calculation method was applied:

| | |
|---|-------------------------|
| Estimate amount of the Recovery Fund [€] | 3.900.000.000,00 |
| Cost of the agreement for the intervention [€/cm] | 457,1428571 |
| Cost of the agreement for the intervention [€/sqm] | 1600 |
| Redeveloped surface [sqm] | 2.437.500,00 |
| Redeveloped volume [cm] | 8.531.250,00 |

| Estimate primary energy savings | School buildings estimated average consumption (source Enea) [kWh/cm * year] | Redeveloped volume [million cm] | Total consumption kWh/year | TOE/year ante operam | TCO2/year ante operam | % saving (data average source Enea) | Saving achieved [kWh] | Energy vector | Carbon emission conversion factors [KgCO2/kwh] | Saving achieved in TCO2/year | Saving achieved in TOE/year |
|---------------------------------|--|---------------------------------|----------------------------|----------------------|-----------------------|-------------------------------------|-----------------------|---------------|--|------------------------------|-----------------------------|
| Electricity consumption_ante | 4,571428571 | 8,53125 | 39.000.000,00 | 3.353,22 | 16.894,80 | 20% | 7.800.000,00 | Electricity | 0,4332 | 3.378,96 | 670,64 |
| Thermal consumption_ante | 50 | 8,53125 | 426.562.500,00 | 36.675,84 | 83.179,69 | 20% | 85.312.500,00 | Methane | 0,195 | 16.635,94 | 7.335,17 |
| Total | | | 465.562.500,00 | 40.029,06 | 100.074,49 | 20% | 93.112.500,00 | | | 20.014,90 | 8.005,81 |

Investment 3.4) Teaching and advanced university skills

These are the details on the estimated cost of each sub-initiative.

T1) 60,000€*500 PhD scholarships: 30mln€.

T2a) 10mln€ (5mln€ of investment + 1mln€/year*5year) *3 initiatives: 30M€ (based on data from previous experiences).

T2b) 50M€ (25M€ of investment + 5M€/year*5year)*3 initiatives: 150M€ (based on data from previous experiences).

T3) 20M€/year*5year: 100M€ (based on data from previous experiences). The budget will be assigned based on education projects that will be designed by the superior university schools. A ratio of the budget will be allocated to initiatives to be carried out in Southern Italy.

T4) 16M€ (6M€ of investment + 2M€/year*5years) *10 initiatives: 160M€ (based on data from previous experiences). In details, the budget will be used to establish the headquarters in the main locations of the TNE initiatives and to manage the personnel costs and the mobility costs for teachers and students, up to 2026. A fraction of the budget will be allocated to initiatives to be carried out in Southern Italy.

T5) 6M€ * 5 initiatives: 30M€ (based on data from previous experiences).

Investment 4.1) Extension in number and career opportunities of PhDs (Research-oriented, Public Administration and Cultural Heritage)

As far as research-oriented PhDs are concerned, by taking into account that a standard cost of a full PhD cycle is estimated at 60,000 euro per student (the standard amount suggested by universities to finance a PhD bursary including the increase for period abroad and the research

budget), extending the number of PhDs by 1,200 units in each cycle implies a cost of 72mln. For the whole three cycles to be activated in the years up to 2026 (3,600 PhD grants) the cost is 216mln euro. This is considered the minimum target to be achieved.

As far as PhDs for public administration and cultural heritage are concerned, By taking into account that a standard cost of a full PhD cycle is estimated at 60,000 euro per student (the standard amount suggested by universities to finance a PhD bursary including the increase for period abroad and the research budget), extending the number of PhDs by 1,200 units in each cycle implies a cost of 72mln. For the whole three cycles to be activated in the years up to 2026 (3,600 PhD grants) the cost is 216mln euro. This is considered the minimum target to be achieved.

Annex II: M/Ts of Component 1 of Mission 4

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | <p style="text-align: center;">CID</p> <p style="text-align: center;">[For data defined in the targets, please update/verify based on most recent information on costing]</p> | <p style="text-align: center;">Further specifications included in the OA</p> <p style="text-align: center;">[Please complete with relevant elements and definitions as appropriate]</p> | <p style="text-align: center;">Monitoring included in the OA</p> <p style="text-align: center;">[Please complete with relevant information as appropriate]</p> | <p style="text-align: center;">Additional comment</p> |
|----------|--|--|---|--|
| Q4-2021 | <p>REFORM 1.5, 1.6, 4.1</p> <p>MILESTONE: Adoption of the reforms of the tertiary education system to improve educational outcomes (primary legislation). The reforms should include at least the following key elements:</p> <ul style="list-style-type: none"> i) Measures to reform the university degree groups introducing a higher degree of flexibility to meet the evolving skills demand of the labour market; ii) Measure to reform the enabling university degrees, to simplify and speed up the access to professions; iii) Measures to reform the PHD programmes to better involve firms and boost applied research; <p>Measures to reform the tertiary vocational training system, including strengthening links and possible transitions with professional degrees (<i>lauree professionalizzanti</i>), to meet the labour market demand for technical competences</p> | | Publication of the regulations on the OJ. | |
| Q4-2021 | <p>REFORM (INCLUDING INVESTMENT) 1.7</p> <p>MILESTONE: Adopt legislation to:</p> <ul style="list-style-type: none"> (i) Amend the current rules for student housing (law 338/2000 and the Legislative Decree 68/2012) in order to: (1). Fostering the restructuring and | | Publication of the regulations on the Gazzetta Ufficiale. | |

| | | | | |
|----------------|--|--|---|--|
| | renovation of structures instead of new green-field buildings (with a greater percentage of cofounding, currently at 50%), with the highest environmental standard to be ensured by the presented projects; (2). Simplifying, also thanks to the digitalization, the presentation and selection of projects and, therefore, the implementation timing; (3). Provision by law for a derogation from the criteria set out in Law no. 338/2000 with regard to the percentage of co-financing that can be granted. | | | |
| Q4-2021 | INVESTMENT 1.7 MILESTONE: Adoption of ministerial decrees for reform on scholarships to enhance access to tertiary education for talented students in socio-economic difficulties also by increasing the amount of the scholarships and the number of beneficiaries until 2024. | | | |
| Q2-2022 | REFORM 2.1, MILESTONE: Adopt [primary and/or secondary legislation] to reform the teaching profession with a view to attracting, recruiting and motivating quality teachers, in particular through: i) the revision of the recruitment system (already in the plan); ii) higher qualification in teaching to access the profession in secondary school; iii) limit to excessive teacher mobility (in the interest of teaching continuity); iv) career progression clearly linked to the performance evaluation and continuous professional development (CPD). | | Publication of the regulations on the OJ. | |
| Q4-2022 | REFORM (INCLUDING INVESTMENT) 1.7 MILESTONE: Adoption of the reform of student housing legislation. The reform will include: (1) Opening up the participation to the funding also to private investors, also allowing public- | | | |

| | | | | |
|----------------|---|---|------------------------------|--|
| | <p>private partnerships where the university will make use of the available funding to support the financial equilibrium in real-estate investments for student housing; (2). Ensuring the long-term sustainability of the private investments by guaranteeing a change in the taxation scheme from the one applied for hotel services to the one applied for social housing, by constraining the use of the new accommodations for student housing purposes during the Academic Year, but allowing the use of the structures when they are not needed for student hospitality. This will, in turn, help the supply of a new range of accommodation at affordable rents; (3). Conditioning the funding as well as additional tax allowances (e.g. the equal treatment with the social housing) on the use of the new accommodations for student housing during the overall investment horizon and the compliance with the agreed upper bound in the rents charged to students even beyond the expiration of special funding schemes that may contribute to trigger the investment by the private operators; (4). Redefining the standards for student accommodations, by redetermining the law requirements regarding the common space per student available in the buildings in exchange for better equipped (single) rooms.</p> | | | |
| Q2-2022 | <p>INVESTMENT 3.2 MILESTONE: Adoption of the School 4.0 Plan to foster the digital transition of the Italian school system through four important measures: a) transformation of approximately 100.000 traditional classrooms into innovative learning environments by arranging classrooms' settings and providing learners and students with adequate digital tools and devices; b) creation of laboratories focusing on development of the professions of the future in secondary schools, in strict connection with innovative local industries, universities and research centres; c) digitalisation of school administrations with the updating of their equipment for a full digital transition</p> | <p>At least 40% of the beneficiary schools will be located in the South of Italy.</p> | <p>Ministry of Education</p> | <p>As regards the key elements of the Plan, it should be specified, as already highlighted above, that the RRF resources will finance the "School 4.0" plan in relation to action a) relating to the transformation of 100,000 classrooms into innovative learning environments and action b) relating to the creation of laboratories for the new digital professions in all high schools. Measure c) relating to the administrative and organizational digitization of schools and measure d) relating to the internal wiring of school buildings of the "School 4.0" plan will be financed with funds from the React-EU.</p> <p>Action a) intends to transform school spaces intended for traditional classrooms into innovative,</p> |

| | | | | |
|---------|--|--|---|---|
| | <p>of the schools' administrative and organizational procedures;</p> <p>d) completing and enhancing the internal Lan and Wlan cabling of approximately 40.000 school buildings, securing within each single school complex with a network, together with its digital devices, which would enable the whole school compound to work in full efficiency with its classes and labs, also granting the safety of data circulation.</p> | | | <p>adaptive and flexible learning environments, connected, integrated with digital, physical and virtual technologies together. The investment will make it possible to bring all the most innovative teaching technologies (coding and robotics devices, virtual reality devices, advanced digital devices for inclusive education, etc. to at least 100,000 classrooms of primary and secondary schools used for lessons).). Action b) promotes the establishment of at least one laboratory for digital professions in each high school, a laboratory strictly interconnected with companies and innovative start-ups for the creation of new jobs in the sector of new digital professions (artificial intelligence , robotics, big data, cybersecurity, blue and green economy, etc.).</p> <p>In relation to the call for the identification of beneficiaries, it should be noted that this is a public notice for the presentation of applications for the use of the resources of the RRF, addressed to all state educational institutions. It is expected to be able to approve the list and the amounts for the implementing schools of the "School 4.0" plan by Q1-2022.</p> |
| Q4-2022 | <p>REFORM 1.3, 1.2, 1.1, 1.4</p> <p>MILESTONE: Adoption of the reforms of the primary and secondary education system to improve educational outcomes (primary legislation). It should include mandatory deadlines for the issuance of the secondary legislation, guidelines and all necessary regulatory provisions to ensure a smooth implementation</p> <p>The reforms should include at least the following key elements:</p> <p>i) Measures to reform the organisation of the education system to adapt to demographic</p> | | Publication of the regulations on the OJ. | |

| | | | | |
|-----------------------|---|--|--|--|
| | <p>developments (number of schools, pupils/teachers ratio, etc)</p> <p>ii) Measures to reform the orientation system to minimise the drop-out rate in tertiary education;</p> <p>iii) Measures to strengthen secondary vocational education (Istituti tecnico-professionali) including adoption of the new curriculum and their orientation towards the innovation output of the National Industry 4.0;</p> <p>iv) Measures for the training of school managers, teachers and administrative/technical staff and the creation of the Tertiary Advanced School for training to improve teaching quality;</p> <p>Measures for the for the integration, , of activities, methodologies and contents aimed at developing and strengthening STEM, digital and innovation skills, in all cycles of education, from kindergarten to upper secondary school, with the aim to boost enrolment in tertiary STEM curricula, particularly for women;</p> <p>REFORM 2.2 MILESTONE: Entry into force of legislation aimed at building a quality training system for school staff in line with continuous professional and career development through the establishment of a qualified body in charge of school staff training guidelines in line with European standards, the selection and coordination of training initiatives, possibly linking them to career progressions, as provided for in the recruitment reform.</p> | | <p>Publication of the regulations on the OJ.</p> | |
| <p>Q4-2024</p> | <p>INVESTMENT 1.4</p> <p>MILESTONE: Implementation of mentoring activities for at least 470.000 young people at risk of early school leaving and for at least 350.000 young people who have already dropped out.</p> | | <p>Ministry of education: Provision of details on type of intervention; gender and territorial distribution - Introduction of a Platform for mentoring and training activities available online.</p> | |

| | | | | |
|----------------|---|--|---|--|
| | | | <p>Launch of post-diploma courses (job-oriented qualifications)</p> <ul style="list-style-type: none"> - The measure covers the whole of the national territory, with particular attention to areas at risk (reported through the platform) and mostly in the South of Italy -Measures to overcome territorial gaps and inequalities in equal access to education and success in training will be addressed, in particular, to schools and school situations where there is also a greater presence of drop-out rates linked to this social condition | |
| Q2-2023 | <p>INVESTMENT 1.1</p> <p>MILESTONE: Adoption of the Plan for nurseries and preschools and early childhood education and care services, with full disclosure of the number of works awarded by type and territorial distribution. All nursery, preschool, early childhood education and care services work contracts awarded.</p> | | | |
| Q4-2023 | <p>REFORM 2.1, 1.3, 1.2, 1.1, 1.4, 1.5, 1.6</p> <p>MILESTONE: Entry into force of secondary legislation (where needed), including all necessary regulations for the effective implementation and application of all the measures concerning the reforms of primary, secondary and tertiary education.</p> | <p>This should include:</p> <p>Reform 1.5 will be implemented through D.M. to be adopted in 2021, for the application of updated teaching regulations starting from the academic year 22/23.</p> | <p>Publication of the regulations on the OJ.</p> | <p>The only measure for which the secondary legislation is envisaged is the investment</p> |
| Q4-2024 | <p>INVESTMENT 4.1</p> <p>TARGET: At least [1.200] additional fellowships per year in PhD Programs per year (over 3 years); at least 1000 additional fellowships per year (over 3 years)for PhD Programs for public administration; at least [200] new fellowships per year (over 3 years) in PhD Programs for Cultural Heritage)</p> | <p>The standards for the 3 new PHD programmes:</p> <p>a) PhD will adhere to the requirements foreseen by Reform 4.1;</p> <p>b) PhD for the Public Administration will adhere to the</p> | <p>Ministry of University and Research Department of public administration Ministry of Culture</p> | <p>Consistent with the costing of the measure (the Italian version will be amended).</p> |

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| | | regulatory framework to be implemented in collaboration with the Ministry of Public Administration. PhD in Public Administration may be offered in different classes of PhDs identified by the CUN, Consiglio Universitario Nazionale (e.g. 12 - Law, 13 - Economics and Statistics, 14 - Political and Social Sciences), as far as aimed at further qualify the candidate to contribute to the development of enhanced government systems. c) PhDs for Cultural Heritage will adhere to a framework to be defined under close cooperation with the Culture Ministry, (e.g in the class 10 – Antiquities, Philology, Literary Studies, Art History, and 11 - History, Philosophy, Pedagogy and Psychology, as identified by the CUN, Consiglio Universitario Nazionale). | | |
| Q4-2024 | REFORM 2.1, INVESTMENT 2.1 TARGET: At least 70.000 teachers recruited with the reformed recruitment system; 650 000 school managers, teachers and administrative staff trained. | | Ex-post monitoring of the Ministry of Education | It should be noted that the two targets refer to two distinct measures. The first relating to the Reform 2.1. (at least 70,000 teachers recruited), the second relating to the investment measure 2.1. Integrated digital education and training of school staff in the digital transition (650,000 teachers, managers and administrative staff, overall trained in the 5 years of implementation of the measure). |
| Q4-2024 | INVESTMENT 1.7 TARGET: At least 336.000 students benefiting from a scholarships paid [baseline 256.000] | Target at Q4 2023: at least [296.000] students benefiting from a scholarship paid [baseline 256.000] | | |
| Q2-2025 | INVESTMENT 1.4, 3.1, TARGET: At least [820.000] students or young people who attended mentoring activities or post-diploma orientation courses; At least [8000] schools that have | | Ministry of Education /Universities/schools/Equal Opportunities Department | |

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| | activated STEM guidance projects in 2024/25; At least [1000] annual language and methodological courses for teachers | | Provision of Details on type of intervention; gender and territorial distribution provided | |
| Q4-2025 | INVESTMENT 1.1 TARGET: At least [228.000] new places activated for educational and early childhood care services (from 0 to 6 years old) | | Ministry of Public Education, Municipalities, Family department Provision of details on type of intervention and territorial distribution | |
| Q4-2025 | INVESTMENT 3.2 TARGET: At least [100.000] classes transformed in innovative learning environments thanks to School 4.0 | The action aims to transform school spaces used for traditional classrooms into innovative, adaptive and flexible learning environments, connected, integrated with digital technologies, physical and virtual together. The investment will bring all the most innovative teaching technologies (coding and robotics devices, virtual reality devices, advanced digital devices for inclusive teaching, etc.) into at least 100,000 classrooms in primary and secondary schools used for teaching. | | |
| Q2-2026 | INVESTMENT 1.6, 3.4 TARGET: At least 500 new PhDs awarded for three years in programmes devoted to digital and environmental transitions (3.4); At least 1.000.000 students attended school-university transition courses (1.6) | | Ministry of university and research The territorial impact of the investment will depend on the territorial distribution of secondary school students, which are currently (year 2020) distributed as follows: 21% North, 20% Centre, 39% South and Islands. | |

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| Q2-2026 | REFORM (INCLUDING INVESTMENT) 1.7 TARGET: At least 60.000 additional sleeping accommodation units created and assigned following the existing and the new legislative scheme | Target at Q4 2022: At least 7.500 additional sleeping accommodation units created and assigned through law 338/2000, as revised by the end of 2021 [baseline 40.000] | | |
| Q2-2026 | INVESTMENT 1.4 TARGET: Reduce the gap in drop-out rate in year 2024 in secondary education to reach the EU average 2019 (10,2%). | | | |
| Q2-2026 | INVESTMENT 3.3 TARGET: Sqm of school buildings restored (baseline 0 – goal 2.400.000) | | Ministry of Public Education, Municipalities, Provinces | |

| Mission | Component Id | Name | |
|----------------|---------------------|-------------|---|
| M4 | C1 | Inv1.1 | Plan for nurseries and preschools and early childhood education and care services |
| M4 | C1 | Inv1.2 | Full-time extension plan - canteens |
| M4 | C1 | Inv1.3 | Strengthening infrastructure for school sports - Sports and schools plan |
| M4 | C1 | Inv1.4 | Extraordinary intervention aimed at the reduction of territorial gaps in lower and upper secondary schools. Fight against school dropou |
| M4 | C1 | Inv1.5 | Development of the tertiary vocational training system (ITS) |
| M4 | C1 | Inv1.6 | Active orientation in school-university transition |
| M4 | C1 | Inv1.7 | Scholarships and exemption from school tuition fees |
| M4 | C1 | Ref1.1 | Reform of Technical and Professional Institutes |
| M4 | C1 | Ref1.2 | Reform of the tertiary vocational training system (ITS) |
| M4 | C1 | Ref1.3 | Reorganisation of the School system |
| M4 | C1 | Ref1.4 | Reform of the "Orientation" system |
| M4 | C1 | Ref1.5 | University degree groups |
| M4 | C1 | Ref1.6 | Enabling university degrees |
| M4 | C1 | Ref1.7 | Student housing |
| M4 | C1 | Ref2.1 | Teachers recruitment |
| M4 | C1 | Ref2.2 | Tertiary advanced school (University-Indire) and compulsory training for school managers, teachers, administrative and technical staff |
| M4 | C1 | Inv2.1 | Integrated digital teaching and training on digital transition for school staff |
| M4 | C1 | Inv3.1 | New skills and new languages |
| M4 | C1 | Inv3.2 | School 4.0: innovative schools, wiring, new classrooms and workshops |
| M4 | C1 | Inv3.3 | Structural rehabilitation of school buildings |
| M4 | C1 | Inv3.4 | Teaching and advanced university skills |
| M4 | C1 | Inv4.1 | Extension in number and career opportunities of PhDs (Research-oriented, Public Administration and Cultural Heritage) |
| M4 | C1 | Ref4.1 | Ph.D. Programmes |

DNSH assessment

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| Ministry | A |
| Cluster | 1 |
| Related Ministry Director or Investment | Investment 1.3 Strengthening Infrastructure for school sports - Sports and school life |
| Responsible for reporting and Implementation | Ministry of Education |
| Date | 14/05/2021 |

| Strategic objective | Does the measure have an or an insignificant foreseeable impact on this objective or contribute to support this objective? | The 1 | Justification (A, B, C or D has been selected) | Comments | The 2 | |
|--|---|-------|--|---|--------|---|
| | | | | | Yes/No | Substantive justification (if No) has been selected |
| 1 Climate change mitigation | The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 1 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |
| 2 Climate change adaptation | The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 2 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |
| 3 The sustainable use and protection of water and marine resources | The measure has no or an insignificant foreseeable impact on an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 3 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |
| 4 The circular economy, including waste prevention and recycling | The measure has no or an insignificant foreseeable impact on an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 4 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |
| 5 Pollution prevention and control to air, water or land | The measure has no or an insignificant foreseeable impact on an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 5 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |
| 6 The protection and restoration of biodiversity and ecosystems | The measure has no or an insignificant foreseeable impact on an environmental objective pursuant to the Taxonomy Regulation, and in such a consistent manner with those for the relevant objective. | 6 | The measure is eligible for a minimum score (either within or the score of the 100) regarding with a climate change coefficient of at least 40%. | The building measures and the energy efficiency measures are reducing energy consumption and significantly increasing energy efficiency in particular, the energy saving achieved and reduce annual greenhouse gas emissions and have significant annual emissions reductions resulting from energy efficiency. | Yes | |

DNSH assessment

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| Mission | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Investment 1.5: Development of the tertiary vocational training system (IT3) |
| Responsibility for monitoring and implementation | Ministry of Education |
| Date | July 2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to an increased vulnerability to the current climate and/or expected future climate, including water and groundwater, or (ii) to the good environmental status of water, including surface water and groundwater, or (iii) to the good environmental status of marine waters? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to a significant decrease of the availability of natural resources in the direct or indirect use of any natural resource at any stage of its life cycle which are not recovered by adequate measures, or (ii) cause significant and long term harm to the environment in respect to the circular economy part 27 of the measure expected to lead to a significant increase in the emissions of pollutants, or (iii) the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or (iv) detrimental to the conservation status of habitats and species, including those of cross-border? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to a significant decrease of the availability of natural resources in the direct or indirect use of any natural resource at any stage of its life cycle which are not recovered by adequate measures, or (ii) cause significant and long term harm to the environment in respect to the circular economy part 27 of the measure expected to lead to a significant increase in the emissions of pollutants, or (iii) the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or (iv) detrimental to the conservation status of habitats and species, including those of cross-border? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to a significant decrease of the availability of natural resources in the direct or indirect use of any natural resource at any stage of its life cycle which are not recovered by adequate measures, or (ii) cause significant and long term harm to the environment in respect to the circular economy part 27 of the measure expected to lead to a significant increase in the emissions of pollutants, or (iii) the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or (iv) detrimental to the conservation status of habitats and species, including those of cross-border? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no investment related impact or activities, the provision of an educational nature. The measure does not foresee the construction of new facilities, but the implementation of the EU governance system | Is the measure expected to lead to a significant decrease of the availability of natural resources in the direct or indirect use of any natural resource at any stage of its life cycle which are not recovered by adequate measures, or (ii) cause significant and long term harm to the environment in respect to the circular economy part 27 of the measure expected to lead to a significant increase in the emissions of pollutants, or (iii) the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or (iv) detrimental to the conservation status of habitats and species, including those of cross-border? | | |

DNSH assessment

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| Mission 4 | 4 |
| Cluster 1 | 1 |
| Related Measure (Reform or Investment) | Reform 1.4: Reform of Technical and Professional Institutions |
| Responsibility for research and implementation | Ministry of Education |
| Date | 10/04/2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (if A, B or C has been selected) | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | Is the measure expected to lead to an increase in the consumption of natural resources in the direct or indirect use of any natural resource at any stage of its life cycle which are not replaced by identical resources, or (ii) cause significant and long-term harm to the environment in respect to the circular economy (art. 17) of the measure expected to lead to a significant increase in the emissions of pollutants at a level of | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | Is the measure expected to be detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of conservation interest? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such is considered compatible with DNSH for the relevant objective | The measure has no investment-related impact or, at most, the contribution of an educational nature. The estimated cost related to the ERF is equal to 0. The return does not envisage any investment, since the | | | |

DNSH assessment

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| Mission | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Reform 1.2: Reform of the tertiary vocational training system (TVET) |
| Responsibility for monitoring and implementation | Ministry of Education |
| Date | July 2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention is aimed at reforming TVET system. | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to the conservation status of habitats and species, including those of cross-border? | | |

DNSh assessment

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| Measure | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Reform 1.3 - Reorganization of the school system |
| Responsibility for research and implementation | Ministry of Education |
| Date | July/August |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|--|---|--------|---|
| | Does the measure have an or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to lead to an increased adverse impact of the current climate and the expected climate change, which may result in a significant impact on the environment? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to be detrimental to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to result in a significant decrease in the generation of waste or in a significant increase in the reuse of waste, with the exception of the management of non-combustible liquid waste, or of high-level radioactive waste, in the direct or indirect use of any natural resource at any stage of its life cycle which are not recovered by adequate treatment, or (b) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Directive) or to the consumption of resources in the waste or construction sector, or (c) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Directive)? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to lead to a significant increase in the emissions of pollutants (i.e. air, water or land)? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and its considered complexity with regard to the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature | Is the measure expected to be (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Mission | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Reform 1.4: Reform of the "Orientation" system |
| Responsibility for monitoring and implementation | Ministry of Education |
| Date | 26/04/2021 |

| | Step 1 | | Step 2 | | |
|---|--|---|-----------|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objective | | | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |
| 2. Climate change adaptation | B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |
| 5. Pollution prevention and control (air, water and land) | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and/or such a considered condition with DNSH for the relevant objective | The measure has no environmental impact or emissions, the intervention is of an educational nature. The intervention area to introduce is: (i) the measure expected to lead to significant GHG emissions? | | | |

DNSH assessment

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|---|---|
| Measure | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Investment 2.1. Interacted digital teaching and training on digital transition for school staff |
| Responsibility for reporting and implementation | Ministry of Education |
| Date | 14/03/2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (if A, B or C has been selected) | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure provides for teaching and training activities for teachers and school staff for the development digital and pedagogical competences in "blended learning" modality. The organization of such activities is fully compliant with the DNSH criteria. The measure consists in teaching and training activities. This does not imply any relevant impact in terms of sustainable use of water and air. | Is the measure expected to result in increased pollution levels of the common environment? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure consists in teaching and training activities. This does not imply any relevant impact in terms of sustainable use of water and air. | Is the measure expected to result in increased pollution levels of the common environment and the common environment related to its nature, water or land? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure consists in teaching and training activities. This does not imply any relevant impact in terms of sustainable use of water and air. | Is the measure expected to be detrimental (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure consists in teaching and training activities. This does not imply any relevant impact on circular economy. | Is the measure expected to result in the generation of non-recyclable hazardous waste, or (ii) lead to significant pollution in the direct or indirect use of any natural resource at the stage of its life cycle which are not (i) the measure expected to result in significant increase in the emission (quantities, rate, or level or level)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure consists in teaching and training activities. This does not imply any relevant impact on pollution. | Is the measure expected to be (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure consists in teaching and training activities. This does not imply any relevant impact in terms of impact on the ecosystems. | | | |

DNSH assessment

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| Mission | 4 |
| Cluster | 1 |
| Related Measure (Action or Investment) | Investment 3.2 School 4.0: Innovative schools, virtual, new classrooms and workshops |
| Responsibility for research and implementation | Ministry of Education |
| Date | 14/04/2021 |

| | Step 1 | | Step 2 | | |
|---|--|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (if A, B or C has been selected) | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objective | | | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective. | No relevant products for the purchase of school digital equipment with environmental features, such as water-cooling devices in classrooms and digital equipment with energy-saving features. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective. | The measure does not involve the purchase of goods and digital equipment by the schools, which should be produced and/or under the current production process for the purchase of school digital equipment, which do not involve any production of waste disposal. However, the school responsible with the purchase and the installation of digital equipment will be provided with precise guidelines regarding the possible disposal of obsolete equipment in compliance with WEEE. | Is the measure expected to lead to an increased amount of greenhouse gas emissions in the direct or indirect use of any natural resource at any stage of its life cycle which are not captured by adequate measures, or: (a) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Directive)? | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective. | The measure does not provide for any relevant eco-systems, as it makes the purchase of digital equipment for the schools, which already provided and under the current regulation related to the subject. | Is the measure expected to: (a) result in a significant increase of the greenhouse gas emissions, accumulation or disposal of waste, with the exception of the incorporation of non-hazardous waste; or (b) result in significant deficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not captured by adequate measures, or: (c) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Directive)? | | |
| 4. The circular economy, including waste prevention and recycling | D. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective. | The measure does not provide for any relevant eco-systems, as it makes the purchase of digital equipment for the schools, which already provided and under the current regulation related to the subject. | Is the measure expected to lead to a significant increase in the emissions of pollutants (CO ₂ e, water or nitrogen)? | | |
| 5. Pollution prevention and control (soil, water or air) | E. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective. | The measure does not provide for any relevant eco-systems, as it makes the purchase of digital equipment for the schools, which already provided and under the current regulation related to the subject. | Is the measure expected to significantly deteriorate the good condition and resilience of ecosystems, or to contribute to the contamination of land, air, water or soil? | | |
| 6. The protection and restoration of biodiversity and ecosystems | F. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and/or such is considered compatible with the environmental objective. | The measure does not provide for any relevant eco-systems, as it makes the purchase of digital equipment for the schools, which already provided and under the current regulation related to the subject. | Is the measure expected to significantly deteriorate the good condition and resilience of ecosystems, or to contribute to the contamination of land, air, water or soil? | | |

DNSh assessment

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| Version | 1 - Initiatives world & transition schools |
| Cluster | 3 - Energy efficiency and buildings renovation |
| Related Measure (Action or Investment) | 3.3 Structural rehabilitation of school buildings |
| Responsibility for research and implementation | Ministry of Education |
| Date | 14/04/2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (Y, N, or C) has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | The measure contributes substantially to an environmental objective, pursuant to the Factory Regulation, and is such a considered compliant with DNSh for the relevant objective. | The measure is assignable to intervention field (2) in the Annex of the CEE regulation, with a climate change coefficient of 0.05. Therefore the activities fall in the article 10 of the EU Taxonomy Regulation. The renovation programme has been planned to reduce energy consumption and significantly increase energy efficiency. It is estimated that the building renovation undertaken will result in a reduction in energy consumption (total) of at least 20% (see table 2.2.1.1.1.1) and a reduction in energy consumption (total) of at least 20% (see table 2.2.1.1.1.1) by year 1 to 11.02.25 (50-year) with a saving of 0.00241 ton/year with an increase in equivalent volume of approximately 8 m³/m³ by 2024. The energy saving achieved will reduce annual greenhouse gas emissions by 1.24.21 tCO2e. | In the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | The measure contributes substantially to an environmental objective, pursuant to the Factory Regulation, and is such a considered compliant with DNSh for the relevant objective. | The measure considers the exposure of school buildings to the risk of degradation due to climate change, in particular on building located in areas of high hydro-geological risk, with new construction with adaptation will be eligible, and/or major renovations carried out in areas of high seismic risk, where upgrading adaptation will be required. Measures to adapt buildings to climate change also include measures such as the installation of sunshades, which protect buildings from overheating during heat waves and have a direct impact on the building's energy consumption by reducing the need for air conditioning. In addition, for new buildings or building renovation measures, measures will be taken to ensure accessibility to public and disabled persons. There is therefore no evidence of significant negative effects related to the direct and primary indirect effects of the measure on the such as related to the environmental objective. | In the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, or the measure itself or its people, objects or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environment. B. The measure has a significant foreseeable impact on the environment. A. The measure has no or an insignificant foreseeable impact on the environment. B. The measure has a significant foreseeable impact on the environment. | The investment does not affect water bodies or protected habitats and species. | In the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSh assessment. | | In the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not improved by subsequent measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | With current national directives (EU Directive Environmental Criteria for the building sector - Minimum Directive 2.2.2.2.2) and measures, the provision of the sustainability of the products and of the work benefits, will promote the waste prevention and a management focused on the preparation of the plan and results of material. Further guidelines under the revised corporate code per year perform sustainable due about general data compliance a standard. |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSh assessment. | | In the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | The measure complies with existing national and regional pollution reduction plans. Furthermore, it is expected that the measure will lead to a significant increase in emissions of pollutants to air, water or land. The operators engaged with the renovation of the building will be required to use components and building materials that do not contain asbestos or substances of very high concern included in the list of substances subject to authorization in Annex III of Regulation (EC) No. 1907/2006. Measures will be taken to reduce water emissions and emissions of dust and pollutants during construction works. It is also guaranteed that: The components and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the respective Member State. There will be taken in place, in far as possible, actions aimed at using of products and products manufactured by other environmental certified producers in terms of status of the whole life cycle (LCA) or certified by declarations made by credible and recognized independent bodies (EU labeled or other type of environmental labels, ENEC or other type of environmental labels). |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure on the site, given its nature, and/or on a considered compliant with DNSh for the relevant objective. | The general requirements do not affect all habitats or other biodiversity areas, including the Natura 2000 network or protected areas, Natura 2000 or other areas, where no major biodiversity areas, or other biodiversity areas. | In the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those listed in Annex I? | | |

DNSH assessment

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| Mission | A |
| Charter | 1 |
| Subject Measure (Fields of Investment) | A.1 Investments in heritage and cultural assets of Public Administration, Public Administration and Cultural Heritage |
| Responsibility for reporting and implementation | Director General |
| Date | 10/09/2021 |

| Environmental objective | Page 1 | | Questions | Page 2 | |
|---|--|--|---|--------|---|
| | Does the measure have an or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure on the climate system, as well as on the climate system of the recipient. The measure has no or an insignificant foreseeable impact on the climate system of the recipient. | The measure will contribute to the reduction of GHG emissions by favouring energy efficiency and sustainable energy use. Being this mostly in the form of energy efficiency measures, the measure has no or an insignificant foreseeable impact on the climate system of the recipient. The measure has no or an insignificant foreseeable impact on the climate system of the recipient. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure on the water, groundwater, marine and sea ice, as well as on the water, groundwater, marine and sea ice of the recipient. The measure has no or an insignificant foreseeable impact on the water, groundwater, marine and sea ice of the recipient. | The measure will contribute to the sustainable use and protection of water and marine resources by favouring water efficiency and sustainable water use. Being this mostly in the form of water efficiency measures, the measure has no or an insignificant foreseeable impact on the water, groundwater, marine and sea ice of the recipient. The measure has no or an insignificant foreseeable impact on the water, groundwater, marine and sea ice of the recipient. | Is the measure expected to be detrimental to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or to the good environmental status of the marine environment? | | |
| 3. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure on the waste, as well as on the waste of the recipient. The measure has no or an insignificant foreseeable impact on the waste of the recipient. | The measure will contribute to the circular economy by favouring waste prevention and recycling. Being this mostly in the form of waste prevention and recycling measures, the measure has no or an insignificant foreseeable impact on the waste of the recipient. The measure has no or an insignificant foreseeable impact on the waste of the recipient. | Is the measure expected to (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant incineration, in the direct or indirect use of the material resource at any stage of its life cycle which are not considered as deleterious, or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)? | | |
| 4. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure on the biodiversity, as well as on the biodiversity of the recipient. The measure has no or an insignificant foreseeable impact on the biodiversity of the recipient. | The measure will contribute to the protection and restoration of biodiversity and ecosystems by favouring biodiversity and ecosystem restoration. Being this mostly in the form of biodiversity and ecosystem restoration measures, the measure has no or an insignificant foreseeable impact on the biodiversity of the recipient. The measure has no or an insignificant foreseeable impact on the biodiversity of the recipient. | Is the measure expected to be (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the representative status of habitats and species, including those of Union interest? | | |

DNSH assessment

| | |
|--|--|
| Mission | 4 |
| Center | 1 |
| Related Measure (Medium or Investment) | Industry 3.4 University Research centres |
| Responsible for reporting and implementation | Director General |
| Date | 15/06/2021 |

| | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objective | | | | | |
| 1. Climate change mitigation | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure on greenhouse gas emissions or removals or on energy efficiency.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environment.</p> | The activity that is supported by the measure has an insignificant carbon footprint. | <p>Is the measure expected to lead to significant GHG emissions?</p> <p>Is the measure expected to lead to significant GHG removals?</p> <p>Is the measure expected to lead to significant energy efficiency improvements?</p> <p>Is the measure expected to lead to or increase electricity needs of the current status and the expected future demand, and the measure that is supported is a power plant or gas?</p> | | |
| 2. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environment. | The activity that is supported by the measure has an insignificant carbon footprint. | <p>Is the measure expected to be detrimental (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> <p>Is the measure expected to be detrimental to the protection of freshwater ecosystems or to the protection of the marine environment, including marine waters and coastal waters, with the exception of the installation of direct aquifer recharge facilities using only treated effluents?</p> <p>Is the measure expected to lead to a significant increase in the consumption of pesticides, herbicides, fertilizers, and fungicides, and to a significant increase in the consumption of antibiotics, or (ii) detrimental to the consumption status of habitats and species, including those of high biodiversity?</p> | | |
| 3. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environment. | The activity that is supported by the measure has an insignificant carbon footprint. | <p>Is the measure expected to lead to a significant increase in the consumption of raw materials, or (ii) to a significant increase in the consumption of pesticides, herbicides, fertilizers, and fungicides, and to a significant increase in the consumption of antibiotics, or (ii) detrimental to the consumption status of habitats and species, including those of high biodiversity?</p> | | |
| 4. Pollution prevention, particularly air, water or land | A. The measure has no or an insignificant foreseeable impact on the environment. | The activity that is supported by the measure has an insignificant carbon footprint. | <p>Is the measure expected to lead to a significant increase in the consumption of raw materials, or (ii) to a significant increase in the consumption of pesticides, herbicides, fertilizers, and fungicides, and to a significant increase in the consumption of antibiotics, or (ii) detrimental to the consumption status of habitats and species, including those of high biodiversity?</p> | | |
| 5. The promotion and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environment. | The activity that is supported by the measure has an insignificant carbon footprint. | <p>Is the measure expected to lead to a significant increase in the consumption of raw materials, or (ii) to a significant increase in the consumption of pesticides, herbicides, fertilizers, and fungicides, and to a significant increase in the consumption of antibiotics, or (ii) detrimental to the consumption status of habitats and species, including those of high biodiversity?</p> | | |

DNSS assessment

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|--|---------------------|
| Mission | 4 |
| Cluster | 1 |
| Subsidy Measure (Heading or Investment) | 4.2 Student housing |
| Research/Innovation project and implementation | Building Refurb |
| Date | 15/06/2021 |

| Environmental objective | Step 1 | | Questions | Step 2 | |
|---|---|---|--|--------|--|
| | Does the measure have an or a negligible greenhouse impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | B. The measure is linked to financing of research, innovation or development activities with a coefficient of 0.05, and so such is considered compliant with the measure's greenhouse impact on this objective or contribute to support this objective. | The measure supports the following: Energy efficiency renovation of existing housing stock, administration projects and supporting research and innovation activities in the construction sector. | Is the measure expected to lead to significant GHG emissions? | NO | |
| 2. Climate change adaptation | D. No, the measure requires a substantive DSS assessment. | | Is the measure expected to lead to or increase climate risks of the current climate and associated future climate, and the measure help to prevent, reduce or adapt? | NO | |
| 3. The sustainable use and protection of water and marine resources | D. No, the measure requires a substantive DSS assessment. | | Is the measure expected to be detrimental (i) to the good status or the good ecological potential of bodies of water (including surface water and groundwater) or (ii) to the good environmental status of the marine environment? | NO | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DSS assessment. | | Is the measure expected to (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant pollution, or (iii) lead to a significant loss of raw materials or other natural resources, or (iv) lead to the use of raw materials which are not identified by adequate measures, or (v) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)? | NO | <p>The measure is expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant pollution, or (iii) lead to a significant loss of raw materials or other natural resources, or (iv) lead to the use of raw materials which are not identified by adequate measures, or (v) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)?</p> <p>Construction and Demolition Waste Management Protocol. Operators have better control of the construction and demolition waste management process and taking into account best available techniques and using effective identification to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using suitable sorting systems for construction and demolition waste.</p> <p>Building designs and construction techniques support circularity and in particular deconstruction, with reference to EN 20887 or other standards for ensuring the deconstructibility or adaptability of buildings, how the use of</p> |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DSS assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | |
| 6. The protection and restoration of biodiversity and ecosystems | D. No, the measure requires a substantive DSS assessment. | | Is the measure expected to (i) significantly deteriorate or prevent restoration and recovery of ecosystems, or (ii) be detrimental to the conservation status of habitats and species, including those of high interest? | NO | <p>The measure is expected to (i) significantly deteriorate or prevent restoration and recovery of ecosystems, or (ii) be detrimental to the conservation status of habitats and species, including those of high interest?</p> <p>The measure is expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant pollution, or (iii) lead to a significant loss of raw materials or other natural resources, or (iv) lead to the use of raw materials which are not identified by adequate measures, or (v) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)?</p> <p>Building designs and construction techniques support circularity and in particular deconstruction, with reference to EN 20887 or other standards for ensuring the deconstructibility or adaptability of buildings, how the use of</p> |

DNSh assessment

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|---|----------------------------------|
| Measure | 4 |
| Cluster | 1 |
| Related Measure (Reform or Investment) | Reform 2.4: Teachers recruitment |
| Responsibility for reporting and implementation | Ministry of Education |
| Date | July 2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to lead to significant GHG emissions? Is the measure expected to lead to an increase in greenhouse gas emissions or a decrease in greenhouse gas emissions? Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to be detrimental to the good status or the good ecological potential of water, including surface water and groundwater, or to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to be detrimental to the conservation status of habitats and species, including those of high concern? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to be detrimental to the conservation status of habitats and species, including those of high concern? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. B. The measure has no or an insignificant foreseeable impact on this environmental objective related to the direct and primary indirect effects of the measure across the life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The measure has no environmental impact or emissions, the intervention is of an educational nature. The measure has no environmental impact or emissions, the intervention is of an educational nature. | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to be detrimental to the conservation status of habitats and species, including those of high concern? | | |



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: Mission 4 – Component 1 – Strengthening teaching and the right to study – Upgrading of nursery schools (3-6 years old) and 'spring' classes (aged 2 and over)

Il programma prevede investimenti sia nella costruzione, riqualificazione e messa in sicurezza delle scuole della prima infanzia, anche attraverso l'innovazione negli ambienti di apprendimento e la sostenibilità ambientale e la realizzazione di poli dell'infanzia di cui al d.lgs. n. 65 del 2017, sia nel rafforzamento dei servizi integrati per la fascia 0-6 e delle sezioni sperimentali c.d. "Primavera" (24-36 mesi). Tali sezioni favoriscono la continuità del percorso educativo da zero a sei anni di età e rispondono a specifiche funzioni di cura, educazione e istruzione con modalità adeguate ai tempi e agli stili di sviluppo e di apprendimento delle bambine e dei bambini nella fascia di età considerata.

Il Piano asili nido e servizi per l'infanzia viene inserito all'interno della Missione "EDUCATION AND RESEARCH" e mira a un potenziamento dei servizi di asili nido e per la prima infanzia, delle scuole per l'infanzia e del tempo scuola. Si pone l'obiettivo di aumentare l'offerta di asili nido e servizi per l'infanzia e favorirne una distribuzione equilibrata sul territorio nazionale, di ridurre i divari territoriali aggregando uno dei fattori strutturali di ritardo in alcune regioni e anche fornendo un concreto supporto alle famiglie.

Il programma si pone in linea e in continuità sia con il piano di riqualificazione e di costruzione di asili nido e scuole dell'infanzia, anche innovative, già in corso di finanziamento da parte del Ministero dell'istruzione, sia con il piano integrato per i servizi 0-6 di cui al citato decreto legislativo n. 65 del 2017, che concorre all'educazione e alla cura delle bambine e dei bambini e soddisfa i bisogni delle famiglie in modo flessibile e diversificato sotto il profilo strutturale ed organizzativo.

La previsione di stanziamento è di 4,6 miliardi per un piano quinquennale.

I beneficiari sono gli enti locali proprietari degli edifici adibiti ad asili nido e a scuole per l'infanzia e gli stessi enti locali che gestiscono i servizi educativi per l'infanzia.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training. Per quanto riguarda la riqualificazione e la costruzione di asili nido e poli dell'infanzia, gli edifici sono di proprietà pubblica degli enti locali competenti e destinati esclusivamente a servizi educativi e per la prima infanzia che non costituiscono attività economica.

Parimenti, la gestione dei servizi integrati per la prima infanzia, oggetto di potenziamento, è affidata ai medesimi enti locali competenti e non costituisce attività economica.

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)



I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

- **1.a. impiego di risorse pubbliche** **SI** **NO**

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

- **1.b. risorse imputabili all'autorità pubblica** **SI** **NO**

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.



2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? SI NO

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività SI NO

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;



- per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – Accesso all'istruzione e riduzione dei divari territoriali - Fondo tempo pieno scuola

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

Si aumenterà il "tempo-scuola" incrementando lo spazio per l'offerta formativa e contemporaneamente aiutando la conciliazione dei tempi di vita e lavoro delle famiglie e specialmente delle donne. La misura è destinata a potenziare dotazioni e personale delle istituzioni scolastiche statali al fine dell'estensione del numero di scuole con tempo pieno.

L'intervento è finanziato con 1 miliardo di euro, sono inoltre previsti 300 milioni per interventi all'interno dei progetti PON.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

- 1.a. impiego di risorse pubbliche SI NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.



• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;



- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – Accesso all'istruzione e riduzione dei divari territoriali - Riduzione dei divari territoriali nelle competenze e contrasto all'abbandono scolastico

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

L'intervento prevede un piano per il potenziamento delle "Competenze di base", che pone particolare attenzione alle scuole che hanno registrato maggiori difficoltà in termini di rendimento scolastico – differenziando quindi gli interventi in relazione ai bisogni delle studentesse e degli studenti. Oltre all'intervento di supporto del dirigente scolastico con tutor esterni, nei casi più critici vi sarà la disponibilità di organico potenziato di almeno un'unità per disciplina (Italiano, Matematica e Inglese) e per almeno un biennio. Sono previste azioni di tutoraggio e di formazione per i docenti. Il progetto include, altresì, un investimento rivolto al contrasto della dispersione scolastica attraverso tutoraggio, consulenza e orientamento attivo e vocazionale che prevengano l'abbandono prematuro degli studi nel periodo della scuola secondaria. I finanziamenti sono in favore delle istituzioni scolastiche statali e del relativo personale di potenziamento.

L'intervento è finanziato con 1,5 miliardi di euro; sono inoltre previsti 750 milioni per interventi all'interno dei progetti PON e 240 milioni di stanziamenti della Legge di Bilancio.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.



Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e



incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**

.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|---|------------------------------------|------------------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: _____ | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Parere del distinct body

SI

NO

Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – Istruzione professionalizzante e ITS - Formazione professionalizzate collaborazione università - territori

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

Il progetto mira a implementare un programma per la Formazione Superiore Professionale, che preveda la costruzione di collaborazioni su base regionale con il contributo delle Università e delle articolazioni locali di associazioni di categoria, al fine di incrementare l'offerta di percorsi di laurea professionalizzanti. Ogni ambito regionale potrà gestire diverse lauree professionalizzanti in diverse classi, secondo la vocazione delle imprese del territorio. Le collaborazioni su base regionale potranno prevedere la partecipazione degli ITS e la creazione di percorsi in sinergia con meccanismi di scambio e di integrazione dei percorsi formativi.

L'intervento beneficia di risorse pari a 500 milioni di euro, destinati sia alle fondazioni ITS esistenti sia a nuovi partenariati fra scuole, università e associazioni datoriali.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione dei punti 16 e 18 del Guiding template: Upgrading education and training. Infatti, gli ITS sono fondazioni miste pubblico-private, costituite da scuole, enti di formazione, università e imprese, che hanno l'esclusiva finalità non commerciale di progettare e realizzare percorsi formativi di livello altamente professionalizzante per gli studenti in uscita dalle scuole secondarie di secondo grado. Per tale ragione il contributo pubblico è esclusivamente finalizzato a potenziare attività non economiche, quali i percorsi delle lauree professionalizzanti.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• 1.a. impiego di risorse pubbliche

X SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'impresa. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.



Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e



incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**

.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|---|------------------------------------|------------------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: _____ | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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Parere del distinct body

SI

NO

Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – Istruzione professionalizzante e ITS – Orientamento attivo nella transizione scuola-università

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

La misura consiste in un programma di investimenti a favore degli studenti al quarto ed al quinto anno delle scuole superiori, con un risultato atteso di aumento del tasso di transizione tra scuola e università. Essa è finalizzata a un orientamento attivo e vocazionale verso le opportunità di formazione universitaria, attraverso corsi brevi erogati da docenti universitari e insegnanti scolastici che consentano agli studenti di comprendere meglio l'offerta dei percorsi didattici universitari e di colmare i gap presenti nelle competenze di base che sono richieste. Inoltre, obiettivo concorrente è anche costruire un programma, integrato con il precedente, che preveda iniziative di orientamento al quarto ed al quinto anno delle scuole superiori per avvicinare le ragazze alle opportunità offerte dalle discipline STEM e dalle discipline legate al digitale.

I finanziamenti sono erogati alle istituzioni scolastiche statali (scuole secondarie di secondo grado) sulla base di specifici progetti.

L'intervento beneficia di risorse pari a 250 milioni di euro.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• 1.a. impiego di risorse pubbliche

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):

FORSE (specificare dubbi): _____



In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:



- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

*Se si è risposto **SI**:*

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)
- Casi di pre notifica**

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'università e della ricerca

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: M4C1. I Scholarships and exemption from school tuition fees for STEM students

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento:

Goals. The objective is to help enhance the access to tertiary education for talented students both in socio-economic difficulties and with a relatively high opportunity cost of advanced studies against an early transition on the labour market. For this purpose, the measure pursues the integration of contribution policies with those for study support through:

- scholarships increase by 700 euros, up to 4,000 average euros per student.
- scholarships funding for a larger number of students, thus significantly reducing the gap with the EU average share of students with a grant (around 25 per cent against just 12 currently registered in Italy), despite the planned increase in the enrolment and retention rates in Italy.
- no-tax area extension to students coming from families with ISEE's indicator below 23,500 euro (in the past below 13,000 euro, revised up to 20,000 in 2020), in order to shrink the large gap with the EU average share of students in no tax area (30 per cent, more than double of the 13 per cent observed in Italy before 2020), even by accounting the planned increase of the enrolment and retention rates. This intervention will be dedicated to STEM students, because of the gap documented in the choice of STEM disciplines among Italian students (24% of enrolled students, slightly below the EU average of 25.4%).

The measure is strategic and fully coherent for the achievement of the planned increase in the number of students regularly enrolled in advanced education, which is, in turn, a key requirement to fill the structural gap of Italy against the EU reading in the share of 25–34-year people concluding a tertiary degree. In addition to the aggregate target, the measure is particularly urgent in order to spur a widespread diffusion of high-quality competencies across regions and socioeconomic groups, which is the compelling



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opportunity for raising innovation propensity and productivity also in sections of the business sector, institutions and territory that lag more behind the frontier. Accordingly, very much in line with the Country Specific Recommendations for Italy, the measure provides the necessary support to tackle the structural factors long dragging the growth and employment potential of the Italian economy as well as its social cohesion, thus the resilience and the ability to react to negative shocks. The measure is recurrent in nature with regards to the actions on scholarship, which however address an unsustainable gap in the attractiveness of the Italian tertiary education system compared with the EU average, even more so compared with single partners such as Germany and France. In this context, the measure is worth being re-financed beyond the NGEU horizon, especially if it proves by 2026 to be essential as expected to fuel widespread access to tertiary education, namely a compelling target under any respect to drive Italy out of the stagnation trap apparently in place over the last twenty years. However, even in case the measure were suspended beyond 2026, it would provide a persistent impact on the stock of human capital in Italy, which will structurally benefit from the strong injection of new young with a tertiary degree.

As for the extension of the no tax area for students enrolled in STEM programs, the action is meant to be considered experimental in order to assess the impact on the participation rate to tertiary education not only by students with a poor socio-economic background (below the current ISEE threshold of 13,000 euro before the recent increase introduced in 2020 up to 20,000 euro) but also by those in the middle range in terms of income and occupation opportunities, who may add to the mix of motivation and experiences for the benefits of the whole student community. The impact of no-tax area extension on the enrolment and the retention rates across different groups of students will be strictly monitored, and in case of positive evidence the measure will be eligible for national resources after 2026.

As far as the decision on the investment of future resources is concerned, this initiative will be evaluated together with investment 1.1 and 3.2, as jointly aimed at an increase in the number of university students. The following evidence will be considered: impact on the school-to-university transition rate; impact on the university dropout rate; impact on the share of university students with family incomes in the first two deciles and of those residing in regions under objective 1.

Implementation. The program is managed by the Ministry of University and Research. The implementation of the intervention will be accompanied by a Ministerial Decree reform on scholarships regulations and a Ministerial Decree for the implementation of the tax fee amendment . Details will be provided.



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This investment will have a significant impact on the development of Southern regions.

Costs. The estimated cost related to the RRF is equal to 0.90 billion euro. This intervention will benefit from additional resources (0.45 from React EU and 0.6 billion euro allocated in the Budget Law).

Target group. Students.

Timing. The intervention will start in 2022 and will last until 2024.

Self-assessment of State-aid compliance. We do not identify any issues related to State aid under Investment 1.2. The measure is aimed at supporting students, through scholarships individually assigned based on merit and wealth and exemption from school tuition fees for STEM students.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- ~~il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

~~In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.~~

• **1.b. risorse imputabili all'autorità pubblica**

SI

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- ~~il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie)~~



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~~che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.~~

~~Altro (specificare):~~

FORSE (specificare dubbi): _____

~~In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.~~

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

*Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'impresa. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.*

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

~~2.b Presenza di selettività~~ **SI** **NO**

~~La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.~~

~~Indicare se la selettività riguarda imprese individuate per:~~

- ~~identità (aiuti ad hoc);~~
- ~~dimensione;~~
- ~~settore economico o attività (indicare quali);~~
- ~~area geografica¹ (indicare quale);~~

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- ~~altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);~~
- ~~caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.~~
- Altro (specificare):

FORSE (specificare dubbi):

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico **NO**

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

*Se si è risposto **SI**:*

Indicare lo strumento di aiuto che conferisce il vantaggio:

- ~~sovvenzione diretta (contributi o sovvenzioni a fondo perduto);~~
- ~~abbuono di interessi (contributo in conto interessi);~~
- ~~agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota;~~
- ~~differimento dell'imposta; esoneri fiscali, ammortamento accelerato);~~
- ~~riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);~~
- ~~estinzione o riduzione del debito;~~
- ~~cessioni di beni o servizi a prezzi inferiori a quelli di mercato;~~
- ~~garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);~~
- ~~prestito agevolato (mutuo a tasso agevolato);~~



- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
- per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
- per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
- per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

~~II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.~~

~~de minimis~~ ai sensi del Regolamento (UE) n. 1407/2013

~~esenzione~~ dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) — specificare sezione e articoli pertinenti



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~~notifica preventiva~~, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

~~indicare gli orientamenti di settore²~~

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

~~disposizione diretta del Trattato (TFUE)~~

~~articolo 93~~

~~articolo 107.2 - specificare la lettera pertinente.~~

~~articolo 107.3 - specificare la lettera pertinente.~~

~~disciplina sui Servizi di Interesse Economico Generale (SIEG):~~

~~Regolamento (UE) n. 360/2012 (SIEG)~~

~~Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG~~

~~Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70~~

~~Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)~~

~~Casi di pre notifica~~

~~Supporto del distinct body SI NO~~

~~Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: _____~~

~~Parere del distinct body SI NO~~

~~Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.~~

Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – Istruzione professionalizzante e ITS - Sviluppo e riforma degli ITS

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

L'investimento è orientato ad incrementare l'offerta formativa degli Istituti Tecnici Superiori, rafforzandone le dotazioni strumentali e logistiche e incrementando la partecipazione delle imprese nei processi di formazione per una migliore connessione con il tessuto imprenditoriale. È inoltre prevista l'attivazione di una piattaforma digitale nazionale che consenta agli studenti di conoscere le offerte di impiego per chi consegue un titolo di studio professionale.

L'intervento beneficia di 1,5 miliardi di euro, destinati al potenziamento dei 107 ITS esistenti e alla realizzazione di nuovi.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione dei punti 16 e 18 del Guiding template: Upgrading education and training. Infatti, gli ITS sono fondazioni miste pubblico-private, costituite da scuole, enti di formazione, università e imprese, che hanno l'esclusiva finalità non commerciale di progettare e realizzare percorsi formativi di livello altamente professionalizzante per gli studenti in uscita dalle scuole secondarie di secondo grado. Per tale ragione il contributo pubblico è esclusivamente finalizzato a potenziare attività non economiche, quali i percorsi di formazione professionalizzanti e ad incrementare le dotazioni di tali istituti con attrezzature avanzate.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• 1.a. impiego di risorse pubbliche

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):

FORSE (specificare dubbi): _____



In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:



- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

*Se si è risposto **SI**:*

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'università e della ricerca

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Reform of student housing regulation (L 338/2000)

Descrizione dell'intervento:

Goals.

There is a need to update the current law representing the foundation to define the rules for student housing, namely the law 338/2000 and the Legislative Decree 68/2012. This reform will apply the following major changes:

1. Opening up the participation to the funding also to private investors (according to the scheme described in investment 1.1), also allowing public-private partnerships where the university will make use of the available funding to support the financial equilibrium in real-estate investments for student housing
[ASSESSED UNDER INVESTMENT 1.1.]
2. Ensuring the long-term sustainability of the private investments by guaranteeing a change in the taxation scheme from the one applied for hotel services to the one applied for social housing, by constraining the use of the new accommodations for student housing purposes during the Academic Year, but allowing the use of the structures when they are not needed for student hospitality. This will, in turn, help the supply of a new range of accommodation at affordable rents;
[ASSESSED UNDER INVESTMENT 1.1]
3. Redefine the standards for student accommodations, by redetermining the law requirements regarding the common space per student available in the buildings in exchange for better equipped (single) rooms;
4. Fostering the restructuring and renovation of structures instead of new green-field buildings (with a greater percentage of cofounding, currently at 50%), with the highest environmental standard to be ensured by the presented projects;



5. Simplifying, also thanks to the digitalization, the presentation and selection of projects and, therefore, the implementation timing.
6. Provision by law for a derogation from the criteria set out in Law no. 338/2000 with regard to the percentage of co-financing that can be granted.

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- ~~il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- ~~il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.~~
- ~~Altro (specificare):~~



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**

~~La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.~~

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- ~~caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali;~~
- Altro (specificare):

PRECISAZIONI:

I soggetti che hanno accesso al cofinanziamento statale di cui alla legge n.338/2000 sono individuati dalla stessa legge 338 e sono tutti soggetti pubblici o privati senza scopo di lucro che svolgono una funzione ritenuta di interesse pubblico e coinvolti nel settore dei servizi agli studenti universitari. Ai sensi della legge 338/2000, i destinatari dei fondi sono le università statali, regioni, enti per il diritto allo studio regionali, università non statali legalmente riconosciute, collegi universitari o altri enti senza scopo di lucro (associazioni studentesche, ecc.)

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- ~~sovvenzione diretta (contributi o sovvenzioni a fondo perduto);~~
- ~~abbuono di interessi (contributo in conto interessi);~~
- ~~agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);~~
- ~~differimento dell'imposta; esoneri fiscali, ammortamento accelerato);~~
- ~~riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);~~
- ~~estinzione o riduzione del debito;~~



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- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
- per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
- per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
- per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare): cofinanziamento dell'intervento

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

~~II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.~~

~~de minimis~~ ai sensi del Regolamento (UE) n. 1407/2013



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- ~~esenzione~~ dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- ~~notifica preventiva~~, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
- ~~indicare gli orientamenti di settore~~²

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- ~~disposizione diretta del Trattato (TFUE)~~
- ~~articolo 93~~
 - ~~articolo 107.2 – specificare la lettera pertinente.~~
 - ~~articolo 107.3 – specificare la lettera pertinente.~~
- ~~disciplina sui Servizi di Interesse Economico Generale (SIEG):~~
- ~~Regolamento (UE) n. 360/2012 (SIEG)~~
 - ~~Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG~~
 - ~~Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70~~
 - ~~Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)~~

Casi di pre-notifica

| | | |
|--|--|-----------------------------|
| Supporto del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – - Competenze STEM e multilinguismo - Didattica digitale integrata e formazione continua del personale scolastico

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

Il progetto prevede interventi mirati in formazione, sulla base di una rilevazione dei bisogni di aggiornamento degli insegnanti e del personale della scuola e la realizzazione di un sistema digitale che documenti le esperienze e la formazione e la realizzazione di un bilancio di competenze e le azioni formative di miglioramento. L'intervento comprende specifiche misure per la realizzazione di un ecosistema delle competenze digitali del personale scolastico e delle studentesse e degli studenti al fine di promuovere lo sviluppo della didattica digitale integrata e l'adozione di *curricula* digitali nelle istituzioni scolastiche, anche finalizzate alla priorità indicata nel Programma Nazionale di Riforma di aprire il Piano Nazionale Scuola Digitale a nuovi scenari, potenziarne le azioni rivolte direttamente alle scuole, per arrivare a un pieno sviluppo delle competenze digitali degli studenti, ma anche della scuola tutta, in sintonia con il quadro europeo delle competenze digitali declinato dall'UE. Saranno coinvolte nei progetti di formazione, previsti da una pianificazione nazionale, le scuole statali. I finanziamenti sono erogati alle istituzioni scolastiche pubbliche statali sulla base di specifici progetti. L'intervento beneficia di risorse complementari per 420 milioni di euro dai progetti PON e 390 milioni di euro dagli stanziamenti della Legge di Bilancio, oltre ai 30 milioni previsti per progetti nuovi finanziati dal Recovery funds.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• 1.a. impiego di risorse pubbliche

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

- **1.b. risorse imputabili all'autorità pubblica** **SI** **NO**
- X** il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

*Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'impresa. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.*

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**



La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e



incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|---|------------------------------------|------------------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: _____ | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Parere del distinct body

SI

NO

Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – - Competenze STEM e multilinguismo - Competenze STEM e multilinguismo per docenti e studenti

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

L'intervento consiste nell'integrazione nelle discipline curriculari di attività, metodologie e contenuti correlati a sviluppare e rafforzare le competenze STEM e di digitalizzazione e innovazione, in tutti i gradi d'istruzione, a partire dall'infanzia e primaria alla secondaria di I e II grado, in ottica di piena interdisciplinarietà, con particolare attenzione alle pari opportunità e alla parità di genere nell'approccio metodologico e nell'orientamento alle materie STEM. Le attività saranno sviluppate dalle istituzioni scolastiche statali sulla base di appositi avvisi.

L'intervento è finanziato con 1,1 miliardi di euro, sono inoltre previsti 250 milioni per interventi all'interno dei progetti PON. Tali risorse sono destinate anche alle mobilità di apprendimento del personale scolastico e degli studenti

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: **Upgrading education and training.**

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei



chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);



- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



dell'aliquota;

- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'Istruzione

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Piano Nazionale di Ripresa e Resilienza

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: M4C1 – Potenziamento delle competenze e diritto allo studio – - Competenze STEM e multilinguismo -Scuola 4.0. scuole innovative, cablaggio, nuove aule didattiche e laboratori

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

L'intervento intende promuovere il potenziamento della digitalizzazione delle scuole, anche al fine di ridurre i gap territoriali e favorire l'accesso alle tecnologie di tutte le istituzioni scolastiche, la realizzazione di ambienti di apprendimento innovativi, la trasformazione digitale dell'organizzazione scolastica, ricomprendendo azioni per il cablaggio interno delle scuole al fine di migliorare la connettività, la dotazione nelle aule di strumenti innovativi e avanzati per la didattica digitale, l'attivazione nelle scuole superiori di laboratori sulle nuove professioni connesse all'intelligenza artificiale, alla robotica e alla digitalizzazione. I finanziamenti sono ripartiti fra le 8.184 istituzioni scolastiche statali.

Questo intervento beneficia di risorse per 3 miliardi di euro, di cui 1 miliardo per progetti in essere dalla legge di bilancio, 1,1 miliardi per nuovi progetti, 0,9 miliardi a valere sulle risorse React-Eu.

Si conferma che l'intervento non si configura come aiuto di Stato, in quanto lo stesso rientra nella previsione del punto 14 del Guiding template: Upgrading education and training.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

- **1.a. impiego di risorse pubbliche** **SI** **NO**

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):

FORSE (specificare dubbi): _____



In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

X **SI**

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

X **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

X **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:



- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

*Se si è risposto **SI**:*

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)
- Casi di pre notifica**

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link:
http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'università e della ricerca

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: M4C1. Teaching and advanced university skills

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento:

Goals. According to the highlighted challenges above, the project aims to qualify and innovate university programs (comprising PhD programs), through three strategic objectives: a) digitization; b) "culture of innovation"; c) internationalization, acting:

- on the promotion of open-access digital training courses of excellence, synergistic between universities and businesses.
- on strengthening the role of Superior University Schools for high-merit and cutting-edge training in a new dimension of strong collaboration with universities and the business world, contributing to the dissemination of the culture of innovation.
- on the strengthening of scientific cooperation, on the circulation and attraction of talents, stably structuring training programs abroad, defining programs to support strategic partnerships to innovate the international dimension of the Italian university system, funding initiatives for the internationalization of research.

In details the following sub-measures will be implemented:

T1) up to 500 PhD students will be enrolled in 3 years (100+200+200) in programmes devoted to digital and environmental transitions. The programmes will be established through joint national initiatives with the involvement of universities, research bodies and companies. Companies will establish agreements with universities to host the training activities of the students but will not receive direct funding. A fraction of the budget will be allocated to initiatives to be carried out in Southern Italy.

T2a) Teaching learning centres. 3 TLC will be established across the country to improve the teaching competencies (including digital competencies) of the faculty members in the universities and the teachers in the schools, in all disciplines, comprising traditionally less digital-oriented disciplines. Each TLC will carry out courses and tutoring activities to all the personnel involved in the teaching activities (professors, tutors, phd students) to



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support them in implementing new learning schemes as well as adopting digital technologies in the teaching activities. The TLCs will be established as university networks, who will detail the action programmes that will be assessed by the MUR. One TLC will be established in each of the macro-regional areas of Italy (Northern, Central, Southern Italy and Islands).

T2b) Digital education hubs. 3 DEH will be established across the country to improve the capability of the higher-education system to offer digital education to university students and workers. Each DEH will be a university consortium located in the macro-regional areas (Northern, Central, Southern Italy and Islands) and will support the universities in offering digital education activities to university students, professionals, and companies. The DEH will improve the availability of MOOCs and will support the universities to release education programmes to professionals, companies as well as the public sectors, to improve the up-skilling and re-skilling initiatives. Further, the DEH will facilitate the activation of inter-university teaching programs through reciprocal teaching exchange. Cooperation programmes involving universities located in different areas of the country will be promoted. The private companies and workers will contribute in the first period supporting the DEH in the definition of the education needs but they will not receive financial aid and will access the DEH resources for their upskilling and reskilling needs.

T3) The Superior University Schools will strengthen their role in the higher-education systems with two activities: i) offering courses and training activities to PhD students enrolled in other institutions, to share their experiences and competencies with the whole higher education system, ii) strengthening their role in the school-to-university transition, by means of orientation activities for the school students. The detailed action programmes will be developed by the Superior University Schools and assessed by the MUR. The Superior University Schools will play the role of higher education hubs for the PhD and the post-graduate specialization courses, in all areas of the country. They will carry out high-quality courses and training activities in the area of economics, engineering, science, technology, and others. These activities will improve the mobility of these students and enlarge their learning opportunities.

T4) Transnational education initiatives. 10 TNE initiatives will be implemented in cooperation with the Ministry of Foreign Affairs and International Cooperation, to establish permanent higher-education centres abroad and improve the internationalization of the Italian universities. The TNE initiatives will be based outside of Europe, with a focus on developing areas in the world and will be implemented by consortiums of universities. The detailed action programmes will be developed by these consortiums and assessed by the MUR.



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T5) internationalization activities of artistic and musical higher education institutions (AFAM). The initiative will fund 5 internationalization projects of the AFAM institutions, to promote their role abroad in preserving and promoting Italian culture. The detailed action programmes will be developed by networks of the AFAM institutions and assessed by the MUR.

Implementation. The program is managed by the Ministry of University and Research, which will constitute a control room for effective management of the sub-measures, enhancing the synergies.

The implementation of TLC and DEH will be synergic with the high-tech partnerships for digital skills (fiche distributed by the EC to the Member States in January 2021), which aims at strengthening the offer of specialised education and training in digital domains, including via cross-border cooperation. Investment 2.4 will allow this project to have a national component, linked at a multi-country level with a light governance structure, modelled on the implementation of the Digital Europe Programme, i.e. through consortia that will be identified through a dedicated tender. This collaboration will allow higher education institutions to pool resources and expertise in digital areas, strengthen capacity, increase the number of people trained in highly demanded fields, with the aim of training, retaining and attracting the best digital experts.

The investment is connected with other investments under the component 2 of Mission 4. In particular, it will be synergistic with investment 1.1 “ Partnership extended to universities, research centres, companies and funding of basic research project” which will allow better cooperation of companies with universities enabling the identification of relevant skills to be provided to professionals through digital courses offering. Moreover, the sub-measure T1 aimed to the creation of 500 PhD students with advanced green and digital skills will going through a similar path of the PhD students that will be funded thanks to investment 2.4 “Innovative doctorated for private companies and introduction of researchers into enterprises”, under component 2, and the “Green and digital PhDs and research projects”, funded through REACT-EU, but with a differentiated final career path.

This investment will have a significant impact on the development of Southern regions. In particular, under T1, 20% of PhD students are expected to be enrolled by Southern Italy and Islands’ universities, on the basis of the current distribution of PhD students across the country; under T2a, one of the three TLC will be established in Southern regions; under T2b, one of the three DEH will be established in Southern regions; under T5, at least one of the initiatives will be promoted by Southern Italy AFAM institutions.

Costs. The estimated cost related to the RRF is equal to 0.50 billion euro.



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Target group. Students, university.

Timing. The intervention will start in 2021 and will last until 2026.

Self-assessment of State-aid compliance. We do not identify any issues related to State aid under Investment 2.4. Both State and Non-State universities will benefit from the implementation of these measures. Please consider that Non-State universities are assimilated by the Italian current regulatory framework as non-profit entities.

Please also consider that, as for the implementation of measures sub T1, companies involved will establish agreements with universities to host the training activities of the students but will not receive direct funding.

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- ~~il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- ~~il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità~~



~~pubblica-~~

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

~~2.b Presenza di selettività~~ **SI** **NO**

~~La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.~~

~~Indicare se la selettività riguarda imprese individuate per:~~

- ~~identità (aiuti ad hoc);~~
- ~~dimensione;~~
- ~~settore economico o attività (indicare quali);~~
- ~~area geografica¹ (indicare quale);~~
- ~~altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti)~~

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



~~giuridici, o solo ad imprese neo-costituite, ecc...);~~

- ~~caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali;~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi):

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico **SI** **NO**

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto **SI**:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- ~~sovvenzione diretta (contributi o sovvenzioni a fondo perduto);~~
- ~~abbuono di interessi (contributo in conto interessi);~~
- ~~agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);~~
- ~~differimento dell'imposta; esoneri fiscali, ammortamento accelerato);~~
- ~~riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);~~
- ~~estinzione o riduzione del debito;~~
- ~~cessioni di beni o servizi a prezzi inferiori a quelli di mercato;~~
- ~~garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);~~
- ~~prestito agevolato (mutuo a tasso agevolato);~~
- ~~riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;~~



- ~~finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;~~
- ~~partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);~~
- ~~compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;~~
- ~~nel caso delle infrastrutture:~~
 - ~~per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;~~
 - ~~per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;~~
 - ~~per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.~~
 - ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

~~In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.~~

~~II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.~~

- ~~de minimis ai sensi del Regolamento (UE) n. 1407/2013~~
- ~~esenzione dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) — specificare sezione e articoli pertinenti~~
- ~~notifica preventiva, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore~~



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~~indicare gli orientamenti di settore²~~

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

~~disposizione diretta del Trattato (TFUE)~~

- ~~articolo 93~~
- ~~articolo 107.2 – specificare la lettera pertinente.~~
- ~~articolo 107.3 – specificare la lettera pertinente.~~

~~disciplina sui Servizi di Interesse Economico Generale (SIEG):~~

- ~~Regolamento (UE) n. 360/2012 (SIEG)~~
- ~~Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG~~
- ~~Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70~~
- ~~Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)~~

~~Casi di pre-notifica~~

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: | | |
| <hr/> <hr/> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE. | | |

— Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dell'università e della ricerca

Tipologia del provvedimento: M4C1. Extension in the number and career opportunities of PhDs (Research Oriented, Public Administration and Cultural Heritage)

Descrizione dell'intervento:

Goals. Two actions are provided under this investment, in order to increase the stock of human capital dedicated to research-oriented activities (Action A), to Public Administration and Cultural Heritage (Action B).

A) The project aims at increasing by 3600 units the PhDs by activating three cycles since 2021, each of them endowed with 1200 grants. The target is set to largely make up the loss in PhD fellowships suffered in recent years, as an intermediate step towards a further extension in their number in a longer horizon.

This investment will be coordinated with investment 2.5 in M4C2, on innovative green and digital PhDs. This project, however, is aimed at research-oriented PhDs with an academic orientation, and implementation will be therefore carried out leveraging on adequate governance and procedures for a research-based valorization.

The measure is meant to be temporary, in order to support the stock of PhDs potentially employable in Italy in a three-year period, leaving a further extension in the number of traditional PhDs as an open option for the future.

As far as the decision on the investment of future resources is concerned, the following evidence will be considered: impact on the total number of PhDs graduate per 1,000 inhabitants.

B) In line with the CSRs addressed to Italy by the European Commission in order to raise the country's productivity and potential growth, the measure aims at enhancing the efficiency of the Italian general government by developing the advanced competencies especially needed in the organization and management of the provision of public services that match the high timeliness and quality demanded by the productive system, workers and the society as a whole.

Key areas regard the enhancement of the propensity to innovate the organization models and the operative practices, the ability to select the right priorities in the



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provision of public services in a framework of rapid technical progress and the new challenges in the digital and environmental transitions, the development of a responsible and autonomous spirit of initiative and the related reward system, the regular assessment of the results achieved and the reasons of possible failures.

The measure activates three cycles of new PhD programmes specifically designed for the needs of the general government under close cooperation with the Public Administration Ministry and by interacting with the SNA, the high school currently dealing with the skill development of the fresh public employees. Each PhD cycle is endowed with 1,000 grants, thus implying a total of new 3,000 PhDs. The target may prove undersized compared with the extent of the efficiency gap of the Italian public administration, but it needs to be tested against the actual attractiveness of the public job for the new PhDs. In this respect, introducing reforms aimed at allowing special career paths in the public employees prove crucial.

The measure also starts PhD programmes especially devoted to the efficient management and development of the huge Cultural Heritage of the country, also by seizing the new opportunities opened by the digital transition. Some fellowships may be reserved for the competencies required by AFAM, also in cooperation with Universities. The design of this class of PhD, which are organized in three cycles endowed with 600 grants, is to be defined under close cooperation with the Culture Ministry.

Implementation. The implementation is managed by the Ministry of University and Research, supported by an active engagement of host Universities. An active engagement of the Public Administration Ministry (PhD for the PA) and the Culture Ministry (PhD for the Culture Heritage) is needed, in order to provide future career opportunities for PhDs in these areas. Attention will be dedicated to the criteria for selection, aimed at granting, on the one hand, the best selection process in terms of quality of students; on the other, criteria will take into account the specific needs of these PhD groups, and will be detailed together with the interested stakeholders.

The initiative will have a significant impact on the development of Southern regions. In particular, given the current distribution of PhD students, Southern Regions and the Islands, currently the territories with the lowest share of PhD students, will benefit from the largest increase in PhDs. At least 20% of resources are expected to be distributed in the South and to the Islands.

Costs. The estimated cost related to the RRF is equal to 0.50 billion euro. A similar investment to Action A is supported with REACT EU funding. RRF actions are “additional” to the baseline, such that they provide an “extension” in the number of supported students, and PhDs with respect to those already in place and documented, both in



quantity and in terms of career paths. Thus, there will have no overlap with the measures in the REACT programme as they will enforce each other by adding additional PhD positions and extending the number of PhD courses and cycles.

Target group. Graduate students.

Timing. The intervention will start in 2021 and will last until 2025.

Self-assessment of State-aid compliance. We do not identify any issues related to State aid under Investment 3.3. This measure will benefit State universities through the ordinary funding formula (Fondo di Finanziamento Ordinario).

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- ~~il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- ~~il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.~~
- ~~Altro (specificare):~~



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **NO**

~~In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.~~

~~2.b Presenza di selettività **SI** **NO**~~

~~La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.~~

~~Indicare se la selettività riguarda imprese individuate per:~~

- ~~identità (aiuti ad hoc);~~
- ~~dimensione;~~
- ~~settore economico o attività (indicare quali);~~
- ~~area geografica¹ (indicare quale);~~
- ~~altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);~~

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- ~~caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali;~~
- Altro (specificare):

FORSE (specificare dubbi):

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico **SI** **NO**

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto **SI**:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- ~~sovvenzione diretta (contributi o sovvenzioni a fondo perduto);~~
- ~~abbuono di interessi (contributo in conto interessi);~~
- ~~agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);~~
- ~~differimento dell'imposta; esoneri fiscali, ammortamento accelerato);~~
- ~~riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);~~
- ~~estinzione o riduzione del debito;~~
- ~~cessioni di beni o servizi a prezzi inferiori a quelli di mercato;~~
- ~~garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);~~
- ~~prestito agevolato (mutuo a tasso agevolato);~~
- ~~riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;~~
- ~~finanziamento del rischio collegato ad un investimento in grandi imprese o imprese~~



~~quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;~~

- ~~partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);~~
- ~~compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;~~
- ~~nel caso delle infrastrutture:~~
- ~~per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;~~
- ~~per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;~~
- ~~per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.~~
- ~~Altro (specificare):~~

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

~~In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.~~

~~II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.~~

- ~~**de minimis** ai sensi del Regolamento (UE) n. 1407/2013~~
- ~~**esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) — specificare sezione e articoli pertinenti~~
- ~~**notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore~~



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~~indicare gli orientamenti di settore²~~

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~~disposizione diretta del Trattato (TFUE)~~

- ~~articolo 93~~
- ~~articolo 107.2 – specificare la lettera pertinente.~~
- ~~articolo 107.3 – specificare la lettera pertinente.~~

~~disciplina sui Servizi di Interesse Economico Generale (SIEG):~~

- ~~Regolamento (UE) n. 360/2012 (SIEG)~~
- ~~Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG~~
- ~~Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70~~
- ~~Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)~~

~~Casi di pre-notifica~~

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body: | | |
| <hr/> <hr/> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE. | | |

— Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.

MISSION 4 – EDUCATION AND RESEARCH

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT M4C2: From research to business

1. Description of the component

From research to business

Policy area / scope: *Strengthening R&D activities and promoting the dissemination of innovative models for basic and applied research carried out in synergy between universities and companies, supporting innovation and technology transfer processes, strengthening research infrastructure as well as capital and skills to spread innovation.*

Objective: *The objectives of this component, developed with individual proposed projects, are articulated on three Areas of intervention and a cross-sectional reform:*

Implementation of R&D support measures to foster simplification and mobility

- a) Strengthening R&D activities and promoting the dissemination of innovative models for basic and applied research carried out in synergy between universities and companies*
- b) Supporting innovation and technology transfer processes*
- c) Strengthening the enabling conditions to support R&I activities*

Reform and Investments:

Reform 1.1: Implementation of R&D support measures to foster simplification and mobility

Area of intervention 1: Strengthening R&D activities and promoting the dissemination of innovative models for basic and applied research carried out in synergy between universities and companies

Investment 1.1) Fund for the National Research Programme (PNR) and Research Projects of Significant National Interest (PRIN)

Investment 1.2) Funding projects presented by young researchers

Investment 1.3) Partnerships extended to universities, research centres, companies and funding of basic research projects

Investment 1.4) Strengthening research structures and supporting the creation of

*“national R&D leaders” on Key Enabling Technologies
Investment 1.5) Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D"*

Area of intervention 2: Supporting innovation and technology transfer processes

Investment 2.1) IPCEI

Investment 2.2) Partnerships in research and innovation – Horizon Europe

Investment 2.3) Strengthening and sectorial/territorial extension of technology transfer centres by industry segments

Area of intervention 3: Strengthening the enabling conditions to support R&I activities

Investment 3.1) Fund for construction of an integrated system of research and innovation infrastructures

Investment 3.2) Financing Start-ups

Investment 3.3) Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote the hiring of researchers by companies

Estimated cost: € 11.440 million to be covered by RRF.

2. Main challenges and objectives

a) Main challenges

Italy needs to strengthen the conditions to develop a knowledge – based economy, competitive and resilient. The country will act on the basis of a systemic approach that foresees the increase of investment in R&D. This component addresses the following main challenges:

- **Low level of R&D spending.** Italy registers a low intensity of R&D expenditure compared to GDP (in 2018 equal to 1.4%) much lower than the OECD average (2.4%), in both public and private sector (0.9% versus an OECD average of 1.7%). In this perspective, the recovery and support to public and private R&D investments is an essential condition to recover the gap in productivity levels of inputs (capital and labour).
- **Low number of researchers and brain drain.** An important barrier to the development and competitiveness of the economic system is the limited availability of skills, with fewer public and private researchers than the average in other advanced countries (the number of researchers per active person employed by enterprises is only half the EU average: 2.3 % as against 4.3 % in 2017). It is therefore necessary to curb the substantial

and lasting loss of technical scientific talent, especially young people, catching up with the performance of other countries.

- **Weak demand for innovation.** In Italy, the reduced demand for innovation and for highly qualified human capital is mainly due to: i) the prevalent specialization of the productive system in traditional sectors; ii) the industry's backbone (typically made of SMEs) characterized by a propensity to contain costs and a limited innovation culture. The use and enhancement of the scientific and technological base available is therefore limited: the volume of research developed in the public R&D system and financed by private companies (as a percentage of GDP) remains distant from the EU average. In addition, in 2019 only 2% of Italian publications were public / private co-publications compared to 4% in the EU.
- **Limited integration of research results into the production system.** The Italian technology system suffers from structural and organisational problems that prevent the transfer of research, even in the many areas of excellence, and its enhancement in terms of patents, commercial agreements and the setup of new businesses.

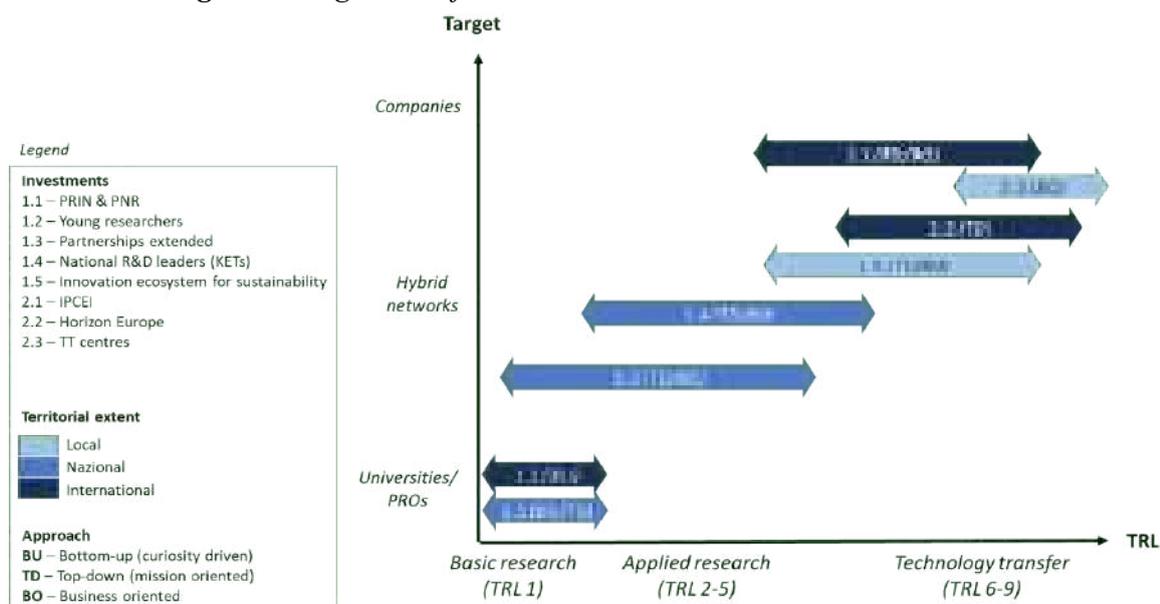
b) Objectives

In coherence with the 2019 and 2020 country-specific recommendations for Italy, the component aims at supporting R&D investments, promoting innovation and technology diffusion as well as strengthening skills, by stimulating the transition towards a knowledge-based economy. The three Areas of intervention envisaged cover the entire supply chain of R&I process, from basic research to technology transfer, with measures that differ both in the degree of heterogeneity of the networks (between universities, research centers/bodies and companies) and in the degree of TRL (Technology Readiness Level). Selection procedures for all measures will be built on competitive basis.

The criteria for the selection of projects will be inspired by: a) critical mass of the beneficiaries, starting from the opportunity to reinforce and enhance the existing ones; b) structural and lasting impact (also through co-financing mechanisms, by encouraging the private sector involvement); (c) spillovers effects on the national economic and productive system; d) feasibility of the projects, considering the RRF deadlines.

In addition, with particular reference to investments 1.4, 1.5 and 3.1, a coordination committee will be set up for such initiatives.

Figure - Integration of measures in relation to the actors involved and the TRL



Preparatory to these measures will be the reform aimed at supporting R&D activities, characterized by a model based on a few horizontal missions, with aggregated and integrated interventions to support the whole chain of knowledge creation (technological poles and research infrastructures, scientific and technological skills, companies). These missions will be consistent with the priorities of the National Research Plan (PNR) 2021-2027 and the pillars of Horizon Europe, in particular pillar 1 and 3. They will also facilitate way to follow the EU Horizon missions and the global challenges of the pillar 2. Reform will be implemented by MUR and MiSE by setting up an interministerial control room and through 2 Ministerial Decrees: the first, referred to mobility issues, is aimed at increasing and supporting the mutual mobility (through incentives) of high-profile figures (e.g. researchers and managers) between universities, research infrastructure and companies; the second one acts by simplifying the management of research funds. The reform will overcome the current logic of redistribution of resources, by favouring a shared approach and it will be oriented towards simplifying bureaucracy in the management of funds devoted to public-private research activities, also supported by the first component of the Mission. Public Research Bodies (EPR) will play a key role both as possible project leaders for Partnerships (1.3), National Champions (1.4) and Territorial Ecosystems (1.5), and as potential beneficiaries of the investments for calls on the PNR Fund and the Infrastructure Fund (1.1).

3. Description of the reforms and investments of the component

Reform 1.1: Implementation of R&D support measures to foster simplification and mobility

Challenges. One of the main challenges concerns the governance mechanisms to support R&D investment and make its policies effective. It must generate a significant impact on the production and research fabric, ensure coherence and critical mass to interventions and avoid dispersion and fragmentation of priorities. Furthermore, the current rigidity of the system governing the mobility of the highest-skilled human resources (i.e. researchers) implies a missed opportunity to periodically leverage these valuable skills to turn R&D investments into industrial applications.

Goals. The systemic approach to support R&D activities will be strengthened with a model based on a few horizontal missions, with aggregated and integrated interventions to support the entire knowledge-creation chain (technological poles and research infrastructures, scientific and technological skills, companies). These missions will strategically comply with the priorities of the National Research Plan (PNR) 2021-2027: i) support the diffused and inclusive growth of the research; ii) consolidate fundamental research; iii) strengthen interdisciplinary research; iv) ensuring the centrality of the person in innovation; v) enhance the circulation of knowledge and skills between the world of research and the production system; vi) accompany the development of a new generation of researchers, technologists and knowledge transfer professionals. These missions comply with the Pillars of Horizon Europe, especially in the context of Pillar 1 (i.e. reinforcing and extending the excellence of Union's Science Base) and Pillar 3 (i.e. Support to innovations with breakthrough and market-creating potential and Connection with regional and national innovation actors). Moreover, the proposed framework will also contribute to paving the way for addressing the EU Horizon Missions (e.g., cancer, climate-neutral cities, and soil health and food) and the global challenges of Pillar 2 (e.g., digital industry & space, culture creativity & inclusive societies, and climate, energy and mobility).

In particular, the reform package here described will overcome the current logic of mere redistribution of resources by favouring a sharing approach and will be directed towards the simplification of bureaucracy related to the management of funds devoted to public-private research activities, also supported by the first component of Mission 1. In this context, the Ministry of University and Research will introduce three main innovations i) increasing and supporting the mutual mobility (through incentives) of high-profile figures (i.e. researchers and managers) among Universities, Research infrastructures and companies (leave of absence); ii) simplifying the management of funds directed to financed projects; iii) creating a unique tenure track path which will unify the current figures of temporary researcher type A and B and allowing higher commitment to research activities and a clearer career path. According to the OECD Science, Technology and Innovation Outlook 2021, mobility between academia and other sectors can help promote an effective interaction among research, education and innovation, as well as opening up alternative career paths for doctorates.

The reform is strictly integrated with other investments proposed under Mission 4, Component 2, such as investments 1.1, 1.3, and 3.2 all concerning public-private collaborations in developing R&D projects. Also, the reform is tied with investment 1.2, which includes short mobility programmes for young researchers to stimulate excellence circulation and spreading.

Implementation. The Ministry of University and Research and the Ministry of Economic Development will be responsible for this reform. Inter-ministerial coordination will be carried out through the Research Commission of the Inter-ministerial Committee for Economic Planning (CIPE) supported by a stable coordination committee at the Presidency of the Council of Ministers (as allowed with the approval of the PNR 2021-2027 deliberated on December 2020, n.74/2020) to establish the priorities in terms of reforms modifications needed in the short term, as well as to define new ministerial decrees that will be needed to set the simplified disciplines for the management of joint R&D activities and the facilitation of mobility. Besides, to support the mobility reform, the Ministry of University and Research will allocate part of the ordinary financing fund (FFO) and part of research centres ordinary financing (FOE) to incentivize mobility among universities and universities and research centres. In particular, dedicated incentives will be temporarily recognized to mobile researchers so to cover additional costs, as well as access to the facilities, infrastructures and research network offered by the host institution.

The Ministry of University and Research and the Ministry of Economic Development will constantly evaluate the effectiveness of territorial impact, assessing the need for initiatives dedicated to specific territories aiming for a reduction in the regional divide.

Costs: The estimated cost related to the RRF is equal to 0.

Target group. Universities, research centres, researchers, enterprises.

Timeline. A first step in supporting this reform was the establishment of the Ministry of University and Research, formerly joined with the Ministry of Education, with the Decree D.L. 1/2020. The intervention on simplification will mainly concern the simplification of the MUR's liability funding procedures and will be completed in 2021, with a Ministerial Decree based on the previous Decree D.M. 593/2016. The intervention will be completed in the first quarter of 2022, this intervention will also include support tools of researchers' mobility from academia to enterprises.

By 2021, the MUR ministerial decree will be approved for the use of the extraordinary resources provided with the Fund for the promotion and development of PNR policies (paragraph 548 of art.1, Law No. 178/2020). The MUR evaluation procedures will also be supported through the measures approved within paragraphs 550 and 551 of art.1, law No. 178/2020, concerning the establishment of the new Fund for the evaluation and enhancement of research projects (10 million euros starting from 2021) and simplification measures for the evaluation of research programmes and projects and their results.

Self-assessment of State-aid compliance: The reform allows for the implementation of initiatives with consequences on State-aid compliance. Assessment will be provided individually for each of the investments described in Component 2.

Area of intervention 1: Strengthening R&D activities and promoting the dissemination of innovative models for basic and applied research carried out in synergy between universities and companies

The Area of intervention aims at strengthening basic and industrial research activities, by stimulating both open and multidisciplinary research (following a curiosity driven and also a scientific approach) and research aimed at addressing strategic challenges for the development of the country. Particular attention is paid to investments earmarked for young researchers as well as for the setting up of public/private partnerships of national relevance or with a territorial scope.

Investment 1.1: Fund for the National Research Programme (PNR) and Research Projects of Significant National Interest (PRIN)

Challenges. The national research system lacks interactions between universities and research bodies and this limits the Italian participation in initiatives under the European Union's Framework Programme for Research and Innovation.

Goals. The Fund will support scientific research measures set out in the National Programme for Research (PNR) 2021- 2027 in such a way as to ensure the implementation of the strategic lines in the field of scientific research in coherence with the EU Framework Programme for Research and Innovation. The approach followed in planning the PNR 2021-2027 proposes a paradigm shift, towards a systematization of programmes for research, development, innovation, support to international relations and industrial policies. The result is a multiannual programme, aiming to contribute to the achievement of the Sustainable Development Goals (SDGs), the European Commission's priorities and the objectives of the 2021-2027 cohesion policy. The goal is to make Italy more attractive for researchers, by fighting territorial inequalities and creating opportunities for young talents. The priorities of the Investment will be defined through consultation with the national scientific community, the central administrations, the Regions and the major public and private stakeholders, in accordance with the recommendations by national, European and international authoritative organizations.

The major areas of intervention of the PNR reflect the six clusters of the European Framework Programme for Research and Innovation 2021-2027: i) health; ii) humanistic culture, creativity, social transformations, a society of inclusion; iii) security for social systems; iv) digital, industry, aerospace; v) climate, energy, sustainable mobility; vi) food products, bioeconomics, biodiversity, agriculture, environment.

As a support of the PNR, a new action has been planned, calling for Research Projects of Significant National Interest (PRIN) to fund three-year projects that, due to their complexity and nature, require the collaboration of research units belonging to universities and research organizations (such as the National Research Center). These projects - which intend to promote curiosity-driven research activities, both fundamental and oriented - are selected on the basis of scientific profile quality of responsible subjects, as well as the originality, methodological adequacy, impact and feasibility of the research project. This type of activity stimulates the development of initiatives promoted by researchers, towards frontier research, and stronger interaction between universities and research institutions. The investment will promote three main directions:

i) Support curiosity-driven research activities in the three ERC macro sectors (i.e., LS, PE and SH) encouraging the synergistic interaction between universities and national research bodies to generate a critical mass and therefore increasing the Italian participation and success rate to EU R&I programmes. The projects will last for a maximum of 36 months and could involve up to 5 research units. The maximum funding allocated for each project will be EUR 2,0 Million.

ii) Support the funding renewal of projects selected on the basis of scientific quality, territorial context and long-term expected impact indicators. This strategy would guarantee the continuity of strategic research lines up to 6 years (3+2 or 3+3). The funding renewal will last for a maximum of 36 months for the projects admitted to funding in the 2021 call, and for a maximum of 24 months for the calls of 2022. The maximum funding allocated for each project will be 1.5 million euro.

iii) Support research activities dealing with strategic emerging topics, such as sustainability and protection of natural resources, circular economy, environmental protection and quality, biodiversity and ecosystem services, and human wellbeing. This specific action will be devoted to supporting interdisciplinary, multidisciplinary and territorial balanced projects aiming at merging different scientific approaches, knowledge, methods, and skills to solve complex problems. Interdisciplinarity and multidisciplinary would act as reliable incubators of innovative scientific discovery resulting from the exchange of ideas and the development of new synergies (serendipity) with the final aim of encouraging changes of consolidated research perspectives, routine, and paradigms. The projects will last for a maximum of 48 months and could involve up to 5 research units. The maximum funding allocated for each project will be 2.0 million euro.

This investment should encourage participation in initiatives under the European Union's Framework Programme for Research and Innovation.

Implementation. The programme is managed by the Ministry of University and Research. The implementation passes through competitive calls, according to the scheme of European research and innovation projects, or in response to calls for proposals setting out the objectives of the projects to be financed, within the framework of the various measures identified. The selection of the Projects of Significant National Interest (PRIN) to be funded go through an evaluation process made by three evaluation panels, one for each of the ERC macro-sectors. A total of four

project calls will be scheduled between 2021 to 2024 (the 2021 call has already been opened and the selection procedure is ongoing).

For the scientific evaluation of the projects, the panels are supported by three external referees with expertise in the ERC sector of the specific project. The considered evaluation criteria are 1) quality of the project (40%); ii) composition of the team, feasibility and appropriateness of the project (40%); iii) social and climatic impact of the project (20%). Besides, 10% of the total funding for the 2020 call has been dedicated to projects presented by young researchers (under 40 years old). With a similar approach, future calls will have dedicated resources to address the divides of the country (such as gender or territorial). Finally, part of the resources will be dedicated to a new action directed to multidisciplinary projects, that usually have difficulties in finding the right space among the sectors identified for the PRIN (ERC sectors).

During the projects submission steps, a quantitative evaluation will be required concerning the environmental issues, among which the mitigation and/or adaptation to climate change, the impact on natural resources (water, air and soil), biodiversity and ecosystems, the adherence to the circular economy principles and the amelioration of health and environmental quality.

The investment is expected to have a significant impact on the development of research projects involving Southern Universities. In particular, we can expect a similar distribution as the one that characterized the funded projects from the PRIN Programme in 2015, as reported in the following table.

Table. Territorial and sectorial division of the PRIN project presented and financed in 2015

| Macro-sectors ERC | Number of projects (2015) | | | | |
|--|--|-------|--------|---------------|-------|
| | | North | Centre | South-Islands | Total |
| LS - Life Science | presented | 792 | 405 | 464 | 1661 |
| | financed | 49 | 34 | 26 | 109 |
| | % financed | 6% | 8% | 6% | 7% |
| PE - Physical Sciences and Engineering | presented | 719 | 381 | 383 | 1483 |
| | financed | 41 | 35 | 19 | 95 |
| | % financed | 6% | 9% | 5% | 6% |
| SH - Social Sciences and Humanities | presented | 586 | 363 | 338 | 1.287 |
| | financed | 43 | 28 | 25 | 96 |
| | % financed | 7% | 8% | 7% | 7459% |
| Total | presented | 2097 | 1149 | 1185 | 4431 |
| | financed | 133 | 97 | 70 | 300 |
| | % financed | 6% | 8% | 6% | 7% |
| Percentage per territory | | North | Centre | South-Islands | Total |
| | presented | 47% | 26% | 27% | 100% |
| | financed | 44% | 32% | 23% | 100% |
| LS - Life Science | | North | Centre | South-Islands | Total |
| | Number of researchers/professors involved in financed projects | 535 | 396 | 356 | 1287 |
| PE - Physical Sciences and Engineering | | | | | |
| | Number of researchers/professors involved in financed projects | 737 | 422 | 372 | 1531 |
| SH - Social Sciences and Humanities | | | | | |
| | Number of researchers/professors involved in financed projects | 562 | 352 | 379 | 1293 |
| Total | | 1834 | 1170 | 1107 | 4111 |
| Percentage per territory | | 45% | 28% | 27% | 100% |

As for State-aid compliance the proposed initiative does not constitute State aid as it is not related to the economic activity of the public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules.

Costs. The estimated cost related to the RRF is equal to 1.80 billion euro, of which 0.80 concerning existing initiatives that were launched with a call opened in Autumn 2020. The cost does not include the cost for personnel, but new personnel may be recruited within the funded projects. Instead, the cost includes a budget devoted to assessment and monitoring activities, in line with what was planned for the 2017 PRIN call (about 5 million euro per call).

Target group. Universities; Public Research Centres; researchers.

Timeline. The new call issued in Autumn 2020 provides for the activation of a single funding procedure with annual opening windows for the submission of research projects for the years 2022 and 2023. Annual calls will be opened from 2022 to 2024. In an attempt to provide continuity in the financing of Research Projects of Relevant National Interest along the whole PNR, the call with enough budget to cover the last three years of the Programme will be planned in 2024.

Investment 1.2: Funding projects presented by young researchers

Challenges. Filling the gap in advanced skills is one of the essential conditions to recover the scarce productivity of the Italian economy: in this perspective, the contribution of ideas and energy of young researchers becomes crucial. Even if the general expectation is that research attracts the most talented to promote long-term socio-economic development and resilience, the working conditions of academic researchers have been continuously deteriorating. According to the OECD Science, Technology and Innovation Outlook 2021, there is a growing number of post-doctoral researchers with non-tenure-track contracts. The precarity of careers might cause a lack of motivation, lower quality of scientific outputs and movements towards more attractive countries. ISTAT data shows that from 2009 to 2018 the number of doctorates that left Italy increased by 10 points to 17.2%. Moreover, looking at the average age of the different steps of the academic ladder, it is clear that the career advances are pretty slow in Italy: the average age is 34 for post-docs, 47 for researchers, 52 for associate professors. Therefore, offering new opportunities dedicated to young researchers is key to retain them within the Italian economic system.

Goals. The investment – strongly inspired by the Excellent Science Pillar of the Horizon Europe programme – finances research activities managed independently by young researchers, who will immediately gain a first experience of research responsibility. The programme will aim at attracting young researchers who are beneficiary of high profile international grants such as the ERC starting grants and the Postdoctoral Fellowships (MSCA). The high amount of the contribution is aimed at attracting excellent researchers and investing their funding in creating research infrastructures and teams in Italy, without losing the international connection, facilitated by the contribution for short mobility periods. This strategy will ensure multi-fold

objectives: i) the anchoring of investments in R&D on the territory, ii) the spread of the excellence in research across universities and research centres, iii) the continuity of research activities of the selected figures for at least 2 years, iv) the attractiveness of Italy as a country where to select the host institution, without losing the opportunity to engage with other countries institutions both for teaching and research. In the framework of this initiative, the selected young researchers will be recruited first as research fellows or visiting professors and, after the necessary evaluations, in the case of MSCA Global Fellowships (duration 36 months) and ERC grantees, they could also be beneficiary of the measures under the D.M. n. 963/2015 (ex art. 1, comma 9 law 230/2005) dealing with the direct recruitment as tenure track (i.e., RTD-B) or permanent (i.e., associate or full professor) figures.

A total of four project calls will be scheduled between 2022 and 2025.

The investment is strongly tied with all the reforms and investments aimed at making Italy an attractive destination for researchers, such as Reform 1.1, which aims at fostering mobility and simplification; Investment 3.1 on research infrastructures and 1.4 on the creation of national R&D leaders, which will be guided by the principle of resource sharing; Investment 1.1, that will provide researchers with new and periodical funding opportunities. Besides, all the investments addressed to the creation of new PhD Programmes and funds (Investment 4.1 first Component and Investment 3.3 in the second Component of Mission 4) will stimulate the creation of new research teams, which is an element of attraction for ambitious young researchers. All these synergies will ensure the long-term retainment of the attracted researchers.

Implementation. The programme is managed by the Ministry of University and Research. The measure is closely integrated with the reform indicated in point 1.1 “Implementation of R&D support measures to foster simplification and mobility”. The selection of the young researchers will be based on i) the score attributed to the project application by the ERC/IF evaluation committee; ii) the impact of the project on the territory in terms of quality of basic research and human capital and technology transfer. All the types of projects considered in this measure (ERC, MSCA-IF, Seal of Excellence) are selected and financed only after the assessment of the DNSH principle. Finally, it is important to underline that despite this measure will be based on an investment in terms of human capital (the young researchers), the project topics and the expected outputs could have positive indirect impacts on all the other environmental objectives. It is possible to expect that specific researches, devoted to the management of water, coasts and protected areas could represent suitable elements for innovation processes, having a concrete positive impact on these sectors.

The investment envisages supporting up to 300 young researchers awarded with ERC grants, with an individual contribution of 1 million euro (on average), depending on the time left on the project. This contribution will be used to support research activities, short mobility periods for research or teaching in other locations in Italy or abroad (requested as part of the funding received), and technology transfer. In order to strengthen the link between investments in research and maintenance of the results on the territory and employment, part of the individual

contribution (up to 20%) will be constrained to the recruitment of at least one non-tenure-track researcher and at least 20% will be invested in infrastructures at the Italian host location.

The investment to support MSCA Postdoctoral Fellowship grantees envisages to support up to 500 recruited researchers with an individual contribution of 0.30 million (on average). This contribution will be used to i) support the research activities of the awarded Postdoctoral Fellowship projects (12-24 months) and ii) to possibly extend the permanence in the hosting institution for a maximum of additional 12 months. This extension could be used to valorize the obtained research outcomes by developing and presenting an ERC or Horizon Europe proposal involving the same hosting institution as a partner and/or to support the technology transfer to companies of the territory. The same contribution could also be applied to MSCA Global Postdoctoral Fellowship (36 months) grantees; in this case, they cannot benefit from the additional 12 months extension but they could be beneficiary of the measures under the D.M. n. 963/2015 (ex art. 1, comma 9 law 230/2005).

The investment to support the applicants who have obtained the ‘Seal of Excellence’ label by the Postdoctoral fellowship MSCA committee, envisages supporting up to 900 figures with an individual contribution of 0.150 million euro (on average). This contribution will be used to i) provide a Research fellowship (12-24 months), and ii) support the research activities.

To ensure a long-lasting impact of this investment, some actions will be introduced: i) for MSCA Postdoctoral fellowship, an extension of the funding by one year will be granted in case the researcher aims to work to a further ERC submission; ii) ERC grantees will be requested to invest in research infrastructures in the host institution and to start creating a new research group. This, associated with simplified rules, mobility incentives and a more defined tenure track path, guaranteed by Reform 1.1, will ensure a higher propensity to stay in our country after the years covered by the funding.

As for State-aid compliance, the proposed initiative does not constitute State aid as it is not related to the economic activity of the public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules.

Costs. The estimated cost related to the RRF is equal to 0.60 billion euro. The resources allocated to supporting ERC grantees will be 0.3 billion euro, while the investment for MSCA Postdoctoral Fellowship (including the Global ones) will be 0.15 billion euro. 0.135 billion euro will be allocated to support the recruitment of applicants who receive the ‘Seal of Excellence’ label by the Postdoctoral fellowship MSCA committee. This investment will be supported with additional resources equal to 0.20 billion euro coming from European structural and investment funds to ensure the continuity of the investment. Also, the costs needed for the evaluation and monitoring activities are considered.

Target group. Young researchers.

Timeline. The intervention will start in 2022 and will last until 2026.

Investment 1.3: Partnerships extended to universities, research centres, companies and funding of basic research projects

Challenges. The new development models require an ever-closer interaction between the world of research and the world of production, and innovations must serve as an opportunity for the development and not as a cause of the decline of our companies. According to the OECD Skills Studies on “Supporting Entrepreneurship and Innovation in Higher Education in Italy”, particularly critical is the low patents and spin-offs production of Italian research and university system when compared to other European comparable experiences. This is due to some systemic challenges, such as the dominant role of small and medium-sized enterprises in the national economy and the large regional disparities in terms of income and productivity. These differences among regional ecosystems hinder the ability of the university to connect with industry and society. Such challenges require the evolution of research strategies, the increase of research competitiveness, and the contribution of research to social and economic well-being.

Goals. This line of action, which is closely integrated with the initiatives to support the research chain, aims at financing up to 15 major basic research programmes carried out by widespread networks of public and private subjects. The investment is aligned with one of the PNR objectives of promoting positive changes by leveraging fundamental research. Moreover, aiming at engaging citizens, as well as facilitating technology and knowledge transfer to territories, companies and public administrations, a dedicated stakeholder engagement process will be conducted to plan, drive and manage (i.e., project control and delivery) each programme. Each project may have different stakeholders according to the specific objectives. In general, we expect the interested communities, the involved universities and research centres, the network of companies engaged in the project, as well as, the Ministry of University and Research and the European Commission to be involved in the stakeholder engagement process.

Such programmes will contribute to strengthen national technology chains and promote their participation in strategic European and global value chains. The programmes will be oriented to the missions of the PNR and the clusters of Horizon Europe, to create new supply and production chains based on these programmes. Possible examples are the following: circular economy, sustainable mobility (sustainable batteries, materials, logistics, etc.), self-driving vehicles, vaccines, bioreactors, new raw materials. Each programme will promote the aggregation of small and medium-sized enterprises around large private players and public research centres; it will encourage collaborative and complementary research activities. R&D projects will include investments both in human capital, by recruiting non-tenure track researchers (at least 100 positions per programme), and resources for basic research development for universities, research centres and enterprises. This strategy will generate a critical mass able to improve the competitiveness and innovation of the production system, produce short-term economic and social value, enhancing, at the same time, the interdisciplinarity and soft skills of the recruited non-tenure-track researchers. At least 20% of the resources will be devoted to research programmes based on low carbon emission economy,

resilience, adaptation to climate change and circular economy, in accordance with the general objective of green transition pursued by the European Commission and Italy as well.

Implementation. The implementation is managed by the Ministry of University and Research. Particularly, the monitoring of the implementation will be under the responsibility of the supervisory board that will be set to monitor Investments 1.3 (extended research partnership), 3.1 (research infrastructures), 1.4 (National Centres on Key Enabling Technologies) and 1.5 (Innovation Ecosystems for sustainability). The measure is closely integrated with the reform indicated in point 1.1 “Implementation of R&D support measures to foster simplification and mobility”. The investment is closely integrated with the PNR and Investment 1.1 in particular. Once the programmes will be defined, working groups will be set up to define, for each programme, a roadmap of objectives. For each programme, a leading subject, responsible and accountable for the development and outcomes of the programme, will be identified, as well as the governance for the specific programme.

The projects will be selected based on competitive criteria including i) adherence to the PNR objectives and priorities; ii) involvement of stakeholders to combine the Technology Readiness Level -TRL with the Societal Readiness Level -SRL; iii) relevance to EU intervention programmes such as the Knowledge and Innovation Communities (KIC) promoted by the European Institute of Innovation and Technology (EIT). Moreover, specific selection criteria will be defined to ensure i) balance of territories involved (i.e., by promoting the involvement of actors from different regions and different zones of the country, including the South and the Islands), ii) the involvement of both large and small-medium enterprises (SME) with particular attention to the younger (< 5 years) and innovative ones. The calls will also take into account the periodic EU country-specific recommendations. Finally, the call for projects, as well as the selection procedure will require a DNSH evaluation, as well as a possible Strategic Environmental Evaluation (SEA) in case the project will be expected to produce a consistent impact on the territory. Once the programmes will be defined, working groups will be set up to define, for each programme, a roadmap of objectives. For each programme, a leading subject, responsible and accountable for the development and outcomes of the programme, will be identified, as well as the governance for the specific programme

On average, 100 million euro will be allocated for each programme. Contribution to single projects within each programme will range between EUR 5 to 20 million. From EUR 15 to 25 million per programme will be devoted to the recruitment of fixed-term researchers (about 100 per programme) that will be based on public selection procedures under the art.24, of Law No.240/2010 and the norms applied to public research centres. A total of two programme calls will be scheduled between 2022 and 2023 and the expected project duration will range from three to four years. In case less than 15 programs would be activated (the defined target is equal to 10 projects), consolidation programme calls would be activated in 2024 and 2025 to fund 12-24 months projects in the framework of TRL 6 and 7. A competitive call will be published in the Official Gazette, interested subjects (both public and private) will be able to candidate as leading subjects, providing an indication of the governance for the programme and the number of researchers they aim to recruit.

The investment is expected to have a significant impact on the development of research projects involving universities, research centres and companies from the South and the Islands. In fact, among the selection criteria, the territorial balance of the actors involved will be considered. Moreover, the creation of networks with partners belonging to different regions of the country will be strongly encouraged.

Concerning the recruited researchers (up to 1500), at least three long-lasting impact scenarios are envisaged: i) absorption by the industry as permanent staff members, with the possibility of supporting the development of private/public research hubs; ii) absorption by the University system or other territorial public research institutions in synergy with the investment 3.4 of Component 1 on “Teaching and advanced university skills”; iii) launch of new entrepreneurial activities.

As for State-aid compliance, the proposed initiative is not directly related to the economic activity of the private or public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules. The initiative will only involve basic research projects, the involvement of private actors will be needed to direct basic research into future practical application paths. In the event that a single investment may involve private operators, the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

Costs. The estimated cost related to the RRF is equal to 1.61 billion euro.

Target group. Universities, research centres, small and medium-sized enterprises, researchers.

Timeline: The intervention will start in 2021 and will last until 2026.

Investment 1.4: Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies

Challenges. Italy needs to strengthen its research infrastructures, spread an entrepreneurial culture, promote programmes at universities and research centres that encourage innovation, via patenting, licensing, and the creation and development of start-ups, with significant contribution of venture capital and private investments.

Integrating emerging technologies into production processes is essential to strengthen the future competitiveness of Italian companies and increase employment opportunities. These new technologies will comprise quantum-based computation, simulations, communications and sensors, composites, new layered materials and devices for 5G/6G communications and beyond, artificial intelligence and machine learning, high-performance computing, cybersecurity, digital twins, big data management and discovery. Knowledge-based innovation is mandatory to address major social challenges identified by the UN Sustainable Development

Goals, with an impact on health, food, water, climate change, migratory trends, digital transition.

Goals. The measure aims at financing the creation of research networks of universities and research institutions united by common objectives and research interests, also aiming to balance territories involved (i.e., by promoting the involvement of actors from different regions and different zones of the country, including the South and the Islands). This will strengthen and institutionalize the cooperation between universities, research institutions and enterprises for the production of innovation-oriented research, offering business advice and learning opportunities. The investment will provide hardware and software infrastructure to be used by highly qualified and internationally competitive personnel. These National Centres will leverage the collaboration between universities, research institutes and companies and will have a technological and/or thematic declination consistent with the priorities of the European agenda and the contents of the PNRR. In this first phase, the following potential topics for the National Centres have been identified (up to five will be financed):

- National Centre (NC) for Advanced Simulation and Big Data analysis and management, supporting innovation and knowledge transfer at national and international level. The Centres include a High-Performance Computing (HPC) infrastructure focused on edge computing and embedded Artificial Intelligence aspects, a priority for the Italian production system. The HPC will be aimed at developing a new generation of numerical applications on datasets generated by the research and industrial sectors.
- NC for Advanced Environment and Energy Technologies. This NC will target the development of technologies for environmental management and renewable energy in synergy with the Italian nodes of pan-European and global research infrastructures in this strategic sector.
- NC for Quantum and Advanced Materials Technologies, Photonics and Optoelectronics. This NC will exploit the new possibilities that quantum science and advanced materials technologies create in the ways we process, distribute and sense information, as well as for the development of new materials for the energy transition. The advances in this field are prime examples of step-change innovations. This NC will ensure Italy will benefit from the approaching technological revolution, Quantum 2.0, which is on the verge of unlocking the power of counter-intuitive concepts of superposition and entanglement. AI-assisted quantum computing will enable discoveries, by predicting not only the ground state of new functional intelligent materials but also the intermediate pathways. Computing technologies utilizing the effects of quantum physics have the potential to solve some computational problems much faster and/or solve some computational problems that are beyond the capabilities of the most powerful supercomputers. This will foster the expected exponential growth of the quantum computing market, with benefits for the Italian economy and society. Photonics is an asset of the entire European community. Photonics is needed for advanced manufacturing, health and biotechnology, image sensors, lighting, navigation, energy (photovoltaic), agri-food (sensors) telecommunications (terrestrial, wireless and space-based). It has applications for autonomous driving, artificial intelligence, quantum

communications, computing and sensors. Photonics contributes to sustainability and the European Green Deal. There are more than 5000 SMEs in the field of photonics and optoelectronics in the EU. In Italy, integrated photonics centres are needed to systematically exploit scientific knowledge to stimulate industrial innovation.

- NC for Technologies for Health (Biopharma), aimed at linking multidisciplinary know-how, intersectoral technologies and bioproducts for people-centred health care and nutritional status, in synergy with the Italian nodes of pan-European and global research infrastructures in this strategic sector (Biobanks, Biochemistry, Clinical Trials, Analytical Facilities, Bioimaging, among others). Its ambition is to support the delivery of new active bio-molecules and new bio-processes for prevention, diagnosis and personal care, based on the principles of the circular economy and green deal and on the exploitation of new technologies (i.e. biotechnologies, nanotechnologies, etc). The new centre is aligned with all the Health Horizon Europe Partnerships
- NC for Technologies for Agriculture and Food (Agri-Tech). This NC will encourage innovation and development of the sustainable agri-food sector to which companies, universities, research centres will contribute, thus promoting private investments. This NC will include several cutting-edge laboratories and infrastructures dedicated to the research and experimentation of technologies in the agri-food sector. Priorities of the centre will be the adaptation to climate change and the prevention of climate-related risks (i.e. drought), the reduction of agrochemistry, the enhancement of biodiversity and agrobiodiversity and the increase in the resilience of farms.
- NC for Sustainable Mobility. This NC will contribute to future transport and mobility services, which need to be part of smart and sustainable city strategies to improve urban resource efficiency, decarbonisation and ensure an integrated transport system. New mobility and transport services and systems are being created due to developments in Information and Communication Technologies (ICT)-enabled web, mobile and big data applications. Traditional automotive, public and private transport models are being challenged as new players emerge with disruptive services; blurring traditional demarcations between public transport and private mobility, including in the area of urban logistics.
- NC for Technologies Applied to Cultural Heritage. This NC will foster research on new technologies for the preservation and conservation of Cultural Heritage materials, expanding and improving current approaches, by leveraging Computer Vision, Machine Learning, Robotics and Material Science.
- NC Technologies for Biodiversity and Environmental Sustainability. The NC will foster innovation and development of technology-based solutions to support ecosystem services and to promote sustainable exploitation of natural resources, safeguarding, at the same time, the value of local biodiversity. The NC will comply with the Pillars of the EU Green Deal ‘Biodiversity Strategy for 2030’ and with the Horizon Europe Mission ‘Healthy oceans, seas, coastal and inland waters.

- NC for Technologies for Industrial Digital Transition – Industry 4.0 (including Artificial Intelligence). This NC will be oriented to capture the competitive advantage offered by Industry 4.0 by reducing time, costs and risks related to the development of the technological solution. The NC will be devoted to experimenting with the use of new technologies, evaluating their effects on products and processes, and experimenting with the opportunities offered to enable the digital transition of the industrial system, including Small and Medium Enterprises. Among the technologies, Artificial Intelligence will play an important role in creating smart systems for process optimization and new smart products.

The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness). The projects of the NCs will be channelled towards impactful projects and linked with EU initiatives and cross-country collaborations. To achieve this goal the NCs will include the most relevant research institutions in the different fields, taking advantage of the existing relationships with other EU research partners and companies.

Implementation.

- a) *Management and institutional setting:* The programme is managed by the Ministry of University and Research and the Ministry of Economic Development. They will jointly set up temporary associations of universities, research bodies and companies (i.e., consortiums). Each consortium will be established including the leading research institutions and the private companies. The inner network that will establish the consortium will be selected based on the development project that will be proposed by the candidate networks, its feasibility, its sustainability beyond 2026, the involvement of the productive sector, the quality of the partners of the consortium. The Ministries will jointly develop the R&D centres governance and management, and integrate them with the Implementation of the R&D support measures (Reform 1.1). Moreover, the Ministries will ensure the differentiation from the "innovation ecosystems" (Investment 1.5).
- b) *Hub-and-spoke structure:* The NCs are based on the backbone of the public research system. Any NC will be based on a central hub, where most of the management and the research activities will take place and spokes where further research infrastructures and activities will be located. The hub and the spoke nodes will be identified based on the scientific specialization and innovation capabilities of the research institutions that will host them.

The spoke institutions and the private companies will join the NCs, once these have been established, with specific agreements that will rule the research and innovation activities and the sharing of the research and technological infrastructures.

- c) *Activities:* Every NC will implement the following activities:
 - Research and innovation activities:

- Relevant research infrastructures will be created, and existing ones will be improved
 - Research and innovation programmes will be implemented in cooperation with the private sector. The cooperation will include leading companies along with SMEs that will benefit from the strategic relationship with highly qualified research institutions and leading companies. The private companies will co-fund the activities with their personnel and research structures.
 - Support to start-up and spin-off companies, with the involvement of private leading companies and venture capital investors. This initiative will be linked to measures in Component 1 of Mission 4 to support the creation of an entrepreneurial culture among the researchers and the university students.
- d) *Budget*: The NCs will allocate up to half of the budget to activities that benefit research institutions and companies not belonging to the established network of the centres. Specific research calls will be set up by any NC to cooperate with other companies and research institutions, and let them have access to the research facilities of the NCs. The selection and the engagement of companies in the actions will be managed by the NCs, which will guarantee equal opportunities and transparency.
- e) *Sustainability*: As far as the long-run financing is concerned, the activities will generate positive cooperation with the private sector that is expected to continue over the 5 years of implementation, guaranteeing the impact of the projects beyond the first 5 years. The integration with the actions of Investment 3.1 will contribute to guarantee the sustainability of the NC beyond the first 5 years. Moreover, as the NCs will be established with the main contribution of existing research institutions, their sustainability will be guaranteed by the pre-existing entities. Concerning environmental sustainability, each centre would be requested to ensure that at least part of its activity will be devoted to contributing to the environmental objectives. The centres will have a technological and/or thematic declination consistent with the priorities of the European agenda and the contents of the PNR. The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness).
- f) *Governance*: In terms of governance, the NCs will comprise an Executive Board (EB) and a Council. The NC EB members and chair will be world-leading, independent, science-technology-innovation leaders, identified through competitive calls. The EB will be responsible for managing the business activities of the NCs and will represent the NC both internally and externally. It will elaborate on the basic premises of the NC science, research and innovation policy and draw up business development and financial plans. The EB will also negotiate with the Government to obtain institutional funding and define how it is to be distributed among the NCs. A key duty of the EB is to appoint the NC directors. The NC Council will consist of the EB members, and the NC Directors, as well as the Directors of the RIIs (including the ones supported by Investment 3.1) and innovation ecosystems

(including the ones supported by Investment 1.4) affiliated to the NC. The NC council will participate in the EB decision-making processes on questions relating to the NC business strategy and will assist with the implementation of EB resolutions. This governance scheme will be linked to the general governance of the Plan and will allow the Supervisory Board to advise on the implementation of this measure.

- g) *Administrative procedure and coordination with other procedures:* Up to five of the NCs identified above will be created following a competitive call by merging existing world-leading laboratories already present in Universities, and public and private research centres, as well as by setting up new bespoke infrastructure. Close cooperation between RIIs and NCs will be required, whereby some RIIs could be part of the new NCs, and others, with independent governance, could be affiliated to the new NCs. Existing consortiums or other research institutions will have the opportunity to be selected as one of the National Centres.

A ratio of the budget will be allocated to initiatives that will be carried out in Southern Italy. In particular, specific incentives will be implemented to stimulate the networks to include research institutions and companies from Southern Italy, as well as to establish one of the hubs in Southern Italy.

As for state-aid compliance, in the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

Costs. The estimated cost related to the RRF is equal to 1.60 billion euro.

Target group: Universities, research centres, research infrastructures, data infrastructures and companies. The measure will have an impact mostly on applied research and innovation.

Timeline: The intervention will start in 2021 and will last until 2026.

Investment 1.5: Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D"

Challenges. Innovation must be conceived as a real ecosystem that must include advanced training and laboratories, created in partnership with private companies. They must be able to exploit and enhance the skills of researchers, otherwise attracted by appealing employment opportunities abroad. The scarce presence of business incubators in Italy limits the transition of innovation from the research field to that of enterprises. Italy needs to strengthen the training mechanism, through collaboration with the productive world, widening the opportunities to develop initiatives promoted by dynamic young people. The challenge is therefore to be able to count on locations, the ecosystems of innovation, where these components coexist, influence

and stimulate each other, fuelling the circulation of ideas, energies and resources to the benefit of research development and its positive effects on the business environment and society.

Goals. The project is centred on academic, industrial and blended (PPP) research and innovation infrastructures (RIIs). Innovation ecosystems are physical places of contamination between universities, research institutions, companies and local institutions; their activities are related to higher education, applied research, innovation, on specific technological areas, defined based on the specialization of the territory. It is expected that up to 12 innovation ecosystems will be distributed on the national territory with regional coverage. Formally, this initiative is not going to support the creation of new research organizations but only temporary networks of research institutions and companies implementing the different actions. Similarly, an existing leading subject may lead to the creation of a partnership among existing institutions. The innovation ecosystems will play a crucial role in the implementation of research and innovation activities in the field of environmental and social sustainability. To this aim, a *grand-challenges-oriented* approach will be implemented, fostering the creation of *impact innovation and entrepreneurship*. The scope of these networks will be defined based on:

- 1) Scientific excellence of universities and institutions.
- 2) Specialization of the Region, that will host the initiatives.
- 3) Involvement of large companies as well as SMEs.
- 4) Availability of local institutions to support the initiatives.
- 5) National and international relations with other centres of scientific excellence, which will become available for collaboration.

In details, for any innovation ecosystem in each regional territory, universities and public research bodies, through single or joint initiatives, will implement articulated projects, including multiple actions, among the following options:

- Training and education activities:
 - o Universities and public research centres in collaboration with companies: courses catering to the training needs of companies, in order to bridge the mismatch of skills. These courses will be characterized by large flexibility in the definition of the content of the training (free from traditional scientific-disciplinary sectors), lecturers and instructors coming from both academia and the business world; approach to teaching (innovative teaching: proactive, practical, multidisciplinary and personalized, with a combination of active-distributed-flip-learning, support of digital systems, group work, etc.); criteria and method to select students (tests, entry, interviews, etc.); duration of training courses, integration into the companies.
 - o Industrial doctorates, with the involvement of companies, especially SME, aimed at conducting research activities functional to their innovation challenges.
- Applied research activities
 - o Applied research and innovation programmes, in partnership with local companies, especially SME, and private research centres

- Research and innovation infrastructures (RIIs), that will support the research activities carried out in cooperation with companies, especially SME and research centres (also hosting operational units of companies) as well as open-labs or joint laboratories with companies. This action will be particularly implemented to involve local supply chains and micro-business networks, to stimulate a long-lasting impact on the territories. The RIIs will also support the transfer of research activities to the market, i.e. initiatives to create new spin-offs and innovative start-ups.
- Support to new start-ups, through the incubation of research spin-offs and the contribution of venture capital operators, as well as support to other technology transfer initiatives. This initiative will be linked to measures in Component 1 of Mission 4 to support the creation of an entrepreneurial culture among the researchers and the university students.
- Involvement of communities as well as local institutions, to strengthen the engagement of citizens on issues related to innovation, the sustainability of social and economic development and the importance of skills and scientific culture.

The projects are expected to impact the local systems of companies, especially SME, to improve their attitude to innovate, employing: tailor-made education and training activities with the opportunity to improve the attitude to innovate of the workers, support to carry out research actions, the availability of accessible research infrastructures. Their distribution along the national territory will be essential to impacting the regional divide in innovation.

The selection of the projects that will be funded will be based on different factors, including:

- The quality of the scientific and technical projects, and the coherence with the scientific and productive vocation and specialization of the territories where the projects are expected to be based
- The effectiveness of the projects in supporting companies, especially SMEs, to improve their attitude to innovate
- The capability of the projects to stimulate national and international relationships with research institutions and leading companies
- The effectiveness of the third mission actions and their potential to engage local communities and institutions.

Implementation. The programme is managed by the Ministry of University and Research. The measure is closely integrated with Reform 1.1. The integration with the actions of Investment 3.1 will contribute to guarantee the sustainability of the innovation ecosystems beyond the first 5 years.

The implementation will move from a call for proposals to networks of universities, public research bodies and companies that will be asked to submit “innovation ecosystem” projects, structured as described above. Each project proposal will be identified in a regional area. Private companies and research centres will participate in the projects for the implementation of the training and research activities that involve the contribution of the private sector. The selection and the engagement of the private companies in the project proposals will be managed by the

local universities and research bodies. Any project will be assessed in terms of feasibility, sustainability beyond 2026, cofunding from other sources (e.g. regional funds), involvement of the productive sector, quality of the partners, impact on social and environmental sustainability. The call for projects to be financed as innovation ecosystems, as well as the selection procedure will require a DNSH evaluation, and a possible Strategic Environmental Assessment (SEA) in case the project will be expected to produce a consistent impact on the territory. In the case of research, infrastructure will be created, the same assessment requested for initiative 3.1 on research and innovation infrastructure will be applied.

The research activities will not have a direct environmental impact. However, a sustainability assessment of the direct research activities will be required. Generally, public research bodies will be asked to play as leading subjects of the network proposals; however, due to local opportunities or constraints, private research centres or companies can also play as leading subjects. This governance scheme will be linked to the general governance of the Plan and will allow the Supervisory Board to advise the implementation of this measure. Attention will be dedicated to the specificities of the Italia macro-regions (North, Centre, South and Islands)

The implementation phase foresees an integration with the “Fund for construction of research and innovation infrastructures” as well as with the project “Strengthening of research structures and creation of "national R&D leaders" on some Key Enabling Technologies " and other measures of the Plan devoted to the creation of innovation ecosystems (see Missions 5 and 6).

This investment is expected to particularly benefit Southern regions and Islands. Selected and funded initiatives in these regions will benefit from further contributions of the measure on the “innovation ecosystems” in Mission 5.

As for state-aid compliance, In the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

Costs. The estimated cost related to the RRF is equal to 1.30 billion euro.

Target group. Universities, research centres, enterprises. The measure will have an impact mostly on applied research and innovation.

Timeline: The intervention will start in 2021 and will last until 2026.

Area of intervention 2: Supporting innovation and technology transfer processes

The Area of intervention is aimed at strengthening the propensity for innovation of the productive world, by encouraging a systemic use of research results and facilitating the setting

up of international network. Measures targeted at companies are accompanied by a reorganisation, rationalisation and strengthening of structures offering advanced technological services and innovative technology transfer services. A best practice that could inspire the initiatives is the Italian Institute of Technology in Genoa.

Investment 2.1: IPCEI

Challenges. The relaunch and recovery, when they have characteristics of economic resilience and sustainability, are linked to the need to position the country on the strategic European value chains, safeguard the knowledge, raise the level of investments and services for research and development of new technologies, contaminate the productive system with the results of R&D activities by facilitating the application of technologies by SMEs.

The challenge concerns the strengthening of strategic value chains in Italy, in close synergy with the European strategic planning and agendas.

In the next programming period Italy has to face with ambitious challenges to pursue policy objectives set out at European level, regarding territory cohesion, resilience to external and not expected shocks, specific thematic issues as the green and digital transition. To accomplish significant results a huge amount of resources is needed without any risk of crowding out: under cohesion policy and fund could be supported interventions and projects that could have a more effective impact on reducing territorial disparities; under REACT-EU can find room interventions and projects able to be implemented in a very short time so to allow beneficiaries to overcome difficulties coming from the pandemic crisis; under RRF it is appropriate to fund a wide range of interventions made of both reforms and structural investments with a clear capability to have a long term and lasting impact on the whole national territory, regardless to the location they will be carried out.

Additional resources from RRF can only be welcome for cohesion policy because they allow to free national and cohesion resources to strengthen those part of national territory that has more suffered from the current crisis.

Goals. The objective of the measure is aimed at strengthening the financial endowment of the "IPCEI Fund", pursuant to art. 1 paragraph 232 of the budget law for 2020 for the implementation of IPCEIs in the field of research, development, innovation and first industrial production (Communication from the Commission (2014 / C 188/02).

IPCEI Fund can support companies that participate in the implementation of IPCEIs undertaken in all areas of strategic intervention and value chains identified by the European Commission. The general criteria for the intervention and functioning of the IPCEI Fund as well as for the granting of subsidies to companies participating in IPCEIs will be defined with an upcoming decree of Minister of Economic Development, in agreement with the Minister of Economy and Finance.

On the basis of these criteria and in compliance with the authorization decisions of the European

Commission adopted for the projects concerned, the individual interventions will be activated by decrees of the Minister of Economic Development.

IPCEIs bring together knowledge, skills, financial resources and economic actors from across the Union, to overcome serious systemic or market failures and respond to social challenges that cannot be met otherwise. They are intended to foster collaboration between the public and private sectors to undertake large-scale projects that bring significant benefits to the Union and its citizens. It aims at supporting research, development and innovation projects identified with specific calls, in collaboration with EU counterparts. This also promotes the participation of Italian firms in research and innovation partnerships (European Partnerships) within the framework of the Horizon Europe program.

Implementation. The measure is managed by the Ministry of Economic Development (MiSE). For the identification of companies and research institutions, the MiSE, as part of the industrial policy initiatives promoted by Italy and in conjunction with the other EU Member States and the European Commission, launches on its portal web the request for presentation of the expression of interest by companies for participation in IPCEI projects under construction. Interested parties are asked to submit a "Project portfolio" (indicating the location of the planned investment, the main characteristics of the project, the eligible costs, the start and end date of the project) and the presentation "Project Sheet". Following the collection of projects and the evaluation by the MiSE of the applications and their consistency with the national strategies, through a direct comparison with the candidates, the national teams are defined.

The resources made available under the RRF would be used to finance both already approved IPCEIs and future ones, such as cloud, health, raw materials, and cybersecurity. Given the centrality and importance that the Italian Government assigns to the IPCEI instrument, the Ministry of economic development believes it is useful to encourage the participation of Italian companies in all the important project of common European instruments. Obviously, only projects on which companies will converge and therefore prove to be more mature can be financed. Therefore, to date, it is difficult to understand and foresee the exact allocation on the different IPCEIs, because the exact allocation will depend on the readiness of the business sector.

Furthermore, the amount of resources requested for this investment is only a part of the real need for funding and it will be complemented by both national and European funds, such as cohesion funds that will be used in particular for investments in Southern Italy. The Italian authorities will also evaluate, whether relevant, alternative State aid compatibility bases, beyond the IPCEI Communication, to provide public support to all pre-selected individual projects.

So far, Italy has been participating in 3 IPCEIs, two on *Batteries* and the other one on *Microelectronics 1* (SA.46595 - C2018 8864):

- *Batteries 1* – main objective is to create a fully integrated value chain in the EU which will produce raw materials, cells, modules and battery systems on a large scale, i.e. designed for mass production, and which will enable industrial-scale conversion, recycling and refining.

- *Batteries 2* - This project will enable the complete realization of a fully integrated value chain in the EU capable of producing cells, modules and battery systems on a large scale, enabling conversion, recycling and refining on an industrial scale, consistent with new circular economy models requested by Brussels.
- *Microelectronics 1* - main objective is to develop innovative microelectronic technologies and components that can be transferred to downstream industries, primarily the automotive and internet of things sectors, to generate new or improved applications or further research and development in these sectors.

On 30th March 2021, Italy has launched a call for expression of interest on IPCEI regarding *Next Generation Cloud Infrastructure and Services*. It aims to support highly innovative projects in the digital field, and in particular relating to digital infrastructures and cloud services, in order to promote investments in Italy capable of developing new technologies or products associated with the following applications: *Data/Communication, Data Protection, Cybersecurity and Threat Intelligence, Smart home/office/mobility, Energy efficiency and environment sustainability, Industrial Automation, Aerospace/Defence, Finance, Manufacturing, Healthcare, Others*. The main workstreams are: *Infrastructure, Cloud Platform and Services, Cloud Edge Continuum*. The research and technical organization involved is National Research Center (CNR).

Furthermore, Italy is going to launch 2 IPCEIs on:

- Hydrogen:
 - objectives: it aims to produce sustainable hydrogen, in particular from renewable sources; produce hydrogen-powered electrolyzers and heavy transport vehicles, such as ships, airplanes, commercial vehicles; develop solutions for the storage, transmission and distribution of hydrogen; implement industrial applications of hydrogen, to encourage the decarbonization of industrial plants, especially in those sectors that are difficult to electrification.
 - main workstreams: vertical workstreams, linked to the various phases of the hydrogen value chain (production, logistics, energy combustion and other final applications), and transversal workstreams, linked to the production chain logic (industry, refineries, mobility, network stabilization and residential sector).
 - research and technical organizations involved: ENEA.
- Microelectronics 2:
 - objectives: it aims to support investment projects with a high innovative content, in order to develop an industrial production of new technologies or products, in the application areas (Vertical Markets) relating, in particular, to connectivity through 5G and IoT, Smart mobility, Energy efficiency and environmental sustainability, Industry 4.0, Aerospace.
 - main workstreams: technology platforms, design, manufacturing and integration packaging;
 - research and technical organizations involved: National Research Center (CNR).

Ministry of economic development has received projects for these 2 IPCEI (Hydrogen and Microelectronics 2) for a total of 10 billion/€. On the basis of previous IPCEIs, about 55% of

the entity of a project can constitute the funding gap, and therefore can receive the State contribution.

The launch of IPCEIs on Health and Raw Materials will follow shortly. The European Commission decision is expected by the end of 2021 for IPCEIs on Next Generation Cloud Infrastructure and Services, on Microelectronics 2 and on Hydrogen. With the European Commission decision will start the implementation of business projects.

Costs. 1,5 billion/€, 90% Southern Italy, 10% Centre-Nord Italy. The investment costs and their distribution on territories have been planned on the basis of current IPCEI on Microelectronics. Such a territorial distribution could be better defined once IPCEIs to be supported will entry the implementing phase.

Target group. Research centers, enterprises.

Timeline. The intervention will start in 2021 and will last until 2026.

Investment 2.2: Partnerships in research and innovation – Horizon Europe

Challenges. The challenge to be faced concerns the need to support the competitiveness of specific territorial or sectoral areas through an intervention capable of:

- developing favorable conditions for investments in knowledge and innovation;
- promoting closer relations between the research community and industry, helping to stimulate scientific and technological innovation in order to achieve smart, sustainable and inclusive growth in the European Union.

Goals. The aim of the intervention is to support research, development and innovation projects as identified with specific calls for participation in research and innovation partnerships (European Partnerships) within the framework of the Horizon Europe program and in conjunction with EU counterparts.

The project aims to allow the world of research and Italian companies to be an active part in the so-called European partnerships, which the European Commission will launch as part of Horizon Europe (as early as 2021). These transnational research initiatives can represent an important driving force for the development of R&I on strategic issues for the relaunch and growth of the country.

The Italian authorities intend to focus on the following Partnership that the European Commission is going to launch in the period 2021-2027:

- European Partnership n. 8 (High Performance Computing), initiative implemented pursuant to art. 187 TFEU;
- European Partnership n. 9 (Key digital technologies), initiative implemented pursuant to art. 187 TFEU;
- European Partnership n. 26 (Clean energy transition), initiative implemented in co-financing with the EU;

- European Partnership n. 31 (Blue oceans – A climate neutral, sustainable and productive Blue economy), initiative implemented in co-financing with the EU;
- European Partnership n. 35 (Innovative SMEs), initiative implemented in co-financing with the EU.

Priority will be given to Partnerships on the basis of their state of play and on the basis of the territorial and entrepreneurial impact they are able to generate.

Implementation. The implementation of the project proposal is linked to the national participation (funding) in the joint calls that the consortium of partners (made up of the European Commission and member states interested in each issue) will decide to launch to implement the action program of each partnership. When the call is launched, the Italian resources invested in that action will only and exclusively benefit research institutions, companies or other Italian beneficiaries.

With the ministerial decree of 1 July 2020, the Ministry of Economic Development has equipped the Fund for Sustainable Growth with a reference regulatory framework for the support of the projects of Italian companies selected in the calls issued by the bodies, institutions or joint ventures operating centrally for the European Union. With this modality of intervention, the Fund for Sustainable Growth favors the participation of programs or projects prepared by companies in the lines of financing opened by the European Commission and other Community institutions in implementation of Community programs concerning objectives of significant interest for the competitiveness of the country.

Costs. 200 billion/€, 80% Southern Italy, 20% Centre-Nord Italy.

The amount of resources requested for this investment:

- allows to give continuity to performing ended initiatives carried out on an experimental basis during the programming period 14/20, enabling synergies between different levels of government and different financial sources;
- is only a part of the real need for funding and it will be complemented by both national and European funds, such as cohesion funds that will be used in particular for investments in Southern Italy.

The investment costs and their distribution on territories have been planned on the basis of previous similar initiatives, taking into the account the need for Italy to develop the productive and entrepreneurial national system and to involve it in European initiative starting from less developed regions.

If some of the projects require financing above GBER thresholds, notification will be done under the Framework for State aid for Research and Development and Innovation.

Target group. Research centers, enterprises

Timeline. The intervention will start in 2021 and will last until 2026.

Investment 2.3: Strengthening and sectorial/territorial extension of technology transfer centres by industry segments

Challenges. Research results are to a large extent a public asset which should be applied for society's use and benefit. Applying knowledge and technologies to society includes transferring them to the industry in order to fostering innovation process while generating income to support basic research and reward inventors. So far, the Italian technology transfer system, mainly based on the activities carried out by the Competence Centres (CC), the Digital Innovation Hubs (DIH) and the Points of Digital Innovation (PDI), has produced a significant step in support to businesses, focussing on SMEs, in the digital transition, also through awareness raising, training and assessment activities in respective territories and industry segments.

Nevertheless, the technology transfer system in Italy still shows significant areas for improvement, among which, the reluctance of companies to open up to forms of collaboration with universities and research centers, the lack of attractiveness of existing centers, the fragmentation of the system and the presence of too many actors without a clear mission and a defined purpose and, finally, the lack of clear governance. In this perspective, it becomes necessary to rationalize and strengthen the system of specialized centers and structures, and to simplify access and exploitation of skills and technologies.

Goals. The measure is aimed at strengthening the activities, also through a process of reorganization and rationalization and specialisation of existing centres, to offer advanced technological services to companies.

This component is strictly interlinked with M1C2 with reference to Transition 4.0 plan.

In detail, investments will be allocated to the following types of structures:

Competence Centre: Competence Centres of the transition 4.0 Plan, are public-private structures recognized following a public selection procedure and are one of the most innovative and effective tools in implementing digital transformation programs of processes, products and business models. One of the peculiar characteristics of the CC is the “agile” structure that governs a wealth of knowledge, skills and abilities that combine to constitute highly specialized centres of excellence with unique characteristics in the national panorama national: by aggregating the knowledge on 4.0 technologies and applications the CCs are immersed in an ecosystem of partners - Institutions, Universities, Research Centres, but above all technological leaders companies - with a native predisposition towards innovation and change e therefore with high resilience characteristics.

The Competence Centres are the physical and virtual place where ideas become projects and where research results become solutions for the market thanks to a series of services ranging from training and support for project design in innovative areas to test beds and use cases.

At present there is a need to reinforce the network of Competence Centres increasing the efficiency and the effectiveness of the 8 CC currently in place. Eventually, new centers can be financed according to the emerging needs of specific sectors or local ecosystems, always in a

perfect matching of public and private funds.

The CCs are centres of excellence on a national scale.

The Network of on-the-ground innovation hubs: in order to reinforce the network of centres targeting SMEs in proximity. The aim is to fill the gaps and reinforce existing structures, which can offer a range of service from awareness raising, to training, technological brokerage, access to finance for technological innovation, technical audit and test beds.

The process will be based on European Digital Innovation Hubs (EDIH) in Digital Europe Programme (DIGITAL), financing, through the RRF, additional services of these hubs and also supporting those selected hubs, having received the seal of excellence from the EU (see below-the implementation section). While not exclusively, they will have a focus on supporting the adoption of cutting- edge technologies such as Artificial Intelligence, High Performance Computing and cybersecurity.

EDIHs are an important tool to support SME digitalisation, they are “one-stop-shops” providing technical expertise, opportunities to “test before invest”, financing advice, training and more. As such, they provide key services to business wanting to explore digital opportunities that reduce the barriers and risks they face in doing so.

Cooperation with existing structures. The above-mentioned CC and on-the-ground innovation hubs will aggregate in their activities the private sector and will also cooperate and involve existing structures at territorial level, such as the Digital Innovation Hubs (DIH) and Points of Digital Innovation when needed and according to their objectives.

Implementation. The program is managed by the Ministry of Economic Development.

The centres will be financed, favouring an aggregation and specialisation logic both in terms of know-how and services provided, and with the final aim of strengthening and rationalizing the whole system of the Technological transfer. The financing of the already existing centres will be based on the assessments of the performance and on the evaluation of eventual funding gaps. The precondition to finance new centres is the matching with private funds, essential condition to guarantee the sustainability of the centres well beyond 2026 is the evaluation of the quality of services.

A network of EDIHs will be established and implemented under Digital Europe Programme. The selection of the hubs takes place in two stages. Firstly, Member States have pre-selected eligible hubs using an open and competitive selection process, based on national rules. Secondly, following a restricted call, there will be a European level evaluation. Hubs that are evaluated as good enough and fall within the budget threshold will be funded under DIGITAL. Others that are evaluated as good but cannot be funded under DIGITAL, due to lack of budget, will receive a “Seal of Excellence” and can participate in the network without receiving DIGITAL funds. These extra EDIHs, not funded under DIGITAL, could be 100% funded from RFF, if relevant for the national strategy.

For TTC private-public partnerships are envisaged, this is crucial for long-term viability: the

centres are mainly service providers and their survival will depend on their ability to compete in the market.

Costs. The estimated cost related to the RRF is equal to € 0.350 billion the amount is estimated according to the current amount of resources dedicated to Competence Centres and European Digital Innovation Hubs (on average a cost of 1.2 million euro per year).

Target group. Technology transfer structures and SMEs.

Timeline. The intervention will start in 2021 and will last until 2026.

Area of intervention 3: Strengthening the enabling conditions to support R&I activities

The Italian technology transfer system still shows significant areas for improvement, referred to the weak attitude to cooperate between the public scientific base and the business world, the shortcomings of attractiveness of the existing centers, the fragmentation of the system, the presence of a lot of players without a clear mission and a defined purpose as well as the lack of a clear governance.

Investment 3.1: Fund for construction of an integrated system of research and innovation infrastructures

Challenges. The evolution of economic systems towards knowledge-based development requires research and innovation infrastructures bridging the industrial and academic sectors. These will facilitate the osmosis between the scientific knowledge generated in top-quality research infrastructures and the economic sector, fostering innovation in the industry.

Goals. The Fund will be used to build or strengthen, on a competitive basis, research infrastructures (RIs) of pan-European relevance and dedicated innovation infrastructures (IIs), with a complementary scope and coordinated with the measures foreseen within the "innovation ecosystems" (Investment 1.5) and "national R&D leaders" (Investment 1.4).

The RIs are unique resources enabling the performance of advanced studies in various fields, open to usage by researchers who are awarded access based on international standard competitive calls. The RIs design, implement, operate and constantly update and upgrade their facilities for research and innovation in specialised domains, but with interoperability aims to enable multidisciplinary research as well as multi-TRL data exchange or integration. Upgrades of RIs or establishment of novel RIs and IIs will be awarded following the same assessment processes as defined by ESFRI and the National Roadmap (PNIR chapter pf PNR). RIs are typically aimed at supporting curiosity-driven research as well as TRL 1-3 applied research, mostly in the spirit of open innovation. The proposed measure comes from the need to extend the scope of some RIs to provide unique services tailored also to the higher TRL (4-5) which are of direct interest by industry to increase their competitiveness.

The fund will foster a combination of public and private investments, thanks to blending mechanisms, assessing and enforcing the long-term sustainability of the research and innovation infrastructural undertakings.

Currently, the innovation-oriented industrial cooperation with RIs has been twofold: as a supplier involved in co-creation of unique solutions for advanced, often large scale, instrumentation; and as users of these resources for carrying out own innovation or testing projects.

A new model is needed to cater for the industrial needs of knowledge-based innovation. Whilst maintaining the competitive open access to RIs and IIs for industrial users performing research leading to open-innovation and open data, the substantially upgraded catalogue of innovation-oriented research services will also be offered for those industrial access proposals that require full IPR ownership and confidentiality of results, at real-cost, no-profit conditions. The role of industry as a possible Partner and direct financier of the RI and Innovation Infrastructures would be contributing to the development and deployment of new and ad-hoc infrastructure services for industry, with the direct benefit to participating in the implementation of large test-beds, advanced technology open data services, test prototypes and solutions to be possibly adapted for own production purposes. Most of the work to bridge from fundamental knowledge to medium-high TRLs is nowadays shared by competitors and open to new enterprises that nevertheless may still need protected access to the qualification and final development of their proprietary research. Participation of industry or services in the capital of IIs dedicated mostly to open innovation will be an attractor as the possible proprietary pay-access will be facilitated and maximally effective. The open-innovation vs. pay-access share will be tuned to international standards and may vary from case to case.

Adequate scientific and technical staff must be permanently employed at the RI and II as only a high-level permanent staff can guarantee vision of developments and effectiveness of operation. Most of the volume of research will nevertheless be produced by users accessing the facilities. Remote access to RIs and IIs, as made crucial by the pandemics, does require a strong permanent staff to handle effective remote interaction and guidance of measurements, experiments, calibrations, tests by the users.

The users of RIs and IIs will be national and international academic researchers, industrial direct users, industrial consortia or associations accessing perhaps through service providers (public or private) and users of the data generated by RIs and IIs according to open science, open innovation or protected industry results.

Access by industry or other economic organization may be oriented to a) contribute to open-innovation, or b) reinforce own competitiveness by retaining all results. In the first case, the access could be supported by public funding, as is the case for fundamental research. In the case of proprietary research, the services will be still selected for relevance, but then the access cost will be paid by the user. The relative quota of open-free access and pay-for-access will strongly depend on the exact scope of each RI and II, but the open science / open innovation

scope shall always prevail in the scope of the centres, whilst offering substantial opportunities to paid-for access.

The cost of RIs is variable, with typical figures ranging in the 50-1000 M€ in the hard sciences and energy sector, or to 5-300 M€ in the biomedical, environmental, social and cultural sectors. Distributed RIs often are built upgrading and integrating existing resources suitable to be reoriented to the new mission. The general rule of operating costs is 10% of the total construction investment per year. The RIIs (RIs+IIs) system will fulfil the objectives of the EU Competitiveness Council. The RIs will strengthen the Italian excellence in research and technology, and the IIs will provide academia and industry with platforms to develop smart integrated systems, ranging from prototype design to pilot production. The exchange of data and metadata will create the background for the development of open innovation. The plan will build on the experience of ESFRI (European Strategy Forum on Research Infrastructures), ERIC (European Research Infrastructure Consortium) and PNIR (National Plan for Research Infrastructures), accessing the resources of Pillar 1 of Horizon Europe, also generating open FAIR data and data services to the benefit of research and innovation through the European Open Science Cloud - EOSC. Innovation Infrastructures will develop, concerning the goals of Pillar 2 (industrial competitiveness) and will create and grow Innovation oriented services, with unique technological resources, as well as demonstrators of usage of the FAIR data, offered for industry and research access.

The ensemble of RIIs will play an important role for large, medium and SMEs, and will seed the development of start-ups and spinoffs, while leveraging investments by the European Innovation Council (EIC) and, within the PPP framework, by the European Investment Bank, the Italian National Promotional Bank and other institutional investors.

By combining open competitive access to RIs and services to industry, the full cycle from fundamental research to pilot lines will be implemented on strategic topics like the development of new materials and devices in key areas such as communications, quantum technologies, renewable energy, health technologies, with the support of Artificial Intelligence, Machine Learning, and quantitative business science. While Italy has competitive know-how in these areas, it lags when it comes to translating it into economic impact, due to the lack of pilot facilities and capital. The Italian industrial system will receive a propulsive impact from participation and/or access to these infrastructures, now almost non-existent, due to the large initial capital investment and their operating costs. An intellectual property management model, with licensing and exploitation agreements, will be key to create joint pilot lines. These will also facilitate the training of human capital for existing and new companies, with a new apprenticeship model starting after having received the basic skills during university studies.

As indicated in the Horizon Europe Work programme, as the EU is gearing up for a more resilient, green, and digital recovery, it becomes fundamental to maintain strong leadership in research, as well as, strengthen industrial and technology presence in key parts of digital and other supply chains. The EU needs to develop and deploy technologies and reshape its industries and services towards a new reality, ensuring that industry is the accelerator and enabler of this

change, as stated in the European Commission's 'New Industrial Strategy for Europe', supporting the Green Deal and announcing the Circular Economy Action Plan, and in the digital strategies 'Shaping Europe's Digital Future', 'Data' and 'Artificial Intelligence White Papers. Major opportunities lie ahead to position the EU as a technology and industrial leader of this transition.

An optimal combination of RIs and IIs will be built by concurring public open competitive procedures. The goals of excellent science will follow the well-established methodologies (ESFRI, PNIR), and the goals of industrial innovation will be oriented to support key application areas consistently with the EU objectives. These include new, low power and latency, high speed, communication systems (comprising new detectors, modulators, switches, lasers, exploiting novel materials platforms); quantum technologies; advanced and layered materials; artificial intelligence and computing; new biomedical devices; new energy storage and generation technologies with increased performance in terms of durability, safety, energy and power density; new pharmaceutical and wearable diagnostics for remote and personalised medicine; novel solutions for energy harvesting and transportation.

The RIIs system will integrate advanced education (master and doctorate), research, public-private laboratories and the third sector, produce social and economic impacts, assessed during the selection and monitoring processes, also thanks to the collaboration with EU and National institutional investors. The availability of high-quality pilot lines will encourage the participation of Italian companies and Universities in European and international collaborations on innovation projects and technology hubs.

Implementation.

- a) *Management.* The programme will be managed by the Ministry of University and Research, which will design and coordinate the selection procedures.
- b) *Selection:* All proposals will be selected based on their strong scientific/technological/innovation leadership, their innovation potential (both in terms of open innovation/open data and for proprietary developments), their compliance with the thematic areas described above or for novel disruptive developments, their translational and innovation plans, the support from industry as a partner for open-innovation and/or as users, the strength of the business development activities, IP generation, clear rules for distinguishing open and protected output and licensing plans, their ability to develop and host industrial doctorates, their links with the venture or other types of funds to facilitate the development of new start-ups, the strength of their plans to proactively apply for EU calls, with dedicated personnel to support the preparation, and management of EU grants. Supervision and coordination with other initiatives will be granted by the Supervisory board introduced in the Ministry of University and Research, for the joint monitoring of Investment 1.3, Investment 3.1, Investment 1.4 and Investment 1.5.
- c) *Funding and sustainability:* When possible according to the specific features of the projects, RIIs will be financed and managed through public-private partnership (PPPs), to

leverage the grant component, promoting a significant crowding-in, mobilizing skills and capital, while measuring and assessing the sustainability and feasibility of each operation. PPPs will allow the involvement of specialized private infrastructure developers and will strengthen the synergy between public research and private activity and funds. The remuneration of the private capital will be assured by co-creation of the II services, by public availability payments and by access fees from private users, while RIIs will be open to use by Universities and Research Entities, as guaranteed by the public availability payments.

The grant contribution to PPPs will be up to 49% of the total capital investment and personnel costs. The average investment in each PPT will be 50M Euros. Smaller grants down to 10M and larger grants up to 100M, will be considered based on the strength of the proposal and innovation potential. Smaller grants will be targeted to well-defined infrastructures, within a specific research and innovation area. The largest grants will cater for multi-purpose infrastructures able to cover at least 3 topical fields (for example, Quantum, Advanced Materials, Photonics, or Life Sciences, Artificial Intelligence, and Energy Transition, etc.).

The fund will facilitate leveraging on: i) structural and investment funds (ESIF) for implementation, and upgrade of Italian RIs and IIs of pan-European relevance; ii) HEU Partnership resources for the realization of EOSC, thus strengthening the relevant national research infrastructures; iii) private investments in the strategic areas of technological innovation and exploitation of knowledge identified above; iv) funds from the EIC to foster the creation of spin-outs and technological transition.

The current RI operating in Italy are all planned to operate for 2-5 decades realizing the full return on investment in terms of research and innovation results. Funding is based on a dowry from Government and other instruments, typically competitive or project-based, at the national, European and international level. Successful projects based on large scale facilities typically imply a lifecycle of 20-25 years before major upgrade or reorientation.

- d) *Coordination with other procedures:* The implementation will be in strict integration with the programme devoted to national R&D leaders (Investment 1.4) and the creation and enhancement of the innovation ecosystems (Investment 1.5). To ensure the integration with the R&D leaders and innovation ecosystems, an Executive Board (EB), comprising world-leading, independent, science-technology-innovation leaders as members and Chair, will evaluate and oversee the proposals for RIIs, partnerships and innovation ecosystems, and will oversee their coordination, implementation and cross-leveraging. This will ensure a coherent use of the resources and the creation of a truly National system, acting as an innovation engine for all of Italy.
- e) *Actions:* This line of intervention is designed around two main actions:
 - 1) Creation of new RIs, upgrades of existing ones concurring to the Excellent Science goals of HEU;

- 2) Creation of novel IIs as key elements of new “innovation ecosystems” where industry-tailored services will complete the knowledge-innovation chain.

Co-location of RIs and IIs, following the model of the large hubs in Grenoble, Hamburg, Cambridge, Zurich, and providing links with Industry as for the Fraunhofer or IMEC models, will be evaluated as an added value. In this perspective, the action is synergic with that on “innovation ecosystems” and can greatly contribute to the creation of effective open-innovation hubs. RIs are distributed across the national territory, with high impact and socio-economic value in most regions. Effective networking at a national level will provide entry points in all development districts.

Implementation of the specific actions:

- 1) New RIs undertakings or major upgrades, will be tendered by the MUR, exploiting when suitable the PPP option. The proposals for RIs will need to fit the European and national strategy, with the contribution of national higher education institutions or public or private research centres, as well as with well-defined governance including potential private participation. World-leading, independent, science-technology-innovation leadership of such RIs will be identified through competitive calls and employment conditions. The methodology to identify the priority investments in research infrastructures will refer also to the established practices of the ESFRI Roadmap and PNIR. The proposals will be generated in line with the facilities included in the Landscape Analysis performed by ESFRI Roadmap 2018 and PNIR, but could also include new initiatives as proposed by Universities, Research Centres or Companies 1, whenever a national or European relevance is proven.
- 2) New PPP for innovation infrastructures will be tendered by the MUR. World-leading, independent, science-technology-innovation leadership, fully adapted to the targeted mission of such IIs will be identified through competitive calls and employment conditions, designed to favour industrial involvement and co-funding. In the availability-based PPP scheme, the Ministry will be the public counterpart in assuring its fruition throughout the national territory through public-private framework development agreements. The methodology to identify the priority investments in innovation infrastructures will refer also to the established practices of the EURO PRACTICE project. The IIs will also be open for EU and worldwide access, under an access fee framework.

Incentives towards the implementation of innovative services and the interoperability of RIs and IIs will be put in place to integrate their capabilities and the generated knowledge (data, metadata, processes, protocols) to offer unique services to the economic and civil sector, in synergy with the “innovation ecosystems” plan. To this purpose, the following steps will be considered:

- An assessment of potential interoperability of technologies, knowledge and data resources of existing RIs.
- An assessment of potential interoperability of technologies, knowledge and data resources of academic, private and public research organizations for innovation to create IIs.

- Medium-term support actions to implement innovation networks.
- Support to EPRs to perform Research Infrastructure services and EOSC open data services.

As for State-aid compliance, the definition of RI according to ESFRI is what describes all existing Italian RIs both of pan-European or National scope as identified in the Italian Roadmap 2010 and subsequent editions of *Piano Nazionale Infrastrutture di Ricerca* included in the PNR. The RIs are resources open to usage by researchers who are awarded access based on international standard competitive calls. Upgrades will follow the same principles and therefore will be fully compliant with the legal definition. RIs are typically aimed at supporting curiosity-driven research as well as TRL 1-3 applied research. Innovation in the proposed measure comes from the scope of some RIs to be extended also to support the higher TRL (4-5) research of direct interest by the industry as a facility to increase industrial competitiveness. The role of industry as users will be regulated as merit-based for research leading to open innovation (open data) or can be regulated as pay-for-access if IPR and confidentiality of results are sought. The role of industry as a possible partner and financier of the RI and Innovation Infrastructures is to contribute to the development and deployment of infrastructure services for industry, with the direct benefit to implementing large test-beds, advanced technology open data services, testing prototypes of solutions to be possibly adapted for own production purposes. The real link between excellent science and innovation will be in the common definition of FAIR data protocols and of dedicated data services that will become the effective knowledge transfer methodology with all the appropriate rules for protection and openness. Users will be national and international academic researchers, industrial direct users, industrial consortia or associations accessing perhaps through service providers (public or private). Users of the data generated by RI and II will be all obtaining access privileges, according to open innovation or protected results. The infrastructures design, implement, operate and constantly update and upgrade unique resources for research and innovation in specialised domains, but with interoperability aims to enable multidisciplinary research as well as multi-TRL data exchange or integration. Adequate scientific and technical staff must be permanently employed at the RI and II as only a high-level permanent staff can guarantee vision of developments and effectiveness of operation. Most of the volume of research will nevertheless be produced by users accessing the facilities. Remote access to RIs and IIs, as made crucial by the pandemics, does require a strong permanent staff to handle effective remote interaction and guidance of measurements, experiments, calibrations, tests by the users. Access by industry or other economic organization may directly contribute to open innovation or aim at reinforcing own competitiveness by retaining all results. In the first case, the access could be supported by public funding, as is the case for fundamental research. In the case of proprietary research the services will be still selected for relevance, but then paid for by the user organization. The relative quota of open-free access and pay-for-access will strongly depend on the exact scope of each RI and II, but the open science/open innovation scope shall always prevail in the scope of the centres, whilst offering substantial opportunities to paid-for access. On these premises, in the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the

requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

Costs. The estimated cost related to the RRF is equal to 1.58 billion euro, of which 0.58 related to existing research infrastructure projects. The Fund operates through two windows: up to 1.1 billion euros for action 1, and up to 500 million euro for action 2. Overall, we aim for up to 30 projects to be funded. Within each project, at least one research manager will be hired with an expected cost of 0.1 million euro per year covered for three years. The research managers will have temporary contracts covering the time horizon interested by the RRF. We expect that after the financial boost offered by this investment, the research infrastructure will be operating generating revenues allowing the permanent hiring of the research managers. On one side, this will ensure the commitment of the research managers to the success of the research infrastructure, on the other side, this will ensure the eligibility of the measure given that the research managers will be not permanent but limited to the RRF period. According to the scope, expected impact and co-funding opportunities, contributions from 5 to 100 million euro can be envisaged. The primary consideration of excellence of the proposals, crowding in of external resources and timely execution will be key decision criteria in the selection process, ensuring that the fund is fully invested over the expected timeframe. The amounts allocated to each RI- or II will generate a leverage effect, which will vary in consideration of the scientific research and innovation potential of each project, its ability to attract long term loans and equity capital within the PPP schemes, and long-term support from the regional and local institutions where each RI I may be located. The fund will cover capital expenditure, as well as the human resources needed. PPP and blending schemes will be designed following best practices and benchmarks such as the European Fund for Strategic Investments (EFSI) promoted by the EU and managed by the EIB.

Target group. Academic, Scientific and Industrial research and innovation communities lacking access to world-leading research infrastructures and/or to pilot-scale facilities and services to help to reach high Technology Readiness Levels for new ground-breaking ideas and to test new devices and processes from lab to fab environments.

Timeline:

- For tendering and implementing new RIIs integrated into the “innovation ecosystems”: 2021-2026.
- For implementing interoperability of RIIs and EOSC: 2021-2026.

Investment 3.2: Financing start-ups

Challenges. Entrepreneurship development is an important requirement for achieving the goal of smart, sustainable and inclusive growth set out in the National Recovery and Resilience Plan. It is also a means to respond to new economic challenges, to create jobs and to fight social and

financial exclusion. The impact of the pandemic crisis calls for giving entrepreneurship, and especially business ideas that are related to innovation, social innovation, scientific research and high tech, a stronger role in economic and social development policies. This is particularly relevant for youth and women who face higher unemployment rates than the adult population and increased difficulties entering the labour market to start their business.

Goals. An adequate support to the entire sector of innovative companies is essential to guarantee Italy the opportunity to grow, compete, generate new opportunities for qualified work, create and distribute new wealth uniformly throughout the territory. In this sense, the measure is aimed at providing support to two different entity, namely Eneatech and the National Innovation fund, which operates direct and indirect investments in qualified minorities in the capital of innovative companies with generalist and vertical funds or Funds of Funds, to support startups, scaleups and innovative SMEs.

The National Innovation Fund is especially targeted to support and strength innovative start-ups, scale ups and innovative SMEs in the form of minority participation in risk capital or subsidized loans in the absence of guarantees.

The Fund is managed, at market conditions, by the Ministry of Economic Development by means of Cassa Depositi e Prestiti (CDP) through a control room which aims at bringing together and multiply public and private financial resources to foster innovation processes carried out by innovative SMEs.

The measure provides for the strengthening of the CDP Innovation Fund with a view to scale up innovative start-ups, including the enhancement of the use of EIF and EFSI instruments (eg ESCALAR) to strengthen the capital market aimed at scale up and support for funds dedicated to investments in companies with high growth potential to strengthen European technological sovereignty.

Implementation. The National Innovation Fund is a multi-funded entity, operating exclusively through the so-called venture capital methodologies. The investments are made by the dedicated funds in a selective manner, in accordance with the best practices in the sector and based on the ability to generate impact and value for both investments and the Italian economy. The selectivity, flexibility and speed of investments are the elements that allow the venture capital to be the key market tool for developing the innovation and the best way to align the interests of investors and entrepreneurs towards the common goal of economic growth.

The Ministry of the economic Development will provide addition funds to enlarge the financial endowment that will be managed by the Cassa Depositi e Prestiti, through a control room that aims to bring together and multiply public and private resources dedicated to the topic strategic innovation.

Repayments could be reinvested for the same purposes or could be used to refund, if necessary, the loan part of the RRF.

Costs. The estimated cost related to the RRF is equal to 300 billion euros, of which 73% North-Center, 27% South, taking into account the actual territorial specific addresses of the Italia

Ventures funds

Target group. Start up, scale ups, innovative SMEs.

Timeline. The intervention will start in 2021 and will last until 2026.

Investment 3.3: Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote the hiring of researchers by companies

Challenges. The current difficulties, exacerbated by the pandemic, call for a reconfiguration of the higher education and research systems of the Country. This perspective includes interventions aimed at increasing the opportunities to access the most advanced skills, share basic transversal ones (mostly related to digital technologies and environmental transition), promote active interaction with the productive world.

Goals. This line of action aims at enhancing high-profile skills, especially in the KET's areas, through:

- the establishment of dedicated PhD programmes, with the contribution and involvement of companies, also encouraging the creation of research spin-offs.
- incentives for companies to hire junior researchers.

The establishment of PhD programmes dedicated to industry activities and the tertiary sector is envisaged, with three cycles of 5,000 places per year. Private companies, SMEs in particular, will contribute and be actively involved through the establishment of cooperation networks. The programme will be supported by a series of measures aimed at streamlining key procedures regarding the organization of the courses, the tenders to identify private contributors and the PhD locations, the pattern of cooperation with companies involved in the management of the courses, the engagement of public research institutions. Moreover, to enhance the economic values of research pursued by the new PhDs a dedicated fund is started, in cooperation with Ente Nazionale per il Microcredito (ENM), as a vehicle to the creation of new start-ups.

This line of actions will also build a mechanism to cut the tax wedge for the recruitments of researchers in non-permanent positions in the university (e.g. PhD, scholarships, grants, RTDA). This measure will benefit workers and employers and will be proportional to the length of experience gained in the academic world, with up to 10 points of reduction of the wedge per year of an academic career. In the three years, the measure may concern up to 30,000 workers.

Implementation. The programme is managed by the Ministry of University and Research. The measure foresees the activation of innovative PhD programmes focused on the development of advanced competencies more directly oriented to the needs of the productive system, to support or help to adjust the business strategies because of the opportunities and challenges of the new technologies and the environmental transition. Accordingly, the measure allows seizing the economic value of both the advanced competencies and the research developed by the new PhDs, through either their recruitment in key positions within the existing companies or their direct involvement in new start-ups, as owners or managers. In this respect, a dedicated fund is

created in cooperation with the Ente Nazionale del Microcredito, which is already active in financing innovative SMEs; the new fund, to which the measure contributes for 45 mln euros (15 mln for each of the three new PhD cycle) is tailored at the new PhDs who likes creating a start-up or transfer the results of their research by joining start-ups created by third parties. Accordingly, the measure, which is not cost-neutral, closely relates on the one side to the comprehensive reforms of PhD programmes included in Component 1 of Mission 4, on the other side to M4C2 "Implementation of R&D support measures". The tender will grant the possibility to ordinary PhD students to apply, in case they are interested in start-up projects. The measure is also integrated with the ESF OP Research, as it may provide additional funding to projects therein selected and targeted at the lagging areas of the country.

The selection of locations and firms involved in the new PhD programmes is structured in three phases. First, the MUR launches a tender open to the Universities that, individually or as a group, put forward proposals of new PhD programmes under a 50 per cent financial leverage of private capital. Second, the selected (groups of) Universities agree with the involved firms on the priorities of the PhD programmes in the technology fields closer to production needs. This phase will therefore require universities to directly engage with private firms, agreeing on funding availability and on the number of positions to be opened. Third, based on proposal evaluation, MUR selects what programs are activated, and where. Since the action is meant to develop key advanced competencies, firms voluntarily involved in the project commit to providing the agreed financial contribution to the new PhD programmes, virtually as a kind of pre-recruitment of the needed specialists. This consideration helps the economic sustainability of the measure.

In accordance with the procedure implemented by the MUR for the Industry 4.0 actions, a fraction of the available positions will be granted to universities located in Southern Regions and Islands. This share is expected not to be below 30% of the total number of positions available, in order to support start-up projects where they are less likely to be supported by market resources.

According to the self-assessment of state-aid compliance, this action is eligible under preemptive notification and following Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1). A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

Costs. The RRF overall cost of the measure is 0.60 billion euro, of which 0.45 funding the innovative PhD programmes and around 0.15 the social contribution allowances helping the transition of researchers from the University in the productive system and institutions. Moreover, for each court of 5,000 PhDs, 30 million are available to support the creations of start-ups. The single project is expected to be funded, on average, by 50,000 euro, allowing the support of some 600 projects, namely 12% of the new PhDs (a lower share with respect to the population of PhD students to whom the call for application will be available). This specific

action will be supported by resources, equal to 0.10 billion euro, coming from the European structural and investment funds (OP ESF), thus ensuring sustainability over time.

Target group. PhD Students; Researchers.

Timeline. The intervention will start in 2021 and will last until 2026.

4. **Open strategic autonomy and security issues**

[Omissis]

5. **Cross-border and multi-country projects**

[Omissis]

6. **Green dimension of the component**

Please see the enclosed file (Tagging in Table 2)

7. **Digital dimension of the component**

Please see the enclosed file (Tagging in Table 2)

8. **Do no significant harm**

Please see the enclosed files

9. **Milestones, targets and timeline**

Reform 1.1: Implementation of R&D support measures to foster simplification and mobility

Details provided in Table T1.

Investment 1.1: Fund for the National Research Programme (PNR) and New Research Projects of Significant National Interest (PRIN)

Besides the call already issued in 2021, for which the selection procedure is ongoing, other three calls will be opened in the following years (one per year from 2022 to 2024). Considering that the 2017 call had about 1000 projects financed with an overall budget of about 390 million euro, we estimated that about 750 additional projects will be financed with the planned resources for 2021, 2022 and 2023. Instead the budget planned for 2024 will allow to finance about 2200 projects. Details provided in Table T1

Investment 1.2: Funding projects presented by young researchers

The measure provides for the activation of an annual call. A similar procedure to the FARE (Framework for attraction and strengthening of excellences) call will be followed. The CINECA platform will be used to receive the applications. Since a FARE call has been issued at the beginning of 2021 (closing in April 2021), the resources dedicated to this investment will

be used starting from 2022, also considering the startup time for the new ERC grants issued by the Horizon Europe Programme. Concerning the target of 120 researchers, currently Italy attracts about 20 ERC (Starting grant) grantees per year and 60 MSCA-IF grantees per year. Italy wishes to move towards the results of the best performing countries in the EU with about 40 ERC grantees and 80 MSCA-IF grantees. Moreover, among the constraints on how to use the resources provided, the request to hire at least one non-tenure track research to spend a short mobility period for research or teaching will be inserted.

Investment 1.3: Partnerships extended to universities, research centers, companies and funding of basic research projects

A total of two programme calls will be scheduled between 2022 and 2023 and the expected project duration will range from three to four years. Consolidation programme calls would be activated in 2024 and 2025 to fund 12-24 months projects in the framework of TRL 6 and 7.

Table T1 ready

Investment 1.4: Strengthening research structures and supporting the creation of national R&D leaders" on some Key Enabling Technologies

A call for projects and a selection procedure will be implemented, identifying up to five networks of universities, research bodies and companies in any of the scientific and technological areas of interest. The candidate networks will propose the research activities to carry out, the research infrastructures to enable, as well as the technology transfer action to implement. An ongoing monitoring will support the activities and will identify the most promising networks, able to generate other funding opportunities, that will possibly continue their activities beyond the end of the project.

Table T1 ready

Investment 1.5: Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D"

By the end of 2021, a control room will be established by means of a decree of the Minister of University and Research. The control room will select the projects for innovation ecosystems by the first half of 2022 and monitor the activities in each regional area. 12 projects will be admitted; the target will be achieved with the completion of the selection procedure of the projects to be funded. The selection procedure will be oriented so to identify at least one project per regional area. The 12 projects selected by the procedure will be completed, in terms of: training and education activities completed, research activities carried out and research infrastructures installed, technology transfer and third mission activities completed. This target is not splitted into multiple targets due to the specific timelines that any project will require, that are dependent on the scientific, technological and productive vocations of the partners and

of the area where any project will be developed. A strict ongoing monitoring of the projects will be guaranteed by the control room.

Table T1 ready

Investment 2.1: IPCEI

Details provided in T1.

Investment 2.2: Partnerships in research and innovation – Horizon Europe

Details provided in T1.

Investment 2.3: Strengthening and sectorial/territorial extension of technology transfer centres by industry segments

Details provided in T1.

Investment 3.1: Fund for construction of an integrated system of research and innovation infrastructures

The call for infrastructure project proposals will be opened by the end of 2021 and projects will be selected by the first half of 2022. The measure has the target to finance 30 infrastructures and hire 30 research managers.

Table T1 ready

Investment 3.2: Financing Start-ups

Details provided in T1.

Investment 3.3: Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote hiring of researchers by companies

By the end of 2021, the Ministry for University and Research launches a tender open to the Universities, that in isolation or in groups put forward proposals of new PhD programmes. The project envisages the enforcement of doctoral programs dedicated to industry activities of and the tertiary sector, with 3 cycles of up to 5.000 places per year. Up to 30,000 workers will be hired by companies thanks to the tax wedge cut.

Table T1 ready

10. Financing and costs

Investment 1.1: Fund for the National Research Programme (PNR) and New Research Projects of Significant National Interest (PRIN)

The investment is aimed at reinforcing the fund to finance the PNR and the calls devoted to PRIN projects. The call for the 2020 PRIN already included the resources planning for the following years, 2021 and 2022, with an increase of 250 and 300 million euro respectively. Considering that the 2017 call had about 1000 projects financed with an overall budget of about 390 million euro, we estimated that about 750 additional projects will be financed with the planned resources for 2021 (300 million euro), 750 projects each with the budget for 2022 and 2023 (300 million euro each). In an attempt to provide continuity in the financing of Research Projects of Relevant National Interest along the whole PNR, a new call with enough budget to cover the last three years of the Programme can be planned (900 million euro to finance about 2200 projects). Part of these resources will be dedicated to a new action directed to multidisciplinary projects, that usually have difficulties in finding the right space among the sectors identified for the PRIN (ERC sectors). Finally, part of the budget will be devoted to the evaluation and monitoring activities.

Investment 1.2: Funding projects presented by young researchers

The resources allocated to supporting ERC grantees will be 0.3 billion euro (financing some 300 projects), while the investment for MSCA Postdoctoral Fellowship (including the Global ones) will be 0.15 billion euro (financing some 500 projects). 0.145 billion euro will be allocated to support the recruitment of applicants who receive the ‘Seal of Excellence’ label by the Postdoctoral fellowship MSCA committee (financing some 900 researchers). A budget of 15 million have been allocated to evaluation and monitoring activities, equal to 2.5% of the total budget, close to what was assigned in the FARE calls.

Investment 1.3: Partnerships extended to universities, research centers, companies and funding of basic research projects

In the last five years the industrial research expenditure generated by the support policies was equal to 1 billion euro. It was noted that this resulted in a significant demand for quality research which has not being financed; the project proposals which did not have access to the aid were at least five times those financed.

Therefore, it is estimated that 5 billion research spending is of a quality that can be generated through partnerships between private and public entities. The research budget is calculated on an average leverage funding estimate equal to 0.35. From EUR 80 to 150 million will be allocated for each programme. Contribution to single projects within each programme will range between EUR 5 to 20 million. From EUR 15 to 25 million per programme will be devoted

to the recruitment of non-tenure track researchers that will be based on public selection procedures under the art.24, of Law No.240/2010.

Investment 1.4: Strengthening research structures and supporting the creation of national R&D leaders" on some Key Enabling Technologies

The costs are defined on the basis of a detailed analysis of management costs and the experience of similar centers. In particular, an average cost of 320 million euros and an implementation time of 5 years is considered for up to five networks, based on data related to existing best practices, including IIT (Istituto Italiano di Tecnologie) and Human Technopole. However, the cost of each network project will be consistent with the extension and impact of the activities, and may significantly differ from the average. The expected distribution of costs is, on average, estimated as:

- research activities that benefit research institutions and companies not belonging to the established network of the centres: 110 million euros
- research infrastructures: 80 million euros
- research activities that benefit internal institutions (including personnel, management, direct and overhead costs): 80 million euros
- support to start-up and spin-off: 50 million euros (this budget will be further improved by the involvement of private leading companies and venture capital investors).

Investment 1.5: Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D"

An average cost of 105 million euro and an implementation time of 5 years is considered for up to 12 innovation ecosystems, based on data related to existing best practices. However, the cost of each innovation ecosystem project will be consistent with the extension and impact of the activities, and may significantly differ from the average. The expected distribution of costs is, on average, estimated as:

15 million euro to support education activities in 5 years

0.06 million euro*125PhD scholarships on internationally competitive rates

0.5 million euro/year * 5 years for academies

25 million euro in research infrastructures and joint research labs (Additionally, RIIs can be further supported by the budget on the "Fund for construction of RIIs" measure)

30 million euro (6 million euro/year*5 years) in research activities

15 million euro (3 million euro/year * 5years) in technology transfer activities (e.g. start-up incubators)

10 million euro (2 million euro/year *5 years) in third mission activities

The activities will generate a positive cooperation with the private sector that is expected to continue over the 5 years of implementation. However, the innovation ecosystems will be implemented within the existing organizations and structures of the universities and public research bodies guaranteeing the impact of the projects beyond the 5 years of implementation.

The budget forecast is based on an average estimation of 105 million euro of the single intervention, applied to the 12 planned interventions.

Investment 2.1: IPCEI

Details provided in T2.

Investment 2.2: Partnerships in research and innovation – Horizon Europe

Details provided in T2.

Investment 2.3: Strengthening and sectorial/territorial extension of technology transfer centres by industry segments

Details provided in T2.

Investment 3.1: Fund for construction of an integrated system of research and innovation infrastructures

The average investment is 50 million euros per intervention, 30 interventions are estimated to be started by 2026. Within each project, at least one research manager will be hired with an expected cost of 100000 euro per year covered for three years. After that period, the infrastructures are expected to become economically self-sustainable.

Investment 3.2: Financing Start-ups

Based on the experience of CDP VC and its visibility on the market, considering the programs under development on the front of technology transfer and startup acceleration, as well as the investment activity in the early stage phase, we consider an average investment of 1, 2 million per company, resulting in 250 start-ups financed. We also account for management fees to be paid to the investment manager which, in line with market standards, are around 2% of total invested amount for direct investments.

Investment 3.3: Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote hiring of researchers by companies

The estimate is based on:

- the cost of a PhD fellowship, which is approximately equal to € 60,000 according to normative standards currently in use, and foreseeing companies co-financing at 50%; accordingly, activating 5000 fellowships for each of the three PhD cycles considered in the measure entails an overall cost of 450mln weighing on RRF;
- the average contribution of 50,000€ for every start-up projects created by the new PhDs for a total of 600 projects per PhD court; the measure entails an overall cost of 90 millions (30 millions for each of the courts), weighing on OP ESF;
- number of junior researchers who leave their academic careers after an average experience of 5 years (currently around 20,000 per year); for every year of experience gained by the researchers the tax relief once they are hired by companies/institutions is on average 1,000 €; under a maximum entitlement of 50 mln euros per year, the measure applies to half the whole yearly outflow of fixed term researchers; since the measure is applied for 3 yearly outflows, its overall cost is 150 mlns, weighing on RRF.

Annex II: M/Ts of Component 2 of Mission 4

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID [For data defined in the targets, please update/verify based on most recent information on costing] | Further specifications included in the OA [Please complete with relevant elements and definitions as appropriate] | Monitoring included in the OA [Please complete with relevant information as appropriate] | Additional comment |
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| Q2-2021 | INVESTMENT 2.2 – IPCEI MILESTONE: open call for expression of interest in new projects on IPCEI microelectronic n. 2: <ul style="list-style-type: none"> • Open call for expression of interest for the identification of the national projects in the relevant workstreams | | Ministry of Economic Development | The IPCEI that will be supported under the RRF could be updated depending on the actual progress stage of the national IPCEI procedures currently on going and the progress stage of the state aid notification procedure based on the so-called chapeaux text. In any case the chosen IPCEI will regard specific industrial innovative sectors in line with the European value chains already identified. |
| Q2-2022 | INVESTMENT 2.2 – IPCEI MILESTONE: open call for expression of interest in new projects on IPCEI microelectronic n. 2: <ul style="list-style-type: none"> • Adoption of national legal act allocating the necessary funding to provide support to project participants. | | Ministry of Economic Development | The IPCEI that will be supported under the RRF could be updated depending on the actual progress stage of the national IPCEI procedures currently on going and the progress stage of the state aid notification procedure based on the so-called chapeaux text. In any case the chosen IPCEI will regard specific industrial innovative sectors in line with the European value chains already identified. |
| Q2-2022 | REFORM 1.1 - Implementation of R&D support measures to foster simplification and mobility MILESTONE: Adoption of Ministerial Decrees on simplification and mobility in R&D linked to the | | Ministry of University and Research | Part of the ordinary financing fund will be dedicated to foster and incentivize researchers mobility. The percentage may change according to the ongoing monitoring of the effects of this reform |

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| | <p>ordinary financing fund, and including the following key elements:</p> <p>i) move to more systemic approach to R&D activities through a new simplified model aimed at generating a significant impact through avoiding dispersion and fragmentation of priorities; ii) reform legislation to increase mobility of high-profile figures (i.e. researchers and managers) among Universities, Research infrastructures and companies; iii) simplification of funds management; iv) reform career path of researchers to increase their focus on research activities.</p> | | | |
| <p>Q2-2022</p> | <p>INVESTMENT 3.1 1.5 1.4</p> <p>MILESTONE: Completion of the tendering procedures for selection of: a) integrated system of research and innovation infrastructures; b) innovation ecosystems; c) national R&D leaders on key enabling technologies</p> | <p>INVESTMENT 3.1 Proposals will be selected based on their strong scientific/technological/innovation leadership, their innovation potential (both in terms of open innovation/open data and for proprietary developments), their compliance with the thematic areas or for novel disruptive developments, their translational and innovation plans, the support from industry as a partner for open-innovation and/or as users, the strength of the business development activities, IP generation, clear rules for distinguishing open and protected output and licensing plans, their ability to develop and host industrial doctorates, links with the venture or other types of funds to facilitate the development of new start-ups, the strength of their plans to proactively apply for EU calls, with dedicated personnel to support the preparation, and management of EU grants.</p> <p>INVESTMENT 1.4 The National Centres (NCs) will be created following a competitive call by merging existing world-leading laboratories already</p> | <p>Ministry of University and Research Supervision and coordination with other initiatives will be granted by the Supervisory board introduced in the Ministry of University and Research</p> | |

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| | | <p>present in Universities, and public and private research centres, as well as by setting up new bespoke infrastructure. .</p> <p>INVESTMENT 1.5</p> <p>Projects will be assessed in terms of feasibility, sustainability beyond 2026, cofounding from other sources (e.g. regional funds), involvement of the productive sector, quality of the partners, impact on social and environmental sustainability. The call for projects to be financed as innovation ecosystems, as well as the selection procedure will require a DNSH evaluation, and a possible Strategic Environmental Assessment (SEA) in case the project will be expected to produce a consistent impact on the territory.</p> | | |
| Q2 - 2022 | <p>INVESTMENT 3.2 - Financing start-ups</p> <p>MILESTONE: Complete the set-up of the financial instrument and the agreement between IT government and the implementing partner Cassa Depositi e Prestiti (CDP)</p> | <p>Indicative elements to be included in Financial Instrument's investment policy/strategy</p> <ul style="list-style-type: none"> - Investment targets (fund size, number of operations, amounts to be supported over time differentiated by beneficiary eg SMEs vs mid-caps/large companies,...) - Scope and eligible beneficiaries - Eligible financial intermediaries and selection process - Type of support provided (eg guarantees, loans, equity, quasi-equity) - Targeted risk/returns for each type of investor including in particular the MS using RRF funds - Risk policy and AML policy - Governance (partners, fund managers, Board, Investment Committee, role and responsibilities) - Diversification and concentration limits | | |

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| | | <ul style="list-style-type: none"> - Equity policy including exit strategy for equity investments - DNSH/sustainability proofing policy and exclusion list - Lending policy for debt investment, including required guarantees and collateral - Timeline for fund raising and for implementation - State Aid dimension and compatibility - Mechanisms for monitoring and reporting in line with RRF Regulation | | |
| Q4-2022 | <p>INVESTMENT 2.2 – IPCEI MILESTONE: open call for expression of interest in new projects on IPCEI microelectronic n. 2:</p> <ul style="list-style-type: none"> • Finalise the list of potential participants to the common project. | | Ministry of Economic Development | <p>The IPCEI that will be supported under the RRF could be updated depending on the actual progress stage of the national IPCEI procedures currently on going and the progress stage of the state aid notification procedure based on the so-called chapeaux text.</p> <p>In any case the chosen IPCEI will regard specific industrial innovative sectors in line with the European value chains already identified.</p> |
| Q4-2022 | <p>INVESTMENT 1.2 - young researchers</p> <p>TARGET: At least 300 young grantees (including ERC grantees, Marie Skłodowska-Curie Fellowship and Seal of Excellence) supported and at least 300 young researchers contracted</p> | | Ministry of University and Research | |
| Q2-2023 | <p>INVESTMENT 3.1 - integrated system of R&I infrastructure</p> <p>TARGET: At least 30 infrastructures funded and 30 research managers hired for the integrated system of research and innovation infrastructure</p> | | | |
| Q4-2023 | INVESTMENT 1.1 - Fund for the PNR and the PRIN | The considered evaluation criteria are 1) quality of the project (40%); ii) composition | Ministry of University and Research | |

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| | <p>TARGET: At least 3150 = 59% of 5350 PRIN research projects aligned with the priorities of the PNR funded involving universities and research bodies.</p> | <p>of the team, feasibility and appropriateness of the project (40%); iii) social and climatic impact of the project (20%). Besides, 10% of the total funding for the 2020 call has been dedicated to projects presented by young researchers (under 40 years old). With a similar approach, future calls will have dedicated resources to address the divides of the country (such as gender or territorial). Finally, part of the resources will be dedicated to a new action directed to multidisciplinary projects, that usually have difficulties in finding the right space among the sectors identified for the PRIN (ERC sectors).</p> <p>During the projects submission steps, a quantitative evaluation will be required concerning the environmental issues, among which the mitigation and/or adaptation to climate change, the impact on natural resources (water, air and soil), biodiversity and ecosystems, the adherence to the circular economy principles and the amelioration of health and environmental quality.</p> <p>Details on territorial and discipline sector distribution provided through monitoring.</p> | <p>INVESTMENT 1.1 Launch of the call for 2021 and 2022 round.</p> <p>The research priorities addressed with the PRIN project will deal with the six major areas of intervention of the PNR. In turn, they reflect the six clusters of the European Framework Programme for Research and Innovation 2021-2027: i) health; ii) humanistic culture, creativity, social transformations, a society of inclusion; iii) security for social systems; iv) digital, industry, aerospace; v) climate, energy, sustainable mobility; vi) food products, bioeconomics, biodiversity, agriculture, environment. The PRIN projects though are bottom-up and curiosity-driven proposals, so a proper monitoring of the distribution of the funded projects among the PNR areas of intervention will assure an equal distribution of research efforts and funds.</p> | |
| <p>Q4-2024</p> | <p>INVESTMENT 3.3 - Innovative PhDs</p> <p>TARGET: At least 15.000 innovative PhDs fellowships awarded</p> | <p>The former Ministry of Education, University and Research, defined in 2016 the requirements for a PhD Program to be considered as an innovative PhD. In particular, an innovative PhD must be either international (e.g., in collaboration with foreign universities or research centres), intersectoral (e.g., in collaboration with companies), or interdisciplinary (e.g., with multiple research area involved). Investment 3.3 is</p> | <p>Ministry of University and Research</p> | |

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| | | directed to the second type of innovative PhDs, namely the intersectoral one. | | |
| Q2-2025 | <p>INVESTMENT 1.1 - PNR and PRIN</p> <p>TARGET: At least 5350 research projects funded and at least 900 new fixed-term researchers hired</p> <p>INVESTMENT 1.3 - Partnerships</p> <p>TARGET: At least 100 new fixed-term researchers hired for each one of the envisaged basic research partnerships signed between research institutes and private firms; at least 40% of total fixed term-contracts are signed by female researchers.</p> | <p>Details by gender and territorial distribution provided through monitoring:</p> <ul style="list-style-type: none"> - The PRIN projects will dedicate part of the fund to bridging the gaps in our country, a monitoring process will allow to estimate the needs and revise future actions - Concerning Investment 1.3 at least 40% of the hired researchers will be female and the territorial distribution of the funded projects will be managed during the selection process. <p>INVESTMENT 1.1 The PRIN projects are bottom-up initiatives and the research team may decide to require the hiring of new personnel or not within the requested fund. The cost of investment 1.1 does not include the cost for personnel explicitly, but new personnel may be recruited within the funded projects. Moreover, specific projects may decide to hire not only fixed-term researchers but also PhD students. To make an estimate, at least 1 fixed-term researcher every 2 million euro of funding can be envisaged as a plausible share.</p> <p>INVESTMENT 1.3 The projects will be selected based on competitive criteria including i) adherence to the PNR objectives and priorities; ii) involvement of stakeholders to combine the Technology Readiness Level -TRL with the Societal Readiness Level -SRL; iii) relevance to EU intervention programmes such as the Knowledge and Innovation Communities (KIC) promoted by the European Institute of Innovation and</p> | <p>Ministry of University and Research</p> <p>INVESTMENT 1.1 Launch of the call for 2023 round. The research priorities addressed with the PRIN project will deal with the six major areas of intervention of the PNR. In turn, they reflect the six clusters of the European Framework Programme for Research and Innovation 2021-2027: i) health; ii) humanistic culture, creativity, social transformations, a society of inclusion; iii) security for social systems; iv) digital, industry, aerospace; v) climate, energy, sustainable mobility; vi) food products, bioeconomics, biodiversity, agriculture, environment. The PRIN projects though are bottom-up and curiosity-driven proposals, so a proper monitoring of the distribution of the funded projects among the PNR areas of intervention will assure an equal distribution of research efforts and funds.</p> <p>The details about gender of researchers involved and territorial distribution will be monitored along the whole funding period.</p> | |

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| | | <p>Technology (EIT). Moreover, specific selection criteria will be defined to ensure i) balance of territories involved (i.e., by promoting the involvement of actors from different regions and different zones of the country, including the South and the Islands), ii) the involvement of both large and small-medium enterprises (SME) with particular attention to the younger (< 5 years) and innovative ones. The calls will also take into account the periodic EU country-specific recommendations. Finally, the call for projects, as well as the selection procedure will require a DNSH evaluation, as well as a possible Strategic Environmental Evaluation (SEA) in case the project will be expected to produce a consistent impact on the territory. Once the programmes will be defined, working groups will be set up to define, for each programme, a roadmap of objectives. For each programme, a leading subject, responsible and accountable for the development and outcomes of the programme, will be identified, as well as the governance for the specific programme</p> | | |
| <p>Q2-2025</p> | <p>INVESTMENT 3.2, 2.1, 2.2 - start-ups, IPCEI, Horizon Europe TARGET: Number of enterprises which received support: (i) At least 250 SMEs and start-up projects financed by the financing start-ups initiative (ii) At least 20 companies receiving support thanks to the IPCEI model; (iii) At least 205 projects from companies receiving support thanks to the Horizon Europe measure.</p> | <p>Details on territorial distribution and amount of private investment matching public support provided through monitoring. INVESTMENT 2.1 By date 2025, first industrial deployment of microelectronics innovative products on four workstream (technology platforms, design, manufacturing and integration packaging)</p> | | <p>The first industrial deployment of IPCEI related products may change according to the readiness and maturity of the industrial sector. In the same year we may have the deployment of Hydrogen products or cloud infrastructure.</p> |

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| Q4-2025 | <p>INVESTMENT 1.4 - national R&D leaders on key enabling technologies</p> <p>MILESTONE: At least 5 Research structures and "national R&D leaders" are operational in Key Enabling Technologies:</p> <ul style="list-style-type: none"> - Advanced Simulation and Big Data analysis and management - Advanced Environment and Energy Technologies - Quantum and Advanced Materials Technologies, Photonics and Optoelectronics - Technologies for Health (Biopharma Technologies) - Technologies for Agriculture and Food (Agri-Tech) - Sustainable Mobility - Technologies Applied to Cultural Heritage - Technologies for Biodiversity and Environmental Sustainability - Technologies for Industrial Digital Transition – Industry 4.0 | Details on the centers and territorial distribution provided through monitoring: | Ministry of University and Research Ministry of Economic Development | |
| Q4-2025 | <p>INVESTMENT 2.3 - technology transfer</p> <p>Target:</p> <p>Number of new hubs: 42; Estimated financial value of services (public and private resources): 600 ml euro; Minimum number of SMEs: 4500</p> <p>Breakdown of typology of centres:</p> <p>Competence Centres: 8 CC currently in place. Eventually, new centres can be financed according to the emerging needs of specific sectors or local ecosystems.</p> | Details on territorial distribution, industry sector and value in million euro provided | Ministry of Economic Development | Report on the activities of the centres, particularly concerning the involvement of SMEs and on process of reorganization and rationalization and specialisation of existing centres, |

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| | <p>The Network of on-the-ground innovation hubs: the number depends on the EDHI that will be financed by Digital Europe programme (where additional services will be financed, where needed) and those who will receive the Seal of Excellence after the EC selection process, where relevant for the national strategy. Other hubs, cooperating with EDIH, such as national DIH and Points of Digital Innovation, could receive financing</p> | | | |
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| Mission | Componen Id | |
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| M4 | C2 | Inv1.1 |
| M4 | C2 | Inv1.2 |
| M4 | C2 | Inv1.3 |
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| M4 | C2 | Inv1.5 |
| M4 | C2 | Inv2.1 |
| M4 | C2 | Inv2.2 |
| M4 | C2 | Inv2.3 |
| M4 | C2 | Inv3.1 |
| M4 | C2 | Inv3.2 |
| M4 | C2 | Inv3.3 |

Name

Fund for the National Research Programme (NRP) and Research Projects of Significant National Interest

Funding projects presented by young researchers

Partnerships extended to universities, research centres, companies and funding of basic research projects

Strengthening research structures and supporting the creation of "National R&D leaders" on some Key Enablers

Establishing and strengthening of "innovation ecosystems", building "territorial samples of R&D"

IPCEI

Partnership Horizon Europe

Strengthening and sectorial/ territorial extension of technology transfer centres by industry segments

Fund for the construction of an integrated system of research and innovation infrastructure

Financing start-ups

Introduction of innovative doctorates that respond to the needs of innovation and promote hiring of research

ig Technologies

ers by companies

DNSH assessment

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| Mission | 4 |
| Cluster | 2 |
| Related Measure (category of investment) | 1.4 Strengthening research structures and supporting the creation of "national MRN leaders" on some key Enabling Technologies |
| Responsibility for reporting and implementation | Ministry of Industry |
| Date | 03/04/2022 |

| Environmental objective | Step 1 | | Step 2 | | |
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| | Does the measure lead to or an insignificant (between) impact on the objective of sustainable to support this objective? | Justification (if A, B or C has been selected) | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> | | |
| 2. Pollution | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable household waste or (ii) leads to significant pollution: the direct or indirect use of any natural resource at any stage of the cycle which are not considered a negligible quantity, or (iii) cause significant and long-term harm to the environment in respect to the circular economy art. 17 of the Taxonomy?</p> | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to be detrimental to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> | | |
| 4. The circular economy, including waste prevention and recycling | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to be detrimental to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> | | |
| 5. Pollution prevention and control in order to avoid or reduce greenhouse gas emissions | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> <p>Is the measure expected to lead to a significant increase in greenhouse gas emissions?</p> | | |
| 6. The protection and restoration of biodiversity and ecosystems | C. The measure contributes substantially to an environmental objective pursuant to the Taxonomy Regulation, and is such a considered compatible pursuant to the Taxonomy Regulation, and is such a considered compatible with DNSH for the relevant objective. | <p>The measure contributes to the intervention field: "Research and innovation in the low-carbon economy" and to the intervention field: "Research and innovation in the circular economy".</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> <p>The measure is not a fossil intensive activity as defined in the Taxonomy Regulation, and is not a fossil intensive activity as defined in the Taxonomy Regulation.</p> | <p>Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the representative species of habitats and species, including those of Union interest?</p> | | |

DNSh assessment

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|---|-------------------------|---|
| Measure | Climate | 4. Reducing a reserve |
| Cluster | Climate | 2. Data access of Transport |
| Related Measure (Action or Investment) | Project/Action | 2.3 Strengthening and activation/territorial extension of technology transfer centres by industry segments – Investment |
| Responsibility for research and implementation | Reference person | MSE-CONTRIM-DIV IV a DIV VI - Maria Remedios Francoeur e Marco Galvão |
| Date | Date | 09/09/2024 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The measure concerns the provision of services for technological transfer to digitalisation. There is no harm or climate change area energy-intensive activities, such as data centres, big data analytics and quantum computing.</p> <p>Given the nature of the digitalisation related to the data centre for research, the effects that may affect both the current and future climate were assessed and no substance was highlighted to be considered in carrying out the interventions included in the measure, so risks of environmental degradation connected to the protection of water quality and water stress have been identified, since the installation of hydraulic devices or appliances that use water is not envisaged.</p> | <p>Is the measure expected to lead to significant GHG emissions?</p> <p>Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?</p> <p>Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> <p>Is the measure expected to lead to a significant decrease of the groundwater table or to a significant depletion of stocks of water, with the exception of the measurement of non-conformable freshwater water, or (iii) to a significant deterioration in the direct or indirect use of any natural resource in any stage of its life cycle which are not remedied by adequate measures, or (iv) lower significant and long-term benefits to the environment in respect to the circular economy (art. 27(2) of the Taxonomy Regulation)?</p> | | |
| 2. Climate change adaptation | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The measure will not produce additional water stress if there are no changes in the substitution of cold-freshwater goods with new ones. There is no negative impact due to consideration of the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?</p> | | |
| 3. The sustainable use and protection of water and marine resources | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The measure will not produce additional water stress if there are no changes in the substitution of cold-freshwater goods with new ones. There is no negative impact due to consideration of the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> | | |
| 4. The circular economy, including waste prevention and recycling | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The measure supports innovative projects development but it is not envisaged the forcing of the implementation of the projects.</p> | <p>Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?</p> | | |
| 5. Pollution prevention and control to air, water or land | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The expected impact of the activity supported by the measure with respect to this environmental objective is negligible as it does not affect the parameters that determine the biodiversity and ecosystems, when considering the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?</p> | | |
| 6. The protection and restoration of biodiversity and ecosystems | <p>A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> <p>C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with Article 17(2) of the Taxonomy Regulation.</p> | <p>The expected impact of the activity supported by the measure with respect to this environmental objective is negligible as it does not affect the parameters that determine the biodiversity and ecosystems, when considering the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?</p> | | |

DNSh assessment

| | |
|--|--|
| Mission | 4 - Education and Research |
| Cluster | 2 - From research to business |
| Related Missions (Efforts or Investment) | 3.2 Financing start-ups |
| Responsibility for reporting and implementation | Institute of economic development |
| Date | 2nd April 2021 |

| Environmental objectives | Page 1 | | Page 2 | |
|---|--|---|---|---|
| | Does the measure have an or an insignificant foreseeable impact on this objective to support this objective? | Justification if A, B or C has been selected | Question | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to lead to significant GHG emissions? | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself (e.g. people, nature or assets)? | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to be detrimental: (i) to the good status, or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant modifications in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimally adequate measures; or (iii) cause significant and long-term harm to the environment in respect of the waste generated (Art. 22 of the Directive)? | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to lead to significant increase in the emissions of pollutants into air, water or land? | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle given its nature, and is such a combined compliant with DSD for the relevant objective | The measure is compliant with DSD principles for the relevant objective, for the following reasons: The BfE measures are found to strengthen an already existing national measure that, through direct and indirect investments, aims at accelerating the growth of national innovation systems, by supporting start-ups with high growth potential, scale-ups and incubator SMEs whose investments are supported to be based on the best and eco-friendly available technologies in order to be supported by the fund. In fact, interventions to be supported by the fund are selected taking into account their capability to be environmentally sustainable in line with Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment and screening (Regulation (EU) 2020/852). | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | |

DNSH assessment

| | |
|---|--|
| Mission | 4 |
| Charter | 2 |
| Related Measure (Policy or Investment) | 3.3 Introduction of innovative practices that respond to the needs of farmers and promote their research for climate |
| Responsibility for reporting and implementation | Agriculture Budget |
| Date | 03/04/2022 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|---|--|--------|--|
| | Does the measure lead to or an insignificant favourable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Indicative justification if NO has been selected |
| 1. Climate change mitigation | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant climate mitigation. The measure is expected to lead to significant climate mitigation. The measure is expected to lead to significant climate mitigation. | | |
| 2. Clean air pollution | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant clean air pollution. The measure is expected to lead to significant clean air pollution. The measure is expected to lead to significant clean air pollution. | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant water and groundwater. The measure is expected to lead to significant water and groundwater. The measure is expected to lead to significant water and groundwater. | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant circular economy. The measure is expected to lead to significant circular economy. The measure is expected to lead to significant circular economy. | | |
| 5. Pollution prevention and control to air, water or land | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant pollution prevention and control. The measure is expected to lead to significant pollution prevention and control. The measure is expected to lead to significant pollution prevention and control. | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure leads to or an insignificant favourable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The assessment will contribute to the assessment field 2.1.1. The assessment will consider the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure is expected to lead to significant biodiversity and ecosystems. The measure is expected to lead to significant biodiversity and ecosystems. The measure is expected to lead to significant biodiversity and ecosystems. | | |



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Reform: Implementation of R&D support measures to foster simplification and mobility

Objectives: The systemic approach to support R&D activities will be strengthened with a model based on a few horizontal missions, with aggregated and integrated interventions to support the entire knowledge-creation chain (technological poles and research infrastructures, scientific and technological skills, companies). These missions will strategically comply with the priorities of the National Research Plan (PNR) 2021-2027: i) support the diffused and inclusive growth of the research; ii) consolidate fundamental research; iii) strengthen interdisciplinary research; iv) ensuring the centrality of the person in innovation; v) enhance the circulation of knowledge and skills between the world of research and the production system; vi) accompany the development of a new generation of researchers, technologists and knowledge transfer professionals. These missions comply with the pillars of Horizon Europe, especially in the context of Pillar 1 (i.e. reinforcing and extending the excellence of Union's Science Base) and Pillar 3 (i.e. Support to innovations with breakthrough and market-creating potential and Connection with regional and national innovation actors). Moreover, the proposed framework will also contribute to paving the way for addressing the EU Horizon Missions (e.g., cancer, climate-neutral cities, and soil health and food) and the global challenges of Pillar 2 (e.g., digital industry & space, culture creativity & inclusive societies, and climate, energy and mobility).

In particular, the reform package here described will overcome the current logic of mere redistribution of resources by favouring a sharing approach and will be directed towards the simplification of bureaucracy related to the management of funds devoted to public-private research activities, also supported by the first component of Mission 1. In this context, the Ministry of University and Research will introduce three main innovations i) increasing and supporting the mutual mobility (through incentives) of high-profile figures (i.e. researchers and managers) among Universities, Research infrastructures and companies (leave of absence); ii) simplifying the management of funds directed to financed projects; iii) creating a unique tenure track path which will unify the current figures of temporary researcher type A and B and allowing higher commitment to research activities and a clearer career path. According to the OECD Science, Technology and Innovation Outlook 2021, mobility between academia and other sectors can help promote an effective interaction among research, education and innovation, as well as opening up alternative career paths for doctorates.



Presidenza del Consiglio dei Ministri
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The reform is strictly integrated with other investments proposed under Mission 4, Component 2, such as investments 1.1, 1.3, and 1.4 all concerning public-private collaborations in developing R&D projects. Also, the reform is tied with investment 1.2, which includes short mobility programmes for young researchers to stimulate excellence circulation and spreading. Finally, all the investments under the second outcome “Transfer of technology and support for innovation” are synergistically interconnected with the reform by nurturing the entrepreneurial and innovation capabilities of the knowledge-creation chain, enabling an effective knowledge transfer, which in turn will increase the attractiveness and visibility of Italy on the international scene.

Implementation: The Ministry of University and Research and the Ministry of Economic Development will be responsible for this reform. Inter-ministerial coordination will be carried out through the Research Commission of the Inter-ministerial Committee for Economic Planning (CIPE) supported by a stable coordination committee at the Presidency of the Council of Ministers (as allowed with the approval of the PNR 2021-2027 deliberated on December 2020, n.74/2020) to establish the priorities in terms of reforms modifications needed in the short term, as well as to define new ministerial decrees that will be needed to set the simplified disciplines for the management of joint R&D activities and the facilitation of mobility. Besides, to support the mobility reform, the Ministry of University and Research will allocate part of the ordinary financing fund (FFO) and part of research centres ordinary financing (FOE) to incentivize mobility among universities and universities and research centres. In particular, dedicated incentives will be temporarily recognized to mobile researchers so to cover additional costs, as well as access to the facilities, infrastructures and research network offered by the host institution.

The Ministry of University and Research and the Ministry of Economic Development will constantly evaluate the effectiveness of territorial impact, assessing the need for initiatives dedicated to specific territories aiming for a reduction in the regional divide.

Cost: The estimated cost related to the RRF is equal to 0.

Target population: Universities, research centres, researchers, enterprises.

Timeline: A first step in supporting this reform was the establishment of the Ministry of University and Research, formerly joined with the Ministry of Education, with the Decree D.L. 1/2020. The intervention on simplification will mainly concern the simplification of the MUR's liability funding procedures and will be completed in 2021, with a Ministerial Decree based on the previous Decree D.M. 593/2016. The intervention will be completed in the first quarter of 2022, this intervention will also include support tools of researchers' mobility from academia to enterprises.

By 2021, the MUR ministerial decree will be approved for the use of the extraordinary resources provided with the Fund for the promotion and development of PNR policies (paragraph 548 of art.1, Law No. 178/2020). The MUR evaluation procedures will also be supported through the measures approved within paragraphs 550 and 551 of art.1, law No. 178/2020, concerning the establishment of the new Fund for the evaluation and enhancement of research projects (10 million euros starting from 2021) and simplification measures for the evaluation of research programmes and projects and their results.

Self-assessment of State-aid compliance: The reform allows for the implementation of initiatives with consequences on State-aid compliance. Assessment will be provided individually for each of the investments described in Component 2.



I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.



2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? SI NO X

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività SI NO X

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO X

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;



- per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Fund for the National Research Programme (PNR) and Research Projects of Significant National Interest (PRIN)

Objectives: The Fund will support scientific research measures set out in the National Programme for Research (PNR) 2021- 2027 in such a way as to ensure the implementation of the strategic lines in the field of scientific research in coherence with the EU Framework Programme for Research and Innovation. The approach followed in planning the PNR 2021-2027 proposes a paradigm shift, towards a systematization of programmes for research, development, innovation, support to international relations and industrial policies. The result is a multiannual programme, aiming to contribute to the achievement of the Sustainable Development Goals (SDGs), the European Commission's priorities and the objectives of the 2021-2027 cohesion policy. The goal is to make Italy more attractive for researchers, by fighting territorial inequalities and creating opportunities for young talents. The priorities of the Investment will be defined through consultation with the national scientific community, the central administrations, the Regions and the major public and private stakeholders, in accordance with the recommendations by national, European and international authoritative organizations.

The major areas of intervention of the PNR reflect the six clusters of the European Framework Programme for Research and Innovation 2021-2027: i) health; ii) humanistic culture, creativity, social transformations, a society of inclusion; iii) security for social systems; iv) digital, industry, aerospace; v) climate, energy, sustainable mobility; vi) food products, bioeconomics, biodiversity, agriculture, environment.

As a support of the PNR, a new action has been planned, calling for Research Projects of Significant National Interest (PRIN) to fund three-year projects that, due to their complexity and nature, require the collaboration of research units belonging to universities and research organizations (such as the National Research Center). These projects - which intend to promote curiosity-driven research activities, both fundamental and oriented - are selected on the basis of scientific profile quality of responsible subjects, as well as the originality, methodological adequacy, impact and feasibility of the research project. This type of activity stimulates the development of initiatives promoted by researchers, towards frontier research, and



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stronger interaction between universities and research institutions. The investment will promote three main directions:

i) Support curiosity-driven research activities in the three ERC macro sectors (i.e., LS, PE and SH) encouraging the synergistic interaction between universities and national research bodies to generate a critical mass and therefore increasing the Italian participation and success rate to EU R&I programmes. The projects will last for a maximum of 36 months and could involve up to 5 research units. The maximum funding allocated for each project will be EUR 2,0 Million.

ii) Support the funding renewal of projects selected on the basis of scientific quality, territorial context and long-term expected impact indicators. This strategy would guarantee the continuity of strategic research lines up to 6 years (3+2 or 3+3). The funding renewal will last for a maximum of 36 months for the projects admitted to funding in the 2021 call, and for a maximum of 24 months for the calls of 2022. The maximum funding allocated for each project will be 1.5 million euro.

iii) Support research activities dealing with strategic emerging topics, such as sustainability and protection of natural resources, circular economy, environmental protection and quality, biodiversity and ecosystem services, and human wellbeing. This specific action will be devoted to supporting interdisciplinary, multidisciplinary and territorial balanced projects aiming at merging different scientific approaches, knowledge, methods, and skills to solve complex problems. Interdisciplinarity and multidisciplinary would act as reliable incubators of innovative scientific discovery resulting from the exchange of ideas and the development of new synergies (serendipity) with the final aim of encouraging changes of consolidated research perspectives, routine, and paradigms. The projects will last for a maximum of 48 months and could involve up to 5 research units. The maximum funding allocated for each project will be 2.0 million euro.

This investment should encourage participation in initiatives under the European Union's Framework Programme for Research and Innovation.

Implementation: The programme is managed by the Ministry of University and Research. The implementation passes through competitive calls, according to the scheme of European research and innovation projects, or in response to calls for proposals setting out the objectives of the projects to be financed, within the framework of the various measures identified. The selection of the Projects of Significant National Interest (PRIN) to be funded go through an evaluation process made by three evaluation panels, one for each of the ERC macro-sectors. A total of four project calls will be scheduled between 2021 to 2024 (the 2021 call has already been opened and the selection procedure is ongoing).

For the scientific evaluation of the projects, the panels are supported by three external referees with expertise in the ERC sector of the specific project. The considered evaluation criteria are 1) quality of the project (40%); ii) composition of the team, feasibility and appropriateness of the project (40%); iii) social and climatic impact of the project (20%). Besides, 10% of the total funding for the 2020 call has been dedicated to projects presented by young researchers (under 40 years old). With a similar approach, future calls will have dedicated resources to address the divides of the country (such as gender or territorial). Finally, part of the resources will be dedicated to a new action directed to multidisciplinary projects, that usually have difficulties in finding the right space among the sectors identified for the PRIN (ERC sectors).



During the projects submission steps, a quantitative evaluation will be required concerning the environmental issues, among which the mitigation and/or adaptation to climate change, the impact on natural resources (water, air and soil), biodiversity and ecosystems, the adherence to the circular economy principles and the amelioration of health and environmental quality.

The investment is expected to have a significant impact on the development of research projects involving Southern Universities. In particular, we can expect a similar distribution as the one that characterized the funded projects from the PRIN Programme in 2015.

Cost: The estimated cost related to the RRF is equal to 1.80 billion euro, of which 0.80 concerning existing initiatives that were launched with a call opened in Autumn 2020. The cost does not include the cost for personnel, but new personnel may be recruited within the funded projects. Instead, the cost includes a budget devoted to assessment and monitoring activities, in line with what was planned for the 2017 PRIN call (about 5 million euro per call).

Target population: Universities; Public Research Centres; researchers.

Timeline: The new call issued in Autumn 2020 provides for the activation of a single funding procedure with annual opening windows for the submission of research projects for the years 2022 and 2023. Annual calls will be opened from 2022 to 2024. In an attempt to provide continuity in the financing of Research Projects of Relevant National Interest along the whole PNR, the call with enough budget to cover the last three years of the Programme will be planned in 2024.

Self-assessment of State-aid compliance: The proposed initiative does not constitute State aid as it is not related to the economic activity of the public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei



chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica?

SI

NO

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI

NO

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

identità (aiuti ad hoc);



- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO X

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
 - Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Funding projects presented by young researchers

Objectives: The investment – strongly inspired by the Excellent Science pillar of the Horizon Europe programme – finances research activities managed independently by young researchers, who will immediately gain a first experience of research responsibility. The programme will aim at attracting young researchers who are beneficiary of high profile international grants such as the ERC starting grants and the Postdoctoral Fellowships (MSCA). The high amount of the contribution is aimed at attracting excellent researchers and investing their funding in creating research infrastructures and teams in Italy, without losing the international connection, facilitated by the contribution for short mobility periods. This strategy will ensure multi-fold objectives: i) the anchoring of investments in R&D on the territory, ii) the spread of the excellence in research across universities and research centres, iii) the continuity of research activities of the selected figures for at least 2 years, iv) the attractiveness of Italy as a country where to select the host institution, without losing the opportunity to engage with other countries institutions both for teaching and research. In the framework of this initiative, the selected young researchers will be recruited first as research fellows or visiting professors and, after the necessary evaluations, in the case of MSCA Global Fellowships (duration 36 months) and ERC grantees, they could also be beneficiary of the measures under the D.M. n. 963/2015 (ex art. 1, comma 9 law 230/2005) dealing with the direct recruitment as tenure track (i.e., RTD-B) or permanent (i.e., associate or full professor) figures.

A total of four project calls will be scheduled between 2022 and 2025.

The investment is strongly tied with all the reforms and investments aimed at making Italy an attractive destination for researchers, such as Reform 1.1, which aims at fostering mobility and simplification; Investment 1.7 on research infrastructures and 2.1 on the creation of national R&D leaders, which will be guided by the principle of resource sharing; Investment 1.5, that will provide researchers with new and periodical funding opportunities. Besides, all the investments addressed to the creation of new PhD Programmes and funds (Investments 3.3 and 3.4 in the first Component and Investments 3.4 and 3.5 in the second Component of Mision 4) will stimulate the creation of new research teams, which is an element of



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attraction for ambitious young researchers. All these synergies will ensure the long-term retainment of the attracted researchers.

Implementation: The programme is managed by the Ministry of University and Research. The measure is closely integrated with the reform indicated in point 1.1 “Implementation of R&D support measures to foster simplification and mobility”. The selection of the young researchers will be based on i) the score attributed to the project application by the ERC/IF evaluation committee; ii) the impact of the project on the territory in terms of quality of basic research and human capital and technology transfer. All the types of projects considered in this measure (ERC, MSCA-IF, Seal of Excellence) are selected and financed only after the assessment of the DNSH principle. Finally, it is important to underline that despite this measure will be based on an investment in terms of human capital (the young researchers), the project topics and the expected outputs could have positive indirect impacts on all the other environmental objectives. It is possible to expect that specific researches, devoted to the management of water, coasts and protected areas could represent suitable elements for innovation processes, having a concrete positive impact on these sectors.

The investment envisages supporting up to 300 young researchers awarded with ERC grants, with an individual contribution of 1 million euro (on average), depending on the time left on the project. This contribution will be used to support research activities, short mobility periods for research or teaching in other locations in Italy or abroad (requested as part of the funding received), and technology transfer. In order to strengthen the link between investments in research and maintenance of the results on the territory and employment, part of the individual contribution (up to 20%) will be constrained to the recruitment of at least one non-tenure-track researcher and at least 20% will be invested in infrastructures at the Italian host location.

The investment to support MSCA Postdoctoral Fellowship grantees envisages to support up to 500 recruited researchers with an individual contribution of 0.30 million (on average). This contribution will be used to i) support the research activities of the awarded Postdoctoral Fellowship projects (12-24 months) and ii) to possibly extend the permanence in the hosting institution for a maximum of additional 12 months. This extension could be used to valorize the obtained research outcomes by developing and presenting an ERC or Horizon Europe proposal involving the same hosting institution as a partner and/or to support the technology transfer to companies of the territory. The same contribution could also be applied to MSCA Global Postdoctoral Fellowship (36 months) grantees; in this case, they cannot benefit from the additional 12 months extension but they could be beneficiary of the measures under the D.M. n. 963/2015 (ex art. 1, comma 9 law 230/2005).

The investment to support the applicants who have obtained the ‘Seal of Excellence’ label by the Postdoctoral fellowship MSCA committee, envisages supporting up to 900 figures with an individual contribution of 0.150 million euro (on average). This contribution will be used to i) provide a Research fellowship (12-24 months), and ii) support the research activities.

To ensure a long-lasting impact of this investment, some actions will be introduced: i) for MSCA Postdoctoral fellowship, an extension of the funding by one year will be granted in case the researcher aims to work to a further ERC submission; ii) ERC grantees will be requested to invest in research infrastructures



in the host institution and to start creating a new research group. This, associated with simplified rules, mobility incentives and a more defined tenure track path, guaranteed by Reform 1.1, will ensure a higher propensity to stay in our country after the years covered by the funding.

Cost: The estimated cost related to the RRF is equal to 0.60 billion euro. The resources allocated to supporting ERC grantees will be 0.3 billion euro, while the investment for MSCA Postdoctoral Fellowship (including the Global ones) will be 0.15 billion euro. 0.135 billion euro will be allocated to support the recruitment of applicants who receive the 'Seal of Excellence' label by the Postdoctoral fellowship MSCA committee. This investment will be supported with additional resources equal to 0.20 billion euro coming from European structural and investment funds to ensure the continuity of the investment. Also, the costs needed for the evaluation and monitoring activities are considered.

Target population: Young researchers.

Timeline: The intervention will start in 2022 and will last until 2026.

Self-assessment of State-aid compliance: The proposed initiative does not constitute State aid as it is not related to the economic activity of the public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI X

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI X

NO

X il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure



- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO X**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO X**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività



- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO X

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;

dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



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- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013



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- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
- indicare gli orientamenti di settore²**

.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
- articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
- Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Partnerships extended to universities, research centres, companies and funding of basic research projects

Objectives: This line of action, which is closely integrated with the initiatives to support the research chain, aims at financing up to 15 major basic research programmes carried out by widespread networks of public and private subjects. The investment is aligned with one of the PNR objectives of promoting positive changes by leveraging fundamental research. Moreover, aiming at engaging citizens, as well as facilitating technology and knowledge transfer to territories, companies and public administrations, a dedicated stakeholder engagement process will be conducted to plan, drive and manage (i.e. project control and delivery) each programme. Each project may have different stakeholders according to the specific objectives. In general, we expect the interested communities, the involved universities and research centres, the network of companies engaged in the project, as well as, the Ministry of University and Research and the European Commission to be involved in the stakeholder engagement process.

Such programmes will contribute to strengthen national technology chains and promote their participation in strategic European and global value chains. The programmes will be oriented to the missions of the PNR and the clusters of Horizon Europe, to create new supply and production chains based on these programmes. Possible examples are the following: circular economy, sustainable mobility (sustainable batteries, materials, logistics, etc.), self-driving vehicles, vaccines, bioreactors, new raw materials. Each programme will promote the aggregation of small and medium-sized enterprises around large private players and public research centres; it will encourage collaborative and complementary research activities. R&D projects will include investments both in human capital, by recruiting non-tenure track researchers (at least 100 positions per programme), and resources for basic research development for universities, research centres and enterprises. This strategy will generate a critical mass able to improve the competitiveness and innovation of the production system, produce short-term economic and social value, enhancing, at the same time, the interdisciplinarity and soft skills of the recruited non-tenure-track researchers. At least 20% of the resources will be devoted to research programmes based on low carbon emission economy, resilience, adaptation to climate change and circular economy, in accordance with the general objective of green transition pursued by the European Commission and Italy as well.



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Implementation: The implementation is managed by the Ministry of University and Research. Particularly, the monitoring of the implementation will be under the responsibility of the supervisory board that will be set to monitor Investments 1.1 (extended research partnership), 1.8 (research infrastructures), 2.1 (National Centres on Key Enabling Technologies) and 2.3 (Innovation Ecosystems for sustainability). The measure is closely integrated with the reform indicated in point 1.1 “Implementation of R&D support measures to foster simplification and mobility”. The investment is closely integrated with the PNR and Investment 1.7 in particular. Once the programmes will be defined, working groups will be set up to define, for each programme, a roadmap of objectives. For each programme, a leading subject, responsible and accountable for the development and outcomes of the programme, will be identified, as well as the governance for the specific programme.

The projects will be selected based on competitive criteria including i) adherence to the PNR objectives and priorities; ii) involvement of stakeholders to combine the Technology Readiness Level -TRL with the Societal Readiness Level -SRL; iii) relevance to EU intervention programmes such as the Knowledge and Innovation Communities (KIC) promoted by the European Institute of Innovation and Technology (EIT). Moreover, specific selection criteria will be defined to ensure i) balance of territories involved (i.e., by promoting the involvement of actors from different regions and different zones of the country, including the South and the Islands), ii) the involvement of both large and small-medium enterprises (SME) with particular attention to the younger (< 5 years) and innovative ones. The calls will also take into account the periodic EU country-specific recommendations. Finally, the call for projects, as well as the selection procedure will require a DNSH evaluation, as well as a possible Strategic Environmental Evaluation (SEA) in case the project will be expected to produce a consistent impact on the territory. Once the programmes will be defined, working groups will be set up to define, for each programme, a roadmap of objectives. For each programme, a leading subject, responsible and accountable for the development and outcomes of the programme, will be identified, as well as the governance for the specific programme

On average, 100 million euro will be allocated for each programme. Contribution to single projects within each programme will range between EUR 5 to 20 million. From EUR 15 to 25 million per programme will be devoted to the recruitment of fixed-term researchers (about 100 per programme) that will be based on public selection procedures under the art.24, of Law No.240/2010 and the norms applied to public research centres. A total of two programme calls will be scheduled between 2022 and 2023 and the expected project duration will range from three to four years. In case less than 15 programs would be activated (the defined target is equal to 10 projects), consolidation programme calls would be activated in 2024 and 2025 to fund 12-24 months projects in the framework of TRL 6 and 7. A competitive call will be published in the Official Gazette, interested subjects (both public and private) will be able to candidate as leading subjects, providing an indication of the governance for the programme and the number of researchers they aim to recruit.

The investment is expected to have a significant impact on the development of research projects involving universities, research centres and companies from the South and the Islands. In fact, among the selection criteria, the territorial balance of the actors involved will be considered. Moreover, the creation of networks with partners belonging to different regions of the country will be strongly encouraged.



Concerning the recruited researchers (up to 1500), at least three long-lasting impact scenarios are envisaged: i) absorption by the industry as permanent staff members, with the possibility of supporting the development of private/public research hubs; ii) absorption by the University system or other territorial public research institutions in synergy with the investment 2.4 of Component 1 on “Teaching and advanced university skills”; iii) launch of new entrepreneurial activities.

Cost: The estimated cost related to the RRF is equal to 1.61 billion euro.

Target population: Universities, research centres, small and medium-sized enterprises, researchers.

Timeline: The intervention will start in 2021 and will last until 2026.

Self-assessment of State-aid compliance: The proposed initiative is not directly related to the economic activity of the private or public beneficiary and therefore does not fall within the notion of an enterprise within the meaning of the aid rules. The initiative will only involve basic research projects, the involvement of private actors will be needed to direct basic research into future practical application paths. In the event that a single investment may involve private operators, the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

X il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO



- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);



- area geografica¹ (indicare quale);
 - altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
 - caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- X Altro (specificare): **selezione qualitativa dei progetti su base competitiva**

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI X

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- X sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.



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- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- X **esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- X **notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

X **indicare gli orientamenti di settore**²

Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

disposizione diretta del Trattato (TFUE)

- articolo 93
- articolo 107.2 – specificare la lettera pertinente.
- articolo 107.3 – specificare la lettera pertinente.

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|--|-----------------------------|
| Supporto del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies (code INN)

Objectives: The measure aims at financing the creation of research networks of universities and research institutions united by common objectives and research interests, also aiming to balance territories involved (i.e., by promoting the involvement of actors from different regions and different zones of the country, including the South and the Islands). This will strengthen and institutionalize the cooperation between universities, research institutions and enterprises for the production of innovation-oriented research, offering business advice and learning opportunities. The investment will provide hardware and software infrastructure to be used by highly qualified and internationally competitive personnel. These National Centres will leverage the collaboration between universities, research institutes and companies and will have a technological and/or thematic declination consistent with the priorities of the European agenda and the contents of the PNRR. In this first phase, the following potential topics for National Centres have been identified (up to five will be financed):

- National Centre (NC) for Advanced Simulation and Big Data analysis and management, supporting innovation and knowledge transfer at national and international level. The Centres include a High-Performance Computing (HPC) infrastructure focused on edge computing and embedded Artificial Intelligence aspects, a priority for the Italian production system. The HPC will be aimed at developing a new generation of numerical applications on datasets generated by the research and industrial sectors.
- NC for Advanced Environment and Energy Technologies. This NC will target the development of technologies for environmental management and renewable energy in synergy with the Italian nodes of pan-European and global research infrastructures in this strategic sector.
- NC for Hydrogen Technology, supporting the energy transition to hydrogen in synergy with the materials science and analytical research infrastructures.
- NC for Quantum and Advanced Materials Technologies, Photonics and Optoelectronics. This NC will exploit the new possibilities that quantum science and advanced materials technologies create in the



ways we process, distribute and sense information, as well as for the development of new materials for the energy transition. The advances in this field are prime examples of step-change innovations. This NC will ensure Italy will benefit from the approaching technological revolution, Quantum 2.0, which is on the verge of unlocking the power of counter-intuitive concepts of superposition and entanglement. AI-assisted quantum computing will enable discoveries, by predicting not only the ground state of new functional intelligent materials but also the intermediate pathways. Computing technologies utilizing the effects of quantum physics have the potential to solve some computational problems much faster and/or solve some computational problems that are beyond the capabilities of the most powerful supercomputers. This will foster the expected exponential growth of the quantum computing market, with benefits for the Italian economy and society. Photonics is an asset of the entire European community. Photonics is needed for advanced manufacturing, health and biotechnology, image sensors, lighting, navigation, energy (photovoltaic), agri-food (sensors) telecommunications (terrestrial, wireless and space-based). It has applications for autonomous driving, artificial intelligence, quantum communications, computing and sensors. Photonics contributes to sustainability and the European Green Deal. There are more than 5000 SMEs in the field of photonics and optoelectronics in the EU. In Italy, integrated photonics centres are needed to systematically exploit scientific knowledge to stimulate industrial innovation.

- NC for Technologies for Health (Biopharma), aimed at linking multidisciplinary know-how, intersectoral technologies and bioproducts for people-centred health care and nutritional status, in synergy with the Italian nodes of pan-European and global research infrastructures in this strategic sector (Biobanks, Biochemistry, Clinical Trials, Analytical Facilities, Bioimaging, among others). Its ambition is to support the delivery of new active bio-molecules and new bio-processes for prevention, diagnosis and personal care, based on the principles of the circular economy and green deal and the exploitation of new technologies (i.e. biotechnologies, nanotechnologies, etc). The new centre is aligned with all the Health Horizon Europe Partnerships.
- NC for Technologies for Agriculture and Food (Agri-Tech). This NC will encourage innovation and development of the sustainable agri-food sector to which companies, universities, research centres will contribute, thus promoting private investments. This NC will include several cutting-edge laboratories and infrastructures dedicated to the research and experimentation of technologies in the agri-food sector. Priorities of the centre will be the adaptation to climate change and the prevention of climate-related risks (i.e. drought), the reduction of agrochemistry, the enhancement of biodiversity and agrobiodiversity and the increase in the resilience of farms.
- NC for Fintech. This NC will foster innovation and development of the financial and economic market in a digital key. In addition to the Bank of Italy, which will operate through the NC for FinTech and as a coordination and direction centre for various activities, universities, research centres, and large financial industry operators will also be expected to contribute.
- NC for Sustainable Mobility. This NC will contribute to future transport and mobility services, which need to be part of smart and sustainable city strategies to improve urban resource efficiency, decarbonisation and ensure an integrated transport system. New mobility and transport services and systems are being created due to developments in Information and Communication Technologies (ICT)-enabled web, mobile and big data applications. Traditional automotive, public and private transport



models are being challenged as new players emerge with disruptive services; blurring traditional demarcations between public transport and private mobility, including in the area of urban logistics.

- NC for Technologies Applied to Cultural Heritage. This NC will foster research on new technologies for the preservation and conservation of Cultural Heritage materials, expanding and improving current approaches, by leveraging Computer Vision, Machine Learning, Robotics and Material Science.
- NC Technologies for Biodiversity and Environmental Sustainability. The NC will foster innovation and development of technology-based solutions to support ecosystem services and to promote sustainable exploitation of natural resources, safeguarding, at the same time, the value of local biodiversity. The NC will comply with the pillars of the EU Green Deal 'Biodiversity Strategy for 2030' and with the Horizon Europe Mission 'Healthy oceans, seas, coastal and inland waters.
- NC for Technologies for Industrial Digital Transition – Industry 4.0 (including Artificial Intelligence). This NC will be oriented to capture the competitive advantage offered by Industry 4.0 by reducing time, costs and risks related to the development of the technological solution. The NC will be devoted to experimenting with the use of new technologies, evaluating their effects on products and processes, and experimenting with the opportunities offered to enable the digital transition of the industrial system, including Small and Medium Enterprises. Among the technologies, Artificial Intelligence will play an important role in creating smart systems for process optimization and new smart products.

The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness). The projects of the NCs will be channelled towards impactful projects and linked with EU initiatives and cross-country collaborations. To achieve this goal the NCs will include the most relevant research institutions in the different fields, taking advantage of the existing relationships with other EU research partners and companies.

Implementation:

- a) *Management and institutional setting:* The programme is managed by the Ministry of University and Research and the Ministry of Economic Development. They will jointly set up temporary associations of universities, research bodies and companies (i.e., consortiums). Each consortium will be established including the leading research institutions and the private companies. The inner network that will establish the consortium will be selected based on the development project that will be proposed by the candidate networks, its feasibility, its sustainability beyond 2026, the involvement of the productive sector, the quality of the partners of the consortium. The Ministries will jointly develop the R&D centres governance and management, and integrate them with the Implementation of the R&D support measures (Reform 1.1). Moreover, the Ministries will ensure the differentiation from the "innovation ecosystems" (Investment 2.4).
- b) *Hub-and-spoke structure:* The NCs are based on the backbone of the public research system. Any NC will be based on a central hub, where most of the management and the research activities will take place and spokes where further research infrastructures and activities will be located. The hub and the spoke nodes will be identified based on the scientific specialization and innovation capabilities of the research institutions that will host them.



The spoke institutions and the private companies will join the NCs, once these have been established, with specific agreements that will rule the research and innovation activities and the sharing of the research and technological infrastructures.

- c) *Activities:* Every NC will implement the following activities:
- Research and innovation activities:
 - Relevant research infrastructures will be created, and existing ones will be improved
 - Research and innovation programmes will be implemented in cooperation with the private sector. The cooperation will include leading companies along with SMEs that will benefit from the strategic relationship with highly qualified research institutions and leading companies. The private companies will co-fund the activities with their personnel and research structures.
 - Support to start-up and spin-off companies, with the involvement of private leading companies and venture capital investors. This initiative will be linked to measures in Component 1 of Mission 4 to support the creation of an entrepreneurial culture among the researchers and the university students.
- d) *Budget:* The NCs will allocate up to half of the budget to activities that benefit research institutions and companies not belonging to the established network of the centres. Specific research calls will be set up by any NC to cooperate with other companies and research institutions, and let them have access to the research facilities of the NCs. The selection and the engagement of companies in the actions will be managed by the NCs, which will guarantee equal opportunities and transparency.
- e) *Sustainability:* As far as the long-run financing is concerned, the activities will generate positive cooperation with the private sector that is expected to continue over the 5 years of implementation, guaranteeing the impact of the projects beyond the first 5 years. The integration with the actions of Investment 1.8 will contribute to guarantee the sustainability of the NC beyond the first 5 years. Moreover, as the NCs will be established with the main contribution of existing research institutions, their sustainability will be guaranteed by the pre-existing entities. Concerning environmental sustainability, each centre would be requested to ensure that at least part of its activity will be devoted to contributing to the environmental objectives. The centres will have a technological and/or thematic declination consistent with the priorities of the European agenda and the contents of the PNR. The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness).
- f) *Governance:* In terms of governance, the NCs will comprise an Executive Board (EB) and a Council. The NC EB members and chair will be world-leading, independent, science-technology-innovation leaders, identified through competitive calls. The EB will be responsible for managing the business activities of the NCs and will represent the NC both internally and externally. It will elaborate on the basic premises of the NC science, research and innovation policy and draw up business development and financial plans. The EB will also negotiate with the Government to obtain institutional funding and define how it is to be distributed among the NCs. A key duty of the EB is to appoint the NC directors. The NC Council will consist of the EB members, and the NC Directors, as well as the Directors of the RIIs (including the ones supported by Investment 1.8) and innovation ecosystems (including the ones supported by



Investment 2.3) affiliated to the NC. The NC council will participate in the EB decision-making processes on questions relating to the NC business strategy and will assist with the implementation of EB resolutions. This governance scheme will be linked to the general governance of the Plan and will allow the Supervisory Board to advise on the implementation of this measure.

- g) *Administrative procedure and coordination with other procedures:* Up to five of the NCs identified above will be created following a competitive call by merging existing world-leading laboratories already present in Universities, and public and private research centres, as well as by setting up new bespoke infrastructure. Close cooperation between RIIs and NCs will be required, whereby some RIIs could be part of the new NCs, and others, with independent governance, could be affiliated to the new NCs. Existing consortiums or other research institutions will have the opportunity to be selected as one of the National Centres.

A ratio of the budget will be allocated to initiatives that will be carried out in Southern Italy. In particular, specific incentives will be implemented to stimulate the networks to include research institutions and companies from Southern Italy, as well as to establish one of the hubs in Southern Italy.

Cost: The estimated cost related to the RRF is equal to 1.60 billion euro.

Target population: Universities, research centres, research infrastructures, data infrastructures, and companies. The measure will have an impact mostly on applied research and innovation.

Timeline: The intervention will start in 2021 and will last until 2026.

Self-assessment of state-aid compliance: In the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

- **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI X

NO

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

*Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'impresa. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.*

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI X** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI X

NO



La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
 - dimensione;
 - settore economico o attività (indicare quali);
 - area geografica¹ (indicare quale);
 - altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
 - caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- X Altro (specificare): **selezione qualitativa dei progetti su base competitiva**

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI X

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
 - agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
 - differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
 - riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
 - estinzione o riduzione del debito;
 - cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
 - garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
 - prestito agevolato (mutuo a tasso agevolato);
 - riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
 - finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
 - partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
 - compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
 - nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
 - Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e



incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- X **esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
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X **indicare gli orientamenti di settore²**

Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
- articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
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 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|---|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |

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Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

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- National Centre (NC) for Advanced Simulation and Big Data analysis and management, supporting innovation and knowledge transfer at national and international level. The Centres include a High-Performance Computing (HPC) infrastructure focused on edge computing and embedded Artificial Intelligence aspects, a priority for the Italian production system. The HPC will be aimed at developing a new generation of numerical applications on datasets generated by the research and industrial sectors.
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- NC for Hydrogen Technology, supporting the energy transition to hydrogen in synergy with the materials science and analytical research infrastructures.
- NC for Quantum and Advanced Materials Technologies, Photonics and Optoelectronics. This NC will exploit the new possibilities that quantum science and advanced materials technologies create in the



ways we process, distribute and sense information, as well as for the development of new materials for the energy transition. The advances in this field are prime examples of step-change innovations. This NC will ensure Italy will benefit from the approaching technological revolution, Quantum 2.0, which is on the verge of unlocking the power of counter-intuitive concepts of superposition and entanglement. AI-assisted quantum computing will enable discoveries, by predicting not only the ground state of new functional intelligent materials but also the intermediate pathways. Computing technologies utilizing the effects of quantum physics have the potential to solve some computational problems much faster and/or solve some computational problems that are beyond the capabilities of the most powerful supercomputers. This will foster the expected exponential growth of the quantum computing market, with benefits for the Italian economy and society. Photonics is an asset of the entire European community. Photonics is needed for advanced manufacturing, health and biotechnology, image sensors, lighting, navigation, energy (photovoltaic), agri-food (sensors) telecommunications (terrestrial, wireless and space-based). It has applications for autonomous driving, artificial intelligence, quantum communications, computing and sensors. Photonics contributes to sustainability and the European Green Deal. There are more than 5000 SMEs in the field of photonics and optoelectronics in the EU. In Italy, integrated photonics centres are needed to systematically exploit scientific knowledge to stimulate industrial innovation.

- NC for Technologies for Health (Biopharma), aimed at linking multidisciplinary know-how, intersectoral technologies and bioproducts for people-centred health care and nutritional status, in synergy with the Italian nodes of pan-European and global research infrastructures in this strategic sector (Biobanks, Biochemistry, Clinical Trials, Analytical Facilities, Bioimaging, among others). Its ambition is to support the delivery of new active bio-molecules and new bio-processes for prevention, diagnosis and personal care, based on the principles of the circular economy and green deal and the exploitation of new technologies (i.e. biotechnologies, nanotechnologies, etc). The new centre is aligned with all the Health Horizon Europe Partnerships.
- NC for Technologies for Agriculture and Food (Agri-Tech). This NC will encourage innovation and development of the sustainable agri-food sector to which companies, universities, research centres will contribute, thus promoting private investments. This NC will include several cutting-edge laboratories and infrastructures dedicated to the research and experimentation of technologies in the agri-food sector. Priorities of the centre will be the adaptation to climate change and the prevention of climate-related risks (i.e. drought), the reduction of agrochemistry, the enhancement of biodiversity and agrobiodiversity and the increase in the resilience of farms.
- NC for Fintech. This NC will foster innovation and development of the financial and economic market in a digital key. In addition to the Bank of Italy, which will operate through the NC for FinTech and as a coordination and direction centre for various activities, universities, research centres, and large financial industry operators will also be expected to contribute.
- NC for Sustainable Mobility. This NC will contribute to future transport and mobility services, which need to be part of smart and sustainable city strategies to improve urban resource efficiency, decarbonisation and ensure an integrated transport system. New mobility and transport services and systems are being created due to developments in Information and Communication Technologies (ICT)-enabled web, mobile and big data applications. Traditional automotive, public and private transport



models are being challenged as new players emerge with disruptive services; blurring traditional demarcations between public transport and private mobility, including in the area of urban logistics.

- NC for Technologies Applied to Cultural Heritage. This NC will foster research on new technologies for the preservation and conservation of Cultural Heritage materials, expanding and improving current approaches, by leveraging Computer Vision, Machine Learning, Robotics and Material Science.
- NC Technologies for Biodiversity and Environmental Sustainability. The NC will foster innovation and development of technology-based solutions to support ecosystem services and to promote sustainable exploitation of natural resources, safeguarding, at the same time, the value of local biodiversity. The NC will comply with the pillars of the EU Green Deal 'Biodiversity Strategy for 2030' and with the Horizon Europe Mission 'Healthy oceans, seas, coastal and inland waters.
- NC for Technologies for Industrial Digital Transition – Industry 4.0 (including Artificial Intelligence). This NC will be oriented to capture the competitive advantage offered by Industry 4.0 by reducing time, costs and risks related to the development of the technological solution. The NC will be devoted to experimenting with the use of new technologies, evaluating their effects on products and processes, and experimenting with the opportunities offered to enable the digital transition of the industrial system, including Small and Medium Enterprises. Among the technologies, Artificial Intelligence will play an important role in creating smart systems for process optimization and new smart products.

The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness). The projects of the NCs will be channelled towards impactful projects and linked with EU initiatives and cross-country collaborations. To achieve this goal the NCs will include the most relevant research institutions in the different fields, taking advantage of the existing relationships with other EU research partners and companies.

Implementation:

- a) *Management and institutional setting:* The programme is managed by the Ministry of University and Research and the Ministry of Economic Development. They will jointly set up temporary associations of universities, research bodies and companies (i.e., consortiums). Each consortium will be established including the leading research institutions and the private companies. The inner network that will establish the consortium will be selected based on the development project that will be proposed by the candidate networks, its feasibility, its sustainability beyond 2026, the involvement of the productive sector, the quality of the partners of the consortium. The Ministries will jointly develop the R&D centres governance and management, and integrate them with the Implementation of the R&D support measures (Reform 1.1). Moreover, the Ministries will ensure the differentiation from the "innovation ecosystems" (Investment 2.4).
- b) *Hub-and-spoke structure:* The NCs are based on the backbone of the public research system. Any NC will be based on a central hub, where most of the management and the research activities will take place and spokes where further research infrastructures and activities will be located. The hub and the spoke nodes will be identified based on the scientific specialization and innovation capabilities of the research institutions that will host them.



The spoke institutions and the private companies will join the NCs, once these have been established, with specific agreements that will rule the research and innovation activities and the sharing of the research and technological infrastructures.

- c) *Activities:* Every NC will implement the following activities:
- Research and innovation activities:
 - Relevant research infrastructures will be created, and existing ones will be improved
 - Research and innovation programmes will be implemented in cooperation with the private sector. The cooperation will include leading companies along with SMEs that will benefit from the strategic relationship with highly qualified research institutions and leading companies. The private companies will co-fund the activities with their personnel and research structures.
 - Support to start-up and spin-off companies, with the involvement of private leading companies and venture capital investors. This initiative will be linked to measures in Component 1 of Mission 4 to support the creation of an entrepreneurial culture among the researchers and the university students.
- d) *Budget:* The NCs will allocate up to half of the budget to activities that benefit research institutions and companies not belonging to the established network of the centres. Specific research calls will be set up by any NC to cooperate with other companies and research institutions, and let them have access to the research facilities of the NCs. The selection and the engagement of companies in the actions will be managed by the NCs, which will guarantee equal opportunities and transparency.
- e) *Sustainability:* As far as the long-run financing is concerned, the activities will generate positive cooperation with the private sector that is expected to continue over the 5 years of implementation, guaranteeing the impact of the projects beyond the first 5 years. The integration with the actions of Investment 1.8 will contribute to guarantee the sustainability of the NC beyond the first 5 years. Moreover, as the NCs will be established with the main contribution of existing research institutions, their sustainability will be guaranteed by the pre-existing entities. Concerning environmental sustainability, each centre would be requested to ensure that at least part of its activity will be devoted to contributing to the environmental objectives. The centres will have a technological and/or thematic declination consistent with the priorities of the European agenda and the contents of the PNR. The measure will reinforce synergies with the Horizon Europe research programme overarching the Pillar I (excellent science and research infrastructures) and Pillar II (Global Challenges and Industrial Competitiveness).
- f) *Governance:* In terms of governance, the NCs will comprise an Executive Board (EB) and a Council. The NC EB members and chair will be world-leading, independent, science-technology-innovation leaders, identified through competitive calls. The EB will be responsible for managing the business activities of the NCs and will represent the NC both internally and externally. It will elaborate on the basic premises of the NC science, research and innovation policy and draw up business development and financial plans. The EB will also negotiate with the Government to obtain institutional funding and define how it is to be distributed among the NCs. A key duty of the EB is to appoint the NC directors. The NC Council will consist of the EB members, and the NC Directors, as well as the Directors of the RIIs (including the ones supported by Investment 1.8) and innovation ecosystems (including the ones supported by



Investment 2.3) affiliated to the NC. The NC council will participate in the EB decision-making processes on questions relating to the NC business strategy and will assist with the implementation of EB resolutions. This governance scheme will be linked to the general governance of the Plan and will allow the Supervisory Board to advise on the implementation of this measure.

- g) *Administrative procedure and coordination with other procedures:* Up to five of the NCs identified above will be created following a competitive call by merging existing world-leading laboratories already present in Universities, and public and private research centres, as well as by setting up new bespoke infrastructure. Close cooperation between RIIs and NCs will be required, whereby some RIIs could be part of the new NCs, and others, with independent governance, could be affiliated to the new NCs. Existing consortiums or other research institutions will have the opportunity to be selected as one of the National Centres.

A ratio of the budget will be allocated to initiatives that will be carried out in Southern Italy. In particular, specific incentives will be implemented to stimulate the networks to include research institutions and companies from Southern Italy, as well as to establish one of the hubs in Southern Italy.

Cost: The estimated cost related to the RRF is equal to 1.60 billion euro.

Target population: Universities, research centres, research infrastructures, data infrastructures, and companies. The measure will have an impact mostly on applied research and innovation.

Timeline: The intervention will start in 2021 and will last until 2026.

Self-assessment of state-aid compliance: In the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

- **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI X

NO

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

*Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'impresa. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.*

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI X** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività

SI X

NO



La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
 - dimensione;
 - settore economico o attività (indicare quali);
 - area geografica¹ (indicare quale);
 - altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
 - caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- X Altro (specificare): **selezione qualitativa dei progetti su base competitiva**

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI X

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
 - agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
 - differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
 - riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
 - estinzione o riduzione del debito;
 - cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
 - garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
 - prestito agevolato (mutuo a tasso agevolato);
 - riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
 - finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
 - partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
 - compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
 - nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
 - Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e



incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- X **esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- X **notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

X **indicare gli orientamenti di settore**²

Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
- articolo 93
 - articolo 107.2 – specificare la lettera pertinente.
 - articolo 107.3 – specificare la lettera pertinente.
- disciplina sui Servizi di Interesse Economico Generale (SIEG):**
- Regolamento (UE) n. 360/2012 (SIEG)
 - Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
 - Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
 - Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|---|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Establishing and strengthening of "innovation ecosystems", building "territorial leaders of R&D" (code INN)

Objectives: The project is centred on academic, industrial and blended (PPP) research and innovation infrastructures (RIIs). Innovation ecosystems are physical places of contamination between universities, research institutions, companies and local institutions; their activities are related to higher education, applied research, innovation, on specific technological areas, defined based on the specialization of the territory. It is expected that up to 12 innovation ecosystems will be distributed on the national territory with regional coverage. Formally, this initiative is not going to support the creation of new research organizations but only temporary networks of research institutions and companies implementing the different actions. Similarly, an existing leading subject may lead to the creation of a partnership among existing institutions. The innovation ecosystems will play a crucial role in the implementation of research and innovation activities in the field of environmental and social sustainability. To this aim, a *grand-challenges-oriented* approach will be implemented, fostering the creation of *impact innovation and entrepreneurship*. The scope of these networks will be defined based on:

- 1) Scientific excellence of universities and institutions.
- 2) Specialization of the Region, that will host the initiatives.
- 3) Involvement of large companies as well as SMEs.
- 4) Availability of local institutions to support the initiatives.
- 5) National and international relations with other centres of scientific excellence, which will become available for collaboration.

In details, for any innovation ecosystem in each regional territory, universities and public research bodies, through single or joint initiatives, will implement articulated projects, including multiple actions, among the following options:

- Training and education activities:



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- Universities and public research centres in collaboration with companies: courses catering to the training needs of companies, in order to bridge the mismatch of skills. These courses will be characterized by large flexibility in the definition of the content of the training (free from traditional scientific-disciplinary sectors), lecturers and instructors coming from both academia and the business world; approach to teaching (innovative teaching: proactive, practical, multidisciplinary and personalized, with a combination of active-distributed-flip-learning, support of digital systems, group work, etc.); criteria and method to select students (tests, entry, interviews, etc.); duration of training courses, integration into the companies.
- Industrial doctorates, with the involvement of companies, especially SME, aimed at conducting research activities functional to their innovation challenges.
- Applied research activities
 - Applied research and innovation programmes, in partnership with local companies, especially SME, and private research centres
 - Research and innovation infrastructures (RIIs), that will support the research activities carried out in cooperation with companies, especially SME and research centres (also hosting operational units of companies) as well as open-labs or joint laboratories with companies. This action will be particularly implemented to involve local supply chains and micro-business networks, to stimulate a long-lasting impact on the territories. The RIIs will also support the transfer of research activities to the market, i.e. initiatives to create new spin-offs and innovative startups.
- Support to new start-ups, through the incubation of research spin-offs and the contribution of venture capital operators, as well as support to other technology transfer initiatives. This initiative will be linked to measures in Component 1 of Mission 4 to support the creation of an entrepreneurial culture among the researchers and the university students.
- Involvement of communities as well as local institutions, to strengthen the engagement of citizens on issues related to innovation, the sustainability of social and economic development and the importance of skills and scientific culture.

The projects are expected to impact the local systems of companies, especially SME, to improve their attitude to innovate, employing: tailor-made education and training activities with the opportunity to improve the attitude to innovate of the workers, support to carry out research actions, the availability of accessible research infrastructures. Their distribution along the national territory will be essential to impacting the regional divide in innovation.

The selection of the projects that will be funded will be based on different factors, including:

- The quality of the scientific and technical projects, and the coherence with the scientific and productive vocation and specialization of the territories where the projects are expected to be based
- The effectiveness of the projects in supporting companies, especially SMEs, to improve their attitude to innovate



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- The capability of the projects to stimulate national and international relationships with research institutions and leading companies
- The effectiveness of the third mission actions and their potential to engage local communities and institutions.

Implementation: The programme is managed by the Ministry of University and Research. The measure is closely integrated with Reform 1.1. The integration with the actions of Investment 1.8 will contribute to guarantee the sustainability of the innovation ecosystems beyond the first 5 years.

The implementation will move from a call for proposals to networks of universities, public research bodies and companies that will be asked to submit “innovation ecosystem” projects, structured as described above. Each project proposal will be identified in a regional area. Private companies and research centres will participate in the projects for the implementation of the training and research activities that involve the contribution of the private sector. The selection and the engagement of the private companies in the project proposals will be managed by the local universities and research bodies. Any project will be assessed in terms of feasibility, sustainability beyond 2026, cofounding from other sources (e.g. regional funds), involvement of the productive sector, quality of the partners, impact on social and environmental sustainability. The call for projects to be financed as innovation ecosystems, as well as the selection procedure will require a DNSH evaluation, and a possible Strategic Environmental Assessment (SEA) in case the project will be expected to produce a consistent impact on the territory. In the case of research, infrastructure will be created, the same assessment requested for initiative 1.8 on research and innovation infrastructure will be applied.

The research activities will not have a direct environmental impact. However, a sustainability assessment of the direct research activities will be required. Generally, public research bodies will be asked to play as leading subjects of the network proposals; however, due to local opportunities or constraints, private research centres or companies can also play as leading subjects. This governance scheme will be linked to the general governance of the Plan and will allow the Supervisory Board to advise the implementation of this measure. Attention will be dedicated to the specificities of the Italia macro-regions (North, Centre, South and Islands)

The implementation phase foresees an integration with the “Fund for construction of research and innovation infrastructures” as well as with the project “Strengthening of research structures and creation of “national R&D leaders” on some Key Enabling Technologies ” and other measures of the Plan devoted to the creation of innovation ecosystems (see Missions 5 and 6).

This investment is expected to particularly benefit Southern regions and Islands. Selected and funded initiatives in these regions will benefit from further contributions of the measure on the “innovation ecosystems” in Mission 5.

Cost: The estimated cost related to the RRF is equal to 1.30 billion euro.

Target population: Universities, research centres, enterprises. The measure will have an impact mostly on applied research and innovation.

Timeline: The intervention will start in 2021 and will last until 2026.



Self-assessment of state-aid compliance: In the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI X

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI X

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.

Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



X Altro (specificare): **selezione qualitativa dei progetti su base competitiva**

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI X

NO

Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.

Se si è risposto **SI**:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- X sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);



- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

X indicare gli orientamenti di settore²

Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

disposizione diretta del Trattato (TFUE)

- articolo 93
- articolo 107.2 – specificare la lettera pertinente.
- articolo 107.3 – specificare la lettera pertinente.

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

IPCEI

Amministrazione proponente: Ministero dello sviluppo economico

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Decreto interministeriale

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: _____

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

La Comunicazione della Commissione europea 2014/C 188/02 ha definito i criteri per l'analisi della compatibilità con il mercato interno degli aiuti di Stato destinati a promuovere la realizzazione di importanti progetti di comune interesse europeo.

È attualmente in corso di consultazione la revisione della comunicazione con l'obiettivo di apportare alcuni adeguamenti mirati a fornire ulteriori orientamenti su alcuni criteri stabiliti nella comunicazione, facilitare la partecipazione delle PMI, in linea con la strategia industriale e la strategia per le PMI e garantire l'ampio carattere europeo dei progetti rafforzandone l'apertura e la coerenza con le politiche dell'UE. In particolare, come riportato nella proposta di revisione, gli IPCEI possono sostenere tutte le politiche e le azioni finalizzate al conseguimento di obiettivi europei comuni, con specifico riferimento al Green Deal europeo, alla strategia digitale, alla nuova strategia industriale per l'Europa e Next Generation EU. Gli stessi possono altresì contribuire a una ripresa sostenibile a seguito di gravi perturbazioni economiche, quali quelle provocate dalla pandemia di COVID-19, nonché sostenere gli sforzi per il rafforzamento della resilienza sociale ed economica dell'UE. È prevista la concessione di agevolazioni per progetti di ricerca, innovazione e sviluppo (RSI) fortemente innovativi e progetti che comportano la prima applicazione industriale e che consentano lo sviluppo di un nuovo prodotto o servizio ad alto contenuto di ricerca e innovazione e/o la diffusione di un processo di produzione radicalmente innovativo.

Gli IPCEI consentono, anche attraverso la collaborazione tra settore pubblico e privato, di riunire conoscenze, competenze, risorse finanziarie e attori economici di tutta l'Unione, al fine di ovviare ai gravi fallimenti sistemici o del mercato e alle sfide sociali che non potrebbero altrimenti essere affrontati.

Con propria Decisione 2018/C 39/03 del 30 gennaio 2018 la Commissione europea ha istituito il Forum strategico per gli IPCEI e con il rapporto *"Strengthening Strategic Value Chains for a future-ready EU Industry"* sono state individuate le catene del valore strategiche per la competitività e la leadership industriale dell'Europa ed evidenziate le azioni prioritarie da intraprendere per il rafforzamento e lo sviluppo delle sei catene del valore dei veicoli connessi, puliti e autonomi, dei sistemi e tecnologie dell'idrogeno, della sanità intelligente dell'internet industriale delle cose, dell'industria a basse emissioni di CO2 e della sicurezza informatica.

Allo stato attuale sulla base della citata Comunicazione CE 2014/C188/02 del 20/06/2014 è stato notificato il regime di aiuto n. SA.46595 a sostegno della realizzazione dell'IPCEI sulla microelettronica. Sulla base del



predetto regime la Legge di Bilancio 2019 ha istituito un fondo finalizzato all'erogazione di contributi alle imprese che partecipano all'IPCEI sulla microelettronica.

Con Decreto ministeriale 30/10/2019 sono state definite le procedure per la concessione ed erogazione delle agevolazioni in favore di progetti di ricerca, sviluppo e innovazione nell'ambito del menzionato l'IPCEI, con riferimento a 5 settori tecnologici.

È inoltre prevista l'adozione di un nuovo decreto interministeriale per tutte le future iniziative IPCEI che standardizzerà la procedura di concessione delle agevolazioni (dalla manifestazione d'interesse, alla raccolta e selezione dei progetti fino alla notifica alla CE e alla concessione).

Il nuovo DM prevederà il finanziamento di iniziative notificate sia prima che successivamente all'entrata in vigore del Decreto stesso. Le notifiche dovranno sempre avere garanzia di copertura finanziaria.

Sulla base dei criteri definiti con decreto del Ministro dello sviluppo economico, di concerto con il Ministro dell'economia e delle finanze e nel rispetto delle decisioni di autorizzazione della Commissione europea adottate per i progetti interessati, i singoli interventi saranno attivati con decreti del Ministro dello sviluppo economico.

L'effettiva implementazione dell'aiuto è soggetta alla preventiva approvazione della Commissione europea e, pertanto, le agevolazioni sono concesse nelle forme e nei limiti previsti dalla Decisione di autorizzazione.

La dotazione complessiva per il periodo 2021-2026 stimata sul PNRR è di 1,5 miliardi di euro.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO



- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? SI NO

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività SI NO

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);



- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

Come stabilito dalla Comunicazione CE 2014/C 188/02, la scelta dello strumento di aiuto deve essere fatta in funzione del fallimento del mercato o degli altri importanti fallimenti sistemici cui si intende porre rimedio. Ad esempio, se il problema sottostante è la mancanza di finanziamento esterno, gli Stati membri dovrebbero ricorrere ad aiuti sotto forma di sostegno alla liquidità, quali prestiti o garanzie. Se è inoltre necessario dotare l'impresa di un certo grado di condivisione dei rischi, lo strumento di aiuto da privilegiare dovrebbe generalmente essere un anticipo rimborsabile. Gli strumenti di aiuto rimborsabili saranno in genere considerati favorevolmente.

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.



II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
- indicare gli orientamenti di settore²**

.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

disposizione diretta del Trattato (TFUE)

- articolo 93
- articolo 107.2 – specificare la lettera pertinente.
- articolo 107.3 – specificare la lettera pertinente. *Articolo 107, paragrafo 3, lettera b), del TFUE - aiuti destinati a promuovere la realizzazione di un importante progetto di comune interesse europeo*

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|---|------------------------------------|
| Supporto del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> | | |
| Parere del distinct body | <input checked="" type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e</i> | | |

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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sommario delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Partenariati Horizon Europe

Amministrazione proponente: Ministero dello sviluppo economico

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: Decreto ministeriale

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: _____

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

L'intervento mira a consentire al mondo della ricerca e delle imprese italiane di essere parte attiva nelle cd. *European partnerships*, che la Commissione europea lancerà nell'ambito di Horizon Europe (già dal 2021). Tali iniziative transnazionali di ricerca possono rappresentare un importante volano di sviluppo della R&I su temi strategici per il rilancio e la crescita del Paese e, per il periodo 2021-2027, la Commissione europea ha in programma di lanciare 50 *partnership* relative a progetti di ricerca su tematiche ritenute strategiche per la competitività dell'UE.

Le modalità di attuazione della proposta progettuale sono legate alla partecipazione (finanziamento) nazionale ai bandi congiunti che il consorzio di partner (composto da Commissione europea e stati membri interessati a ciascuna tematica) deciderà di lanciare per attuare il programma di azione proprio di ciascuna *partnership*. Una volta lanciato il bando, è rilevante precisare che le risorse italiane investite in quell'azione potranno andare a beneficio solo ed esclusivamente di enti di ricerca, aziende o altri beneficiari italiani.

Con il decreto ministeriale 1° luglio 2020 il Ministero dello sviluppo economico ha inteso dotare la strumentazione ad oggi a disposizione del Fondo per la crescita sostenibile (FCS) di un quadro normativo di riferimento per il sostegno dei progetti delle imprese italiane selezionati nei bandi emanati dagli organismi, istituzioni o imprese comuni che operano a livello centralizzato per l'Unione europea. Nello specifico - al fine di promuovere relazioni più strette tra la comunità dei ricercatori e l'industria, in modo da conseguire una crescita intelligente, sostenibile e inclusiva nell'Unione europea e di sostenere la valorizzazione economica dell'innovazione sull'intero territorio nazionale attraverso la sperimentazione e l'adozione di soluzioni innovative di alto profilo - il decreto 1° luglio ha definito i criteri generali per la concessione ed erogazione delle agevolazioni in favore dei progetti di ricerca industriale e sviluppo sperimentale delle imprese italiane selezionati nei bandi emanati dalle istituzioni UE.

Si tratta di un'ulteriore modalità di intervento del FCS che favorisce la partecipazione dei programmi o progetti predisposti dalle imprese alle linee di finanziamento aperte dalla Commissione europea e dalle altre istituzioni comunitarie in attuazione di programmi comunitari concernenti obiettivi di rilevante interesse per la competitività del Paese.

Per la concessione delle agevolazioni il fabbisogno stimato a valere sul PNRR è di 200 milioni di euro.

Il nuovo strumento agevolativo prevede un'applicazione pilota dello stesso alla call ECSEL 2020 IA – Innovation Actions, dell'impresa comune ECSEL, con una dotazione finanziaria complessivamente pari a 10



milioni di euro, stanziata con il medesimo decreto 1° luglio ed avente come obiettivo quello di contribuire allo sviluppo di una industria forte e competitiva nel settore dei componenti e dei sistemi elettronici. I progetti di ricerca e sviluppo cofinanziabili devono prevedere spese e costi ammissibili compresi tra 3 e 20 milioni di euro. Le agevolazioni sono concesse nella forma di contributo diretto alla spesa con percentuali che variano a seconda della dimensione del soggetto proponente.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

- il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure
- il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

- il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure
- il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.
- Altro (specificare):

FORSE (specificare dubbi): _____



In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? SI NO

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività SI NO

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
rif. Art. 3 DM 1 luglio 2020: a) imprese che esercitano le attività di cui all'articolo 2195 del codice civile, numeri 1) e 3), ivi comprese le imprese artigiane di cui alla legge 8 agosto 1985, n. 443; b) imprese agro-industriali che svolgono prevalentemente attività industriale; c) imprese che esercitano le attività ausiliarie di cui al numero 5) dell'articolo 2195 del codice civile, in favore delle imprese di cui alle lettere a) e b); d) Centri di ricerca.
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

Se si è risposto SI ad entrambi i punti 1 e 2 compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;



- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti

Le agevolazioni sono concesse, nei limiti delle intensità massime di aiuto e delle soglie di notifica individuali stabilite, rispettivamente, dall'articolo 25 e dall'articolo 4 del Regolamento GBER ed in raccordo con ciascun intervento emanato dalle istituzioni UE, nella forma del contributo diretto alla spesa e/o del finanziamento agevolato



notifica preventiva, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

indicare gli orientamenti di settore²

.....

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

disposizione diretta del Trattato (TFUE)

articolo 93

articolo 107.2 – specificare la lettera pertinente.

articolo 107.3 – specificare la lettera pertinente. *Articolo 107, paragrafo 3, lettera b), del TFUE - aiuti destinati a promuovere la realizzazione di un importante progetto di comune interesse europeo*

disciplina sui Servizi di Interesse Economico Generale (SIEG):

Regolamento (UE) n. 360/2012 (SIEG)

Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG

Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70

Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE EUROPEE

Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Fund for construction of an integrated system of research and innovation infrastructures

Objectives: The Fund will be used to build or strengthen, on a competitive basis, research infrastructures (RIs) of pan-European relevance and dedicated innovation infrastructures (IIs), with a complementary scope and coordinated with the measures foreseen within the "innovation ecosystems" (Investment 2.3) and "national R&D leaders" (Investment 2.1).

The RIs are unique resources enabling the performance of advanced studies in various fields, open to usage by researchers who are awarded access based on international standard competitive calls. The RIs design, implement, operate and constantly update and upgrade their facilities for research and innovation in specialised domains, but with interoperability aims to enable multidisciplinary research as well as multi-TRL data exchange or integration. Upgrades of RIs or establishment of novel RIs and IIs will be awarded following the same assessment processes as defined by ESFRI and the National Roadmap (PNIR chapter of PNR). RIs are typically aimed at supporting curiosity-driven research as well as TRL 1-3 applied research, mostly in the spirit of open innovation. The proposed measure comes from the need to extend the scope of some RIs to provide unique services tailored also to the higher TRL (4-5) which are of direct interest by industry to increase their competitiveness.

The fund will foster a combination of public and private investments, thanks to blending mechanisms, assessing and enforcing the long-term sustainability of the research and innovation infrastructural undertakings.

Currently, the innovation-oriented industrial cooperation with RIs has been twofold: as a supplier involved in co-creation of unique solutions for advanced, often large scale, instrumentation; and as users of these resources for carrying out own innovation or testing projects.

A new model is needed to cater for the industrial needs of knowledge-based innovation. Whilst maintaining the competitive open access to RIs and IIs for industrial users performing research leading to open-innovation and open data, the substantially upgraded catalogue of innovation-oriented research services will also be offered for those industrial access proposals that require full IPR ownership and confidentiality



of results, at real-cost, no-profit conditions. The role of industry as a possible Partner and direct financier of the RI and Innovation Infrastructures would be contributing to the development and deployment of new and ad-hoc infrastructure services for industry, with the direct benefit to participating in the implementation of large test-beds, advanced technology open data services, test prototypes and solutions to be possibly adapted for own production purposes. Most of the work to bridge from fundamental knowledge to medium-high TRLs is nowadays shared by competitors and open to new enterprises that nevertheless may still need protected access to the qualification and final development of their proprietary research. Participation of industry or services in the capital of IIs dedicated mostly to open innovation will be an attractor as the possible proprietary pay-access will be facilitated and maximally effective. The open-innovation vs. pay-access share will be tuned to international standards and may vary from case to case.

Adequate scientific and technical staff must be permanently employed at the RI and II as only a high-level permanent staff can guarantee vision of developments and effectiveness of operation. Most of the volume of research will nevertheless be produced by users accessing the facilities. Remote access to RIs and IIs, as made crucial by the pandemics, does require a strong permanent staff to handle effective remote interaction and guidance of measurements, experiments, calibrations, tests by the users.

The users of RIs and IIs will be national and international academic researchers, industrial direct users, industrial consortia or associations accessing perhaps through service providers (public or private) and users of the data generated by RIs and IIs according to open science, open innovation or protected industry results.

Access by industry or other economic organization may be oriented to a) contribute to open-innovation, or b) reinforce own competitiveness by retaining all results. In the first case, the access could be supported by public funding, as is the case for fundamental research. In the case of proprietary research, the services will be still selected for relevance, but then the access cost will be paid by the user. The relative quota of open-free access and pay-for-access will strongly depend on the exact scope of each RI and II, but the open science / open innovation scope shall always prevail in the scope of the centres, whilst offering substantial opportunities to paid-for access.

The cost of RIs is variable, with typical figures ranging in the 50-1000 M€ in the hard sciences and energy sector, or to 5-300 M€ in the biomedical, environmental, social and cultural sectors. Distributed RIs often are built upgrading and integrating existing resources suitable to be reoriented to the new mission. The general rule of operating costs is 10% of the total construction investment per year. The RIIs (RIs+IIs) system will fulfil the objectives of the EU Competitiveness Council. The RIs will strengthen the Italian excellence in research and technology, and the IIs will provide academia and industry with platforms to develop smart integrated systems, ranging from prototype design to pilot production. The exchange of data and metadata will create the background for the development of open innovation. The plan will build on the experience of ESFRI (European Strategy Forum on Research Infrastructures), ERIC (European Research Infrastructure Consortium) and PNIR (National Plan for Research Infrastructures), accessing the resources of Pillar 1 of Horizon Europe, also generating open FAIR data and data services to the benefit of research and innovation through the European Open Science Cloud - EOSC. Innovation Infrastructures will develop, concerning the goals of Pillar 2 (industrial competitiveness) and will create and grow Innovation oriented



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services, with unique technological resources, as well as demonstrators of usage of the FAIR data, offered for industry and research access.

The ensemble of RIIs will play an important role for large, medium and SMEs, and will seed the development of start-ups and spinoffs, while leveraging investments by the European Innovation Council (EIC) and, within the PPP framework, by the European Investment Bank, the Italian National Promotional Bank and other institutional investors.

By combining open competitive access to RIs and services to industry, the full cycle from fundamental research to pilot lines will be implemented on strategic topics like the development of new materials and devices in key areas such as communications, quantum technologies, renewable energy, health technologies, with the support of Artificial Intelligence, Machine Learning, and quantitative business science. While Italy has competitive know-how in these areas, it lags when it comes to translating it into economic impact, due to the lack of pilot facilities and capital. The Italian industrial system will receive a propulsive impact from participation and/or access to these infrastructures, now almost non-existent, due to the large initial capital investment and their operating costs. An intellectual property management model, with licensing and exploitation agreements, will be key to create joint pilot lines. These will also facilitate the training of human capital for existing and new companies, with a new apprenticeship model starting after having received the basic skills during university studies.

As indicated in the Horizon Europe Work programme, as the EU is gearing up for a more resilient, green, and digital recovery, it becomes fundamental to maintain strong leadership in research, as well as, strengthen industrial and technology presence in key parts of digital and other supply chains. The EU needs to develop and deploy technologies and reshape its industries and services towards a new reality, ensuring that industry is the accelerator and enabler of this change, as stated in the European Commission's 'New Industrial Strategy for Europe', supporting the Green Deal and announcing the Circular Economy Action Plan, and in the digital strategies 'Shaping Europe's Digital Future', 'Data' and 'Artificial Intelligence White Papers. Major opportunities lie ahead to position the EU as a technology and industrial leader of this transition.

An optimal combination of RIs and IIs will be built by concurring public open competitive procedures. The goals of excellent science will follow the well-established methodologies (ESFRI, PNIR), and the goals of industrial innovation will be oriented to support key application areas consistently with the EU objectives. These include new, low power and latency, high speed, communication systems (comprising new detectors, modulators, switches, lasers, exploiting novel materials platforms); quantum technologies; advanced and layered materials; artificial intelligence and computing; new biomedical devices; new energy storage and generation technologies with increased performance in terms of durability, safety, energy and power density; new pharmaceutical and wearable diagnostics for remote and personalised medicine; novel solutions for energy harvesting and transportation.

The RIIs system will integrate advanced education (master and doctorate), research, public-private laboratories and the third sector, produce social and economic impacts, assessed during the selection and monitoring processes, also thanks to the collaboration with EU and National institutional investors. The



availability of high-quality pilot lines will encourage the participation of Italian companies and Universities in European and international collaborations on innovation projects and technology hubs.

Implementation:

- a) *Management.* The programme will be managed by the Ministry of University and Research, which will design and coordinate the selection procedures.
- b) *Selection:* All proposals will be selected based on their strong scientific/technological/innovation leadership, their innovation potential (both in terms of open innovation/open data and for proprietary developments), their compliance with the thematic areas described above or for novel disruptive developments, their translational and innovation plans, the support from industry as a partner for open-innovation and/or as users, the strength of the business development activities, IP generation, clear rules for distinguishing open and protected output and licensing plans, their ability to develop and host industrial doctorates, their links with the venture or other types of funds to facilitate the development of new start-ups, the strength of their plans to proactively apply for EU calls, with dedicated personnel to support the preparation, and management of EU grants. Supervision and coordination with other initiatives will be granted by the Supervisory board introduced in the Ministry of University and Research, for the joint monitoring of Investment 1.1, Investment 1.8, Investment 2.1 and Investment 2.3.
- c) *Funding and sustainability:* When possible according to the specific features of the projects, RIIs will be financed and managed through public-private partnership (PPPs), to leverage the grant component, promoting a significant crowding-in, mobilizing skills and capital, while measuring and assessing the sustainability and feasibility of each operation. PPPs will allow the involvement of specialized private infrastructure developers and will strengthen the synergy between public research and private activity and funds. The remuneration of the private capital will be assured by co-creation of the II services, by public availability payments and by access fees from private users, while RIIs will be open to use by Universities and Research Entities, as guaranteed by the public availability payments.

The grant contribution to PPPs will be up to 49% of the total capital investment and personnel costs. The average investment in each PPT will be 50M Euros. Smaller grants down to 10M and larger grants up to 100M, will be considered based on the strength of the proposal and innovation potential. Smaller grants will be targeted to well-defined infrastructures, within a specific research and innovation area. The largest grants will cater for multi-purpose infrastructures able to cover at least 3 topical fields (for example, Quantum, Advanced Materials, Photonics, or Life Sciences, Artificial Intelligence, and Energy Transition, etc.).

The fund will facilitate leveraging on: i) structural and investment funds (ESIF) for implementation, and upgrade of Italian RIs and IIs of pan-European relevance; ii) HEU Partnership resources for the realization of EOSC, thus strengthening the relevant national research infrastructures; iii) private investments in the strategic areas of technological innovation and exploitation of knowledge identified above; iv) funds from the EIC to foster the creation of spin-outs and technological transition.

The current RI operating in Italy are all planned to operate for 2-5 decades realizing the full return on investment in terms of research and innovation results. Funding is based on a dowry from Government



and other instruments, typically competitive or project-based, at the national, European and international level. Successful projects based on large scale facilities typically imply a lifecycle of 20-25 years before major upgrade or reorientation.

- d) *Coordination with other procedures:* The implementation will be in strict integration with the programme devoted to national R&D leaders (Investment 2.1) and the creation and enhancement of the innovation ecosystems (Investment 2.3). To ensure the integration with the R&D leaders and innovation ecosystems, an Executive Board (EB), comprising world-leading, independent, science-technology-innovation leaders as members and Chair, will evaluate and oversee the proposals for RIs, partnerships and innovation ecosystems, and will oversee their coordination, implementation and cross-leveraging. This will ensure a coherent use of the resources and the creation of a truly National system, acting as an innovation engine for all of Italy.
- e) *Actions:* This line of intervention is designed around two main actions:
- 1) Creation of new RIs, upgrades of existing ones concurring to the Excellent Science goals of HEU;
 - 2) Creation of novel IIs as key elements of new “innovation ecosystems” where industry-tailored services will complete the knowledge-innovation chain.

Co-location of RIs and IIs, following the model of the large hubs in Grenoble, Hamburg, Cambridge, Zurich, and providing links with Industry as for the Fraunhofer or IMEC models, will be evaluated as an added value. In this perspective, the action is synergic with that on “innovation ecosystems” and can greatly contribute to the creation of effective open-innovation hubs. RIs are distributed across the national territory, with high impact and socio-economic value in most regions. Effective networking at a national level will provide entry points in all development districts.

Implementation of the specific actions:

- 1) New RIs undertakings or major upgrades, will be tendered by the MUR, exploiting when suitable the PPP option. The proposals for RIs will need to fit the European and national strategy, with the contribution of national higher education institutions or public or private research centres, as well as with well-defined governance including potential private participation. World-leading, independent, science-technology-innovation leadership of such RIs will be identified through competitive calls and employment conditions. The methodology to identify the priority investments in research infrastructures will refer also to the established practices of the ESFRI Roadmap and PNIR. The proposals will be generated in line with the facilities included in the Landscape Analysis performed by ESFRI Roadmap 2018 and PNIR, but could also include new initiatives as proposed by Universities, Research Centres or Companies 1, whenever a national or European relevance is proven.
- 2) New PPP for innovation infrastructures will be tendered by the MUR. World-leading, independent, science-technology-innovation leadership, fully adapted to the targeted mission of such IIs will be identified through competitive calls and employment conditions, designed to favour industrial involvement and co-funding. In the availability-based PPP scheme, the Ministry will be the public counterpart in assuring its fruition throughout the national territory through public-private framework development agreements. The methodology to identify the priority investments in innovation



infrastructures will refer also to the established practices of the EUROPRACTICE project. The IIs will also be open for EU and worldwide access, under an access fee framework.

Incentives towards the implementation of innovative services and the interoperability of RIs and IIs will be put in place to integrate their capabilities and the generated knowledge (data, metadata, processes, protocols) to offer unique services to the economic and civil sector, in synergy with the “innovation ecosystems” plan. To this purpose, the following steps will be considered:

- An assessment of potential interoperability of technologies, knowledge and data resources of existing RIs.
- An assessment of potential interoperability of technologies, knowledge and data resources of academic, private and public research organizations for innovation to create IIs.
- Medium-term support actions to implement innovation networks.
- Support to EPRs to perform Research Infrastructure services and EOSC open data services.

Cost: The estimated cost related to the RRF is equal to 1.58 billion euro, of which 0.58 related to existing research infrastructure projects. The Fund operates through two windows: up to 1.1 billion euros for action 1, and up to 500 million euro for action 2. Overall, we aim for up to 30 projects to be funded. Within each project, at least one research manager will be hired with an expected cost of 0.1 million euro per year covered for three years. The research managers will have temporary contracts covering the time horizon interested by the RRF. We expect that after the financial boost offered by this investment, the research infrastructure will be operating generating revenues allowing the permanent hiring of the research managers. On one side, this will ensure the commitment of the research managers to the success of the research infrastructure, on the other side, this will ensure the eligibility of the measure given that the research managers will be not permanent but limited to the RRF period. According to the scope, expected impact and co-funding opportunities, contributions from 5 to 100 million euro can be envisaged. The primary consideration of excellence of the proposals, crowding in of external resources and timely execution will be key decision criteria in the selection process, ensuring that the fund is fully invested over the expected timeframe. The amounts allocated to each RI-or II will generate a leverage effect, which will vary in consideration of the scientific research and innovation potential of each project, its ability to attract long term loans and equity capital within the PPP schemes, and long-term support from the regional and local institutions where each RI I may be located. The fund will cover capital expenditure, as well as the human resources needed. PPP and blending schemes will be designed following best practices and benchmarks such as the European Fund for Strategic Investments (EFSI) promoted by the EU and managed by the EIB.

Target population: Academic, Scientific and Industrial research and innovation communities lacking access to world-leading research infrastructures and/or to pilot-scale facilities and services to help to reach high Technology Readiness Levels for new ground-breaking ideas and to test new devices and processes from lab to fab environments.



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Timeline:

- For tendering and implementing new RIs integrated into the “innovation ecosystems”: 2021-2026.
- For implementing interoperability of RIs and EOSC: 2021-2026.

Self-assessment of State-aid compliance: The definition of RI according to ESFRI is what describes all existing Italian RIs both of pan-European or National scope as identified in the Italian Roadmap 2010 and subsequent editions of Piano Nazionale Infrastrutture di Ricerca included in the PNR. The RIs are resources open to usage by researchers who are awarded access based on international standard competitive calls. Upgrades will follow the same principles and therefore will be fully compliant with the legal definition. RIs are typically aimed at supporting curiosity-driven research as well as TRL 1-3 applied research. Innovation in the proposed measure comes from the scope of some RIs to be extended also to support the higher TRL (4-5) research of direct interest by the industry as a facility to increase industrial competitiveness. The role of industry as users will be regulated as merit-based for research leading to open innovation (open data) or can be regulated as pay-for-access if IPR and confidentiality of results are sought. The role of industry as a possible partner and financier of the RI and Innovation Infrastructures is to contribute to the development and deployment of infrastructure services for industry, with the direct benefit to implementing large test-beds, advanced technology open data services, testing prototypes of solutions to be possibly adapted for own production purposes. The real link between excellent science and innovation will be in the common definition of FAIR data protocols and of dedicated data services that will become the effective knowledge transfer methodology with all the appropriate rules for protection and openness. Users will be national and international academic researchers, industrial direct users, industrial consortia or associations accessing perhaps through service providers (public or private). Users of the data generated by RI and II will be all obtaining access privileges, according to open innovation or protected results. The infrastructures design, implement, operate and constantly update and upgrade unique resources for research and innovation in specialised domains, but with interoperability aims to enable multidisciplinary research as well as multi-TRL data exchange or integration. Adequate scientific and technical staff must be permanently employed at the RI and II as only a high-level permanent staff can guarantee vision of developments and effectiveness of operation. Most of the volume of research will nevertheless be produced by users accessing the facilities. Remote access to RIs and IIs, as made crucial by the pandemics, does require a strong permanent staff to handle effective remote interaction and guidance of measurements, experiments, calibrations, tests by the users. Access by industry or other economic organization may directly contribute to open innovation or aim at reinforcing own competitiveness by retaining all results. In the first case, the access could be supported by public funding, as is the case for fundamental research. In the case of proprietary research the services will be still selected for relevance, but then paid for by the user organization. The relative quota of open-free access and pay-for-access will strongly depend on the exact scope of each RI and II, but the open science/open innovation scope shall always prevail in the scope of the centres, whilst offering substantial opportunities to paid-for access. On these premises, in the event that a single investment may involve private operators (economic activities), the investment may be considered as State Aid, but its compliance will be promptly assessed in accordance with the requirements established by paragraph 4 of the EC communication 2014/C 198/01. A more detailed assessment regarding the possibility of using Reg.



651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.



Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare): **selezione qualitativa dei progetti su base competitiva**

FORSE (specificare dubbi): _____

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- X sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:



- per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
- per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
- per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore

X indicare gli orientamenti di settore²

Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

- disposizione diretta del Trattato (TFUE)**
 - articolo 93
 - articolo 107.2 – specificare la lettera pertinente.

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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articolo 107.3 – specificare la lettera pertinente.

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile



Presidenza del Consiglio dei Ministri
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Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: Ministero dello sviluppo economico

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: legge 30 dicembre 2018, n. 145, articolo 1, comma 208; decreto ministeriale 27 giugno 2019

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento:

Il Fondo nazionale innovazione è stato istituito dall'articolo 1, comma 208 e seguenti, della legge 30 dicembre 2018, n. 145 (Legge di bilancio 2019) con l'obiettivo di sviluppare e rafforzare il mercato italiano del venture capital, promuovendo una maggiore crescita e competitività del Paese, soprattutto negli ambiti tecnologici a maggior valore.

L'attuazione dell'intervento è stata completata con decreto del Ministro dello sviluppo economico, di concerto con Ministro dell'economia e delle finanze, 27 giugno 2019.

Il Fondo, gestito da CDP Venture Capital SGR S.p.A., opera attraverso investimenti, diretti e indiretti, nel capitale di rischio di imprese innovative ad alto potenziale di sviluppo (start-up, scale-up e PMI innovative).

Gli investimenti nel Fondo sono attuati in co-investimento con investitori privati, a parità di condizioni e in conformità con le migliori pratiche del settore. In particolare, il Fondo investe nel rispetto delle condizioni riportate nel cosiddetto "test dell'operatore in un'economia di mercato" di cui al paragrafo 2.1 della "Comunicazione della CE sugli Orientamenti sugli aiuti di Stato destinati a promuovere gli investimenti per il finanziamento del rischio (2014/C 19/04)".

Nell'ambito del PNRR, l'intervento del Fondo nazionale di innovazione sarà focalizzato, mediante l'istituzione di un apposito e dedicato comparto del fondo stesso, dotato di separata contabilità, sull'ESG¹ e sosterrà, dunque, gli investimenti nelle PMI che realizzano progetti di investimento orientati ad una transizione verso un'economia verde.

La dimensione finanziaria dell'intervento (e, dunque, dell'apposito comparto di investimento) sarà di euro 300.000.000,00, di cui 90 mln/€ dedicati alle imprese delle regioni del Mezzogiorno e 210 mln/€ per le imprese del Centro-Nord, a fronte di un taglio medio degli investimenti nelle imprese target si attesti intorno a 1,2 milioni di euro.

(indicare l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario)

¹ Environmental, Social, Governance si utilizza in ambito economico/finanziario per indicare tutte quelle attività legate all'investimento responsabile (IR) che perseguono gli obiettivi tipici della gestione finanziaria tenendo in considerazione aspetti di natura ambientale, sociale e di governance.



I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica. (*Cfr. CDP Venture Capital SGR S.p.A.*).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.



2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? SI NO

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività SI NO

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica² (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare): **programmi di investimenti finalizzati alla transizione ecologica**

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto NO al presente punto 2, non compilare il successivo punto 3.

² Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto **3** per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

*Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente).*

*Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.*

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;
- nel caso delle infrastrutture:
 - per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;
 - per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;
 - per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.
- Altro (specificare):



FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

NB: Il Fondo nazionale di innovazione investe nel capitale di rischio delle start-up e imprese innovative operando a condizioni di mercato, nel rispetto delle condizioni previste dal cosiddetto «test dell'operatore in un'economia di mercato» di cui al paragrafo 2.1 della *“Comunicazione della CE sugli Orientamenti sugli aiuti di Stato destinati a promuovere gli investimenti per il finanziamento del rischio (2014/C 19/04)”*.

Pertanto, l'intervento non determina un aiuto di Stato, né a livello dell'impresa target né a livello di intermediario gestore del Fondo, cui sono riconosciute commissioni per la gestione allineate ai livelli di mercato e accettate dagli altri investitori privati.

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
- esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) (Investment aid to SMEs (Art. 17) Risk finance aid (Art. 21) Aid for start-ups (Art. 22)
- notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore**³

Il Fondo interviene attraverso partecipazioni al capitale di rischio delle PMI innovative al punto 2.2 degli «Orientamenti sugli aiuti di Stato destinati a promuovere gli investimenti per il finanziamento del rischio» di cui alla Comunicazione CE (2014/C 19/04).

- Altro: “Comunicazione della CE sugli Orientamenti sugli aiuti di Stato destinati a promuovere gli investimenti per il finanziamento del rischio (2014/C 19/04)” - Test dell'operatore in un'economia di mercato».**

In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:

³ Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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disposizione diretta del Trattato (TFUE)

- articolo 93
- articolo 107.2 – specificare la lettera pertinente.
- articolo 107.3 – specificare la lettera pertinente.

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile



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Allegato

SCHEDA AIUTI DI STATO

Amministrazione proponente: MINISTERO DELL'UNIVERSITA' E DELLA RICERCA

(indicare se: Ministero, Regione, Ente, Agenzia, ecc)

Tipologia del provvedimento: DECRETO MINISTERIALE

(legge, decreto legge, decreto legislativo, decreto ministeriale, legge regionale, emendamenti, ecc.)

Descrizione dell'intervento: (cfr. singole schede di intervento per l'obiettivo principale, la durata, stanziamento complessivo, stanziamento annuale, ammontare stimato per beneficiario):

Investment: Introduction of innovative doctorates that respond to the needs of innovation by enterprises and promote the hiring of researchers by companies (code INN)

Objectives: This line of action aims at enhancing high-profile skills, especially in the KET's areas, through:

- the establishment of dedicated PhD programmes, with the contribution and involvement of companies, also encouraging the creation of research spin-offs.
- incentives for companies to hire junior researchers.

The establishment of PhD programmes dedicated to industry activities and the tertiary sector is envisaged, with three cycles of 5,000 places per year. Private companies, SMEs in particular, will contribute and be actively involved through the establishment of cooperation networks. The programme will be supported by a series of measures aimed at streamlining key procedures regarding the organization of the courses, the tenders to identify private contributors and the PhD locations, the pattern of cooperation with companies involved in the management of the courses, the engagement of public research institutions. Moreover, to enhance the economic values of research pursued by the new PhDs a dedicated fund is started, in cooperation with Ente Nazionale per il Microcredito (ENM), as a vehicle to the creation of new start-ups.

This line of actions will also build a mechanism to cut the tax wedge for the recruitments of researchers in non-permanent positions in the university (e.g. PhD, scholarships, grants, RTDA). This measure will benefit workers and employers and will be proportional to the length of experience gained in the academic world, with up to 10 points of reduction of the wedge per year of an academic career. In the three years, the measure may concern up to 30,000 workers.

Implementation: The programme is managed by the Ministry of University and Research. The measure foresees the activation of innovative PhD programmes focused on the development of advanced competencies more directly oriented to the needs of the productive system, to support or help to adjust the business strategies because of the opportunities and challenges of the new technologies and the environmental transition. Accordingly, the measure allows seizing the economic value of both the advanced competencies and the research developed by the new PhDs, through either their recruitment in key



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positions within the existing companies or their direct involvement in new start-ups, as owners or managers. In this respect, a dedicated fund is created in cooperation with the Ente Nazionale del Microcredito, which is already active in financing innovative SMEs; the new fund, to which the measure contributes for 45 mln euros (15 mln for each of the three new PhD cycle) is tailored at the new PhDs who likes creating a start-up or transfer the results of their research by joining start-ups created by third parties. Accordingly, the measure, which is not cost-neutral, closely relates on the one side to the comprehensive reforms of PhD programmes included in Component 1 of Mission 4, on the other side to M4C2 "Implementation of R&D support measures". The tender will grant the possibility to ordinary PhD students to apply, in case they are interested in start-up projects. The measure is also integrated with the ESF OP Research, as it may provide additional funding to projects therein selected and targeted at the lagging areas of the country.

The selection of locations and firms involved in the new PhD programmes is structured in three phases. First, the MUR launches a tender open to the Universities that, individually or as a group, put forward proposals of new PhD programmes under a 50 per cent financial leverage of private capital. Second, the selected (groups of) Universities agree with the involved firms on the priorities of the PhD programmes in the technology fields closer to production needs. This phase will therefore require universities to directly engage with private firms, agreeing on funding availability and on the number of positions to be opened. Third, based on proposal evaluation, MUR selects what programs are activated, and where. Since the action is meant to develop key advanced competencies, firms voluntarily involved in the project commit to providing the agreed financial contribution to the new PhD programmes, virtually as a kind of pre-recruitment of the needed specialists. This consideration helps the economic sustainability of the measure.

In accordance with the procedure implemented by the MUR for the Industry 4.0 actions, a fraction of the available positions will be granted to universities located in Southern Regions and Islands. This share is expected not to be below 20% of the total number of positions available, in order to support start-up projects where they are less likely to be supported by market resources.

Cost: The RRF overall cost of the measure is 0.60 billion euro, of which 0.45 funding the innovative PhD programmes and around 0.15 the social contribution allowances helping the transition of researchers from the University in the productive system and institutions. Moreover, for each cohort of 5,000 PhDs, 30 million are available to support the creations of start-ups. The single project is expected to be funded, on average, by 50,000 euro, allowing the support of some 600 projects, namely 12% of the new PhDs (a lower share with respect to the population of PhD students to whom the call for application will be available). This specific action will be supported by resources, equal to 0.10 billion euro, coming from the European structural and investment funds (OP ESF), thus ensuring sustainability over time.

Target population: PhD Students; Researchers.

Timeline: The intervention will start in 2021 and will last until 2026.

Self-assessment of state-aid compliance: According to the self-assessment of state-aid compliance, this action is eligible under preemptive notification and following Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1). A more detailed assessment regarding the



possibility of using Reg. 651/2014 (category exemption general regulation) or having to proceed with the necessary prior approvals by the European Commission (notified aid schemes) will be performed.

I SEZIONE: CRITERI PER VERIFICARE L'EVENTUALE PRESENZA DI UN AIUTO DI STATO

1. risorse pubbliche

• **1.a. impiego di risorse pubbliche**

SI

NO

il vantaggio è concesso a valere su risorse del bilancio pubblico delle Autorità nazionali o del bilancio di altri enti pubblici sulla cui destinazione le Autorità nazionali esercitano la propria discrezionalità (es.: statali, regionali, Fondi Strutturali e di Investimento europei (SIE)); oppure

il vantaggio è concesso a valere su risorse che non originano direttamente o indirettamente dall'Autorità pubblica, ma che originano da soggetti privati e sulle quali tuttavia l'Autorità pubblica esercita il controllo in termini di influenza dominante sulla destinazione d'uso delle stesse (es. tributi parafiscali o contributi privati resi obbligatori da un atto dell'Autorità pubblica).

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

• **1.b. risorse imputabili all'autorità pubblica**

SI

NO

il vantaggio è concesso direttamente dall'Autorità pubblica in quanto parte integrante dell'amministrazione pubblica; oppure

il vantaggio è concesso attraverso intermediari (istituti di credito, agenzie, società finanziarie) che agiscono sotto il controllo dell'Autorità pubblica (azionariato, diritti di voto, nomine del presidente e dei membri dei rispettivi consigli d'amministrazione) o su direttiva dell'Autorità pubblica.

Altro (specificare):

FORSE (specificare dubbi): _____

In caso in cui si intenda rispondere NO al punto 1.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi all'origine statale delle risorse forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.



Se si è risposto **NO** ad entrambi i punti 1a e 1b, non compilare i successivi punti 2 e 3.

2. Beneficiari e selettività

Le norme in materia di aiuti di Stato si applicano solo se il beneficiario è un'**impresa**. Per impresa si intende qualsiasi ente che esercita **attività economica**, ovvero una attività che consiste nell'offrire beni e servizi in un mercato, a prescindere dal suo stato giuridico (pubblico o privato) e dalle modalità di finanziamento, nonché dal conseguimento dello scopo di lucro.

2.a Attività economica

L'aiuto viene concesso in relazione ad un'attività economica? **SI** **NO**

In caso in cui si intenda rispondere **NO** al punto 2.a, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla nozione di impresa e di attività economica forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

2.b Presenza di selettività **SI** **NO**

La misura è selettiva perché avvantaggia in via diretta o indiretta solo alcune tipologie di imprese.

Indicare se la selettività riguarda imprese individuate per:

- identità (aiuti ad hoc);
- dimensione;
- settore economico o attività (indicare quali);
- area geografica¹ (indicare quale);
- altre caratteristiche pre-determinate (ad esempio regimi rivolti solo a determinati soggetti giuridici, o solo ad imprese neo-costituite, ecc...);
- caso di finanziamento pubblico di infrastrutture ad utilizzo commerciale, attraverso la limitazione, di diritto o di fatto, dell'accesso all'infrastruttura solo a taluni utenti commerciali.
- Altro (specificare): Selettività relativa alla discrezionalità delle singole università nell'attivare collaborazioni con le imprese interessate e alle capacità di assunzione diverse da parte delle imprese

FORSE (specificare dubbi): _____

¹ Si ricorda che il diritto europeo fa divieto di condizionare le misure di aiuto all'obbligo per il beneficiario di avere la propria sede nello Stato membro interessato o di essere stabilito prevalentemente in questo Stato, fermo restando il principio di territorialità in base al quale l'attività dell'Amministrazione regionale per sé si rivolge al proprio territorio di competenza. Le misure di aiuto potranno pertanto rivolgersi ad imprese aventi unità operativa sul territorio regionale ma non potranno richiedere alle imprese beneficiarie di avervi sede legale



In caso in cui si intenda rispondere **NO** al punto 2.b, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi alla selettività forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.

Se si è risposto **NO** al presente punto 2, non compilare il successivo punto 3.

Se si è risposto **SI** ad entrambi i punti **1 e 2** compilare il successivo punto 3 per verificare la presenza di un aiuto di Stato.

3. vantaggio economico

SI

NO

Il **vantaggio economico** è un beneficio che una impresa non avrebbe potuto ottenere sul mercato (di norma perché lo Stato ha concesso il vantaggio gratuitamente o contro una remunerazione insufficiente). Per **impresa** si intende qualsiasi ente che esercita un'attività economica ai sensi della normativa europea e della Comunicazione della Commissione europea UE 2016/C 262/01.

Se si è risposto SI:

Indicare lo strumento di aiuto che conferisce il vantaggio:

- sovvenzione diretta (contributi o sovvenzioni a fondo perduto);
- abbuono di interessi (contributo in conto interessi);
- agevolazioni fiscali (es. detrazioni d'imposta, riduzione della base imponibile, riduzione dell'aliquota);
- differimento dell'imposta; esoneri fiscali, ammortamento accelerato);
- riduzione dei contributi di previdenza sociale (oneri sociali e previdenziali);
- estinzione o riduzione del debito;
- cessioni di beni o servizi a prezzi inferiori a quelli di mercato;
- garanzia (concessione di garanzie a condizioni più favorevoli di quelle di mercato);
- prestito agevolato (mutuo a tasso agevolato);
- riduzione del rischio collegato ad un investimento in un'impresa o in una serie di imprese;
- finanziamento del rischio collegato ad un investimento in grandi imprese o imprese quotate nel listino ufficiale di una borsa valori o di un mercato regolamentato;
- partecipazione al capitale (l'apporto di nuovo capitale all'impresa si effettua in circostanze che non sarebbero accettabili per un investitore privato operante nelle normali condizioni di mercato);
- compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di servizi di interesse economico generale, che non rispetta tutte e 4 le condizioni Altmark;



| |
|---|
| <ul style="list-style-type: none"><input type="checkbox"/> nel caso delle infrastrutture:<ul style="list-style-type: none"><input type="checkbox"/> per il Proprietario: riduzione dei costi di costruzione, estensione o ammodernamento;<input type="checkbox"/> per il Gestore: sollevamento da taluni oneri che il contratto di concessione riporrebbe in capo al gestore;<input type="checkbox"/> per l'Utente: condizioni agevolate per l'accesso e la fruizione dell'infrastruttura.<input type="checkbox"/> Altro (specificare): <p>FORSE (specificare dubbi): _____</p> <p>In caso in cui si intenda rispondere <u>NO</u> al punto 3, si raccomanda in particolare un'attenta verifica dei chiarimenti relativi al vantaggio forniti nella Comunicazione della Commissione europea UE 2016/C 262/01 sulla nozione di Aiuto di Stato.</p> |
|---|

In presenza dei requisiti di cui ai punti 1, 2 e 3 occorre presupporre che sia soddisfatto anche il criterio relativo alla potenziale distorsione della concorrenza e incidenza sugli scambi, fatti salvi i casi di cui alla Comunicazione della Commissione europea UE 2016/C 262/01. In presenza dei requisiti di cui ai punti 1, 2 e 3 l'eventuale esclusione della distorsione della concorrenza e incidenza sugli scambi necessita di una indagine approfondita che non può essere fatta nel contesto della presente check-list.

II SEZIONE: INDIVIDUAZIONE DEGLI STRUMENTI DI COMPATIBILITÀ E DELLE PROCEDURE AI FINI DELLA LEGALITÀ.

- de minimis** ai sensi del Regolamento (UE) n. 1407/2013
 - esenzione** dall'obbligo di notifica preventiva ai sensi del Regolamento (UE) 651/2014 (regolamento generale di esenzione per categoria) – specificare sezione e articoli pertinenti
 - notifica preventiva**, a seguito della decisione favorevole della Commissione, ai sensi degli Orientamenti e delle Linee guida di settore
 - indicare gli orientamenti di settore²**
Framework for State aid for research and development and innovation (OJ C 198 of 27.06.2014, p. 1)
- In mancanza di Orientamenti o linee guida specificare la disciplina di riferimento dell'aiuto in oggetto:
- disposizione diretta del Trattato (TFUE)**
 - articolo 93

² Gli Orientamenti le linee guida e s.m.i sono rinvenibili al seguente link: http://ec.europa.eu/competition/state_aid/legislation/legislation.html.



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- articolo 107.2 – specificare la lettera pertinente.
- articolo 107.3 – specificare la lettera pertinente.

disciplina sui Servizi di Interesse Economico Generale (SIEG):

- Regolamento (UE) n. 360/2012 (SIEG)
- Decisione 2012/21/UE di esenzione degli aiuti di Stato sotto forma di compensazione degli obblighi di servizio pubblico, concessi a determinate imprese incaricate della gestione di SIEG
- Regolamento (CE) n. 1370/2007 del Parlamento Europeo e del Consiglio del 23 ottobre 2007 relativo ai servizi pubblici di trasporto di passeggeri su strada e per ferrovia e che abroga i regolamenti del Consiglio (CEE) n. 1191/69 e (CEE) n. 1107/70
- Disciplina dell'Unione europea relativa agli aiuti di Stato concessi sotto forma di compensazione degli obblighi di servizio pubblico (2012/C 8/03)

Casi di pre notifica

| | | |
|--|-----------------------------|-----------------------------|
| Supporto del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Indicare per quale sezione e/o punto/i specifico/i si è richiesto il supporto del distinct body:</i> _____ | | |
| Parere del distinct body | <input type="checkbox"/> SI | <input type="checkbox"/> NO |
| <i>Se si è risposto FORSE ad una delle precedenti domande, il supporto del Distinct Body deve essere richiesto dagli uffici responsabili della compilazione della scheda e il parere reso dal Distinct Body deve essere allegato al modulo di notifica sulla piattaforma SANI2, alla richiesta al DPE di valutazione preliminare e sommaria delle misure GBER e ad ogni altra richiesta di parere che l'ufficio che predispone la misura di aiuto intende sottoporre al DPE.</i> | | |

Il Dirigente responsabile

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 1: Employment Policies

1. Description of the component

Title of the Component: Employment Policies

Policy area/domain: INCLUSION AND COHESION

Objective:

The first component, “*Employment Policies*”, aims to promote labour market transformation with adequate instruments to facilitate employment transitions, improve workers' employability and skills, and achieve decent work for all (women, young people and adults). According to the Country-Specific Recommendation (CSR) No 2 for Italy (COM (2020) 512 final¹), these interventions aim at “*mitigating the employment impact of the crisis, including through flexible working arrangements and active support to employment. Strengthen distance learning and skills, including digital ones*”.

Specifically, the component promotes the following specific objectives:

- Supporting employment levels, in particular with regard to the outsider groups (young people, women, adults without secondary education qualification, long-term unemployed) by defining and improving ALMPs measures, aimed to foster the acquisition of skills and their matching with labour market needs.
- Facing the mismatch between the skills of workers and the companies' needs in order to ensure access to quality training throughout the country, by strengthening cooperation between the various competent national and regional institutions and defining uniform standards for vocational training and competence certification system.
- Improving the employability of young people and the acquisition of competences through the dual system, including apprenticeship.
- Tackling undeclared work in all its forms, illegal recruitment and contribution evasion.
- Promoting the empowerment of women, through direct support for the creation of women's enterprises.
- Qualifying the labour market by assisting enterprises to promote gender equality in relation to all "critical" areas (growth opportunities within the company, equal pay for

¹ European Commission, *Recommendation for a Council Recommendations on the 2020 National Reform Programme of Italy and delivering a Council opinion on the 2020 Stability Programme of Italy* (COM/2020/274 final)

equal tasks, policies to manage gender differences) through the implementation of a gender equality certification system.

- Enhancing the “Universal Civil Service” initiative for young people aged between 18 and 28 years old, to promote their acquisition of key competences (soft skills and digital skills).

To achieve these objectives, the component includes:

1. Line of intervention: “Active Labour Market Policies (ALMPs) and employment support”

- 1) **Strengthening Active Labour Market Policies (ALMPs) and Vocational Training:** Supporting unemployed workers and workers in transition by a) establishing the “National Programme for the Guaranteed Employability of Workers” (*Programma Nazionale “Garanzia Occupabilità dei Lavoratori - GOL*); b) promoting the revision of the governance of the vocational training system in Italy, with the aim to define uniform standards and essential levels of vocational training, through the adoption of the National Plan for New Skills.
- 2) **Tackling undeclared work in all its forms, illegal recruitment and contribution evasion:** aimed at promoting action: a) to deter undeclared work by detecting and punishing those who engage in it (whether as employees, employers or intermediaries); b) to encourage workers and employers to declare work by making easier to comply with actions such as the simplification of enrolment procedures and tax arrangements; c) to boost a culture of respect for “playing by the rules”, including by demonstrating the cumulative financial and social costs and consequences for the whole society of the undeclared work.
- 3) **Strengthening Public Employment Services (PES):** Enhancing the capacity of Public Employment Services (PES) network to provide innovative ALMPs services, such as skills forecasting and skills needs analysis, definition of individual training plans, effective guidance and support to the work, also through the engagement of public and private stakeholders
- 4) **Creation of women’s enterprises:** Raising the level of women’s participation in the labour market, by leveraging their creative and innovative potential, and supporting services to promote women’s self-employment and entrepreneurship.
- 5) **Gender equality certification system.** Introduction of a "National gender equality certification system", based on the definition of standards for the certification of gender equality and related incentives for companies that successfully conclude the certification process.
- 6) **Strengthening the dual system:** Strengthening the dual system, including through apprenticeship, in order to boost the matching of education and training system with the labour market, and the acquisition of new skills by young people and adults without a secondary education qualification.

2. Line of intervention: “Universal Civil Service”

- 7) **Universal Civil Service:** Promoting the personal and professional development of young people, aged between 18 and 28 years old, and their acquisition of basic and soft skills through the “*Universal Civil Service*” initiative.

Reforms and investments:

a) Reforms

Reform 1: “Active Labour Market Policies (ALMPs) and Vocational Training” [*linked to Investment 2 Strengthening Public Employment Services (PES)*]:

- Establishing a new measure (*Guaranteed Employability of Workers - GOL*) as a national programme for taking charge, providing specific services (assessment, skills assessments, definition of training needs, etc.) and personalised vocational training for employability.
- Adopting the National Plan for New Skills, for setting common standards for vocational training and strengthening the VET system in Italy, through the promotion of territorial network of education, training and work services, including Public-Private Partnership (PPP).

Reform 2: “National Plan tackling undeclared work”:

- Improving the quality of work and the conditions of workers, including aspects related to payment and social protection, through the strengthening of the action of prevention and tackling undeclared work, caporalato and other forms of irregular work.

a) Investments

Investment 3: “Strengthening Public Employment (PES)” [*linked to Reform 1 Active Labour Market Policies (ALMPs) and Vocational Training*]:

- Improving the capacity building of the Public Employment Services (PES) e their integration with the vocational education and training system, also through the network of private operators. In particular, the procedures for taking charge of the unemployed will be redefined, through innovative ALMPs able to promote personalised upskilling and reskilling pathways and job coaching.

Investment 4: “Creation of women’s enterprises”:

- Defining, identifying and/or adapting support instruments for the creation and development of enterprises with predominant or total female participation, including innovative start-ups, and the consolidation of existing ones.

Investment 5. “Gender Equality Certification System”:

- Introduction of a "National gender equality certification system", based on the definition of standards for the certification of gender equality and related incentives for companies that successfully conclude the certification process,

Investment 6: “Strengthening the dual system”:

- Strengthening the dual system, including through the apprenticeship, in order to ensure

more effective matching between learning (including training-on-the-job) and work, as well as the acquisition of technical and soft skills by young people and adults without secondary education qualification.

Investment 7. “Universal Civil Service”:

- Strengthening of the Universal Civil Service, as a tool supporting youth employability levels and ensuring a direct impact on the communities in terms of social cohesion.

This component promotes new skills and the entry of outsiders (young people, women, adults and long-term unemployed) into the labour market. In addition, these measures are further strengthened by the introduction of specific incentives and labour costs reductions, funded by the Law Budget 2021-2026 and REACT-EU, for employers hiring young people, women, especially in the South.

Estimated cost overall: EUR 12.62 billion; requested under R&RF: EUR 6.66 billion

The difference will be financed under REACT-EU resources (5,97 billion):

- EUR 500 million - Reform “ALMPs & Vocational Training”
- EUR 1 billion - New Skills Fund (not R&RF resources included)
- EUR 4.47 billion - Incentives and labour costs reductions, funded by the Law Budget 2021-2026 (EUR 24.65 billion) and REACT-EU (EUR 4.47 billion), for employers hiring young people, women, especially in the South (not R&RF resources included).

2. Main challenges and objectives

a) Main challenges

Gaps of Active Labour Market Policies (ALMPs)

The European Commission's communication “*European Skills Agenda for Sustainable Competitiveness, Social Fairness and Resilience*”² stresses that employment public services (PES) can play a significant role in steering people towards greater and better retraining, also by increasing the relevance of education and training systems.

At the same time, many issues affect the Italian Active Labour Market Policies (ALMPs, as reported by the European institutions in the *Country Specific Recommendation (COM (2020)511 final of 26.02.2020)*³:

- The need for strengthening the capacity building of the Public Employment Services (PES);
- Poor coordination between the level of ALMPs and social services;

² Communication from the Commission to the European Parliament, the Council, the European Economic And Social Committee and the Committee of the Regions. *European Skills Agenda for sustainable competitiveness, social fairness and resilience* (COM/2020/274 final)

³ Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank and the Eurogroup 2020 European Semester: *Assessment of progress on structural reforms, prevention and correction of macroeconomic imbalances, and results of in-depth reviews under Regulation (EU) No 1176/2011* (COM/2020/150 final)

- Lack of coordination between the central and local systems.

Therefore, it is necessary to increase investments in innovative active policies and lifelong learning systems, in order to promote new employment opportunities, develop new knowledge and skills related to strategic sectors (i.e. green and digital), as well as enhancing competences acquired in the formal, informal and non-formal context.

It is also necessary to meet the professional needs determined by the green and digital transitions, aiming to progressively reduce the gap between existing skills and the skills needs of businesses. Moreover, ALMPs must be able to facilitate employment transitions, both with reference to sectors in crisis and in terms of new opportunities generated by digital and green within the same sector.

As highlighted in the European Commission's Communication of 30 June 2020 “*European Skills Agenda for sustainable competitiveness, social fairness and resilience*”⁴, the COVID-19 pandemic has accelerated the digital transition: smart working and distance learning have become a reality for millions of people in Europe and at the same time has highlighted significant skills gaps.

Gap in participation in training activities

According to the latest available *Adult Education Survey (2016-17)*⁵, Italy ranks 20th position in the adult participation rate in formal or informal training activities. More recent data based on the *Labour Force Survey*⁶ indicate 8.7% of employed persons participating in training activities compared to 13.8% for the EU15 average. The *OECD-PIAAC international survey (Programme for the International Assessment of Adult Competencies, 2nd round 2013)*⁷ highlights that in Italy the low skilled citizens in literacy are almost 11 million (28% of the adult population between 16 and 65 years, compared to an OECD average of 15,5%).

As underlined by recent literature (*INAPP – National Institution for Public Policy Analysis, Focus PIAAC-Programme for the International Assessment of Adult Competencies 2018*)⁸, “*people with low levels of competence are not distributed evenly throughout Italy. The South and North-West of the Country are the regions with the highest percentages: alone they have more than 60% of Italian low-skilled*”.

In particular, the *Skill Strategy Diagnostic Report: Italy*⁹ study, carried out by OECD in 2017, stressed as our Country has to face ten skill challenges, gathered in 4 pillars of intervention: a) developing relevant skills, b) activating skills supply, c) making effective use of skills; d) strengthening skills systems. These issues are related to policy interventions, recommended by the OECD, that are fundamental to reduce the gap, measured by a set of indicators, and to achieve the average EU level.

There is therefore a need to realign the needs of enterprises and the skills of workers, at least partially recovering the gap with the European average. It should be noted that the incidence of participation in training activities is double among managers (68.1%) compared to unskilled staff (31.5%), so it is on the lower qualifications that a priority for intervention should be focused.

Needs for disruptive skills

⁴ Communication from the Commission to the European Parliament, the Council, the European Economic And Social Committee and the Committee of the Regions, op.cit

⁵ Eurostat, Adult Education Survey (2016-2017): <https://ec.europa.eu/eurostat/web/microdata/adult-education-survey>

⁶ Istat, *Labour Force Survey*: <https://www.istat.it/en/archivio/127804>

⁷ OECD Skills Survey, PIAAC: <https://www.oecd.org/skills/piaac/>

⁸ INAPP, PIAAC Data: <https://www.inapp.org/piaac/risultati-e-dati>

⁹ OECD (2018), *OECD Skills Strategy Diagnostic Report: Italy 2017*, OECD Skills Studies, OECD Publishing, Paris, <https://doi.org/10.1787/9789264298644-en>.

The disruptive change of the ongoing technological revolution (growing connectivity between people, technologies, sectors and lifestyles) requires people new skills in terms of adaptability, flexibility, resilience and creativity. At the same time, the OECD¹⁰ points out that the main challenge is not only to ensure that citizens can develop skills in line with the technological changes taking place. In order to be competitive and ready for a changing labour market, it is also necessary to acquire those skills of global and intercultural analysis and understanding of problems, so that no one is left behind. According to the *Digital Economy and Society Index (DESI)*¹¹, Italy ranks 25th out of the 28 EU Member States in 2020, highlighting a significant gap in terms of Human Capital. In 2019 Italy dropped two places and now ranks last in the EU on the Human Capital. Compared to the other European Countries, Italy records very low levels of basic and advanced digital skills. Only 42% of people aged between 16-74 years old have at least basic digital skills (58% at EU level), while the number of ICT specialists and ICT graduates is below the EU average (2.8% versus 3.9% in Europe). The number of ICT graduates is also the lowest in the EU (only 1%), despite many different interventions promoted in recent years (*National Plan for Digital Schools*, *National Plan “Enterprises 4.0”*; strengthening post-secondary technical education and vocational training institute (“*Istituti Tecnici Superiori*” - ITS, “*Transition 4.0*”, *National Strategy “Italy 2025*).

Therefore, it is necessary to increase efforts in the promotion of digital skills, boosting innovative lifelong learning systems, in order to improve the competitiveness and productivity of businesses and the efficiency of the country's system.

Tackling Undeclared Work

Fair and efficient labour market and social support systems are central pillars of the EU economic, employment and social policies. Maintaining such high standards and ensuring progress have always been challenging for Member States, individually and jointly. In this context, the presence of UDW has always been seen as disruptive.

This phenomenon became particularly prominent in the context of the recent economic crises (the one from 2008 and the most recent one caused by Covid-19 pandemic), with an increased number of workers exposed to UDW and a higher number of businesses struggling to survive. This situation has brought an increasing focus on ensuring that all parties – employers, employees and associated organisations and authorities – are “playing by the rules”.

To provide a general idea of the magnitude, it is estimated that “11,6% of the total input in the private sector in the EU is undeclared, and UDW constitutes on average 16,4% of gross value added (GVA)¹². Since the start of the 2007-2008 economic and financial crisis, there has been a growing focus on policy initiatives aimed at tackling UDW, for example resulting in several Member States receiving country-specific recommendations (CRSs)¹³ within the European Semester to tackle UDW and related matters.

It is also important to note that the scale of incidence of UDW varies across economic sectors and sections of the workforce and society. In sectoral terms, it is widely recognised that UDW is particularly present the

¹⁰ OECD (2018), op.cit.

¹¹ European Commission (2020), Digital Economy and Society Index (DESI) 2020. Italy: [file:///C:/Users/rcerroni00/Downloads/DESI2020-ITALY-ENG%20\(1\).pdf](file:///C:/Users/rcerroni00/Downloads/DESI2020-ITALY-ENG%20(1).pdf)

¹² P. Bejakovic, J. Franic, A.Kedirm, I.A. Horodnic, D. Mikulic & C. C. Williams (2017), *An evaluation of the scale of undeclared work in the European Union and its structural determinants: estimates using the Labour Input Method*, European Commission, p.1

¹³ Bulgaria, Italy and Romania.

personal service sector¹⁴, construction and hospitality services. Other sectors that are susceptible to UDW are retail and repair services, education, health and social work, and agriculture. There are wide variations between Member States and even within Member States on the sectors and types of UDW that is undertaken¹⁵.

The UDW in Italy amounts to about EUR 190 billion (ISTAT data). The number of irregular workers is 3,652 million, although down 48,000 from 2017. In addition, the incidence rate of irregular work on regular work exceeds 15% on average, with peaks of 60% in domestic work or 17% in commerce. Out of 159,805 inspections and assessments carried out in 142,385 companies, an irregularity index emerged in 68% of the cases identified in the labour inspections, 81% of the cases defined in social security and 89% of those in insurance. These inspections in Italy arise as a reaction to workers' reports: i.e. they intervene where conflict and irregularity situations are reported. The number of irregular workers that have been identified is 356,145, of which 41,544 are totally undeclared (there were 42,306 in 2018). Last year EUR 1,23 billion in contributions and premium evaded by employers were recovered.

Gender employment and inequality gap in the labour market

The 2019 specific recommendations for Italy (CSR) note that the gender gap in employment levels remains one of the highest in the EU and the employment rate of women, although slightly increasing, is far below the EU average (53.1% compared to 67.4% in 2018). With the Covid emergency, the employment rate of women in the second quarter of 2020 fell to 48.5% bringing the inactivity rate of women (15-64 years) to 46.5%¹⁶. The challenge for the country is therefore to encourage women's participation in the labour market, which has a strong positive impact on the economy, especially in the face of a shrinking workforce and skills shortages, as underlined by the European Commission in its 2020-2025 Gender Equality Strategy. In addition, according to the International Labour Organisation (ILO), the recent international economic crisis has had a serious impact on the weakest groups in the labour market, including women. Gender equality conditions have worsened considerably, with a consequent increase in discrimination in the workplace. This situation is confirmed by the fact that, in the first half of 2020, the employment rate of women fell below 49% due to the halt in production activities caused by the Covid-19 pandemic, which severely affected the sectors with the greatest presence of women, such as commerce, hospitality and tourism, care services, entertainment and culture. In fact, the country still has employment sectors that are strongly characterized by gender, with industry and construction predominantly male and the services sector highly feminized (around 50% of employed women work in services), particularly in health, education, hospitality and catering, as well as in the arts and culture.

Moreover, according to ISTAT¹⁷, there is a progressive deterioration of the quality of women's work in Italy. Less access to top positions, more part-time jobs and discontinuous careers are the factors that, together with a different age structure, determine gender differentials in labour income. The share of female employees who, irrespective of their job title, reports coordinating the work of other people is 18.4% in 2018, a share that has increased slightly since 2017 and since 2008. The gap with men is 5.4 percentage points. Women in

¹⁴ European Commission, Special Eurobarometer 498, Undeclared work in the European Union Report, 2019.

¹⁵ 9 Van Geuns et al (1987) already describe the considerable differences in size and nature of UDW between regions even in a small country like the Netherlands: Spatial and sectoral diversity of the informal economy. TESSG 78(5), pp. 389-398.

¹⁶ Quarterly note on employment trends Q2 2020 - ISTAT

¹⁷ Measures in support of women's participation in the labour market and for the reconciliation of life and work needs AA.C. 522, 615, 1320, 1345, 1675, 1732, 1925 Hearing of the National Institute of Statistics Ms Linda Laura Sabbadini Director of the Central Directorate for Studies and Thematic Enhancement in the area of Social and Demographic Statistics.

part-time employment are now a third (32.8% in the average of the first three quarters of 2019) compared to 8.7% of men. The incidence of part-time workers is higher among younger women (35.1% up to 34 years of age) and increases as the level of education decreases (42.6% up to middle school graduates and 22.5% among university graduates). Part-time work has not grown as a tool for reconciling work and family life, but in its involuntary component, which has exceeded 60% of the total, increasingly becoming a tool used for flexibility on the side of businesses rather than on the side of people and their needs for reconciling work and family life.

Supporting female entrepreneurship

Women's participation in business life is still low. Only 22% of businesses are run by women, which, according to international observers such as the OECD and the European Commission, is a limiting factor for the growth of our economy.

The recent IV Report on female entrepreneurship by UNIONCAMERE¹⁸ shows that women's enterprises (about 1.3 million) account for about ¼ of the total, with a strong presence of sole proprietorships (63% compared to 48% of the total). The female entrepreneurship segment is showing interesting signs of dynamism, with a high rate of increase in new enterprises, especially in the services sector, contrasted, however, by the persistence of elements of weakness in relation to investments in innovation and technology, internationalization and access to financing and forms of venture capital.

The Report also shows how female entrepreneurial initiatives have suffered more than male ones during the lockdown period, with a reduction in registrations (-42% compared to -35% for male ones), even though in the previous period they had grown faster than male ones. There has been a slowdown in the process of women's empowerment initiated through female entrepreneurship, one of the strategic sectors for the country's development and the full participation of women in the labour market and in positions of responsibility. It is therefore strategic and urgent, with the objective of recovering the national GDP, to activate measures that restore and expand the number of working women, also through incentives and interventions to support the creation of women's enterprises.

Opportunity gap for young people

Promoting youth employment is one of the main challenges at European and national level. Despite the positive trend in the last three-year period 2017-2019, the Covid19 pandemic wave has again worsened the national trend, bringing it back below 40% as during the economic recession. In this regard, the *European Commission's recommendations for Italy (COM (2020) 512 final of 20.05.2020)* highlight the need to promote an effective “*integration into the labour market of inactive and Neets*”.

The opportunity gap for young people is represented by the constant growth of Neet, which achieves particularly negative results in Italy, making our country the worst in Europe for this indicator. For what concerns the age group 15-34 years, indeed, the Neet are 3 million 189 thousand, of which 53.8% are concentrated in Southern Italy.

The data on the Neet measure precisely the growing social unrest of the new generations: long-term absence from the labour market or the education system significantly increases the difficulties of reintegration, as well as the risk of social exclusion and poverty in the medium to long term.

¹⁸ Unioncamere, IV Report on Female Entrepreneurship, 2020.

At the same time, the Neet indicator actually includes different target groups to be considered:

- Young people who are more vulnerable and at risk of social exclusion (i.e. the long-term unemployed or the discouraged);
- Young people that voluntarily choose to leave the labour market (i.e. those inactive for family reasons)
- Young people that are only temporarily in this situation, because they are waiting to complete informal or non-formal training pathways.

At the same time, there is a clear need to further promote the participation of young people in the political, social and cultural life of the country. According to the data of the *European Intergenerational Fairness Index*¹⁹, Italy is the country with the highest level of "generational gap" among the Member States. This gap has a direct impact not only in the delay of the new generations in reaching their economic independence, but also in the difficulty of participation as "active citizens" in their own communities. In addition, the precariousness of employment fosters an increase in mistrust towards political and social institutions, which are perceived as distant and uninterested in the problems of young people.

According to the European initiative "*Youth Employment Support: a Bridge to Jobs for Next Generation*"²⁰, there is thus a clear need to relaunch and further strengthen investments devoted to young people, to both promote their employment and acquisition of skills, as well as to boost their social and economic integration in the European and national community.

b) Objectives

The package of investments, by which this component "*Employment Policies*" is composed, aims at pursuing the following objectives:

- 1) **Strengthening ALMPs**, in order to support unemployed workers and workers in transition by improving the PES network and establishing the "National Programme for the Guaranteed Employability of Workers (GOL)". The interventions of this component aim at tackling the following priorities identified by the European Commission in the Country Reports for Italy:
 - Recommendations 2019 (COM (2019)512 final del 05.06.2019)²¹ – n.2 "*Ensure that active labour market and social policies are effectively integrated and reach out notably to young people and vulnerable groups*"
 - Post-Covid Recommendations (COM (2020)512 final del 20.05.2020) n. 2 – "*Mitigate the employment impact of the crisis, including through flexible working arrangements and active support to employment. Strengthen distance learning and skills, including digital ones*"²².

Referring to the strengthening of the operation of the PES, the National Reform

¹⁹ Intergenerational Foundation, *Intergenerational Fairness Index*: <https://www.if.org.uk/>

²⁰ European Commission (2020), *Commission proposal for a Council Recommendation on a Bridge to Jobs. Reinforcing the Youth Guarantee*: <https://ec.europa.eu/social/BlobServlet?docId=22778&langId=en>

²¹ European Commission, *Recommendation for a Council Recommendation on the 2019 National Reform Programme of Italy and delivering a Council opinion on the 2019 Stability Programme of Italy*, (COM/2019/512 final), pag. 12

²² (COM/2020/512 final), pag. 9

Programme²³ identifies the following intervention areas - in addition to the increase in the number of staff and the consequent adaptation of the operational centres:

- the need to invest in staff training;
- the need to operate with a high level of integration between labour and social services;
- the need to invest in external communication of the services offered and in the supporting information systems.

Another area highlighted by the National Reform Programme is the strengthening of the linkage between education and training systems and the labour market, improving their quality and fostering the transition of young people to the world of work.

- 2) **Adopting a National Plan for New Skills**, aimed at defining essential levels of vocational training and supporting upskilling and reskilling processes of workers, unemployed and workers in transitions, including young people and adults. In particular, the *Country-Specific Recommendations for Italy 2020*²⁴ in paragraph 19 highlights the need to improve e-learning and e-skills, with regard to working-age adults and distance learning. It is also stressed that investment in skills is crucial to promote a smart and inclusive recovery and to foster a green and digital transition.
- 3) **Tackling undeclared work in all its forms, illegal recruitment and contribution evasion.** The definition of UDW varies throughout Europe. In many countries there is no official or legal definition at all. However, there is a broad consensus on the EU description²⁵ to define UDW as “any paid activities that are lawful as regards their nature but not declared to the public authorities, taking into account the differences in the regulatory system of Member States”. This definition covers a wide range of activities from domestic services to activities conducted by illegal residents but excludes the realm of criminal activity where illicit goods and services are exchanged. For what concerns the UDW, the European Council Recommendation on Italy's 2019 National Reform Programme (COM / 2019/512 final) recommends the Country to continue and intensify its efforts to face UDW in 2019 and 2020. It also recommends close monitoring of recently adopted and additional measures to prevent UDW and to ensure fair and safe working conditions. In this regard, the challenge is also linked to the priorities defined in December 2019 by the European Commission in the Annual Sustainable Growth Strategy (ASGS). According to the Recommendation (COM/2020/512 final), Italy also has to take action in favour of people employed in the undeclared economy, in particular in sectors such as agriculture, food and housing, as they risk facing gaps in access to social protection and income support.
- 4) **Promoting the personal and professional development of young people, aged between 18 and 28 years old, and their acquisition of basic and soft skills through the “Universal Civil Service” initiative.** The intervention has a relevant social impact, considering that young people carry out projects that are useful to local communities, and therefore indirectly this also ensures economic benefits (in terms of social care services, education, social promotion, etc.). For what concerns the direct impact on employment, an INAPP sampling analysis in 2017 highlights the effects of the

²³ The National Reform Programmes (NRPs) are policy documents prepared by Member States in accordance with their national traditions and reflecting national priorities. They play a central role at EU level, alongside the Stability or Convergence Programmes (SCPs), in enabling the collective monitoring and multilateral discussion of policy challenges and reforms.

²⁴ (COM (2020) 512 final), op.cit, pag. 5-6

²⁵ European Commission (2007), *Stepping up the fight against undeclared work* (COM/2007/0628 final)

"Civil Service measure" in terms of youth employment: 33.5% of Neet participants are employed (at six months after the end of the service), while 52% of volunteer participants are employed (at 12 months after the end of the service).

- 5) **Promoting women's empowerment in the labour market**, according to the European Commission's 2019 and 2020 CSRs and to the implementation process of the EC 2020-2025 Gender Equality Strategy, published in March 2020. In particular, the objective of this component is to increase investments aimed at promoting women participation in the labour market and equal work opportunities in response to the 2019 CSR, which requires Italy to reduce both the gender employment gap and gender inequality in the Workplace (e.g. gender pay gap). All these actions have been envisioned to encourage greater female participation in the workforce and, as required by the 2020-2025 European Strategy for Gender Equality, empower women in the labour market, increasing their opportunities to become investors and entrepreneurs. Furthermore, implementing the Certification system on gender equality will improve the quality of female employment. In fact, qualifying the labour market by helping small, medium and big enterprises favour gender equality, especially in all those "critical" areas (growth opportunities, equal pay for equal work, gender gap policies) is considered a priority.

- 6) **Strengthening the dual system**, in order to boost the matching of education and training systems with the labour market and the acquisition of new skills by young people. Through the apprenticeship in dual system and the *training-on-the-job approach*, the aim is to foster training pathways that meet the companies' needs in terms of skills.
According to the UnionCamere-ANPAL Report²⁶, in 2019 31% of Italian companies faced relevant problems in finding high-skilled workers for 1.2 planned contracts. This skills mismatch affects not only those job vacancies where degrees are required, especially STEM (science, technology, engineering, mathematics), but also those where a HEIs qualification is not required. As highlighted by the UnionCamere-ANPAL report, among the most difficult professions to find are blacksmiths, welders, workers specialised in the installation and maintenance of electrical equipment, ICT specialists. The rate of difficulty in finding jobs for these professions range between 48% and 58%. In order to tackle this challenge, many reforms have been implemented over last years to introduce the dual system in Italy: work-related learning (*Alternanza Scuola-Lavoro*), simulated training enterprises (*Impresa Formativa Simulata - IFS*), vocational apprenticeship (*Apprendistato professionalizzante*), Higher Technical Institutes (*Istituti Tecnici Superiori - ITS*). At the same time, the low levels of participation and the fragmentation of the dual system offering requires for more investments at national and regional levels.

- 7) **Promoting the personal and professional development of young people, aged between 18 and 28 years old, and their acquisition of basic and soft skills through the "Universal Civil Service" initiative**. The intervention has a relevant social impact, considering that young people carry out projects that are useful to local communities, and therefore indirectly this also ensures economic benefits (in terms of social care services, education, social promotion, etc.). For what concerns the direct impact on employment, an INAPP sampling analysis in 2017 highlights the effects of the "Civil Service measure" in terms of youth employment: 33.5% of Neet participants are employed

²⁶ UnionCamere-ANPAL, Previsioni dei fabbisogni occupazionali e professionali in Italia a medio termine (2019-2023): https://excelsior.unioncamere.net/index.php?option=com_content&view=article&id=364:previsioni-dei-fabbisogni-occupazionali-e-professionali-in-italia-a-medio-termine-2019-2023&catid=108&Itemid=1698

(at six months after the end of the service), while 52% of volunteer participants are employed (at 12 months after the end of the service).

3. Description of the reforms and investments of the component

a) Reforms

Reform 1: “Active Labour Market Policies (ALMPs) and Vocational Training” [*linked to Investment 2 Strengthening Public Employment Services (PES)*]

Challenges:

Technological progress and globalisation have profoundly changed production activities and the labour market. Countering skills obsolescence is one of the major challenges of our time, in economies that are constantly evolving and require continuous training and updating. The need to adapt the skills possessed by workers, jobseekers, but also students who will soon enter the labour market, has been evident for some time. The Covid-19 emergency has strongly brought this need to the forefront, capturing the attention not only of institutions but also of the workers themselves and, more generally, of the current and future workforce, who is called upon to re-examine their employment situation with new eyes, in search of methods of adaptation and acquisition of skills capable of taking their professionalism beyond the crisis. Several reforms have taken place in recent years in the ALMPs system, starting with the *Job Act*²⁷ and the establishment of a basic income (“*Reddito di Cittadinanza*”²⁸).

The new National Programme for the Guaranteed Employability of Workers (**GOL**) starts from the experience of these years, trying to overcome the excessive heterogeneity of the local services, with an approach based on the definition of essential levels of services, proximity of actions and network integration.

The strengthening of ALMPs will be accompanied by a national structural reform - **National Plan for New Skills** - aimed to revise and reorganise the training of workers, both employed and unemployed. The VET system in Italy will be enhanced by promoting a territorial network of education, training and employment services (also through PPPs), as well as by developing an inclusive lifelong learning system and innovative upskilling and reskilling pathways. Stimulating public-private cooperation in CVET and training will support the employers in the investment on upskilling and reskilling of the workforce, guaranteeing relevant increase of the employee participation in learning activities.

In addition, the “New Skills Fund”, established by Article 88 of Decree-Law No. 34/2020 and funded by REACT-EU resources, is one of the measures implementing the National Plan for New Skills. Specifically the NSF aims at stimulating public-private cooperation in CVET and training supporting the employers in the investment on upskilling and reskilling of the workforce, guaranteeing relevant increase of the employee participation to learning activities.

The reform is fully consistent with the National Reform Programme under the European Semester. According to the Priority 2 “Labour Market School and Skills”, the plan highlights a lack of skills and the mismatch between qualifications and business needs among the causes of Italy's low productivity. It is thus essential to promote a more efficient active labour market system by strengthening the PES and promoting training courses for the development of new skills in line with the challenges of the labour market (soft skills, digital skills, etc.).

²⁷ Legislative Decree n. 81/2015: https://www.cliclavoro.gov.it/Normative/Decreto_Legislativo_15_giugno_2015_n.81.pdf

²⁸ Legislative Decree n. 4/2019: <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2019-01-28;4!vig=>

Moreover, the reform will include the revision of the governance of the vocational training system in Italy, by means of agreements at the different levels of government and between the different competent state and regional administrations, in order to guarantee access to quality training at national level, as well as **defining uniform standards and strengthening the competence certification system** (essential levels of vocational training).

Objectives:

In agreement with the regions, the Government aims at adopting a **National Programme for the Guaranteed Employability of Workers** (GOL) in order to take charge and provide specific services and personalised professional planning. The National Programme for the Guaranteed Employability of Workers aims to assist unemployed workers and workers in transition by activating the network of employment services and providing a variety of active labour policy tools. The criticalities observed in the recent reform processes have to be overcome by investing in specific essential levels of services that guarantee uniformity of treatment throughout the national territory. In addition, the National Programme GOL will strengthen the Public Employment Services (PES), so that they can systematically carry out skills forecasting analysis, build personalised training plans and thus provide guidance and job coaching through an active engagement of public and private stakeholders.

The Programme will be adopted by inter-ministerial decree, following agreement at the State-Regions Conference.

GOL programme will be accompanied by the **National Plan for New Skills** and the definition of **national essential levels of vocational training measures**. The VET system in Italy will be enhanced by promoting a territorial network of education, training and employment services (also through PPPs), as well as by developing an inclusive lifelong learning system and innovative upskilling and reskilling pathways.

In coordination with the Regions, the aim of the Plan is to define essential levels of training activities that must be activated, in particular for the most vulnerable targets. For instance, standards can be set for the training of recipients of income support instrument for the unemployed (NASPI, DIS-COLL) or recipients of basic income (“*Reddito di Cittadinanza*”) and long-term unemployed, as well as for taking charge of outgoing workers who benefit from extraordinary or exceptional wage supplementation instruments (CIGS that is the Italian acronym for extraordinary redundancy fund, fund for cessation of activities, derogation treatments in areas of complex crisis).

Moreover, the already mentioned New Skills Fund, funded by REACT-EU and coordinated by the Ministry of Labour and Social Policies in collaboration with ANPAL, will support employment transitions and the development of new skills for young people and adults, by charging the cost of the hours spent in training to the Fund's resources. Training costs (teachers and classrooms) are borne by the companies, also through the use of interprofessional funds. The Fund can also be activated for companies using the “*Cassa integrazione*” (payroll subsidies): in order to face restructuring or structural crises, the training activities promoted are crucial to promote workforce relocation processes or help the transition to new employment. Furthermore, given that the implementation process of the New Skills Fund has already started and taking into account the timeframe for the approval of the NRNP, it is believed that this Fund can be considered immediately operational.

Implementation:

Starting with the review of the job-integration voucher (*assegno di ricollocazione*), already funded by the 2021 Budget Law²⁹, the National Programme GOL will provide specific active labour policy services, in the context of the Personalised Service Agreement, drawn up between the unemployed and the public employment service

²⁹ Article 1, c. 325, Law n. 178/2020

(PES), in order to achieve the job placement objective. A range of upskilling and reskilling services will be also enhanced, in order to promote the acquisition of professional qualifications, higher technical diplomas and degrees through credit recognition.

The acts for GOL should as a minimum:

- define the essential elements and their standards of PES, including skills forecasting, personalised training, guidance and job coaching, to ensure the effective provision of personalised employment services, according to common and uniform standards at national level;
- ensure that upskilling and reskilling training activities provided by PES are fully in line with the National Plan for New Skills, including digital skills;
- ensure that PES are targeted to the needs of recipients;
- ensure that PES target as priority the most vulnerable;
- set up a target of a minimum of 25% of beneficiaries of GOL as recipients of relevant training, with a particular focus on digital skills and with a priority for the most vulnerable;
- set new mechanisms which strengthen and make structural the cooperation between public and private systems, including in relation to the identification of the relevant skill needs and the provision of job offers.

The Decree establishes that recipients of social safety nets shall access the services provided under the National Programme GOL within 4 months from the moment in which they mature the right to social safety nets.

In addition, the 2021 Budget Law states that part of the resources of the newly established “Fund for the implementation of ALMPs measures related to those eligible by the European Commission under the React-EU Programme” (*“Fondo per l’attuazione di misure relative alle politiche attive rientranti tra quelle ammissibili dalla Commissione Europea nell’ambito del programme React-EU”*) can be used for the establishment of the National Programme GOL.

While the procedures for calculating eligible expenditure, reimbursement and results, as well as the linkage with private operators are defined at national level, the Programme GOL will be managed in close cooperation with the Regions. The governance will be designed according to competences defined at Constitutional level. In the field of ALMPs and VET, Regions are responsible for the programming and implementation of policies; the State is responsible for the definition of essential level of services. So, at central level will be defined targets of beneficiaries and according measures to take care of their needs; at regional level resources will be made available for the realization of the national strategy, through territorial services. The identification of personalised services related to the Programme and well as their definition according to the specific recipient, is entrusted to a specific ministerial decree, to be adopted after reaching an agreement with Regions. A common steering committee will be established and meetings are already in place.

As part of the establishment of the National Programme GOL, it is also envisaged that the job-integration voucher, consisting of an amount to be used with bodies that provide personalised service of job guidance and taking charge³⁰, will be once again be granted to recipients of NASPI (New Employment Social Insurance Benefit)³¹ or DIS-COLL³² for more than 4 months.

With regard to the adequacy of the regional capacity to deliver, it should be taken into account that, leaving aside other measures in the RRP to increase capacity building, there has been in the last few years an

³⁰ The “assegno di ricollocazione” will be not considered apart from the GOL Programme - as it was the case with the reform of the 2015, with respect to the regional ALMPs – but it will be a component of a personalized set of measures, based on an assessment of needs and inclusive of possible training activities, with the view of increasing the employability of beneficiaries.

³¹ NASPI is a cash benefit granted, on request, in the event of involuntary redundancy or expiry of a fixed-term employment contract, to employed workers, which includes apprentices, cooperative members, artistic staff and fixed-term workers of public administrative bodies

³² DIS-COLL is a cash benefit awarded on request in the event of involuntary redundancy to workers with an atypical employment contract registered with the separate pension scheme.

extraordinary investment in the PES recently (DL. n. 4/2019). PES staff will increase by the end of 2021 to around 20.000 people, starting from 8.000 in 2019. Training of the existing and new staff is envisaged as well as the improvement of analytical capacity of anticipating trends of the local labor market. In addition, there have been planned physical and technological investments that almost double the ones financed by the RRF.

In addition, the National Plan for New Skills will provide for the definition of an essential level of vocational training, linked to specific needs to be identified with respect to the different target groups.

The acts for National Plan for New Skills should as a minimum:

- defines common standards and essential levels of vocational training throughout the national territory;
- targets both employed and unemployed persons with the goal to enhance their digital skills and encourage lifelong learning;
- Identifies skills and relevant standards based on a cooperation between the public and private systems;
- takes into account the different needs of the target groups considered which, as a minimum, should include the most vulnerable;
- Encompasses all relevant sectoral strategies as to have a comprehensive approach, including the national strategic plan for adult competencies;
- incorporates the provision for the development of a forecasting system for new competencies needed in the short-medium term within the labour market.

Activities should be guaranteed within a certain period of time (e.g. within six months from the access to the benefit), follow certain quality standards, be certifiable, and be carefully monitored on the basis of result indicators (e.g. percentage of training participants finding employment within a certain period of time). Pilot projects can also be envisaged, to be subjected to rigorous impact assessment in order to identify good practices that can be translated into national guidelines. Essential levels of training could be a relevant element of the reform of social safety nets. The reform is currently in preparation, involving also social partners. Under the reform, it is envisaged a strict link between the unemployed benefit and the participation in ALMPs and training.

For what concerns action financed by the RRF, the Plan will be mainly focused on specific measures for unemployed workers and NEET: in particular, ways to identify skills needs at national and local level, involving employers and developing skills intelligence. Specific training courses will be accordingly defined and financed. Given the structural shortages of digital skills both at basic and advanced level, training in this area will be promoted – even in the form of specific targets to be met. Strengthening the dual system will be part of the Plan too.

But the National Plan for New Skills will incorporate also existing measures and strategies in the area of vocational training, independently from the fact that they are financed by the RRF. Hence, the New Skills Fund (NSF), already mentioned, will be part of the National Plan, as well as the National strategic plan for adult competencies, which is going to be approved in the first semester 2021. For what concerns the NSF, this is finalized exclusively to the upskilling of employees. Their skill needs are defined at firm level by collective bargaining. The National Plan for adult competencies has a more general approach, being focused on adults with low level of competencies (11 million of adults in Italy shows very low level of literacy according to PIAAC survey). In order to increase the competencies of the low skilled a number of measures are envisaged: strengthening the “CPIA” (institutions specialized in adult education); establishing local

network of different VET agencies including the PES and the local authorities; defining ways to validate formal and not formal skills.

1st Semester 2021

In the first half of 2021, the Government aims at adopting, in agreement with the Regions and subject to the approval of a constitutive regulation, the Interministerial Decree defining the Programme GOL. Also administrative procedures and the monitoring system will be defined to deliver ALMPs under the Programme.

2nd Semester 2021

In the second half of 2021, a National Plan for New Skills that will improve the employability of workers in the face of changes in the market and the evolution of professional needs. The Plan will be adopted by an inter-ministerial decree, after agreement at the State-Regions Conference. In the same period, the Regions will be asked to launch regional plans and training programmes will be launched.

1st Semester 2022 - 2025

ALMPs and training under the Programme GOL and the Plan for New Skills will be provided until 2025, involving - in additional terms compared to what happens today - around 3 million of different recipients (recipients of relevant income support instruments for the unemployed and of basic income (*Reddito di Cittadinanza*, *NASPI*, *DIS-COLL*) , recipients of relevant wage supplementation schemes (CIGs schemes), other significant number of employed people in different ways (new skills fund, interprofessional funds, etc.) and outsiders groups (women, employed under 30, NEET, people with disabilities, long-term unemployed). In regard to the 3 million of beneficiaries, at least 75% would be women, long-term unemployed, people with disabilities, and people under 30. In addition, 800,000 of the 3 million beneficiaries should be also recipients of vocational training (in the context of the National Plan for New Skills), of which 300,000 training provided on digital skills. This should be considered as an extraordinary effort in the post-pandemic period, due to the potential number of people involved. After this period, assuming reduced needs, the Programme will continue under the ordinary financing of the ALMPs and VET.

Implementing Bodies: Ministry of Labour and Social Policies (MPLS) and ANPAL (National Agency for Active Labour Market Policies), Regions and Autonomous Provinces.

Target population:

Target population is as follow:

- Recipients of guaranteed minimum income (“*Reddito di Cittadinanza*”);
- recipients of all relevant income support instrument for the unemployed (e.g. *NASPI*, *DIS-COLL*) ;
- Long-term unemployed people (>24 months), but not recipients of income support;
- Workers in transition (CIGs recipients for termination, complex crisis areas, national strategic enterprises);
- Workers receiving notice of dismissal (to be disciplined) at the end of the layoffs block;
- Working poor (low-skilled/low-income/atypical workers).
- NEET
- Outsiders groups (unemployed under 30, women, people with disabilities, long-term unemployed).

This list includes both targets of GOL and targets of Essential level of Vocational training/National Plan for New Skills.

State Aid:

There is no risk of state aid according to the State Aid regulation, as the intervention is addressed to final beneficiaries (unemployed, NASPI - RdC recipients) and does not concern benefits to economic operators.

Timeline:

5 years (2021-2023)

Cost:

Total amount EUR 4,400,000,000

Reform 2: “National Plan tackling undeclared work”

Challenges:

Labour exploitation in its various forms is of concern in the EU on economic, migration, social and fundamental rights grounds. It is also linked to trafficking in human beings for labour exploitation. At the macroeconomic level, labour exploitation reduces tax revenues and contributions to the social security system and places a burden on these latter systems of each Member State. At the microeconomic level, it distorts competition between economic actors and creates social dumping. In general, undeclared work tends to hamper growth-oriented economic, budgetary and social policies and, therefore, to combat it is a political-economic objective. Counteracting worker exploitation is also a social policy and fundamental rights objective, as the human rights of undeclared workers are frequently violated (e.g. in cases of human trafficking).

In Italy, the use of undeclared and irregular work is still widespread, particularly in some higher risk sectors (construction, agriculture, public services) and with regard to some particular categories of vulnerable people. This phenomenon leads both to a reduction in the levels of protection for the workers involved, in terms of pay and social protection, and to a distortion of the conditions of competitiveness of the companies with economic and social dumping effects.

The phenomenon of irregular work and labour exploitation in agriculture is an issue with a strong economic and social impact in Italy. In 2019, people employed in the agricultural sector were estimated at over 900,000 (3.8% of total employment). In 2018, the Italian agricultural sector recorded a growth in added value of 0.9% with a total value of agricultural production of EUR 59.3 billion. This strategic sector accounts for 2.1% of the added value of the entire Italian economy. In 2017, the shadow economy in agriculture is estimated to have reached 16.9% of added value, well above 12.3% of the total economy. According to ISTAT estimates, the rate of non-regular work among agricultural workers is the highest of all economic sectors, standing at 24.2% in 2018 with an incidence of irregular work among employees of 34.9%. Applying the irregularity rate to the total number of employees in the agricultural sector in 2018 (about 470,000 workers), the estimate of irregular workers is about 164,000. These estimates do not, however, take into account foreign workers without residence permits or not registered in the registers. Estimates by the Ministry of Economy and Finance indicate that tax evasion for irregular employees in the agricultural sector in 2016 amounted to between EUR 642 million and EUR 1 billion. Labour exploitation consists of illegal forms of intermediation, recruitment and organisation of labour outside regular employment channels, in violation of provisions on working hours,

minimum wages, social security contributions, health and safety at work, as well as degrading living conditions imposed on male and female workers by taking advantage of their state of vulnerability or need. The term '*caporalato*' refers to the illicit system of labour brokering and exploitation by illegal intermediaries (*caporali*). Illegal management of labour supply and demand and mafia infiltration in the agro-food chain drive an illegal and underground economy of more than EUR 5 billion in Italy. In order to ensure more effective action against the phenomenon of labour exploitation in agriculture and to harmonise the various existing rules on the subject, the Law No. 199/2016 "*Provisions on tackling undeclared work, labour exploitation in agriculture and wage realignment in the agriculture sector*"³³ was introduced containing 'Provisions on combating the phenomena of undeclared work, labour exploitation in agriculture and wage realignment in the agricultural sector'. The elements of the policy to prevent and combat labour exploitation are articulated in the aforementioned law, which provides for the promotion of experimental methods of intermediation between labour supply and demand in the agricultural sector, the implementation of efficient forms of worker transport, the monitoring of trends in the agricultural labour market, the promotion of active labour policies and combating undeclared work, the organisation and management of seasonal labour flows and the assistance of foreign workers.

Specifically, the Plan provides for the following ten actions:

- Investments in innovation and enhancement of agricultural products, countering unfair competition;
- Strengthening of the Quality Agricultural Labour Network;
- Planning migration flows, matching labour supply and demand, transparency in intermediation procedures;
- Decent housing solutions for agricultural workers;
- Dedicated transport planning for workers in the sector;
- Communication campaign and promotion of decent work;
- Strengthening of surveillance activities and combating labour exploitation;
- System of integrated services for the protection and assistance of victims of labour exploitation;
- Social and labour reintegration of these victims.

The intervention line on combating the exploitation of agricultural labour will focus in particular on strengthening the following actions:

- Decent housing solutions and dedicated transport planning for agricultural workers;
- Strengthening of the Quality Agricultural Labour Network;
- Integrated service system for the protection and assistance of victims of labour exploitation.

Objectives:

The reform intends to increase the quality of work and the conditions of workers, including issues related to pay and social protection, through the strengthening of the action of prevention and contrast of undeclared work, *caporalato* and other forms of irregular work, thanks to investments aimed at:

- Strengthening National Labour Inspectorate's capacity building; implementing the databases and information systems in use;
- Supporting the process of transformation of undeclared work into regular work, supporting the adoption of deterrence measures and incentives for regular work;
- Carrying out communication campaigns, information and awareness-raising activities for the labour market and educational institutions;

³³ Law n. 199/2016: <https://www.gazzettaufficiale.it/eli/id/2016/11/3/16G00213/sg>

- Strengthening the governance system at national and local level.

Implementation:

The National Plan builds upon the general strategy to combat undeclared work and on the multi-agency approach used to adopt the National Plan against Labour Exploitation in the agriculture sector - “Piano triennale di contrasto allo sfruttamento lavorativo in agricoltura e al caporalato (2020-2022)”

The National Plan and the Road Map for Implementation will include at least the following:

- measures to improve the production, collection and timely distribution of granular data on undeclared work;
- introducing direct and indirect measures to transform undeclared into declared work by ensuring that benefits of operating in the declared economy outweigh the costs of working in the undeclared economy. For instance:
 - a) deterrence measures, such as strengthening inspection and sanctions, and measures to promote declared work, such as targeted financial incentives, also through a review and rationalising of existing ones;
 - b) strengthening the link with employment and social policy;
 - c) a national information campaign on the “disvalue” of undeclared work, addressed to employers and workers, with the active involvement of social partners;
 - d) a governance structure to ensure effective implementation of actions;
- measures to overcome illegal settlements to fight labour exploitation in agriculture

In addition, the National Plan will include specific measures, such as:

- facilitating joined-up actions at the national and local level;
- increasing the penalties and sanctions and advertising penalties;
- simplifying compliance, using direct and indirect measures, including targeted financial incentives, to make it beneficial to operate on a declared basis;
- providing support and advice about how to start-up businesses legitimately;
- measure to harmonize the definition of undeclared work to international standards (EU and ILO).

The Implementation Road Map will include specific measures, such as at least:

- a strong monitoring and evaluation system to allow both national and local authorities to measure the impact of interventions;
- a timeline for the roll-out of the National Plan;
- a costing estimate of funds needed to implement the Plan’s actions for a three years horizon, including recommendations on how to make these investments sustainable in the future.

These specific interventions are part of a more general strategy for strengthening the National Labour Inspectorate, as the national agency for labour surveillance (in the coming months it is planned to hire approximately 2,000 new inspectors out of a current workforce of approximately 4,500). In addition, these measures are consistent with those envisaged in the National Plan against Labour Exploitation in the agriculture sector . In this context, the NRRP identify in the Component 2 of the Mission 5 “Inclusion and Cohesion” a specific intervention aimed to tackle illegal settlements, *caporalato* and the workers affected by irregularity, extreme precariousness and marginalisation

Implementing Bodies: Ministry of Labour and Social Policies (MPLS) and National Labour Inspectorate

Target population:

Target population is as follows:

- Victims or potential victims of undeclared work, labour exploitation, *caporalato* and other forms of irregular work.
- Workers operating in the undeclared labour market or in working conditions affected by irregularity, extreme precariousness and marginalisation.
- Migrants waiting for recognition of a residence permit.

State Aid:

There is no risk of state aid according to the State Aid regulation, as the intervention is addressed to final beneficiaries (victims of undeclared work, workers operating in the undeclared work or in working conditions affected by irregularity, migrants) and does not concern benefits to economic operators.

Timeline:

4 years (2021-2024)

Cost:

Not funded under R&RF

a) Investments

Investment 3: “Strengthening Public Employment Services (PES)” [*linked to Reform 1 “Active Labour Market Policies (ALMPs) and Vocational Training”*]

Challenges:

There is a clear need for such ALMPs measures to support employment transition to be structured and governed by the competent institutions and to be accompanied by an adequate and strengthened system of employment services, which is also 'competent' and operates in synergy with local services, especially those on the social side, for an integrated and multidimensional care of individuals and families, where deemed necessary. Hence the need to include within the same investment project a line of action dedicated to strengthening the Public Employment Services (PES), working on their capacity to provide quality services and on their ability to communicate and publicise the range of services available and thus to be "appealing" to all workers and not only to disadvantaged categories. Effective results can be achieved only by working synergistically in these areas of intervention in terms of strengthening the potential for growth, job creation (including through self-employment) and the social and economic resilience of the country system.

Objectives:

The investment project also will strengthen the PES. An intervention of this relevance necessarily has lasting impacts at country level.

The contents of this project start from already existing National Plan concerning the strengthening of the PES (e.g. the *Plan for strengthening of PES and active labour market policies*, adopted by DM 28 June 2019, n. 74, and integrated and modified by DM 22 May 2020, n. 59).

Implementation:

Three years: 2021-2022-2023, reserving the following two years for the administrative management tasks necessary to ensure compliance with the deadlines of Article 14 of the R&RF Regulation³⁴.

The implementation phase envisages infrastructural investments, the development of regional Observatories of the labour market, in order to facilitate the matching between demand and supply, the development of interoperability between regional and national information systems, the design and implementation (also in distance learning) of training interventions to update the skills of the operators, starting from a needs analysis (e.g. on the topics of service standards, of supply and consultation of the Unified Information System, on the skills plan to align the existing skills with the needs of the enterprises, on the services of identification, validation and certification of the skills of the National System). Furthermore, it is also envisaged the design and implementation of contents and communication channels of the services offered.

Specifically, these activities are in line with the central Strengthening Plan and further defined at regional level, on the basis on a need analysis and allocated resources, including:

- renovation and refurbishment of current location of PES and purchase of new ones;
- further implementation of the IT system, in the perspective of a national interoperability;
- professional training of staff (max 5% of the resources);
- institutions of regional observatories of local labour market (max 2%);
- institutional communication and outreach (max 1,5%).

Equal balance is ensured on the achievement of the target in terms of territorial distribution (North, Centre, South).

The National Plan for strengthening PES has been approved in 2019, with significant addition in 2020 concerning actions in the competence of the regional level. The recruitment of the skilled trainers is in place and will be hopefully completed by the end of this year. Resources have been allocated at regional level according to needs and each region is defining its own priorities. In the three years period, considering the amount of resources involved, all the almost 600 local services will be covered by the process of modernisation. The ways to involve the employers will be defined by national guidelines in the GOL Programme and in the Plan for skills.

Implementing Bodies: Ministry of Labour and Social Policies + ANPAL (National Agency for Active Labour Market Policies) + Regions and Autonomous Provinces

Target population:

The aim is to strengthen the entire network of Public Employment Services (PES), whose main offices are 556 in Italy (236 in the North, 96 in the Centre and 224 in the South). The target of this investment is to achieve the 90% of the National Public Employment Services (PES) within the three-year period.

State Aid:

There is no risk of state aid according to the State Aid regulation, as the intervention does not concern benefits to economic operators.

Timeline:

3 years (2021-2023)

³⁴ European Commission, “Proposal for a Regulation of the European Parliament and of the Council Establishing a Recovery and Resilience Facility” (COM/2020/408 final)

Cost:

Total amount EUR 600,000,000.00

Investment 4. “Creation of women’s enterprises”

Challenges:

Low level of female participation in the labour market. The gender gap in employment levels in Italy remains one of the highest in the EU and the employment rate of women, although slightly increasing, is far below the EU average (53.1% compared to 67.4% in 2018; in the first half of 2020, the employment rate of women fell below 50%). Inactivity is more prevalent among women, just as the phenomenon of undeclared work particularly affects the most vulnerable groups such as migrants, women and children. The level of participation in the labour market and the employment rate of women is also symptomatic of the low capacity to employ and make the most of the human capital in Italy, since - although young women have higher levels of education than their male peers - there are large differentials, to their disadvantage, in employment rates upon leaving school. The gap is widened in the less developed areas of the country.

Low participation of women in business life. Only 22% of companies are run by women, which, according to international observers such as the OECD and the European Commission, is a limiting factor for the growth of our economy. In addition, women experience more interruptions in employment, more precariousness and irregularity. One of the objectives of the European Gender Equality Strategy 2020-2025 is to empower women in the labour market by increasing their chances of **establishing themselves as investors and entrepreneurs**. EU cohesion policy supports female entrepreneurship, the (re)integration of women into the labour market and gender equality in specific, traditionally male-dominated sectors.

Low propensity of women to invest in innovation and technology, internationalisation and access to financing and forms of venture capital. The female entrepreneurship segment shows interesting signs of dynamism, in particular with a high rate of increase in new businesses, especially in the services sector (Unioncamere, IV Report on Female Entrepreneurship, 2020). However, this is contrasted by the persistence of elements of weakness concerning investments in innovation and technology, internationalisation and access to financing and forms of venture capital. The above-mentioned Unioncamere report also shows how female entrepreneurial initiatives have suffered more than male ones in the lockdown period, with a reduction in registrations (-42% compared to -35% for men), despite the fact that in the previous period they had grown faster than male ones.

Objectives:

The project aims to raise the levels of participation of women in the labour market by leveraging their creative and innovative potential. In particular, the project - through an integrated strategy of financial investments and support services - aims at:

- supporting female entrepreneurship, by systematising and redesigning the current supporting tools with respect to a vision that is more attuned to the needs of women, especially qualified young women, and more attentive to innovation and the key roles that women can play in the company;
- supporting the implementation of innovative business projects for women-owned or predominantly women-owned enterprises already established and operating (digitalization of production lines, re-skilling/up-skilling of competences both of women entrepreneurs and their employees, switch to green energy, etc.);
- supporting the start-up of women's entrepreneurial activities through the definition of an offer that is

able to respond in a customized way to women's needs (mentoring, technical-managerial support, measures for work-life balance, etc.);

- creating - through targeted communication actions - a favourable and emulative cultural climate for women's entrepreneurship, particularly in schools and universities.

In relation to the support of innovative skills and business creation areas, the challenges of the green and digital transition will be emphasized with particular attention to the segment of women's micro and small enterprises, including individual enterprises.

Implementation:

Recovery Plan's funds will be used to set up the new "Fondo Impresa Donna" (the "Fund") that will financially strengthen:

- i) a set of existing measures launched to support entrepreneurship, such as NITO³⁵ and Smart&Start³⁶ (the first measure refers to the creation of small and medium enterprises and self-entrepreneurship, while the second supports innovative start-ups and SMEs), whose schemes will be modified and calibrated so to foresee specific areas reserved to women's businesses;
- ii) the newly enacted (as per Budget Law 2021³⁷) Female Entrepreneurship Fund for which implementing measures are in the course of being defined.

The Fund investment policy defines as a minimum: (i) the nature and scope of the investments supported, which shall promote the creation, consolidation and innovation of enterprises run by women and be in line with the RRF objectives and requirements, including in relation to compliance with the Do No Significant Harm principle, as further specified in the Commission guidance note of 12 February 2021, (ii) the types of operations supported and the delivery mechanisms, (iii) the targeted beneficiaries which shall be enterprises run by women, (iv) governance; (v) assessment and selection method of the applications and granting of facilities.

Should the measure eventually entail the use of financial instruments, the investment policy shall also define: (i) the eligibility criteria of financial intermediaries and their selection through an open call; (ii) provisions to re-invest potential reflows for the same policy objectives, also beyond 2026.

From the IV quarter of 2021 until 2026, the Fund's activity will feature:

³⁵ "New zero-interest businesses" is the incentive for young people and women who want to become entrepreneurs. The concessions are valid throughout Italy and provide for the zero-interest financing of business projects with costs up to 1.5 million euros which can cover up to 75% of total eligible expenses.

<https://www.invitalia.it/cosa-facciamo/creiamo-nuove-aziende/nuove-imprese-a-tasso-zero/cose>

³⁶ Smart & Start Italy is the incentive that supports the birth and growth of innovative startups with a high technological content in all Italian regions. The goal is to stimulate a new entrepreneurial culture linked to the digital economy, enhance the results of scientific and technological research and encourage the return of "brains" from abroad.

<https://www.invitalia.it/cosa-facciamo/creiamo-nuove-aziende/smartstart-italia/cose>

³⁷ The article no. 1 of the 2021 Budget Law, containing "State budget for the financial year 2021 and multi-year budget for the three-year period 2021-2023", which, in paragraph 97, establishes, in the forecast of the Ministry of Economic Development, the "Fund to support the 'female enterprise', intended to promote and support the start-up and strengthening of female entrepreneurship, the dissemination of the values of entrepreneurship and work among the population women and to maximize the quantitative and qualitative contribution of women to the economic and social development of the country.

- **provision of facilities** (e.g. non-repayable fund, zero interest rate, financial facilities) for the creation, consolidation and innovation of enterprises run by women, including participation in the risk capital of such enterprises;
- **provision of accompanying measures** (mentoring, technical-managerial support, work-life balance measures, etc.). These actions will be granted also with the support of associations, stakeholders and other existing women's enterprises of services (e.g. through a register of women entrepreneurs available for counseling, advice, ecc.);
- **design and promotion of multimedia communication campaigns and events**, in order to create a favourable and emulative cultural climate for the enhancement of female entrepreneurship, in particular, among the student population of schools and universities;
- **in itinere and ex post monitoring and evaluation**, in order to verify the efficiency and effectiveness of the tools and accompanying measures, with a view to introducing possible corrections to the measure in the medium term. From 2022 onwards one monitoring report per year and 1 annual evaluation report for 5 year plus a final evaluation report. The monitoring and evaluation reports may also be included in the Annual Report to Parliament that the Minister of Economic Development is required to submit pursuant to the 2021 Budget Law (Article 17, paragraph 6).

Implementing body: Ministry of Economic Development (MISE) and Department for Equal Opportunities of the of the Presidency of the Council of Ministers

Target population:

Women of any age residing throughout the country that are running a business or who intend to start a small or micro-enterprise, start up.

State Aid:

The investment will be managed in accordance with the applicable State Aid regulations on a case-by-case basis. In particular in line with the application of the De minimis Regulation and the Regulation UE 651/2014.

Timeline:

6 years (2021 - 2026)

Cost:

Total amount EUR 400,000,000

Investment 5. “Gender Equality Certification System”

Challenges:

Low level of participation of women in the labour market

The gender gap in the labour market is confirmed by many indicators that denounce strong critical issues with respect to the equal inclusion of women in the labour market and fairness at workplaces. In particular, the 2019 Country Specific Recommendations note that the gender gap in employment levels in Italy remains one of the highest in the EU and the employment rate of women is far below the EU average (53.1% against 67.4% in 2018).

With the Covid emergency, the employment rate of women in Q2 2020 decreased to 48.5% bringing the inactivity rate of women (15-64 years old) to 46.5%.

2020 Country Specific Recommendations remark that investments in care services as well as women's

participation in the labour market remain insufficient, as do measures aimed at promoting equal opportunities and appropriate work-life balance policies.

Greater inclusion of women in the labour market and quality of women work are also growth factors that generate multiplier effects of progress in the sectors of consumption, services, investment and innovation, contributing to the development of the whole economic system. The increase in quantity and quality of female employment generates higher consumption and revenue for the State, in terms of taxation and social security contributions, and represents a major factor for social and territorial cohesion.

Reduction of gender inequality in the workplace

Consequently, the increase in employment rates must be accompanied by **a reduction in gender inequality in the workplace** aimed at improving the quality of jobs held by women and reducing the gender pay gap. In fact, women are mostly employed in jobs of low responsibility (e.g., clerks and factory workers) even in the most female-dominated sectors and regardless of company size. Yet, Italian women are often better educated than Italian men: according to Censis (2019), female graduates in Italy account for 56% of the total number of graduates and 59.3% of those enrolled in PhDs, specialisation courses, or masters. However, they are a minority in STEM courses (74% of engineering graduates are male).

Objectives:

In order to face this challenge in the best possible way, it is necessary to accompany productive organisations through incentive mechanisms, so that they adopt adequate company policies to reduce the gender gap in all the most “critical” areas: growth opportunities in the company, equal pay for equal tasks, policies for managing gender differences, maternity protection.

In response to the highlighted challenges, the implementation of the **national gender equality certification system** favors the inclusion and the empowerment of women in the labour market, acting on three strategic lines:

- overall improvement of company policies aimed at hiring women, promoting them in decision-making roles, ensuring gender equality in pay, and adopting company practices that favour the work-life balance of employees;
- support to micro, small and medium-sized enterprises in adopting adequate corporate procedures to reduce the gender gap in the above-mentioned most critical areas, through the provision of a free certification service offered by certification bodies accredited by the DPO (Department for Equal Opportunities);
- provision of rewarding mechanisms for companies that are certified on gender equality, by introducing amendments to the existing legislation on public contracts, in order to assign bonuses along the lines of what already happens with the SA 8000 certification on corporate social responsibility (CSR) or with the regulation on legality rating of the Italian Competition Authority (AGCM in Italian) (<https://www.agcm.it/competenze/rating-di-legalita/>).

The introduction of a Gender Equality Certification in Italy promotes transparency in the labour market as well as in business processes and, in the medium to long term, contributes to improving women's working conditions in terms of quality, remuneration and empowerment. In addition, companies that adopt strategies and measures aimed at promoting gender equality within their organizations (such as skills training specifically addressed to employees, promotion of women in decision-making positions, introduction of welfare measures for work-life balance, measures to facilitate women's return/entry into work after maternity leave) and/or that obtain a high index in the certification of gender equality, will be able to benefit from any tax relief measures

adopted by the Italian Government.

Implementation:

The intervention consists of the following phases:

1) The **first implementation phase (milestone)** consists in **defining the technical standards of the system for Gender Equality Certification and the incentive mechanism (Q4 2022 EU purpose)**. In this first phase **a number of activities will be implemented all aimed at achieving the milestone**. The activities will be performed in the framework of a Public Tender (**Q4 2021 national purpose**) that the Department for Equal Opportunities will publish for the provision of the following services:

- ❑ elaboration of the technical standards of the Gender Certification System for companies.
- ❑ identification of the incentive mechanism. The reward system may provide for an integration of the legislation on public contracts on the model of the SA 8000 certification (CSR) or the regulation on the legality rating of the AGCM;
- ❑ establishment of an Informative System at the DPO, functioning as a platform for collecting data and information on gender certification as well as of the Register of accredited bodies for the gender certification of enterprises (Q4 2022 national purpose). The “Platform” will be accessed by:
 - companies wishing to acquire information on the advantages associated with certification on gender equality in the company and on the certification process;
 - Public Administrations wishing to introduce bonus clauses in favour of gender equality certified companies, in public procurement procedures;
 - Bodies wishing to be accredited for the Certification on gender equality in companies;
 - Bodies already accredited for Gender Equality Certification in companies and registered in the public Register to be set up by the project;
 - Research institutes, enterprises, public administrations wishing to carry out research and studies on the participation of women in the labour market in Italy;
 - Associations representing enterprises and trade unions;
 - Citizens wishing to learn more about Gender Equality Certification of companies, as a good practice for the transparency of business policies and labour market.
- ❑ the establishment of the "Enterprise of the Year for Gender Equality" award (Q4 2022) to be awarded to the best companies that are certified on gender equality in the various size categories (large, medium, small and micro enterprises). The award does not provide for the allocation of financial resources.

The enter into force of the gender equality certification system and accompanying incentive mechanisms for companies, will cover at least the following dimensions: growth opportunities for women, equal pay for equal work, management policies for gender diversity, maternity protection.

2) The **second implementation phase (target)** will consist in the concrete enforcement of the Gender equality certification and participation of work organizations (businesses of any size) to the certification process. The Target is achieved through various activities including both the certification process and the accompanying services for micro and SMEs. Those actions will be entrusted by the DPO to public/private Body with adequate experience in business certification and business consultancy through a public Call for Tenders (Q3 2022). The certification system on gender equality provides for the possibility of certification for companies of all sizes (large, medium, small and micro enterprises). In the experimental phase, i.e., until Q2 2026, the certification process will be facilitated only for medium, small and micro enterprises through a **contribution**

in services of up to 12,500,00 euros each (the expected minimum level of micro and SMEs undertaking the certification process is around 450 in Q2 2026). The amount of the contribution in services for the gender equality certification has been calculated according to the IGQ price list with specific reference to micro and SMEs (see, <http://www.igq.it/documenti/documenti.php?pagina=docs>) and may vary according to the company size and to the complexity of the process, however never exceeding 12,500 euros each. We expect to facilitate the certification process for a minimum level of 450 micro and SMEs while larger companies will bear the costs of the certification process themselves. The system will be operated in line with the application of the De minimis Regulation. It has to be stressed that the Certification process should include at least: an ex-ante analysis of the company organization from a gender perspective (e.g., number and gender of employees, gender distribution of positions of responsibility, coordination and management in the different departments of the company; gender distribution of members of corporate bodies; presence of organizational systems facilitating the work-life balance of female and male employees; adoption of temporary revocable part-time work; adoption of agile work in the company; presence of the equality service in the company; etc.); the identification of the company's strengths and weaknesses from the gender equality point of view; the definition of the gender equality certification path for the company with objectives and timeframe for compliance with the requirements; the verification by the certifying body of the company's integration/adaptation to the required changes/adaptations; the recognition of the gender equality certification to the company or referral to further changes/adjustments still needed for the achievement of the certification. The described **certification process requires a timeframe of no less than 12 months**.

The Gender Equality Certification System will be operational from the third quarter of 2022 (Q3 2022) only for companies with more than 500 employees and on an experimental basis. From the first quarter of 2023 (Q1 2023) the system will be opened to all companies of any size.

To achieve the expected Target and considering the possible complexity of the proposed certification process, it is also planned to offer free of charge **accompanying services and assistance** to medium, small and micro enterprises in the initiation of certification processes on gender equality. These services will be planned by the public/private Body entrusted by the DPO (see above) also in collaboration with the Associations representing social partners and businesses on the basis of specific projects to be financed by the RRF (Q4 2022). The cost of the accompanying services is estimated of up to 2,500 euro (calculated according to the tariff schedule of the Piedmont Region for consultancy to businesses https://www.dors.it/altri_all/tariffario_2016.pdf) for each micro, small and medium size company to a minimum level of 1000 companies by Q2 2026. With reference to the accompanying and assistance measures, the service is intended for a broader target group (minimum level 1,000 units by Q2 2026) than just the companies that will start the certification process. The system will be operated in line with the application of the De minimis Regulation.

Target population:

- Large productive enterprises with >500 employees; medium enterprises with >50 employees; small and microenterprises with <50 employees.

The measure aims to reach as many enterprises as possible without a specific focus on the territorial dimension. By Q2 2026, the following are expected:

- 800 companies (SMEs or larger), of which at least 450 SMEs, participating in the certification process on gender equality in companies;
- 1000 companies receiving accompanying and assistance services.

State Aid:

The contributions of the certification system will be operated in line with the application of the De minimis Regulation.

Timeline:

Q4 2021 – Q2 2026.

Cost:

Total amount EUR 10,000,000

Investment 6. “Strengthening the dual system”

Challenges:

Low rates of attainment of secondary and tertiary education. The share of 25-64-year-olds with at least upper secondary education is 62.2% in 2019, much lower than the EU average of 78.7% and some countries including Germany (86.6%), France (80.4%) and the United Kingdom (81.1%). As far as tertiary education is concerned, only two out of 10 people in Italy (about 19.6%) have tertiary education, against the European share of about one third, i.e. 33.2%.

High levels of early school leavers. The share of 18-24-year-olds in Italy who have at most a lower secondary qualification and are already out of the education and training system is 13.5% (561,000 young people), which is higher than the European benchmark set at 10%; among early school leavers, only one in three (35.4%) is employed in Italy, compared to the European average of almost one in two (46.6%). The employment rate at territorial level is heterogeneous, with a value of 22.7% in the South against 49.5% in the North and 46.9% in the Centre.

Difficulties in generational turnover and much higher percentages of youth unemployment and NEETs than the European average. ISTAT data highlight that the percentage of young people aged 15-29 not in employment or training is 22.2% (2 million young people). The share of NEETs is the highest among EU countries, about 10 points higher than the EU average (12.5%).

Objectives:

The project intends to strengthen the dual system, in order to make the education and training systems more synergic with the labour market, as well as boosting the employability of young people through the acquisition of new competences, with the on-the-job learning approach. This intervention also ensures the development of training courses that meet the companies’ needs, thus reducing the mismatch between the skills required in the labour market and those provided by the education and training system in order to get out of the crisis and engage in the recovery.

In particular, the specific objectives of the intervention are:

- Qualification and modernisation of education and training system, in order to improve the access of young people into the labour market, through the enhancement, consolidation and dissemination of work-related learning, as well as the dialogue with enterprises at national and local level.
- Measures to strengthen the dual system by increasing the financial allocation, in order to enhance the training offer, with particular focus on marginalised areas.
- Implementation of a "strengthened" and "participated" governance, also through the support of specific bodies that are already operational, such as the Apprenticeship Technical Body, which

coordinates the key stakeholders, including the economic and social partners, operating in the field of training, with specific reference to apprenticeship training.

Implementation:

The action is part of the National Plan for New Skills (see Reform Active Labour Market Policies (ALMPs) and Vocational Training).

The distribution of resources to the Regions for the strengthening of the dual system will take place on the basis of the number of students enrolled in VET courses. The monitoring process will be provided by INAPP, according to the data provided by the Regions and Autonomous Provinces.

Programmes by regions financed by the Ministry of Labour in the field of the dual system are targeted on students without secondary education qualification. In order to reduce regional disparities, the following measures will be adopted: access to the first type of apprenticeship will be simplified; outreach should be increased and strengthening of the administrative capacity at local level will be promoted. Where the regional VET system is not particularly advanced, a greater involvement of national “professional” schools, administered by the Ministry of education, could also help to reduce disparities.

Implementing body: Ministry of Labour and Social Policies (MPLS), Regions and Autonomous Provinces

Target population:

Increase the number of young people participating in formal education and vocational education and training through the dual system, including apprenticeship. The main target group is young people, but it is also envisaged to promote specific experimental apprenticeship training for adults without secondary education qualification. The project is also intended to finance cooperation in territorial networks between training institutions and businesses, extending to the entire country the initiative expected under Axis 1 Bis of the NOP YEI for regions in 'transition'.

State Aid:

There is no risk of state aid according to the State Aid regulation, as the intervention is addressed to final beneficiaries (young people) and does not concern benefits to economic operators.

Timeline:

5 years (2021-2025)

Cost:

Total amount EUR 600,000,000

Investment 7. “Universal Civil Service”

The investment, amounting to EUR 650 million, aims to promote the personal and professional development of young people, aged between 18 and 28 years old, and their acquisition of basic and soft skills through the “Universal Civil Service” initiative.

Challenges:

The National Reform Programme makes explicit reference to the Civil Service within priority area 2 "Labour

market, school and skills" and, in particular, in the section "School system and enhancement of training". The document, in fact, highlights the importance of promoting "non-formal civil service training/education".

Therefore, the Universal Civil Service investment promotes a training process for young people aged between 18 and 28 (the range is established by national Legislative Decree 40/2017), aimed at the acquisition of key and basic skills, on which Italian students and adults perform among the worst in the EU (as highlighted in the 2019 Recommendations). At the same time, the Universal Civil Service is also an indirect measure of active support to youth employment.

The Universal Civil Service (previously National Civil Service) is a consolidated programme, anchored in the Italian Constitution, which has been running for 20 years since its creation in 2001. The experience conducted in the past 7 years, particularly in the framework of the Italian Youth Guarantee, indicates its value as a tool for enhancing youth employability.

The project is very innovative as it enriches the traditional vision of active labour market policies, based mainly on vocational training, to consider the role of active citizenship experiences as a tool for acquiring key skills that are crucial to youth employment.

A recent study, named IMPatto Giovani, carried out in 2021 on a platform of 13 youth entrepreneurs professionals and managers associations, in cooperation with the Manager Observatory of Confindustria Youth highlighted that over 35% of the youth interviewed considers acquiring new competences and soft skills as a key factor to finding a job.

Furthermore, in 2017, the Department for youth policies and universal civil service performed a study in cooperation with INAPP (National Institute for the Analysis of Public Policies)³⁸, through 3.500 interviews representing 45.000 young volunteers, which allowed to analyze the employability rate variation of young people when entering and exiting the civil service.

The study carried out by the Department and INAPP highlights three important data:

1. In the 12-18 months following the civil service experience, 52% of the youth participating in mainstream civil service calls, found an occupation (twice the value of the reference sample, ie youth in the same age range who had not previously done the civil service and who declared themselves as "looking for a job or available to work").
2. After the civil service the share of inactive youth is null (whereas this value is 30% with the reference sample of youth in the same age range who had not previously done the civil service), meaning that following the civil service experience there is a good re-orientation and activation effect, with the overwhelming majority of youth involved re-entering the training circuit, resuming (previously interrupted) school or university education or other professional paths .
3. As regards job matching, 15% of employed declared they found their job through the civil service experience, thereby placing the universal civil service at the second place after "friends and personal networks", which represent, as is well known, the first matching channel also in the general population.

The same study stressed the relevance of the activation effect of the USC also on the employability of extremely complex targets such as NEETs (largely recruited in the South through the system of the Youth Guarantee). INAPP research shows that six months following the civil service, 33,5% of former Youth

³⁸ Cfr. De Luca, Ferri, Di Padova, cap. 8 "Cittadinanza attiva e occupabilità: una sperimentazione di due indici di misurazione" pp. 138-145, in "Prospettive di metodo per le politiche educative", 2019.

Guarantee volunteer operators are employed³⁹.

General data show that in 60% of cases the universal civil service is accessed by young female. Average age of volunteer operators is 23 years, but the distribution by age group is very harmonious, if we exclude the less represented one between 18 and 20. Almost all of the volunteers have a secondary or university level education, thereby finding in the civil service a chance for activation in the labour market for the former and a pathway for professional specialization for the latter.

And generally speaking, various other studies, carried out by both sector institutions and independent research bodies, converge on conclusions indicating that the experience of the civil service can have a pivotal role in the life of the youth involved for the main reasons anticipated above: an active citizenship component, a clear increase of employability through the increase of skills, an activation role (in terms of orientation or re-orientation).

Relevant sectoral studies at national and local levels can be quoted here. Confcooperative⁴⁰ and Arci Servizio Civile⁴¹ reports illustrate in detail which specific competences and skills, most likely to boost employability, are being acquired through a civil service experience. Even more interestingly, a research by Associazione Mosaico carried out on a regional basis (Lombardia) shows that 74% of youth participating in the regional civil service receive a recruitment proposal by the organization where they held service, by a partner or a third organization; 89% of these accept the proposal and 77% declare that job opportunities were dependant on the civil service experience⁴². The civil service presents indeed a big potential for youth because it contributes to future life choices in terms of career to undertake or extra education to attain in specific areas, as digital and environmental ones, that are very crucial in terms of job opportunities. Furthermore such kind of skills and abilities developed through civil service will be valued in the new processes of public administration recruitment.

The project also has an impact on the communities, which are the target of the actions carried out by the youth participants in the Civil Service. The areas that benefit most from this initiative are those highlighted as priorities by the European Commission: poverty or social exclusion, accessibility to social services, home/community care, early-school leaving and educational poverty, prevention of natural risks, gender diversity, green and digital transition. For what concerns the digital and green transitions, the project also promotes the participation of young people on environmental and digital issues, through specific and cross-cutting actions devoted to these two areas: a specific memorandum of understanding has been signed with the Ministry for Innovation, Technology and Digitisation and another one will be signed with Ministry for Ecological Transition. Given the role of young people as agents of change, efforts will be made to better target their training so that they can contribute to sustainable and innovative transition processes.

The Universal Civil Service projects therefore have a positive impact for young people and local actors, as they provide a service to the community and promote citizenship values. The recent experience of the Covid-19 emergency has further increased the relevance of this measure. Indeed, faced a minor financial investment compared to other types of policies, it ensures highly significant results also in terms of social and territorial cohesion.

As illustrated above, the Universal Civil Service's measure has a widespread and significant impact in many

³⁹ Cfr. INAPP, "Il servizio civile in Italia. Dai dati di ricerca alle implicazioni di policy", p. 48, 2017.

⁴⁰ Cfr. Leone, De Bernardo, "Giovani verso l'occupazione", p. 143, 2017.

⁴¹ Cfr. XIV e XIV Rapporto Arci Servizio Civile, 2019-2020.

⁴² Cfr. Associazione Mosaico, "Il ritorno occupazionale di servizio civile e leva civica regionale nel 2018. Il caso di Associazione Mosaico", p. 7 and following, 2019.

areas of interventions. Moreover, it is relevant to underline how all of them are fully in line with the main objectives of the United Nations 2030 Agenda for Sustainable Development, which have inspired the three-year planning of Universal Civic Service.

Objectives:

In summary, the general objective of the project is to strengthen the Universal Civil Service, stabilising the number of voluntary workers and raising the quality of the programmes and projects in which young people are involved. More young people and better projects means a more effective impact on youth employability.

According to the Italian legislation, the Universal Civil Service is a specific initiative aimed to support the non-formal learning of young people, through the development of specific competences in terms of knowledge, skills and abilities. By becoming a volunteer operator of civil service, the young person starts a training experience, lasting at least 80 hours, and he/she is constantly supported by a tutor (the local project coordinator) in his/her personal and professional growth pathway. In particular, the “general training” consists of a minimum amount of 30 hours and aims at providing knowledge of subjects such as the history, aim and values of the civil service, the role of volunteers, civic protection, interpersonal skills and conflict-management. This training is delivered through a methodology that combines traditional training methods with more interactive and experiential tools. The general training follows quality standards that have been developed on a national scale through numerous training of trainers events and ad hoc national guidelines. The “specific training” consists of 50 hours of training focused on the specific domain of activity of the civil service organization and is mainly a training on the job.

In addition, by actively participating in local project activities, the young person develops key soft skills, such as the capacities to “learn to learn” and to “learn by doing”.

At the end of the course, the civil service organisation, where the young person has been employed, recognises and certifies his/her skills, according to the key competences for lifelong learning highlighted in the Council Recommendation of 22 May 2018 (2018/C 189/01)⁴³. These key competences for lifelong learning are “soft skills” that are in demand in today’s labour market and, thus, they must be acquired by new generations, in order to facilitate their access to employment. In particular, the Universal Civil Service initiative aims to promote two key competences outlined in the Recommendation:

- personal, social competences and the capacity to “learn to learn”: These skills include the ability to be learners, to manage time and information effectively, to work with others, to be resilient and open-minded;
- “citizenship skills”: these skills refer to the capacity to act as responsible citizens and to participate fully in the civic, sustainable and social community-life.

The specific objectives are the following:

- increasing the number of young people involved in non-formal learning through the Universal Civil Service, in order to improve their knowledge and skills and to be geared more closely to the development of their professional life;
- raising awareness among young people of the importance of active citizenship as a tool for promoting their employability and social inclusion;
- promoting interventions with a high impact on youth employability and social cohesion with particular attention to the green and digital transition. As previously highlighted, the green and digital impact of

⁴³ Council Recommendation, Key Competence for Lifelong Learning (2018/C 189/01), Official Journal of the European Union, 22 May 2018

these projects can be both direct - with reference to the thematic areas of intervention - and indirect - with regard to their effectiveness on communities;

- fostering projects related to local communities, in order to make the Country more resilient and mitigate the economic and social impact of the crisis. Most of the projects are aimed at the most vulnerable categories and most exposed to the effects of the emergency.

Furthermore, these projects are often carried out in complex urban areas (suburbs, inland areas, ecc), at risk of social marginalization and far from institutions and cultural centres. The intervention, therefore, aims at revitalizing these communities, through a direct investment in young people.

Implementation:

The Department for Youth Policies and Universal Civil Service is responsible for the implementation of this intervention. At the same time, it will be useful to foster greater collaboration with the various Ministries that have specific competences in youth policies (i.e. education; environment, cultural heritage; digital transformation or civil protection).

The project has a three-year duration but is developed on an annual basis. The selection of a standard number of volunteer operators is envisaged for each of the years considered. This objective is achieved by providing for the publication of a Notice in the first half of each year, addressed to civil service organisations. They will present intervention programs in which young volunteers will be involved. In the second semester, the programs will be evaluated, approved and partially funded. Finally, the call for the selection of volunteer operators will be published.

Therefore, the project provides for a six-monthly monitoring of the progress and can become operational immediately, as soon as the resources to be allocated are established.

The main initiatives in which young people will be engaged cover different types of sectors and thematic areas:

- Social assistance and inclusion;
- Civil protection;
- Environmental heritage and urban regeneration;
- Historical, artistic and cultural heritage;
- Education and promotion of culture, landscape, environment, sport, sustainable and social tourism;
- Social and sustainable agriculture in rural areas and biodiversity;
- Promotion of peace among people, non-violence and unarmed defense;
- Promotion and protection of human rights;
- Cooperation and development;
- “Made in Italy” promotion and support for Italian communities abroad;

Each local initiative pursues directly one of the 17 SDGs identified in the UN 2030 Agenda for Sustainable Development and is fully consistent with the three-year Plan for Universal Civil Service.

During each year, the results of the intervention will be analysed in order to highlight any critical issues and study possible solutions aimed at reducing them. At the same time, the exchange of good practices at national and local level will also be promoted, with the aim of putting them into the system for the following year.

The quantitative monitoring system of the measure will be based on the following objectively measurable indicators:

- Number of civil service organisation involved in the planning;

- Number of places for volunteers foreseen in the projects presented by the civil service organisations;
- Number of programs and projects carried out;
- Number of facilities financed;
- Number of young people selected as volunteers;
- Number of young people involved;
- Number of municipalities involved in civil service projects.

As well as quantitative monitoring, it will be also possible to promote a qualitative monitoring,

- Quality of the programs and projects carried out;
- Skills and abilities acquired by volunteers;
- Effectiveness of interventions in the territories with reference to the activities promoted;
- Level of satisfaction of the volunteers;
- Level of employability of the volunteers.

With funding from the R&RF, it is possible to increase and stabilise the number of young people to be involved in the Universal Civil Service each year. This also allows the civil service organisations to plan and manage more effectively their activities on a three-year basis, also in order to improve the quality of initiatives in relation to both young people's participants and local communities. In addition, the use of RRF resources to cover the costs of employing young people ensures to devote part of the national resources to strengthen specific activities, such as the monitoring of programmes and impact assessment, as well as to promote best practices' exchange, with the aim to further enhance the quality of future local projects.

Implementing body: Department for Youth Policies and Universal Civil Service

Target population:

As the main target, it is expected to involve a number of young volunteers annually equal to 120,000 units (and a total number of about 170,000 volunteers over the three year period), and, at the same time, to improve the quality of programs and projects presented by the organisations.

Therefore, it is necessary to:

- raise the standards of the design;
- approve annually the Universal Civil Service's Programming Plan;
- evaluate and approve annually programs and projects of civil service organizations, in order to ensure a sufficient number of places available to young people;
- issue selection notices;
- establish contracts to young people
- monitor the progress of programs and projects;
- liaise with voluntary organizations and operators.

These activities will be carried out for each of the years covered by the proposal.

State Aid:

The intervention does not present any implication as State Aid, given that around 98% of funds are perceived by young volunteers aged between 18 and 28 (on the basis of a monthly allowance) and 1,6% of funds are

perceived (as a contribution to training activities) by civil service organizations which are non profit organizations accredited in the National Register of Universal Civil Service.

Timeline:

3 years (2021-2023).

Cost:

Total amount EUR 650,000,000

4. Open strategic autonomy and security issues

N/A

5. Cross/border and multi-country projects

N/A

6. Green dimension of the component

The (proposed regulation COM(2020) 408 establishing a Recovery and Resilience Facility sets a binding target of at least 37% of the plan's total allocation to contribute to the green transition or to the challenges resulting from it⁴⁴.

The reform and investment projects related to this component aim to meet the need for “green expertise”, by reducing the gap between existing skills and the companies’ needs, and promoting employment transitions towards the "core green" sectors (production of green products and services) and “go-green” (conversion of processes, reduction of environmental impact, specialization of functions).

Also creating the condition for the development of female entrepreneurship is a drivers for investments in environmental sustainability. The recent IV Report on Female Entrepreneurship by Unioncamere shows that female enterprises in Italy are quite green. Women's businesses are more environmentally aware, driven above all by ethics and social responsibility: the proportion of young women's businesses that invest in green, driven by an awareness of the risks associated with climate change, is higher than that of young men's entrepreneurs (31% vs. 26%).

These reform and investment areas are absolutely consistent with the investment priorities provided for by the 2021-2027 Partnership Agreement. Indeed, ESF+ also supports training and professional qualification to meet the skill needs in sectors with a high green impact. According to the *National Strategy for the integration of the long-term unemployed into the labor market*⁴⁵, this component supports the reform of labour market,

⁴⁴ Communication COM(2020)575 on the Annual Sustainable Growth Strategy 2021 sets out a climate target of 37% for each national Recovery and Resilience Plan, to follow the commitment of the European Council of July 2020. This is reflected in the 7th compromise proposal put forward by the German Presidency on the proposal for a Regulation COM(2020)408 as a Council negotiating mandate.

⁴⁵ Op.cit

through specific ESF + interventions aimed at:

- Identification of needs
- Professional retraining
- Strengthening and networking of information systems and the ERDF to improve the technological equipment.

Moreover, the component's reforms and investments are fully consistent with the *National Energy and Climate Plan (PNEC)*⁴⁶. As well as providing a vision of the actions promoted in the field of Energy and Climate, the Plan highlights potential impacts on employment, education and skills, making use of the information system on professions, employment and professional needs, set up by INAPP on behalf of the Ministry of Labour and Social Policies. This information system allows to draw up short-term recruitment forecasts and to identify professional needs, medium-term employment forecasts and to anticipate professional needs over five years.

There is also a relevant connection between the objectives promoted under this component and the SDGs 8 “*Decent Work and Economic Growth*” of the UN 2020 Agenda for Sustainable Development, with specific relevance to the targets 8.3, 8.5, 8.6, 8b. In addition, the component is also consistent with the European Green Deal and the National Strategy for Sustainable Development (SNSvS)⁴⁷, adopted in Italy. Although the component does not have a direct connection with the territorial plans involved in the Just Transition Fund (JTM), two specific interventions (Investment 3 “Creation of women’s enterprises” and Investment 5 “Universal Civil Service”) do provide for possible areas of application under points d), e), f), g), h,) of Article 4 of the Proposal for the Regulation establishing the Fund (COM (2020) 22 final).

7. Digital dimension of the component

The (proposed) Regulation COM(2020) 408 establishing a Recovery and Resilience Facility sets a binding target of at least 20% of the plan’s total allocation to contribute to the digital transition or to the challenges resulting from it⁴⁸.

As highlighted by the already mentioned DESI database, the actions included in this component aim precisely at reducing the existing gap between the current and forecast skills needs of enterprises and existing skills, by investing more in the acquisition of STEM, technological and digital skills, according to the indications of the recent 2019 INAPP study, co-financed by ANPAL through the resources of the National Operational Programme (NOP) on Systems for Active Employment Policies.

Moreover, as highlighted by the European Commission's recent Communication of 30 June 2020 “*European Skills Agenda for sustainable competitiveness, social fairness and resilience*”⁴⁹, the Covid-19 pandemic has further accelerated the digital transition process: smart working and distance learning have become a reality for millions of people in Europe and, at the same time, has highlighted significant skills gaps.

⁴⁶ Op.cit

⁴⁷ Ministry of Environment and Protection of Natural Resources and the Sea, *Strategia Nazionale per lo Sviluppo Sostenibile, 2017*: https://www.minambiente.it/sites/default/files/archivio_immagini/Galletti/Comunicati/snsvs_ottobre2017.pdf

⁴⁸ Communication COM(2020)575 on the Annual Sustainable Growth Strategy 2021 proposes setting a 20% digital target for each national Recovery and Resilience Plan. This was endorsed by the European Council of 1-2 October. It is reflected in the 7th compromise proposal put forward by the German Presidency on the proposal for a Regulation COM(2020)408 as a Council negotiating mandate. See Article 15(3)(c1) which sets out the 20% digital target, based on a methodology for digital tagging set out in Annex III.

⁴⁹ Op.cit

Therefore, it is necessary to promote a package of transversal interventions aimed, on the one hand, at curbing the potential negative impacts on employment and, on the other, at boosting investments in new technologies and digital transition. In particular, the acquisition of digital skills (hard and soft) by the new generations is one of the main priorities of the Universal Civil Service, as also highlighted by the "*Digital Civil Service initiative*", set up by the Minister for Technological Innovation and Digitalisation - in agreement with the Minister of Education, Universities and Research. The proposal promotes the development of digital skills and the digitalisation of enterprises, with particular reference to the SMEs, which have more difficulty in grasping and sustaining the challenges of the digital transition.

Those two measures ("Digital Civil Service" and "Universal Civil Service") do not overlap as they are addressed to different programmes and different young people. In particular, the former ("Digital Civil Service") is focused on a very specific area of intervention (Core Digital), aiming to support the digital transition and transformation through the acquisition of digital skills by participating volunteers ("digital facilitators"), the promotion of programmes and projects that improve the digital skills of citizens, the implementation of digital skills of the civil service organisations, which carry out and manage "digital facilitation service" through a process of "capacity building". Conversely, the latter ("Universal Civil Service") does not focus on the digital topic, which represents only a transversal dimension to all the projects and initiatives developed at national level by civil society organisations and young people volunteers.

Please see attached TABLE 2

8. Do no significant harm

See attached file

9. Milestones, targets and timeline

Please see attached Annex II: M/Ts

10. Financing and Costs

a) Reforms

Reform 1: "Active Labour Market Policies (ALMPs) and Vocational Training" [linked to Investment 2 Strengthening Public Employment Services (PES)]

For this reform a cost of EUR 4,400,000,000 is envisaged for the 2021-2025 period, plus additional resources, equal to 500, from REACT-EU.

These funds will support unemployed workers and workers' employability in the face of market changes and the evolution of professional needs, as well as promoting the revision of the governance of the vocational training system in Italy. As far as resources for the GOL programme are concerned, the aim is to identify a series of actions on individual unemployed persons to be financed through Standard Cost Units (SCU). From this point of view, it seems useful to adopt the methodology already in use for the Youth Guarantee Programme, which identifies standards for different types of interventions: e.g., according to the Delegated Regulation (EU) 2017/90 of the Commission of 31 October 2016, reception, analysis of skills and profiling by employment services or agencies can be evaluated 34€/h for a maximum of two hours, assessment and validation of skills

is paid 35,5€/hour for a maximum of 4/8 hours (according to the characteristics of the unemployed), while 40 €/hour is foreseen for individual or customised training activities; different costs are envisaged for group training activities on the basis of the level of specialisation and number of participants. Some interventions are paid "by process" and other "by result" (e.g. with the achievement of an employment result), on the basis of the personal profile.

Hence, resources will be allocated on the basis of needs, taking into account the standard costs approved within the ESF (Delegated Regulation (EU) 2017/90 of the Commission of 31 October 2016). The target of beneficiaries of ALMPs is 3 million people in the entire period of five years, one fourth of which (800.000) will be involved in vocational training. The estimated average cost is slightly less than 670 euros per person, plus vocational training estimated at 3000 € per person involved. The assumptions are the following ones: all people concerned receive analysis of jobseeker's skills, profiling, individualised counselling for a total of 6 hours, paid 34 €/h (first 2 hrs) and 35,5 €/h (other 4 hrs); for 20% of beneficiaries - the most fragile - in addition, these activities are delivered for other 4 hrs at 35,5 €/h; for 10% of beneficiaries reintegration voucher is paid by result 3.000 €; for 33% of the beneficiaries, traineeship is paid on average 390 € per person; vocational training, as already mentioned, involves 800.000 beneficiaries for an average of 3000 € per person.

Reform 2: “National Plan tackling undeclared work”

Not funded under R&RF

b) Investments

Investment 3: “Strengthening Public Employment Services (PES)” [*linked to Reform 1 “Active Labour Market Policies (ALMPs) and Vocational Training”*]

For this reform a cost of EUR 600,000,000 is envisaged for the 2021-2023 period.

The resources are already allocated to the regions in the amount of 400 million euro on the basis of the additional staff units envisaged in the Plan for Strengthening PES financed from national resources (Article 12, paragraph 3-bis, Decree-Law No. 4/2019 and Article 1, paragraph 258, Law No. 145/2018). A similar distribution will have to be identified for the additional 200 million of euros. Resources can be used for: renovation of current locations of PES and purchase of new ones; further implementation of the IT system, in the perspective of a national interoperability, professional training of staff (max. of 5% of the resources); institution of regional observatories of local labour markets; institutional communication and outreach (max 1,5%). Regions adopt regional plans in which local priorities are identified. The investment is intended for all the existing PES. Taking into account possible delays in implementation at local level, a target of 90% has been set

Investment 4. “Creation of women’s enterprises”:

For this investment a cost of EUR 400,000,000 is envisaged for the entire 2021 – 2026 period.

These funds will constitute the "Fondo Impresa Donna" which will implement the specific measure designed within Italy’s Recovery Plan to support female entrepreneurship. Implementing measures will be pre-agreed upon by the Ministry of Economic Development and the PCM-Department for Equal Opportunities, aiming at:

- strengthening the existing measures already managed by in-house bodies of Ministry of Economic Development (such as NITO, Smart&Start) through a capital injection of EUR 150,000,000 which will be reserved only to women's businesses;
- providing for a top up of the Female Entrepreneurship Fund established by 2021 Budget Law with EUR 210,000,000 euro (from Q3 2022 on);
- designing accompanying measures, monitoring and communication campaigns, for an estimated cost of EUR 40,000,000 of which EUR 1,200,000 will be allocated to the PCM-Department for Equal Opportunities to implement a multi-year information campaign to promote female entrepreneurship, for vocational guidance activities for women of every age and female students in Universities towards subjects and professions in which women are underrepresented and the creation of a communication platform.

Cost estimation method

- Investments of the "Fondo Impresa Donna". The estimate of cost, in addition to context data described in the IV report on female entrepreneurship by Unioncamere of July 2020, derives from the analysis of the implementation data of two instruments directed by the Ministry of Economic Development: New zero-rate entrepreneurship (NITO) and Smart & Start. The unit cost, equal to 150 thousand / €, for the determination of the overall investment is identified according to an average investment parameter moderate downwards, compared to the current implementation data of the two instruments mentioned above, to take into account the probable lower risk propensity of the potential beneficiaries following the pandemic crisis. It is foreseen that the investment will have an average cost of € 200,000 and an average subsidy of € 150,000, equal to 75% of the investment.

- Accompanying measures. The voucher for technical and management assistance services is estimated in EUR 5,000.00 for new businesses or businesses already active in corporate form and EUR 3,000.00 for new businesses individually. The estimated cost derives from the analysis of the implementation data of the accompanying measures applied by INVITALIA for similar purposes.

Investment 5. “Gender Equality Certification System”

The total expected cost is 10 million euros, divided into the following three components:

- **Introduction of a certification process on gender equality in the company for companies of all sizes.** The path in the experimental phase (Q3 2022 – Q4 2025) will be facilitated for medium, small and micro-sized companies and aimed at facilitating the adhesion to the certification system of these types of companies for which the certification costs may be too demanding. An average contribution of up to **12,500,00 euros** per company is assumed, not direct but intermediated through the accredited certifying body. The costs will be borne by the RRF for a total value of **5.5 million euros**. The amount of the contribution in services for the gender equality certification has been calculated according to the IGQ price list with specific reference to micro and SMEs (see, <http://www.igq.it/documenti/documenti.php?pagina=docs>) and may vary according to the company size and to the complexity of the process, however never exceeding 12,500 euros each.
- **Creation of an Informative System on the gender certification of companies** for a value of **2 million euros**, including the costs of the creation and management by a third party (tender) on behalf of the DPO.
- **Activation of free assistance services at accredited certifying bodies and/or at associations representing social partners and enterprises** to medium, small and micro enterprises for the start-up

of certification paths on gender equality for a total value of **2.5 million euros** for the period Q4 2022 – Q2 2026 with increasing investment over time based on the gradual extension of the certification process to medium-sized enterprises and, subsequently, to small and micro enterprises. The cost of the accompanying services is estimated of up to 2,500 euro (calculated according to the tariff schedule of the Piedmont Region for consultancy to businesses https://www.dors.it/altri_all/tariffario_2016.pdf) for each micro, small and medium size company to a minimum level of 1000 companies by Q2 2026.

Investment 6. “Strengthening the dual system”:

For this investment a cost of EUR 600,000,000 is envisaged for the 2021-2025 period.

The apprenticeship in dual system foresees about 1000 hours of training both within and outside the host company. Activities and costs are defined at regional level, which is exclusively responsible for regulating the provision. According to the Monitoring report of the "IeFP" system (IeFP stands for education and vocational training) by INAPP, the cost per training year per apprentice is equal to 4467,22 euros on the national average (although with some differences across regions).

Investment 7. “Universal Civil Service”:

The 650 million from R&RF finance the cost of approximately 120,000 young volunteer operators over three years (2021-2023). The cost of the investment has been estimated according to the average annual cost of employing a volunteer operator of civil service, which is about 5,400 euros. This cost includes the monthly allowance of about 440 euros, given to the volunteer operator (for 12 months), 90 euros given to the civil service organisation implementing the project, in order to provide the learning experience to the young person. The remaining part covers the insurance costs.

The source to establish costs under this project is the Italian Legislative Decree 40/2017. This law states that costs are defined in the annual financial programming document adopted by the "Department for youth policies and the universal civil service". The document defines the quantification of the monthly allowance to be paid to volunteer operators and of the contribution to civil service organizations in order to provide training activities. Insurance costs are established in the framework of a national multiannual tender.

The costs detailed in this project are defined according to the same methodology followed in the framework of the Italian National Operational Programme for the Youth Employment Initiative (NOP YEI - Measure 6) according to the GP Regulation n. 1303/2013 and the ESF Regulation 1304/2013. Unit costs for training activities and the flat rate for monthly allowances follow the rule of simplified cost options, whereas insurance is a real cost.

The civil service intervention within the NOP YEI has been subject to numerous auditing procedures, all concluded with no anomalies: in 2016 by the European Court of Auditors, in 2018 by the Managing Authority, and various audits on operations since 2016 and a system audit in 2018 carried out by the national Audit Authority - Secretariat General of the Ministry of Labour and Social Policies.

The additional national funds (about 300 million euros from National Fund for Civil Service - Law 40/2017) will finance another 50,000 volunteers over the same three years (2021-2023). The ESI Funds will finance the cost of specific categories of young people, in particular Neet and unemployed young people, to be included in the measure. These resources related to the Universal Civil Service, already allocated for 2020-2022 under the NOP YEI (Youth Employment Initiative), are 54 million, of which about 36 million already committed for

2020-2021 and another 17 million that will be allocated for 2021-2022. Therefore, there is a full consistency between all the financial resources, without any risks of overlapping.

Since 2014 civil service financial sources have been integrated with EU funds. More specifically, ad hoc calls for fragile youth such as NEETs (though the use of ESF funds of the Youth Guarantee) and young migrants with international protection (FAMI Integration Migration Asylum Fund – funds within a small pilot project with the Interior Ministry).

Specific managing and control procedures have ensured separate paths for management, payment and controls.

In particular, there is a clear separation between interventions funded by EU funds such as the ESF and FAMI (Integration Migration Asylum Fund) as

- 1) calls for volunteers foresee separate applications,
- 2) additional eligibility criteria are foreseen for volunteers applying under EU funds,
- 3) the national universal civil service database (Sistema UNICO) ensures ad hoc separate encoding of these projects.

As regards payments, these are operated from separate chapters within the Council of Ministry separate accounting system. Moreover, as regards the contribution for training costs (90 euro for each volunteer) granted to civil service organizations, requests for payments must include a declaration stating that “no other funds, neither public nor private, are received for the same activity” and that “accounts are kept separate according to the provision of EU Regulation no. 1303/2013 (art. 125)”.

The project will be financed by R&RF over the three-year 2021-2023; by 2024 Italian Government will be committed to ensuring the sustainability of the project, allocating specific funds in the annual “budget law” aimed at providing the same level of recruitments every year. Furthermore, the legislative Decree 40/2017 foresees possible integration of various financial resources: it is being implemented via ad hoc sectoral agreements such as those planned to be signed with the relevant Ministries for Ecological Transition, for Agricultural Policies, for Cultural Heritage, for Instruction, for Digital Transition. This integrated approach, based on an important organizational investment, will be able to guarantee more than 55.000 volunteer operators every year.

Please see attached TABLE 2

Annex II: M/Ts of Component 1 of Mission 5

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|--|---|---|--------------------|
| Q4-2021 | <p>Measure R1. Active Labour Market Policies and Vocational Training</p> <p>Milestone. Adoption of an Inter-Ministerial Decree establishing a National Programme for the Guaranteed Employability of Workers (GOL) and an Inter-Ministerial Decree establishing a National Plan for New Skills.</p> <p>The acts for GOL should as a minimum,</p> <p>(i) define the essential elements and their standards of Public Employment Services (PES), including skills forecasting, personalised training plans, guidance and job coaching, to ensure the effective provision of personalised employment services according to common and uniform standards throughout the national territory,</p> <p>(ii) ensure that upskilling and reskilling training activities provided by PES are fully in line with the National Plan for New Skills, including digital skills,</p> <p>(iii) ensure that PES are targeted to the needs of recipients,</p> <p>(iv) ensure that PES target as priority the most vulnerable;</p> <p>(iv) set up a target of a minimum of 25% of beneficiaries of GOL as recipients of relevant</p> | <p>The most vulnerable shall include at least: recipients of all relevant income support instruments for the unemployed (e.g. NASPI, DIS-COLL), the recipients of the citizenship income (“Reddito di Cittadinanza”), the recipients of all relevant wage supplementation schemes (e.g. some CIGS schemes), NEET, unemployed under 30 and women, people with disabilities and the long-term unemployed.</p> | <p>Agreement by the Unified State-Region Conference.</p> <p>Establishment of a Regulation for the National Programme for the Guaranteed Employability of Workers.</p> <p>Publication of the Inter-Ministerial Decrees in the OJ (Gazzetta Ufficiale).</p> | |

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| <p>training, with a particular focus on digital skills and with a priority for the most vulnerable;</p> <p>(v) set new mechanisms which strengthen and make structural the cooperation between public and private systems, including in relation to the identification of the relevant skill needs and the provision of job offers.</p> <p>The Decree establishes that recipients of social safety nets shall access the services provided under the National Programme GOL within 4 months from the moment in which they mature the right to social safety nets.</p> <p>The acts for National Plan for New Skills should as a minimum,</p> <p>(i) defines common standards and essential levels of vocational training throughout the national territory,</p> <p>(ii) targets both employed and unemployed e persons with the goal to enhance their digital skills and encourage lifelong learning.</p> <p>(iii) Identifies skills and relevant standards based on a cooperation between the public and private systems,</p> <p>(iv) takes into account the different needs of the target groups considered which, as a minimum, should include the most vulnerable,</p> <p>(v) Encompasses all relevant sectoral strategies as to have a comprehensive approach, including the national strategic plan for adult competencies.</p> | | | |
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| | (vi) incorporates the provision for the development a forecasting system for new competencies needed in the short-medium term within the labour market | | | |
| Q4-2022 | Measure R1. Active Labour Market Policies and Vocational Training Milestone. Regions adopt plans for the Public Employment Services to fully implement the Guaranteed Employability of Workers (GOL) programme and execute at least 10% of the activities based on the plans. | | | |
| Q4-2025 | Measure R1. Active Labour Market Policies and Vocational Training Target. At least 3 million beneficiaries of the Guaranteed Employability of Workers (GOL) programme, which at least 75% should be women, long-term unemployed, people with disabilities or people under 30, and at least 0.3 million GOL trainings provided on digital skills. Target. At least 80% of Public Employment Services (PES) in each region meet the criteria of the essential level of PES services as defined in GOL programme. | At least 800,000 of the 3 million beneficiaries should be recipients of vocational training. | | |
| Q4 -2022 | Measure R2. National Plan to fight undeclared work Milestone [process]: Adoption of a National Plan and time-bound (one year) Implementation Road Map to fight undeclared work across all | 1. Provide mandatory deadlines for the implementation of the National Plan, and all necessary regulatory provisions to ensure a smooth implementation. | 1. The National Plan will include specific measures, such as: i) facilitating joined-up actions at the national and local level. ii) increasing the penalties and sanctions and advertising | |

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| | <p>economic sectors. The National Plan builds upon the general strategy to combat undeclared work and on the multi-agency approach used to adopt the National Plan against Labour Exploitation in the agriculture sector - “Piano triennale di contrasto allo sfruttamento lavorativo in agricoltura e al caporalato (2020-2022)” .</p> <p>The National Plan and the Road Map for Implementation will include at least the following: (I) measures to improve the production, collection and timely distribution of granular data on undeclared work. (II) introducing direct and indirect measures to transform undeclared into declared work by ensuring that benefits of operating in the declared economy outweigh the costs of working in the undeclared economy. For instance, (a) deterrence measures, such as strengthening inspection and sanctions, and preventive measures to promote declared work, such as targeted financial incentives, also through a review and rationalising of existing ones; (b) strengthening the link with employment and social policy. (III) a national information campaign on the “disvalue” of undeclared work, addressed to employers and workers, with the active involvement of social partners. (IV) a governance structure to ensure effective implementation of actions. (V) measures to overcome illegal settlements to fight labour exploitation in agriculture.</p> | | <p>penalties. ii) simplifying compliance, using direct and indirect measures, including targeted financial incentives, to make it beneficial to operate on a declared basis. iii) providing support and advice about how to start-up businesses legitimately. iv) measure to harmonize the definition of undeclared work to international standards (EU and ILO). The Implementation Road Map will include specific measures, such as at least: i) a strong monitoring and evaluation system to allow both national and local authorities to measure the impact of interventions. ii) a timeline for the roll-out of the National Plan. iii) a costing estimate of funds needed to implement the Plan’s actions for a three years horizon, including recommendations on how to make these investments sustainable in the future.</p> <p>2. Establishment of the inter-institutional working group that will be responsible for the creation of the National Plan and Implementation Road Map</p> <p>Continuous monitoring: 4Q2021 official government establishment Benchmark: -</p> | |
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| | | | <p>3. Meetings of the inter-institutional working group.</p> <p>Continuous monitoring: throughout the year 2022, ensure at least quarterly meetings of the group to evaluate progress. Benchmark: -</p> <p>4. Allocation of funds to implement the actions included in the National Plan.</p> <p>Continuous monitoring: official government decision</p> <p>Definition of outcome targets together with Social Partners to monitor the impact of the measures to combat undeclared work by 3Q2022</p> | |
| Q1-2024 | <p>Measure R2. National Plan to fight undeclared work Milestone [process]: Full implementation of the measures included in the National Plan in line with the Roadmap</p> | 2. Report on the completed actions implemented after the first year from the adoption of the National Plan. | <p><i>Continuous monitoring:</i> i) publication of official reports/data from the government that proves that all measures included in the Plan are being implemented. ii) report on the functioning of the monitoring and evaluation system of the actions included in the National Plan. iii) process evaluation report that addresses strengths and weaknesses of the implementation phase and propose recommendations to improve it.</p> | |
| Q2-2025 | <p>Measure R2. National Plan to fight undeclared work</p> | Report with analysis of the number of inspections and sanctions | <p><i>Continuous monitoring:</i> i) number of inspections at the end of the year 2024 are higher by at least 20% than the average in the period 2019-21.</p> | |

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| | Target. Increase of at least +20% in the number of inspections with respect to the 2019-2021 period | | | |
| Q1-2026 | Measure R2. National Plan to fight undeclared work Target. Reduce the incidence of undeclared work by 2-6 percentage points in the targeted sectors, or the difference with respect to the EU average by at least 1/3 compared to Q4-2022. This could be replaced by an equivalent output/outcome target defined in the National Plan with the Social Partners by 3Q2022. | Report with analysis of the reduction in the incidence of undeclared work in the targeted sectors | | |
| Q4-2022 | Measure I2. Strengthening Public Employment Services (PES) Target. At least 250 PES have completed 50% of the activities envisaged in the Strengthening Plan over the three years period 2021-2023. | <p>These activities are in line with the central Strengthening Plan and further defined at regional level, on the basis of a need analysis and allocated resources.</p> <p>These activities include:</p> <ul style="list-style-type: none"> - renovation and refurbishment of current locations of PES and purchase of new ones; - further implementation of the IT system, in the perspective of a national interoperability; - professional training of staff (max. 5% of the resources); - institution of regional observatories of local labour markets (max 2%); - institutional communication and outreach (max 1,5%) <p>Infrastructural activities are not considered in this intermediated target.</p> | Regions adopt regional plans to strengthen the PES. | |

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| | | Equal balance is ensured on the achievement of the target in terms of territorial distribution (North, Centre, South). | | |
| Q4-2025 | <p>Measure I2. Strengthening Public Employment Services (PES)</p> <p>Target. At least 500 PES have completed the activities envisaged in the Strengthening Plan over the three years period 2021-2023.</p> | <p>These activities are in line with the central Strengthening Plan and further defined at regional level, on the basis of a need analysis and allocated resources.</p> <p>These activities include:</p> <ul style="list-style-type: none"> - renovation and refurbishment of current locations of PES and purchase of new ones; - further implementation of the IT system, in the perspective of a national interoperability; - professional training of staff (max. 5% of the resources); - institution of regional observatories of local labour markets (max 2%); - institutional communication and outreach (max 1,5%) <p>This target includes all types of activities, including infrastructural ones.</p> <p>Equal balance is ensured on the achievement of the target in terms of territorial distribution (North, Centre, South).</p> | Regions adopt regional plans to strengthen the PES. | |
| Q3-2021 | <p>Measure I3. Creation of women's enterprises Milestone. Adoption of the investment policy for the Fund establishing a set of eligibility criteria in line with the RRF objectives, including the DNSH principle and signature of</p> | <p>The Fund investment policy defines as a minimum: (i) the nature and scope of the investments supported, which shall promote the creation, consolidation and innovation of</p> | | |

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| | the funding agreement and operational agreements with the financial intermediary(ies). | <p>enterprises run by women and be in line with the RRF objectives and requirements, including in relation to compliance with the Do No Significant Harm principle, as further specified in the Commission guidance note of 12 February 2021, (ii) the types of operations supported and the delivery mechanisms, (iii) the targeted beneficiaries which shall be enterprises run by women, (iv) governance; (v) assessment and selection method of the applications and granting of facilities.</p> <p>Should the measure eventually entail the use of financial instruments, the investment policy shall also define: (i) the eligibility criteria of financial intermediaries and their selection through an open call; (ii) provisions to re-invest potential reflows for the same policy objectives, also beyond 2026.</p> <p>The contractual agreement with entrusted entity shall require the use of the DNSH guidance.</p> <p>The Fund activity will also feature the provision of accompanying measures, including in relation to mentoring, technical-managerial support, work-life balance measures.</p> | | |
| Q2-2023 | Measure I3. Creation of women’s enterprises Target (intermediate). At least 700 enterprises as defined in the relevant investment policy have received financial support. | Details on territorial distribution and breakdown for instruments will be provided through reporting | | |
| Q2-2026 | Measure I3. Creation of women’s enterprises | | | |

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| | Target. At least 2400 enterprises as defined in the relevant investment policy have received financial support. | Details on territorial distribution and breakdown for instruments will be provided through reporting | | |
| Q4-2022 | Measure I4. Gender equality certification system Milestone. Enter into force of gender equality certification system and accompanying incentive mechanisms for companies, covering at least the following dimensions: growth opportunities for women, equal pay for equal work, management policies for gender diversity, maternity protection. | The measure shall be accompanied by the set up of an IT system. | Definition of technical standards and accompanying incentive mechanisms (Q4-2022) Adoption of relevant legislative and implementing acts. Establishment of a dedicated Information System for data collection and accredited Registry. Call for tender for certification process and accompanying services (Q3-2022) | |
| Q2-2026 | Measure I4. Gender equality certification system Target. At least 800 companies (SMEs or larger companies) obtain the gender equality certification, of which at least 450 SMEs, and at least 1000 companies supported through the technical assistance. | Details on territorial distribution will be provided through reporting | | |
| Q4-2025 | Measure I5. Strengthening the dual system Target. At least 135,000 additional people, compared to the baseline, have participated in the dual system and obtained the relevant certification in the five-year period 2021-2025. | The baseline corresponds to 39,000 people in the two-year period 2019-2020. Details on territorial distribution and gender will be provided through reporting | Allocation of resources to Regions based on number of students enrolled in VET courses. | |
| Q4-2023 | Measure I.6 Universal civil service Target. At least 120,000 additional people, compared to the baseline, have participated in the universal civil service program and obtained the relevant certification in the three-year period 2021-2023. | The baseline corresponds to 50,000 people in the three-year period 2021-2023. Details on territorial distribution and gender will be provided through reporting | Publication of call for selection for each year of application | |

| Mission | Componen Id | Name |
|----------------|--------------------|--|
| M5 | C1 | Ref1.1 Reform: Active Labour Market Policies (ALMPs) and Vocational Training |
| M5 | C1 | Ref1.2 National Plan for tackling undeclared work |
| M5 | C1 | Inv1.1 Strengthening Public Employment Services (PES) |
| M5 | C1 | Inv1.2 Creation of women's enterprises |
| M5 | C1 | Inv1.3 Gender Equality Certification |
| M5 | C1 | Inv1.4 Stregthening the dual system |
| M5 | C1 | Inv2.1 Universal Civil Service |

DNSH assessment

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| Member | MIT |
| Cluster | CI |
| Related Measures (Reform or Investment) | Ref. 1: Employment Policies - Reform: Active Labour Market Policies (ALMP) and Vocational Training |
| Responsibility for respective implementation | |
| Date | |

| Environmental objectives | Step 1 | | Questions | Step 2 | |
|---|---|--|--|--------|---|
| | Does the measure have an or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure concerns the following activities: analysis of jobs sector's skills profile; intensive activities for job search; assessment of skills; individualized counseling; learning for mobility; vocational training and ongoing reintegration also in the form of reintegration in other host of these can lead to significant GHG emissions | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | From the analysis of the climate-related risks that could affect the measure, the effects that may affect both the current and future climate were assessed and no effects were highlighted related to sea level rising, drought and air temperature. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The activity that is supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and primary indirect effects across the life cycle. No environmental degradation risks related to preserving water quality and water stress are identified. | Is the measure expected to: (i) lead to significant reduction in the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The activity that is supported by the measure has an insignificant foreseeable impact in the generation, incineration or disposal of waste. It does not lead to significant use of any natural resource and it does not cause any long-term harm to the environment or respect to the circular economy. | Is the measure expected to: (i) lead to significant reduction in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at the range of its life cycle which are not mitigated by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The expected impact of the activity supported by the measure with respect to the environmental objective is negligible as it does not lead to any significant increase of pollutants into air, water or land. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The expected impact of the activity supported by the measure with respect to the environmental objective is negligible as it does not affect the parameters that characterize biodiversity and ecosystems, also in consideration of the direct and indirect effects over the entire life cycle. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSh assessment

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| Issue | 3. Initiatives and Objectives |
| Cluster | C3. Environment Policy |
| Related Measure (Policy or Investment) | National Plan to Fight undeclared work |
| Responsibility for research and implementation | MIRP |
| Date | |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of The measure has no impact on the environmental objective related to climate change mitigation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to: (i) result in a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at the level of life cycle which are not recovered by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Regulation)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNCG for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. The measure concerns, in fact, the introduction of direct and indirect measures to transport undeclared work into work, register so that the benefits from operating in the regular economy outweigh the cost of | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of conservation interest? | | |

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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

5 Inclusion and Cohesion

C1 Employment Policies

Investment 1.2 "Creation of women's enterprises"

Ministry of Economic Development - Presidency of the Council of Ministers
(Department for Equal Opportunities)

26/04/2021

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems



Step 1

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.



Justification if A, B or C has been selected









Questions

Is the measure expected to lead to significant GHG emissions?

Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?

Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters?

Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?

Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land??

Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?



Step 2

Yes/No

NO





NO





NO





NO





NO





NO



Substantive justification if NO has been selected

The measure, whose driver is the development of female entrepreneurship, falls in the code C105 "Measures to promote the participation of women in the labor market and to reduce gender segregation in the labor market" (Annex VI Reg. RRF).

The measure is compliant with DNSH principle for the relevant objective. The measure promotes specifically women's labour market participation and reducing gender-based segregation in the labour market, through direct support for the creation of women's enterprises. The investment defines new ones and adapts existing support instruments for the creation and development of micro, small and medium enterprises with predominant or total female participation, including innovative start-ups, and the consolidation of existing ones. The development of female entrepreneurship is considered a driver for investments in environmental sustainability. The recent IV Report on Female Entrepreneurship by Unioncamere shows that female enterprises in Italy are quite green. Women's businesses are more environmentally aware, driven above all by ethics and social responsibility: the proportion of young women's businesses that invest in green, driven by an awareness of the risks associated with climate change, is higher than that of young men's entrepreneurs (31% vs. 26%). So, regardless of the "sectors" which will be concerned by the investments (the mentioned IV Report by Unioncamere, shows those which are characterised by greatest presence of women as commerce, hospitality and tourism, care services, entertainment and culture), because of the pandemic crisis has accelerated the gap also about the elements of weakness (moreover in relation to innovation and technology investment) the measure aims to combine the "green interest/pronensity" to the need of sustaining RSI ensuring the

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The measure is compliance with DNSH principle for the relevant objective. The measure promotes specifically women's labour market participation and reducing gender-based segregation in the labour market, through direct support for the creation of women's enterprises. The investment defines new ones and adapts existing support instruments for the creation and development of micro, small and medium enterprises with predominant or total female participation, including innovative start-ups, and the consolidation of existing ones. The development of female entrepreneurship is considered a driver for investments in environmental sustainability. The recent IV Report on Female Entrepreneurship by Unioncamere shows that female enterprises in Italy are quite green. Women's businesses are more environmentally aware, driven above all by ethics and social responsibility: the proportion of young women's businesses that invest in green, driven by an awareness of the risks associated with climate change, is higher than that of young men's entrepreneurs (31% vs. 26%). So, regardless of the "sectors" which will be concerned by the investments (the mentioned IV Report by Unioncamere, shows those which are characterised by greatest presence of women as commerce, hospitality and tourism, care services, entertainment and culture), because of the pandemic crisis has accelerated the gap also about the elements of weakness (moreover in relation to innovation and technology investment) the measure aims to combine the "green interest/sensitivity" to the need of sustaining RSI ensuring the

The measure, whose driver is the development of female entrepreneurship, falls in the code C105 "Measures to promote the participation of women in the labor market and to reduce gender segregation in the labor market" (Annex VI Reg. RRF).

The measure is compliance with DNSH principle for the relevant objective. The measure promotes specifically women's labour market participation and reducing gender-based segregation in the labour market, through direct support for the creation of women's enterprises. The investment defines new ones and adapts existing support instruments for the creation and development of micro, small and medium enterprises with predominant or total female participation, including innovative start-ups, and the consolidation of existing ones. The development of female entrepreneurship is considered a driver for investments in environmental sustainability. The recent IV Report on Female Entrepreneurship by Unioncamere shows that female enterprises in Italy are quite green. Women's businesses are more environmentally aware, driven above all by ethics and social responsibility: the proportion of young women's businesses that invest in green, driven by an awareness of the risks associated with climate change, is higher than that of young men's entrepreneurs (31% vs. 26%). So, regardless of the "sectors" which will be concerned by the investments (the mentioned IV Report by Unioncamere, shows those which are characterised by greatest presence of women as commerce, hospitality and tourism, care services, entertainment and culture), because of the pandemic crisis has accelerated the gap also about the elements of weakness (moreover in relation to innovation and technology investment) the measure aims to combine the "green interest/sensitivity" to the need of sustaining RSI ensuring the

The measure, whose driver is the development of female entrepreneurship, falls in the code C105 "Measures to promote the participation of women in the labor market and to reduce gender segregation in the labor market" (Annex VI Reg. RRF).

The measure is compliance with DNSH principle for the relevant objective. The measure promotes specifically women's labour market participation and reducing gender-based segregation in the labour market, through direct support for the creation of women's enterprises. The investment defines new ones and adapts existing support instruments for the creation and development of micro, small and medium enterprises with predominant or total female participation, including innovative start-ups, and the consolidation of existing ones. The development of female entrepreneurship is considered a driver for investments in environmental sustainability. The recent IV Report on Female Entrepreneurship by Unioncamere shows that female enterprises in Italy are quite green. Women's businesses are more environmentally aware, driven above all by ethics and social responsibility: the proportion of young women's businesses that invest in green, driven by an awareness of the risks associated with climate change, is higher than that of young men's entrepreneurs (31% vs. 26%). So, regardless of the "sectors" which will be concerned by the investments (the mentioned IV Report by Unioncamere, shows those which are characterised by greatest presence of women as commerce, hospitality and tourism, care services, entertainment and culture), because of the pandemic crisis has accelerated the gap also about the elements of weakness (moreover in relation to innovation and technology investment) the measure aims to combine the "green interest/pronensity" to the need of sustaining BSL ensuring the

DNSH assessment

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| Mission | 3. Inclusion and Cohesion |
| Cluster | C3. Employment Policies |
| Selected Measure (Action or Investment) | Gender Equality Certification |
| Responsibility for research and implementation | Department for Equal Opportunities |
| Date | 17/04/2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|--|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B, E or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change adaptation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to be detrimental (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant pollution in the direct or indirect use of any natural resource at any stage of its life cycle which are not increased by adequate measures, or (iii) cause significant and long-term loss of raw materials? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure has no impact on the environmental objective related to climate change mitigation, given its nature. Furthermore, the certification body shall ensure that the contribution in services offered by the MS is not provided to companies that do not comply with the DNSH principle in accordance with the Taxonomy criteria. Therefore the measure is to be considered compliant with DNSH. | Is the measure expected to: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of conservation interest? | | |

DNSH assessment

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| Mission | M1 |
| Cluster | C1 |
| Related Measures (Reforms or Investments) | Investment 3.4: Strengthening the dual system |
| Responsibility for execution and implementation | |
| Date | |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|--|---|--|--------|---|
| | Does the measure have an or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure concerns the strengthening of pathways of combined education and vocational training, also through apprenticeships. The participation in the pathway cannot lead to significant GHG emissions. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | From the analysis of the climate-related risks that could affect the measure, the effects that may affect both the current and future climate were assessed and no relevant new highlighted elements are listed (rising, drought and air temperature). | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The activity that is supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and primary indirect effects across the life cycle. No environmental degradation risks related to preserving water quality and water stress are identified. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The activity that is supported by the measure has an insignificant foreseeable impact in the generation, incineration or disposal of waste. It does not lead to significant use of any natural resource and it does not cause any long-term harm to the environment or respect to the circular economy. | Is the measure expected to: (i) lead to significant reduction in the generation, incineration or disposal of waste, with the exception of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at the stage of its life cycle which are not mitigated by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The expected impact of the activity supported by the measure with regard to the environmental objective is negligible as it does not lead to any significant increase of pollutants into air, water or land. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The expected impact of the activity supported by the measure with regard to the environmental objective is negligible as it does not affect the parameters that characterise biodiversity and ecosystems, also in consideration of the direct and indirect effects over the entire life cycle. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSh assessment

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| Measure | MS |
| Cluster | CS |
| Related Measure (Referral or Investment) | Universal Civil Service |
| Responsibility for research and implementation | Department for Levelling Up, Housing and Communities |
| Date | |

| Environmental objective | Step 1 | | Questions | Step 2 | |
|---|--|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on the environment or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with climate change, but rather fit into pre-existing activities. The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with climate change, but rather fit into pre-existing activities. The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with the use of water and marine resources, but rather fit into pre-existing activities. The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with the circular economy, but rather fit into pre-existing activities. The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not compensated by abatement measures; or (iii) cause significant and long-term harm to the environment or impact to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with air, water or land pollution, but rather fit into pre-existing activities. The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environment objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective | The measure is intended to fund the service of over 5000 young people per year in over 4,000 civil service projects carried out by not-for-profit organisations and which are developed in the following sectors of intervention: assistance, education and cultural promotion, civil protection, environment, cultural heritage, social agricultural promotion (space and rights abroad). This is a very low impact measure as the projects do not interfere with the conservation status of habitats and species, including those of special interest? The measure is in fact used to pay a monthly allowance to volunteer operators and to pay their training and insurance costs. In particular, then, within the approved projects there will be some that will support the achievement of the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNIGs for the relevant objective. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of special interest? | | |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 2: Social infrastructures, families, communities and third sector

1. Description of the component

Summary box Social infrastructures, families, communities and third sector

Policy area/domain:

INCLUSION AND COHESION

Objective:

The second component, “Social infrastructures, families, communities and third sector”, aims to tackle social exclusion, reaching out to vulnerable population groups, mainly through social housing solutions, a strengthened role of national social services and greater access to sports disciplines. Mainly, it supports the national strategy for the active inclusion and the fight of the different forms of vulnerability of the population, worsened as a result of the epidemiological emergency from COVID -19, through the strengthening of integrated social services, the adoption of innovative models of social housing, the development of the resilience capacity of the most vulnerable subjects, also through the dissemination of the culture of sport.

Hence, the component has three interventions area:

1. ***Social services, disability and social marginalization***: strengthening the role of national social services as a tool of resilience by aiming at the definition of personalized models for taking care and improvement of the quality of life of persons with disabilities, also through the enhancement of social infrastructures involving the third sector.
2. ***Urban regeneration and Social Housing***: urban regeneration and re-functionalization of the existing building heritage contributing to the contrast to the degradation of the territories, improving access to affordable and adequate housing by enhancing the supply of new housing solutions for public housing and social housing (with a controlled rent).
3. ***Sport and social inclusion***: to transform and regenerate many Italian cities in order to promote the culture of sport and physical activity, especially among youngsters, as well as to reduce phenomena of marginalization and social degradation and at the same time to support the recovery of the territory, the protection of health and the environment. These interventions are accompanied by the definition of a model, which can be replicated in several Italian areas, for the recovery of sports infrastructures through the creation of urban parks where sports activities can be combined with entertainment activities for the benefit of the communities.

Reforms and/or investment:

Reform 1: Framework law for disability

Reform 2: Reform for non-self-sufficient elderly persons

Investment 1: Supporting vulnerable people and preventing institutionalization

Investment 2: Autonomy patterns for people with disabilities

Investment 3: Housing First and Post Stations

Investment 4: Investments in projects of urban regeneration, aimed at reducing situations of marginalization and social degradation

Investment 5: Urban Integrated Plans

Investment 6: “Innovative Plan for Housing Quality”

Investment 7: Sport and social inclusion

Estimated cost overall: EUR 11.17 billion; requested under RRF: EUR 11.17 billion

2. Main challenges and objectives

This component provides a national strategy for the active inclusion of vulnerable population groups, whose situation worsened as a result of the COVID-19 epidemiological emergency. This plan has been envisioned through a series of actions: the strengthening of integrated social services, the adoption of innovative models for social housing, the development of resilience capacity for most vulnerable groups, also through the spread of sports culture.

Interventions included in the component, with special reference to the Investment 1, are complementary and fully coherent with interventions that are classified in the M6 Health and, more specifically, in the Component M6C1, which aims at strengthening health assistance and territorial services.

a) Main challenges

As highlighted in the **Country Specific Recommendations 2019**, in Italy “Income inequality and risk of poverty are high, with wide regional and territorial disparities. In 2017, 28.9% of the population was at risk of poverty or social exclusion, above both the pre-crisis levels and well above the 2017 EU average (22.4%). Children, especially those with a migrant background, are particularly affected.” Other groups facing a high risk of living in poverty are temporary workers, self-employed and people with a migrant background.

Furthermore, inequality has intensified in the past ten years. The gap between the rich and the poor has widened, as well as the percentage of people living in extreme poverty. In fact, lower-income groups have not benefited from the slow economic recovery of recent years. Nationally, the proportion of families living

in extreme poverty has nearly doubled, up to 6.9% (2017), with the worst figures (10.3%) being recorded in southern Italy.

The impact of social transfers for reducing poverty and inequalities is one of the lowest in the EU. The anti-poverty scheme introduced in 2018 has been recently replaced by a new major scheme (citizenship income) with an active inclusion approach, subject to certain conditions. However, these reforms may prove difficult to implement, creating a considerable burden for the public administration, namely on employment and social services, whose access and adequacy remain problematic.

In this context, the main challenges of the Component are described below.

The first challenge is related to the needs of **enforcing social services for families, children, persons with disabilities and contrasting social marginalization**:

- Social services do not have adequate resources and their availability in remote and rural areas is a major problem that can foster depopulation. Therefore, *strengthening social services* is essential for the success of the minimum income system and for all disadvantaged people. However, in the absence of additional resources, the implementation of the new system risks putting an excessive burden on social services, which must now reach a greater number of beneficiaries. Other vulnerable groups who depend on social services but are not necessarily among the beneficiaries of the minimum income, such as the elderly or people with disabilities, may be particularly affected.
- *More home and community-based care and long-term care* is key to provide support to people with disabilities and other disadvantaged groups, as well as family support measures through the improvement of social transfers. Adopting a global intervention strategy with particular attention to children is fundamental to prevent and tackle children learning and material poverty, in light of the European Child Guarantee for vulnerable children.
- In Europe, as well as in Italy, the number of *people with disabilities* is constantly growing due to the population aging. Indeed, relevant studies confirm that, at global level, there is a positive correlation between aging and disability, especially in the poorest countries where individuals are more exposed to health risks due to chronic diseases, accidents and other pathologies.

The EU and its Member States are committed to improving the socio-economic conditions of people with disabilities, building on the Charter of Fundamental Rights of the European Union and the Treaty on the Functioning of the European Union.

The European *Strategy for the Rights of Persons with Disabilities 2021-2030* intends to tackle the diverse challenges that persons with disabilities face. It aims to progress on all areas of the United Nations Convention on the Rights of Persons with Disabilities, both at EU and Member State level.

The goal is to ensure that persons with disabilities in Europe, regardless of their sex, racial or ethnic origin, religion or belief, age or sexual orientation:

- enjoy their human rights,
- have equal opportunities,
- have equal access to participate in society and economy,
- are able to decide where, how and with whom they live,
- can move freely in the EU regardless of their support needs,

- no longer experience discrimination.

Over the next decade, according to this Agenda, an equal, high-quality and barrier-free access to education, full economic and political inclusion and the abolition of all physical barriers to access buildings and transport must be guaranteed to all people with disabilities, together with an improvement in the collection of statistical data relating to disability.

A second challenge on social inclusion is related to the need of **improving urban regeneration and increasing the availability of affordable houses** for most vulnerable and disadvantaged people.

- One of the most relevant dimensions of vulnerability is related to ***availability of affordable housing***. The Covid-19 pandemic has worsened an already dramatic situation: according to the Nomisma Institute, 1 million and 475 thousand low-income Italian families suffer from housing problems and 783,000 are in conditions of acute distress while 692,000 in serious distress. Moreover, the 2020 lockdown has lowered living conditions of Italian families, so much that one in four families had difficulties paying rent and over 40% expect to be unable to pay it in the next 12 months.

Faced with such a serious situation, the public housing system plays a fundamental role in terms of responses to housing problems. Today, the rent-related component alone accounts for over 64.5% of household spending (412 euros the average cost incurred for the payment of the rent).

Based on these data, in the event of a reduction in average rent to 200 euros, housing deprivation outside the ERP would go from the current million families to about 363,000 households. If a further reduction of 110 euros in rents were applied, 288,000 families would remain in a situation of hardship but a total of 712,000 would emerge from it. Given that the average fee practiced in Italy for ERP is 110 euro, this phenomenon can be addressed with the public housing system.

- **Marginalization and social degradation are spread in the Italian territory, with a major concentration on urban and metropolitan areas**, and impact on the territorial gap between Northern/Central and Southern Italy. The challenge is reducing marginalization and social degradation by investing in urban regeneration in order to increase citizens' quality of life and to contrast the social and economic gap between the North and the South of Italy.

The third challenge takes into consideration the role of **sport in improving social inclusion** of young people living in most disadvantaged area, such as for example urban peripheries.

- In the field of social policies, ***the sports sector holds an important role in promoting social inclusion and integration***. In fact, in many disadvantaged areas, sports can represent a good and healthy alternative to marginalisation for vulnerable and young people, by improving health and mental conditions and providing for an educational and training role. Sport promotion is particularly important in more deprived and marginalised areas, characterized by a high presence of disadvantaged families and a lack of sport facilities.

The Covid-19 pandemic crisis has profoundly affected the sports sector, highlighting the urgency to recognise the role of sports for social inclusion. To this end, it is essential to promote investments in sports facilities, raising the number of available structures where to ensure social inclusion activities. These investments should be concentrated in the most vulnerable areas, such as for example urban peripheries, that have highest levels of disadvantaged people.

b) Objectives

Component C2 envisages a reform consisting of the implementation of the “**Disability Code**”, which aims to fully implement the principles of the 2006 UN Convention on the Rights of Persons with Disabilities, ratified by Italy since 2009), according to an approach of all consistent with the Charter of Fundamental Rights of the European Union and with the recent “Strategy for the rights of people with disabilities 2021-2030” presented in March 2021 by the European Commission. The reform will simplify access to services, the mechanisms for assessing disability and will enhance the tools aimed at defining the individualized project.

Concerning social and health field, the investment activities already envisaged in the social and health fields in the projects already mentioned included in the PNRR (Missions 5 and 6) will be supported at national level by the reform of non-self-sufficiency, with the primary objective of facing the problem of elderly people. This reform will address in a coordinated manner the various needs arising from the consequences of aging, for the purpose of an integrated approach, aimed at offering the best conditions for maintaining, or regaining (in case it has been lost), the maximum possible autonomy in a context as much as possible de-institutionalized. The reform will further develop the project included in the PNRR which provides for a strong investment aimed at the renovation of residences for the elderly and the promotion of housing solutions that allow them to continue independent life in their own territorial context also through the use of innovative territorial facilities and integrated home services, together with the strengthening of the teams aimed at favouring “protected discharge”.

Moreover, in line with the interventions of the Plan, the acceleration of the implementation of the **reform of the Third Sector** is expected, which is still lacking important implementation decrees. It is also intended to evaluate the effects of the reform on the whole national territory.

Generally, main objectives of the Component are described below:

- **Strengthening the role of local social services as a tool of resilience** by aiming at the definition of personalized models for taking care of families, minors and adolescents, in order to support parenting skills and protect vulnerable families and minors, as well as of persons with disabilities, also through the enhancement of social infrastructures involving the third sector.
- **Improving the autonomy of people with disabilities**, by providing community and home-based social and health services and removing barriers in accessing housing and job opportunities, also considering new possibilities offered by information technology.
- **Improving the protection system and the inclusion actions in favour of people in conditions of extreme marginalization** (e.g. homeless people) and housing deprivation through a wider offer of temporary accommodation assistance facilities and services, personalized paths towards autonomy and personal resilience.
- Integrating national policies and investments to ensure a multiple approach that concerns both the **availability of a more affordable public and private houses and urban and territorial regeneration**.
- **Recognising the role of sports in social inclusion and integration**, by realising integrated projects that can impact not only targeted people, but also local communities. In fact, sports facilities are considered attraction poles of the territories (urban areas, peripheries) and their renovation is connected to local regeneration processes, in terms of urban valorisation and resilience.

3. Description of the reforms and investments of the component

a) Reforms

In order to meet main purposes of this Component, two Reforms will be realised:

- Reform 1: Framework law for disability;
- Reform 2: Reform for non-self-sufficient elderly persons.

Reform 1: Framework law for disability

Challenges

The proposal contributes to improving social resilience, by aiming to overcome the use of institutionalization (i.e. the assistance given within defined structures), whose vulnerability has been widely demonstrated by the pandemic, and to promote autonomy. It improves social cohesion to the extent that it allows a multidimensional assessment of disability, consistently with the principles of the UN Convention, and overcomes the current mainly medico-legal approach, favouring the transition from a protective welfare to a welfare aimed at empowering persons with disabilities. The measure is in fact aimed at forming and reorganizing the system responsible for the multidimensional assessment and at defining a model of individual project, in implementation of the provisions of the Law no. 112 of 22 June 2016 and of the Law no. 328 of 8 November 2000.

Objectives

The main objective of the Reform is to modify the legislation on disabilities by realizing the de-institutionalization and the promotion of the autonomy of people with disabilities. In this sense, the objective is achieved through: (i) the strengthening and qualification of the offer of social services by social districts, (ii) the simplification of access to social and health services, (iii) the revision of the procedures for assessing disabilities, (iv) the promotion of independent living projects, (v) the promotion of multidimensional evaluation units on the territories, capable of defining individual and personalized projects pursuant to art. 14 Law no. 328/00 and law 112/2016, also through the territorial implementation of the Single Access Points for people with disabilities as a tools for multidimensional assessment.

Implementation

The Reform is aimed at **adopting an organic discipline (“Code”) on disability**, aimed at redesigning the social, work, educational inclusion and protection schemes of people with disabilities while, at the same time, providing more efficient processes of benefit disbursement.

The “code” will guide general disability policies towards an independent path, in accordance with the approach of the United Nations Convention on the Rights of Persons with Disabilities and the European Strategy for the Rights of Persons with Disabilities 2021-2030. A definition of persons on disabilities is provided by the Law n. 104 of 5 February 1992, defining the rules for assistance, social integration and recognition of the rights of persons with disabilities. Competences for the assessment of disabilities are

assigned to the Regions, while the evaluation of disabilities is done by the Local Health Services or by the National Institute of Social Welfare.

The measure will be associated with a support to the administrations/organisations involved for the reorganization of network services and for the training of specialist personnel. The supply of software tools and interactive platforms is also envisaged to guide both the multidimensional evaluation activity by the team and the presentation of citizens' requests, needs and individual projects. The adoption of a single computer system, coordinated with the existing ones (INPS' and health systems), moreover, allows the orderly collection of data, useful for reorienting the planning of territorial services and the planning of new interventions by the institutions.

The administrations involved in the Reform are the Ministry of Health, the Ministry of Labour and Social Politics, Regions and Municipalities (ANCI).

To cover the regulatory measures that go under the name of the Framework Law for Disabilities (hinging on the multidimensional revision of the assessment of disability), 200 million euros are currently allocated in the State budget (budget law for 2021) for 2021, 300 million euros for 2022 and 300 million euros from 2023, for a total of 800 million euros, which will form the basis for financing the reform.

Target population

Citizens, people with disabilities.

Timeline

The implementation period is estimated to be from 2021 to 2025.

Reform 2: Reform for non-self-sufficient elderly persons

Objectives

The reform, consistent with the public finance objectives and in line with the Commission Recommendations for the semester 2019 on the rebalancing between welfare functions, is aimed at introducing a legislative provision, following a specific parliamentary delegation, on organic system of interventions in favour of the non-self-sufficient elderly.

Implementation

The provision will be adopted by the natural expiry of the legislature (spring 2023) and is aimed at the formal identification of essential levels of benefits for the non-self-sufficient elderly in the indicated financial framework. The fundamental principles of the reform are those of: (i) the simplification of access through single points of social and health access, (ii) the identification of ways of recognizing non self-sufficiency based on the need for assistance, (iii) a multidimensional assessment, (iv) the definition of an individualized project that identifies and finances support necessary in an integrated way, favouring the stay at home, with a view to de-institutionalization. For the same purposes, the technological infrastructures of the information system of non-self-sufficient people will be strengthened.

The framework law is anticipated by specific interventions envisaged by the PNRR, included both in the health mission (M6), with reference to projects that strengthen local health services and home care, and in the present Component, with specific reference to the investment 1, intervention 2 aimed at the de-

institutionalization, the reconversion of nursing homes and the strengthening of home services for protected dismissals.

Target population

Citizens, families, non-self-sufficient elderly.

Timeline

The implementation period is estimated to be by Q1 2024 with the approval of the Legislative Decree related to the Reform Law.

b) Investments

Investments have been organised in three main topics, which represent specific challenges for Italy:

A. Social services, disability and social marginalization;

- Investment 1: Supporting vulnerable people and preventing institutionalization
 - Intervention 1: Actions aimed to support parenting skills and to prevent vulnerability of families and children
 - Intervention 2: Actions for an autonomous life and the deinstitutionalisation for elderly people
 - Intervention 3: Reinforcing home social services to guarantee early supported discharge and prevent hospitalization
 - Intervention 4: Strengthening social services and preventing burn out among social workers
- Investment 2: Autonomy patterns for people with disabilities
- Investment 3: Housing First and Post Stations;

B. Urban regeneration and social housing;

- Investment 4: Investments in projects of urban regeneration, aimed at reducing situations of marginalization and social degradation
- Investment 5: Urban Integrated Plans
 - Intervention 1: Urban integrated plans - general projects (included the EIB Thematic Fund for Urban Regeneration)
 - Intervention 2: Urban integrated plans - overcoming illegal settlements to fight labour exploitation in agriculture
- Investment 6: Innovative Plan for Housing Quality
 - Intervention 1: Renovation actions and proposals of degraded and service-deficient urban areas;

- Intervention 2: High-performance pilot projects for the regeneration of particularly degraded and service-deficient urban areas

C. Sport and social inclusion.

- Investment 7: Sport and social inclusion

Social services, disability and social marginalization

Investment 1 - Supporting vulnerable people and preventing institutionalization

Challenges

One of the main challenges of the project is to improve the current fragmented and inadequate system of social services by building an interconnected and efficient network of social facilities and services, increasing local resilience and shifting towards a sustainable socio-economic development. By means of the deinstitutionalisation of social services, aimed at ensuring the possibility to take care of people also in their home environment, it will be possible to prevent situations of domestic vulnerability both for children and for elderly people.

In fact, the development of a reliable system of widespread social services is crucial for improving territorial resilience and socio-economic growth as well as for building a network able to provide vulnerable people with social protection services that can guarantee their autonomy and independence. Social services should have an inclusive approach, oriented to people and their different needs, in order to take them in charge, provide them with services aimed at preventing poverty and social inequality and accompany them to autonomy, as requested by various EU directives and the Agenda 2030 for sustainable development. Moreover, social services should prevent disadvantaged situations and promote the rights of all vulnerable targets (families at risk of poverty, families with lack of parenting competences, families and children roma and sinti, elderly people, etc.), in order to limit marginalization processes and institutionalization of disadvantaged people.

The project will expand the financial capacity of “P.I.P.P.I. - Programma di Intervento per la Prevenzione dell’Istituzionalizzazione”, the national institutionalization prevention programme launched in 2010 by the Ministry of Labour and Social Policies. Moreover, the project is in line with the European action on the Child Guarantee, which stimulates Member States to invest resources for combating poverty and social exclusion, particularly amongst the EU’s most disadvantaged children and ensuring the access of these children to the five areas identified by the European Parliament, i.e. free healthcare, free education, free early childhood education and care, decent housing and adequate nutrition.

Moreover, after the global Covid-19 pandemic, which highlighted the lack of hospital beds, medical supplies, healthcare personnel and required volunteers, donations and emergency measures, the aim is to avoid future scenarios of social distress with overwhelmed health and social care systems. In the context of the Covid-19 pandemic, in fact, families faced increased difficulties, among which the augmented risk of poverty and psychological stress. Demand for social services has increased and, currently, there is a need to guarantee that above mentioned difficulties will not produce a higher number of fragmented families.

Objectives

The measure is aimed at strengthening and building infrastructures for territorial social services in order to prevent institutionalization or foster de-institutionalization. It covers areas of interventions such as services

to elderly people, families and children as well as people exiting from hospitals. The measure, in fact, will be focused on four possible actions to be realized by municipalities (single or in association): supporting parenting skills and preventing vulnerability of families and children; favouring autonomous life of elderly people; reinforcing home social services to guarantee early supported discharge and prevent hospitalization; strengthening social services and preventing burn out among social workers.

On this regard, such interventions, which are deeply related to the functions of territorial social services, are complementary and fully coherent with interventions that are classified in the M6 Health, with reference in particular to the Component M6C1, which aims at strengthening health assistance and territorial services. Indeed, while social services are much less developed in Italy than health services, complementarities arise in all areas formally classified as both social and health (aree socio-sanitarie); at the practical level, health and social territorial services are requested to coordinate, although weaknesses in both systems sometime create bottlenecks, which this project addresses on the social side while the M6C1 component addresses on the health side.

Implementation

The project will be implemented by the Ministry of Labour and Social Policies which will publish a non-competitive call for proposals dedicated to municipalities (responsible for social services), single or in association, established in the whole territory. Municipalities (or their associations) can present projects focused on one or more of the following actions: (i) actions aimed to support parenting skills and to prevent vulnerability of families and children; (ii) actions for an autonomous life and the de-institutionalisation for elderly people; (iii) reinforcing home social services to guarantee early supported discharge and prevent hospitalization; (iv) strengthening social services and preventing burn out among social workers.

A description of the actions is provided below.

1. Actions aimed to support parenting skills and to prevent vulnerability of families and children

The aim of the action is to enforce social care services and support underprivileged children and families living in low-income households by improving their living conditions, health and education, as well as parenting skills and abilities to prevent vulnerability. The innovation of social services' practices will make possible to reduce child abuse and the need for children to live their families, by ensuring a stronger connection among social, health and education areas of public services and including both parents and children perspective in designing social interventions.

In this context, multidisciplinary teams, composed by teachers, social workers, health workers, psychologists, etc., will be activated to help families and children at risk of poverty and/or exclusion. Services to families and children will be structured in the following phases:

- Phase 1: pre-assessment of family environment and children situation, aimed at verifying potential situations of children vulnerability and/or parents' negligence;
- Phase 2: assessment of the situation, made by the multidisciplinary team together with family and children, and identification of the necessary services and interventions;
- Phase 3: realisation of the identified types of services, such as: (i) home services; (ii) participation to support groups for parents and children; (iii) cooperation among schools, families and social services; (iv) shared family care services;
- Phase 4: ex post evaluation of services provided.

The duration of the programme for each family is between 18 and 24 months.

For the implementation of the project, the Ministry will start a technical assistance service, so as to provide social services personnel and multidisciplinary teams with the necessary training both on site and on line, to support municipalities (single or in association) in implementing project activities and to define assessment tools for ex ante and ex post evaluation, mainly by using the RPMonline tool (Rilevazione, Progettazione e Monitoraggio). This tool, in fact, is a model useful both for project design and for project evaluation, based on the specific needs of children and their families as well as of social services operators.

2. Actions for an autonomous life and the deinstitutionalisation for elderly people

This action is mainly aimed at reconverting retirement homes for elderly people in groups of autonomous apartments, equipped with all necessary facilities and services of more institutionalized contexts, or alternatively at creating networks of services for separated apartments in order to ensure the coverage of services for elderly people remaining in their home/territory. In both cases, the objective is to allow elderly people to have an autonomous and independent life, by providing them with social services and support. Domotics, telemedicine and remote monitoring will be used for improving the intervention effectiveness. In fact, a good mix between investments in technology and efficient social services, which take elderly people in charge with a multidisciplinary approach, can show a better efficacy in helping elderly people to gain high levels of autonomy and independence.

3. Reinforcing home social services to guarantee early supported discharge and prevent hospitalization

During Covid-19 pandemic, scarcity of home-based health and social services has been one of the causes of strong pressure on hospitals. Social services, in particular, have showed their limits also in ensuring the basic social services they were concerned.

In fact, even if social services system is less developed than the health services, the two systems show a strong level of complementarity, especially in the so-called socio-health area. This “grey” area has been identified in terms of typology of services (such as health services with a social relevance, social services with health relevance, etc.) as well as in terms of funds allocation. So, during Covid-19 pandemic, the weakness of the two services systems, together with the socio-health services, has represented an important bottleneck in providing people with local and home services.

In this context, this line of activity is aimed at defining professional teams and at providing them with specific training, in order to improve the spread of social services in the whole territory, so as to foster the deinstitutionalization and the possibility to come back home after the discharge from hospitals, thanks to the availability of home services and facilities.

4. Strengthening social services and preventing burn out among social workers

This line of activity is transversal and provides the support necessary for the realization of the other three lines. In fact, the role of social services personnel, the quality of services required and the high number of difficult situations to deal with can cause high levels of stress and operators burn out.

In order to ensure the maintenance of a high-quality level of services and a strong efficacy of social services, it appears necessary to implement activities aimed at supporting social operators and reinforcing their professionalism and sharing competences, mainly by introducing instruments for sharing competences and supervising operators work.

The total cost of investment amounts to 500 €/mln.

Stakeholder involvement

Voluntary associations, social workers, educators, local governments, social security institutions, public housing entities, home care providers and educators, local governments and authorities.

Target Population

Direct beneficiaries are families and children, elderly people, social workers.

Timeline

The implementation period is estimated to be from 2021 to 2026.

State aid compliance

State aid rules are not applicable to the investment.

Investment 2 - Autonomy patterns for people with disabilities

Challenges

Addressing the need for a coherent and comprehensive national plan aimed at improving social cohesion and inclusion and inter-generational solidarity. Tackling social inequalities and ensuring decent living conditions by empowering vulnerable people and people with disabilities by providing economic support, social care services and social inclusion initiatives.

Objectives

The aim of the project is to accelerate the process of deinstitutionalization by providing community and home-based social and health services in order to improve the autonomy of people with disabilities. The project, in fact, is focused on improving their autonomy by removing barriers in accessing housing and job opportunities, also considering new possibilities offered by information technology. Increasing home-based care services for people with disabilities and aligning social services to new standards of home care is fundamental to support families and facilitate home staying.

This project is coherent with the pathway marked by the Ministry of Labour and Social policies with the approval of guidelines for improving autonomy and social inclusion of people with disabilities and with the realization of “Progetti di vita indipendente” and “Progetti per il dopo di noi (L. 112/2016)”, funded by the Fondo nazionale per la non autosufficienza and the Fondo per l’assistenza alle persone con disabilità grave prive di sostegno familiare.

Moreover, the project is fully coherent with the UN Convention on the rights of people with disabilities (see in particular article 19), with the European Charter of fundamental rights of the EU (see for example art. 26) as well as with the European pillar of social rights (in particular principle 17) and the recent European Strategy for the Rights of Persons with Disabilities 2021-2030. It is centred on allowing persons with disabilities attaining the maximum autonomy for what is concerned with both living and work arrangements. On this regard, ICT offers very powerful tools allowing the attaining of autonomy at a level which was unthinkable just a few years ago. However, ICT solutions are not standardised, as conditions of the persons with disabilities can be very different and must be assessed within the framework of a personalised project. On this respect it is not a matter of allowing people to use standardised ICT tools by default but allowing each person to benefit from an ICT solution tailored on the individual needs. As a

matter of fact the project extends at the national level experimental projects directed to persons with disabilities that are already undertaken but on a much smaller scale under the labels “independent living” and “after us”, the latter referring to the need to care for people with disabilities whose parents are not anymore in condition to offer them help and care.

Implementation

The project will be implemented by municipalities (responsible for social services), single or in association, coordinated by the Ministry of Labour and Social Policies and in collaboration with Regions, in order to improve the capacity and the effectiveness of personalized social care services, focused on specific needs of disabled and vulnerable people and their families. Thus, investments will be focused on increasing home care services and supporting people with disabilities to allow them to reach a higher quality of life by renovating home spaces based on their specific needs, developing domestic solutions and finding new areas by earmarking real estate properties confiscated to criminal organizations. To ensure the economic independence of disabled and vulnerable people and the reduction of barriers in accessing the job markets through smart-working solutions, the project will provide them with ICT devices and support to develop digital skills.

Services offered to people with disabilities consist in three lines of activities:

- definition and launch of customised projects to support people with disabilities;
- renovation and adaptation of home spaces, with new technology solutions and remote assistance;
- development of digital competences to allow people with disabilities to tele-work.

The total cost of the investment amounts to 500 €/mln. The investment amounts to about 70% of the unitary cost of 0.71 million. This entails: physical adaptation of apartments to the specific needs of the persons with disabilities, as assessed by the individualized project (about 45% of the investment’s costs); assessment of the specific ICT needs needed for independent life and work and acquisition of the necessary devices (about 30% of the investment’s costs); training on the use of such devices and work related training activities (about 25% of the investment’s costs).

Stakeholder involvement

Social security institutions, public housing entities, social assistants, home care providers and educators, local governments and authorities

Target Population

Direct beneficiaries are people with disabilities.

Timeline

The implementation period is estimated to be from 2021 to 2026.

State aid compliance

State aid rules are not applicable to the investment.

Investment 3 - Housing First and Post Stations

Challenges

Italy counts an important number of people living in conditions of extreme marginalization. One of the main problems concerns homeless people (mainly single people and sometimes families) who do not have the chance to access public and social houses and, consequently, do not have the possibility to become independent. Beyond the need to find a home, these people should have the opportunity to receive social assistance and health services.

Objectives

The aim of the project is to help homeless people access a temporary accommodation, in apartments for small groups or families, and refer to a structure for these communities, which offers comprehensive services aimed at promoting autonomy and social integration.

Implementation

Financial resources will be allocated to the municipalities (responsible for social services), single or in association (social districts), that will invest in helping homeless people and families to have temporary accommodation and other essential services.

Concerning Housing first, municipalities will make flats available for single individuals, small groups or families up to 24 months. In fact, municipalities will provide people with temporary accommodations, preferably houses and flats, that are already State property through a program of buildings' refurbishment and renovation. In addition to this, customised projects will be activated for each single person/family in order to implement personal growth development programmes and to help them achieve a higher degree of autonomy, also by providing them with training and with other services aimed at improving their employability level.

Moreover, in larger urban areas and metropolitan cities a Post Station System will be implemented, i.e. a service and inclusion centre for homeless people. Such centres will offer, besides a limited night reception, important amenities such as health services, catering, post distribution, cultural mediation, counselling, job orientation, legal consulting, goods distribution among others. Voluntary associations, specialized in social services, will be involved in the Post Stations activities, collaborating with public administrations and contributing with their experience and competences. In order to reach a wider social inclusion, the project will involve actions focused on job placement, with the support of employment centres. These actions will consider job agreements foreseen in the context of citizens' minimum income and will offer the opportunity to participate to job experiences or internships.

The total cost of the investment amounts to 450 €/mln:

- 177.5 €/mln for Housing first projects;
- 272.5 €/mln for Post Stations projects.

Stakeholder involvement

Third sector organizations and/or private bodies operating within the social policies sector.

Target Population

Homeless people with no chances to access public and social houses and to find a job, families or people in poverty and extremely marginalised.

Timeline

The implementation period is estimated to be from 2021 to 2026.

State aid compliance

State aid rules are not applicable to the investment.

Urban regeneration and social housing

Investment 4 - Investments in projects of urban regeneration, aimed at reducing situations of marginalization and social degradation

Challenges

Marginalization and social degradation are spread in the Italian territory, with a major concentration on urban and metropolitan areas, and impact on the territorial gap between Northern/Central and Southern Italy. These phenomena can be measured by using the ISTAT indicator “Index of social and material vulnerability”, aimed at measuring the vulnerability degree of a territory, taking into consideration social and housing conditions of its citizens. Reducing them by investing in urban regeneration is essential both for increasing citizens’ quality of life, with special reference to those living in marginalized and deprived areas, and for reducing the social and economic gap between the North and the South of Italy.

Therefore, the investment aims for targeted interventions, focused on municipalities.

The phenomena of marginalization and social degradation have become critical also due to a lack of targeted public investment in the last decade. Indeed, ISTAT data reveals that investments by local authorities had decreased by approximately 40% in the period 2008-2017 (- € 6.5 billion, corresponding to -55% for metropolitan cities and province and to -37% for municipalities). From the year 2016 onwards, constant monitoring of the progress of investments at the territorial level was put in place, targeting both national accounting trends and the calls for tenders for public works.

The critical issues that emerged during the years 2016 and 2017, also through direct comparisons with local authorities, can be summarized as follows:

- central-southern municipalities: real decline resulting from the conclusion, in 2015, of the works funded by EU resources. The contraction is confirmed until the new community programming starts “up and running”. The contacted central-southern municipalities show severe budgetary rigidity (limited administration surplus and non-performing loans) and, consequently, lack of resources;
- uncertainty in public finance rules: the Internal Stability Pact (PSI), introduced by Article 28 of Law no. 448 of 1998 (Finance Law for 1999) as an institution aimed at regulating the contribution of the regions and local authorities to the policy of fiscal consolidation, was characterized by great changeability, both as regards the territory of reference and for as regards the set of rules established.

Objectives

The project is aimed at providing municipalities with grants for investments in urban regeneration, in order to reduce situations of marginalization and social degradation as well as to improve the quality of urban decorum as well as of social and environmental context, in full respect of the “do not harm principle”.

This objective can be achieved through two tools:

- Stability of public finance rules;
- Direct contributions to investments.

With regard to the former element, starting from the 2019 financial year, the system of public finance constraints for local authorities has been simplified by providing two distinct objectives: a) the balanced budget governed by Article 9 of Law no. 243 of 2012 constitutes an objective of the sector of territorial entities at regional and national level; b) the non-negative result for the year introduced by Article 1, paragraphs 820 and 821, of Law no. 145 of 2018 .

With reference to the latter element, the aim is to add to the direct contributions to small works referred to in paragraph 29 of article 1 of law no. 160 of 2019 and to the contributions to finance medium-sized public works, always with a view to favouring a rapid recovery of the economy while respecting the territory, direct contributions to medium-large municipalities aimed at interventions for urban regeneration and reduction of marginalization and social decay phenomena, as well as at the improvement of the quality of the urban decor and the social and environmental fabric.

The objective of this Investment - aimed at medium-large municipalities - is urban regeneration, expressed in the following interventions:

- maintenance for the reuse and re-functionalization of public areas and existing public building structures for purposes of public interest, including the demolition of abusive works carried out by private individuals in the absence or total discrepancy from the building permit and the arrangement of the relevant areas;
- improvement of the quality of the urban decorum and of the social and environmental fabric, also through building renovation of public buildings, with particular reference to the development of social and cultural, educational and didactic services, or to the promotion of cultural and sporting activities;
- sustainable mobility.

Implementation

This initiative is in line with article 42 and 43 of Budget Law n. 160/2019. Secondary implementing measures are being enacted by a Decree of the President of the Council of Ministries, that establishes criteria and rules for projects' selection. This Decree, for which a political agreement has already been reached, sets the following framework:

1. municipalities can submit their projects in order to apply for grants, respecting defined criteria and rules;
2. the Minister of Internal Affairs, together with the Minister for Economy and Finance and the Minister of Infrastructures and Transports, will identify the amount of grant for each project. If the total amount of required grants exceeds the amount of available resources, a selection will be realized by giving priority to projects submitted by municipalities with a higher index of social and material vulnerability

The beneficiaries of the grant - which must confirm their interest in receiving the grant through a specific application - are the municipalities with a population greater than 15,000 inhabitants (and which are not the provincial capitals), the provincial capital municipalities and the metropolitan city headquarters. The maximum amounts potentially attributable, on the basis of the resident population, are determined as follows:

- A. 5,000,000 euros for municipalities with populations ranging from 15,000 to 49,999 inhabitants;
- B. 10,000,000 euros for municipalities with a population of between 50,000 and 100,000 inhabitants;
- C. 20,000,000 euros for municipalities with a population greater than or equal to 100,001 inhabitants and for municipalities that are provincial capitals or metropolitan cities.

Grants are granted for individual public works or coordinated sets of public interventions also included in the list of unfinished works, aimed at reducing the phenomena of marginalization, social degradation and improving the quality of urban decor and the social and environmental fabric through interventions of:

1. maintenance for the reuse and re-functionalization of public areas and existing public building structures for purposes of public interest, including the demolition of abusive works carried out by private individuals in the absence or total discrepancy from the building permit and the arrangement of the relevant areas;
2. improvement of the quality of the urban decorum and of the social and environmental fabric, also through building renovation of public buildings, with particular reference to the development of social and cultural, educational and didactic services, or to the promotion of cultural and sporting activities;
3. sustainable mobility. As described above, projects' areas are oriented to reuse and restructuring of existing buildings, without foreseeing new constructions and fully respecting the "do not harm principle".

The financing of the interventions can be finalized, as well as for the construction of the work, also for the related executive design costs if they are included in the economic framework of the work to be carried out.

If the amount of requests received exceeds the amount of available resources, the attribution is carried out, taking into account the share referring to the executive design and the works, in favor of the municipalities that have a higher value of the social and material vulnerability index (IVSM).

The use of the IVSM for the ranking aims to give priority to urban regeneration works falling within the most vulnerable areas (especially those in the southern regions) and most in need of the interventions subject to funding. The allocation of contributions on the basis of the ranking, within the limit of the resources available in the budget, is done by ensuring, in any case, compliance with Article 7-bis, paragraph 2, of Decree Law no. 243, concerning the differential allocation of additional resources to the regions indicated therein.

There is also the obligation - under penalty of revocation of contributions - to entrust the work within the terms indicated below in the award decree:

- for works whose cost is between € 750,001 and € 2,500,000, the works must be awarded within fifteen months;
- for works whose cost exceeds € 2,500,000, the works must be awarded within twenty months.

Lastly, the contributions assigned to the beneficiary municipalities are disbursed for:

- 30 percent of the loan, subject to verification of the assignment of the works through the monitoring system;
- 60 percent on the basis of the work progress or expenses accrued by the entity, as resulting from the monitoring system;
- the remaining 10 percent upon transmission of the test certificate, or the certificate of regular execution issued for the works by the construction manager, pursuant to article 102 of the code referred to in legislative decree no. 50.

The monitoring of the works is carried out through the “Monitoring of public works” system of the “Public administrations database-BDAP” referred to in Legislative Decree 29 December 2011, n. 229.

The total cost of investment amounts to 3.300 €/mln.

Stakeholder involvement

State-Regions conference

Target Population

Direct beneficiaries are municipalities. Indirect beneficiaries are citizens living in municipalities beneficiaries of the grants.

Timeline

The implementation period is estimated to be from 2021 to 2026.

State aid compliance

State aid rules are not applicable to the investment.

Investment 5 - Urban Integrated Plans

Challenges

The intervention foresees participatory urban planning, with the aim of regenerating, revitalizing and enhancing large degraded urban areas with particular attention to the creation of new services for the person and the requalification of accessibility and inter-modal infrastructures, allowing the transformation of vulnerable territories into smart and sustainable cities.

The beneficiaries are the Metropolitan Cities, which have replaced the corresponding provinces as per Law n.56/2014; they are Roma Capitale, Turin, Milan, Venice, Genoa, Bologna, Florence, Bari, Naples, Reggio Calabria, Cagliari, Catania, Messina, Palermo. The interventions may include co-design with the third sector pursuant to art. 55 Legislative Decree No. 117 of 3 July 2017 (Third Sector Code, pursuant to Article 1, paragraph 2, letter b) of Law No. 106 of 6 June 2016 and the participation of private investments in the amount of up to 25%.

Objectives

The priority is to allocate resources promptly between metropolitan areas while ensuring a distribution of resources that takes into account the territories most in need of urban regeneration interventions. To this purpose, an allocation among metropolitan areas is assumed, calculated on the basis of the square root weight of the resident population of each metropolitan city, multiplied by the square of the median SMVI (Social and Material Vulnerability Index). This ensures a fairer distribution among the most vulnerable areas. Moreover, the distribution ensures that resources are concentrated more in the areas of the South of the country most in need of incisive urban regeneration interventions.

Implementation

The project is split in two interventions:

- Intervention 1: Urban integrated plans – general projects;
- Intervention 2: Urban integrated plans - overcoming illegal settlements to fight labour exploitation in agriculture.

With regard to Intervention 1, the metropolitan cities will then, in the next 90 days, identify the projects that can be financed within their urban area. The financed projects may involve the following interventions:

- a) maintenance for the reuse and re-operation of public areas and existing public building structures for purposes of public interest, including the demolition of abusive works carried out by individuals in the absence or total deformity of the building permit and the arrangement of the relevant areas;
- b) improvement of the quality of urban décor and the social and environmental fabric, including through refurbishment of public buildings, with particular reference to the development of social and cultural facilities, education and learning, or the promotion of cultural and sporting activities and improvement of urban areas to ensure better safety and security;
- c) improvement of the environmental quality and digital profile of the urban areas through the support to digital technologies and to technologies with lower CO2 emissions, and support to ecological transition (energy efficiency) in urban areas, through refurbishment of public and private buildings, renewal, regeneration and valorisation of under-used or unused urban areas (brownfield and greenfield), improvement of green, sustainable and smart local mobility systems.

Projects to be financed must consider the energy performance of buildings to be reused and re-functionalised or renovated and, by restructuring urban areas, must pay attention to the balance between built-up areas and green areas.

Furthermore, the financed projects must ensure the improvement of the autonomy of people with disabilities as well as the promotion of social and health services at local level, by removing obstacles to access to housing and job opportunities, also taking into account the new possibilities offered by information technologies and home automation.

Moreover, the projects that can be financed will have to affect urban areas whose SMVI is higher than 99% or, alternatively, higher than the median of the territorial area.

Within the same 90 days, the funded projects, complete with the implementing entity and the CUP, must be communicated.

Projects may include:

- ✓ the possibility of participation of private promoters and individuals up to 30%;

- ✓ design costs (final and executive);
- ✓ the presence of public services start-ups in the project proposal;
- ✓ the co-design with the third sector pursuant to art. 55 Legislative Decree No. 117 of 3 July 2017.

The Intervention 2 is aimed at providing decent housing solutions for workers in the agricultural sector. The birth and development of irregular settlements are fertile ground for the infiltration of criminal groups, a phenomenon that contributes to making the living conditions of workers in these sectors even more precarious. To this end, a “local action Plan” will be provided by the relevant administrations for each illegal settlement identified.

The intervention is linked to the Reform “National plan tackling undeclared work”, foreseen in the Component 1 of Mission 5. Moreover, the intervention, in compliance with the recommendations of the European Commission, also includes the increase in the number of labor inspectors and the recent amnesty for irregular agricultural and domestic workers.

The total cost of investment amounts to 2,920 €/mln:

- 2,720 €/mln for Intervention 1 - Urban integrated plans – general projects, among which 10% for the EIB Thematic Fund for Urban Regeneration (please see below for details);
- 0,20 €/mln for Intervention 2 - Urban integrated plans – overcoming illegal settlements to fight labour exploitation in agriculture.

EIB Thematic Fund for Urban Regeneration (under the EIB Fund of Funds)

In order to stimulate and attract private financing into urban regeneration projects, to leverage and multiply total investment mobilized under this objective, the creation of a dedicated Thematic Fund targeting the support of private intervention in the urban regeneration is envisaged.

The Thematic Fund for Urban Regeneration is a compartment of the EIB Fund of Funds (FoF) with focus on urban regeneration and designed as a dedicated sectorial Fund, aimed at providing financial support for projects and investments promoted by private promoters and individuals in the field of urban regeneration as part of the broader Integrated Urban Plans, in particular aimed at supporting the overall efforts toward the climate and digital transition of urban areas.

Marginalization and social degradation are spread in the Italian territory, with a major concentration on urban and metropolitan areas, and impact on the territorial gap between Northern/Central and Southern Italy. These phenomena can be measured by using the ISTAT indicator “Index of social and material vulnerability”, aimed at measuring the vulnerability degree of a territory, taking into consideration social and housing conditions of its citizens. Reducing them by investing in urban regeneration is essential both for increasing citizens’ quality of life, with special reference to those living in marginalized and deprived areas, and for reducing social and economic gap between the North and the South of Italy.

The EIB and MEF acknowledge the importance of urban regeneration in the context of the Recovery Plan and have decided to cooperate and set up a Urban Regeneration Thematic Fund within the RRF Italy FoF, aimed at providing the necessary funding to public and private promoters of urban regeneration projects that are encountering economic difficulties following the Covid-19 pandemic crisis and which are committed to a shift towards a more inclusive economic development.

The main challenge of this Thematic Fund is to support investments targeting sustainable urban regeneration and development, helping in particular private promoters to overcome the systemic scarcity of financing for these type of long term investments and the weaknesses of the sector (energy, digital and safety inadequacy or buildings and structures, energy efficiency, technological and digital backwardness, lack of coordination and between public and private interventions, limited availability of financing for longer term, usually lower returns projects) and to increase at the same time the usability and attractiveness through the increase of eco-sustainable interventions for a more inclusive fruition of the urban areas.

On this regard, the Urban Regeneration Thematic Fund aims to:

- take advantage of the revolving nature of the financial instrument established through the Fund of Funds. The use of the Thematic Fund enables to create a tool that will “re-constitute” the financial resources dedicated to urban regeneration projects. Once returned, these resources will represent an independent supply of funding, additional to other potential resources made available in future planning periods for the same objectives;
- promote the development and implementation of long-term urban investment. Aware of the importance of developing and supporting urban projects achieving economic and financial returns along with those with purely socio-environmental gains, the MEF seeks to encourage Local Administrations and Private Promoters to plan investments assuring long-term economic, social and environmental benefits, and simultaneously capable to be financially self-sustainable;
- develop the capacity of public entities to plan and promote the use of participative design and planning methodologies based on a continuous public-private dialogue, taking into account the private parties’ interest in being awarded grants and/or obtaining the minimum return to allow the mobilization of private funds;
- attract private financing into urban regeneration projects. By creating a financial instrument dedicated to finance public and/or private urban regeneration projects, including environmentally sustainable buildings and facilitating access to credit;
- develop new and alternative lending channels, as well as innovative models for urban regeneration projects, combining resources from the RRF and other private sector’s co-financiers;
- investments in urban regeneration and in the energy performance of buildings, contributing as well to Green Transition objectives by promoting a sustainable urban regeneration.
- ensure the green transition and digital transformation in the concerned sectors.

By creating a financial instrument dedicated to finance public and/or private urban regeneration projects, including environmentally sustainable buildings and initiatives connected with social housing, and facilitating access to credit, the MEF seeks to encourage Local Administrations and Private Promoters to plan investments assuring long-term economic, social and environmental benefits, and simultaneously capable to be financially self-sustainable.

The Thematic Fund will support public sector entities/local authorities, private promoters and public and private partnerships. Particular focus will be given to those promoters that are (i) of particular relevance in the context of the Italian PNRR, such as those contributing to green transition, digitalization and/or socio-economic development in the country, and (ii) particularly hurt by the crisis following the COVID-19 pandemic. Eligibility criteria will be agreed with the selected Financial Intermediaries and will (i) be compliant with the guidelines set-out in the in the Recovery and Resilience Facility regulatory framework, and any other applicable EU and National Law, including State Aid and (ii) include economic, social and technical viability parameters, including on the green and digital components.

Examples of project (non exhaustive), which will be financed under the Thematic Fund may include: improvement in energy management and energy efficiency; increase of the use of renewable energy; reconversion of disused buildings, including residential ones, for new sustainable uses; reconversion of industrial and degraded areas; improvement of green and sustainable mobility; transition to electric, smart and sustainable urban transport, etc..

Projects financed under the “Urban Regeneration” Thematic Fund will comply with the following main eligibility criteria (non exhaustive): offer an acceptable return on investment and/or ensure the repayment of the support provided; compliant with the criteria and objective specified within the PNRR; final recipients and/or projects located or operate throughout the country, although a minimum amount could be allocated to activities located in the southern regions, in line with the cross-cutting priority of regional cohesion and development of the Mezzogiorno.

The specific eligibility criteria will be translated into obligations and become part of the legal documentation to be entered between MEF and the EIB and between the EIB and the intermediaries, including specific dedicated covenants for the green and digital components of the investments, which will also be outlined in the public documentation needed for the selection of the intermediaries.

The MEF intends to contribute indicatively 10% of the resources available of the European Recovery and Resilience Facility (“RRF”) budget dedicated to Integrated Urban Plans to this Thematic Fund (the “RRF contribution”). This amount is deemed appropriate to produce economies of scale and to achieve a significant leverage effect (estimated between 2x and 3x times the RRF funds contributed to the initiative). The amount allocated to the Thematic Fund may be further increased, subject to MEF agreement (including with resources from different Programmes), based on the actual market demand and/or performance of the Thematic Fund.

The scope of the financial instrument will be to provide financing in the form of low-interest loans and/or quasi-equity support to entities operating in the sector. The financial instrument will provide for the possibility of long-term subsidized financing of a diversified amount according to the characteristics and type of applicant entities. The amount of the financial support provided shall be commensurate with the size and characteristics of the entity requesting the financing. The aid scheme shall be determined by the amount of the loan and the subsidized interest rate of repayment.

The financial resources available to the Thematic Fund shall be entrusted directly by the EIB or by specialised intermediaries, selected by the EIB, which will in turn use them to finance the final projects/beneficiaries.

At the end of the investment period in line with the exit strategy of the Funding Agreement, the financial resources invested under the FoF will return to the MEF (revolving use of funds) and could be used to promote new initiatives in the same thematic areas.

According to the governance model usually used for Financial Instruments of this type managed by the EIB, the key decisions on the Fund’s investment strategy and the investments of the RRF Italy into the present Thematic Fund are taken by the Investment Board (potentially accompanied by specific thematic committees), composed of members appointed by the Fund’s competent authorities for the sectors concerned.

The EIB may, in addition, provide financial support from its own resources for the Thematic Fund’s final recipients/projects. The form and amount are subject to the EIB’s internal rules, policies and procedures.

Such potential financial support may include financing extended to any other third party eligible to obtaining financing from the EIB with a view to co-financing the eligible initiatives.

In cases where the EIB will provide direct financing to projects/investment programmes, these will comply with the EIB Group eligibility criteria, policy goals and guidelines, including the Climate Bank Roadmap 2021-2025, comprising the EIB's approach to sustainable finance and the EU Taxonomy, and the implementation of the Paris Alignment Framework.

Target Population

Citizenship.

Timeline

The implementation period is estimated by the first semester of 2026.

State aid compliance

Subject to notification, the EIB Thematic Fund would rely on the Temporary Framework until it expires.

Further to its expiration or impossibility to use the Temporary Framework, the Thematic Fund will operate at market conditions, according to the market-conform methodologies described in the Commission Notice on the Notion of Aid.

It will also be assessed, to the extent applicable, the recourse to GBER (e.g art. 39 with respect to the Thematic Fund support to energy efficiency projects related to the green transition, etc).

Investment 6 - Innovative Plan for Housing Quality

Challenges

In the “Council Recommendation on Italy’s 2020 National Reform Program and delivering a Council opinion on Italy’s 2020 stability program” (COM (2020) 512 final of 20.05.2020), point (9) of the introduction it is indicated that “It is likely that the socio-economic consequences of the COVID-19 pandemic are unevenly distributed across regions and the Italian territories ...”. In this perspective, the National Innovation Programme for Quality of Life is also promoted with the aim of “contributing to the reduction of housing problems with particular reference to the peripheries and to encourage the exchange between the different regional realities”. Furthermore, the Plan adopts a sustainability and densification approach, according to the “no land consumption” concept and according to principles and guidelines adopted by the European Union, concerning the urban model of the smart, inclusive and sustainable city (Smart City).

Objectives

The main aim of the project is to build new public housing accommodations, contributing to the reduction of housing and settlement difficulties, with particular reference to existing public heritage, and the redevelopment of degraded areas, mainly focusing on green innovation and sustainability.

Mainly, the Plan aims to:

- redevelop, reorganize and increase the assets intended for public housing;

- re-functionalize areas, spaces and public and private properties also through the regeneration of the urban and socio-economic fabric;
- improve the accessibility and safety of urban areas and the provision of services and urban-local infrastructures;
- regenerate areas and spaces already built, increasing environmental quality and improving climate resilience to climate change also by means of operations with impacts on urban densification;
- identify and use innovative management and inclusion models and tools, social and urban welfare, as well as participatory processes.

Implementation

The project is split in two different interventions:

1. Intervention 1 - Redevelopment and increase of social housing, refurbishment and regeneration of the urban society, improvement of accessibility and urban security, mitigation of housing lack and increase in environmental quality, use of innovative models and tools for management, inclusion and urban welfare;
2. Intervention 2 - high-performance pilot projects for the regeneration of particularly degraded and service-deficient urban areas.

According to the article 1, paragraph 438 letter a) Law n. 160/2019 and to article 3, paragraph 1 of the Decree n. 395 of 16 September 2020 on “Procedures for submitting proposals, evaluation criteria and methods of disbursement of funding for the implementation of the national innovative program for the quality of living” of the Ministry for Infrastructures and Transports, Regions, metropolitan cities and cities can submit applications for funding. Each of them can present up to a maximum of three funding requests. The procedure for applying, as described in the Decree n. 15870 of 17 November 2020, is divided into two phases:

- **Phase 1:** a preliminary overall proposal will be sent indicating the strategy as a whole and the set of interventions aimed at achieving the prescribed purposes. Funding requests are formulated by filling in a specific online application scheme containing the significant data for the assessment of proposals. The High Commission for evaluation and assignment of the ranking of the proposals eligible for funding is established. By decree of the Ministry of Infrastructure and Transport, within sixty (60) days from the completion of the scrutiny of the High Commission, the Program is approved with the identification of the proposals eligible for funding. The proposals which are considered having a high strategic impact on the national territory, defined as “Pilot”, are admitted to financing.
- **Phase 2:** a final overall proposal, together with a specific online form filled in, will be transmitted by no later than two hundred and forty (240) days from the publication of the above-mentioned decree. The documentation transmitted is examined by the High Commission within ninety (90) days and if the evaluation is positive expresses its authorization to finance to the Ministry. With decree of the Ministry of Infrastructure and Transport within sixty (60) days from the authorisation to finance, the list of proposals definitively admitted to funding is approved. The signing of the Convention or Program Agreement for the implementation of the proposals definitively accepted for funding will take place within sixty (60) days from the approval of the ranking.

The selection procedure foresees that at least 34% of the total amount will be allocated to interventions realized in Southern Regions (see art. 5.3 of the decree n. 395 of 16 September 2020), that is the Italian macro region including South and islands.

The total cost of the investment amounts to 2,800 €/mln:

- 1,400 €/mln for Intervention 1) Redevelopment and increase of public housing, refurbishment and regeneration of the urban society, improvement of accessibility and urban security, mitigation of housing lack and increase in environmental quality, use of innovative models and tools for management, inclusion and urban welfare;
- 1,400 €/mln for Intervention 2) Interventions with a high strategic impact on the national territory.

Impediments

The allocation of funds is developed according to the time frame defined by the D.I. n. 365 of 16 September 2020 and in accordance with current legislation, so as to avoid delays or disputes in the assignment. However, since the public entities subject to funding are directly responsible for the implementation of the interventions, compliance with the deadlines (starting from the assignment of the works to the control and tracking of the assignment times and the correct implementation of the procedures) could give rise to critical issues. The Program also provides for the participation of private entities that could be potential elements of additional risk.

Target Population

Citizenship.

Timeline

The implementation period is estimated to be from 2021 to 2026.

State aid compliance

State aid rules are not applicable to the investment.

Sport and social inclusion

Investment 7 - Sport and social inclusion

Main challenges

Covid-19 pandemic has deeply impacted on sport events and competitions as well as on non-competitive sports. In fact, the whole sector is suffering from economic losses. Local communities, especially those most deprived, might lose urban spaces (both public and private ones) where people can play sport and develop social relations, with the risk of an increase of social exclusion.

Therefore, sport can be considered as a strategic tool against poor living conditions such as the lack of job security and the ghettoisation of certain suburbs and deprived areas, also taking into account that participation in sport is positively related to self-esteem, self-regulation skills, and social inclusion.

Objectives

The project is aimed at regenerating urban areas focusing on sport facilities, in order to promote social inclusion and integration, especially in the most deprived areas of Italy. Sport and culture play an important social role for inclusion, cohesion and well-being and are a strong tool for participation and social integration. The creation of sports facilities and the regeneration and requalification of sports structures and urban parks can enhance the socialization of young people and tackle social marginalization. In this view, Sport and Social Inclusion project strives toward the achievement of a more stimulating and supportive environment for the sports elevating the most deprived communities.

In this context the national multi-year plan of interventions “Sport e Periferie” (Sport and Suburbs) which started in 2015 (Fund established by article 15, of the decree law 25 November 2015, n. 185 converted by law 22 January 2016, n. 9 and still ongoing can be placed within the reform and investment strategy conceived by the Italian Government more than five years ago.

The 2018 budget law (law 27 December 2017, n. 205) adopted “Sport and Periferie” as a structural Fund, allowing the expenditure of € 10 million per year, starting from 2018, to be assigned to the Office for Sport at the Presidency of the Council of Ministers. There was an urgent need to develop social and cultural policies in order to achieve common goals: to reduce marginalization and social degradation, as well as to improve the quality and redevelopment of the social fabric, also through the promotion of sports activities.

All the measures and interventions of this fund have been designed, implemented and delivered using methodological tools to assess its sustainability. The selection of the projects is actually based on a predefined set of scoring criteria. The evaluation of the applications is carried out by a special Commission which is in charge of delivering the final ranking of the subjects admitted to the funding. Since 2015, more than 350 projects (for example in 2019 were admitted to financing 245 projects for an amount € 72,055,094.00) have been selected and more than 100 have been completed.

In accordance and continuity with the current reform and investment activities initiated by the Italian Government, the *Sport and social inclusion* project intends to improve living conditions for the most vulnerable communities, including migrants and marginalized areas in an inclusive and conflict-sensitive manner by enhancing access to sport, aiming at the inclusion of youth to prevent marginalisation and deviation to crime and organised crime.

By activating urban requalification mechanisms and renewing sport facilities, it is possible to improve culture and territorial regeneration, with positive impacts on economic and social conditions of urban/local communities and on territorial resilience.

In general, the main objectives of the project are:

- i. delivering ambitious government investments and tangible measures (Call for Proposal) aimed at regenerating urban areas focusing on sport facilities, which will be applied immediately or in the short term;
- ii. defining a socio-economic regeneration process, in terms of valorisation of urban relations, social inclusion and better links between open and closed spaces with a special attention to spaces for sport activities;
- iii. enforcing territorial resilience by focusing on the reuse of already existing buildings and urban spaces;
- iv. reducing socio-economic impact of the Covid-19 pandemic;
- v. promoting national and European policies on green and digital transition (project implementation of awarded proposal in line with the guiding principle of with the European Union Action Plan for the circular economy (EU's Taxonomy Regulation) – eco-design approach - the management of a construction project in a sustainable way - use of circular building materials - energy efficient buildings - safeguarding green open spaces, areas for social aggregation and interaction, active and passive sport areas, and cultural spaces – etc.).

Implementation

Sport and social inclusion project implementation is structured in three phases:

- **Phase 1:** This phase includes all the necessary preliminary analysis and actions in order to better prepare the public procurement, such as the baseline identification and analysis; the creation of dedicated tools; the identification of project partners (e.g. sport federations, other associations and entities with competences in sport) and experts (these partner(s) will play a critical role in supporting and contributing to the implementation of the project activities) and their engagement; the setting-up of facilities aimed at supporting the beneficiaries in developing their sustainable projects.

At the end of the phase 1, a public administrative procedure will be implemented for the selection of territorial projects (call for proposals).

- **Phase 2:** starting phase and implementation of the selected projects. For most expensive projects, it will be possible to use the project financing instrument, and each project can receive from 80% to 100% of the total cost of the project, requiring a possible private contribution.
- **Phase 3:** monitoring and verification of the projects' implementation level and promotion of best practice.

In line with strategic objectives of the project by and large the Sport and Social Inclusion project includes the following **interventions aimed at:**

1. *construction and regeneration of sports facilities*, located in the disadvantaged areas of the country and in the urban suburbs, also including rural areas (for examples: indoor and outdoor sport facilities such as courts for various ballgames, shooting ranges, tennis courts, gymnasiums, nature trails, skiing trails and orienteering routes, ect);

2. *dissemination of sports equipment* in order to remove and/or mitigate existing economic and social imbalances (also including the application of technology to sport);
3. *completion and adaptation of existing sports facilities* (for examples: functional recovery, restructuring, extraordinary maintenance, removal of architectural barriers, energy efficiency).

This list is not conclusive and it could be modified and/or integrated in PHASE 1.

Actually, this proposal should be understood as appropriate instrument aimed at ensuring the regeneration of urban areas through a focus on sport facilities, in order to promote social inclusion and integration, especially in the most deprived areas of Italy.

Concerning the call for proposals, the eligibility criteria will be differentiated in mandatory and additional requirements:

- **Mandatory requirements:**

The Sport and social inclusion project takes advantage from reliable and profitable know-how of “Sport e Periferie” Fund (national ongoing investment program) for the development of criteria and indicators.

In this view, the computation of the composite vulnerability index (material and social vulnerability by the Italian National Institute of Statistics - ISTAT) and environmental sustainability, in terms of energy efficiency through the use of appropriate technology and the use of renewable sources/environmentally friendly materials (criteria currently included in the call for proposal of Sport e Periferie” Fund (national ongoing investment program) will be taken into account and eventually improved.

Proposals need to include an analysis of relevant gender and inclusion issues and incorporate relevant activities in their strategy.

- **Additional requirements:**

While all applications meeting the above mandatory requirement will be considered, applications will receive additional points if the proposals meet the additional requirements, not yet individuated (these criteria will be selected during the phase 1).

Proposals may come from Local Authorities (Regions, Provinces, Cities, ect) sport associations, schools (schools have to make their sport infrastructures accessible to all citizens during school time), no profit organizations as well as oratories provided with sport infrastructure.

Eligible costs are those required for carrying out the project activities and are incurred by the applicants and their partners.

Costs should:

- Comply with the principles of sound financial management, such as value for money and cost effectiveness, in accordance with the Italian public procurement Code (Decreto legislativo 18 aprile 2016, n. 50) and Public contracts in the EU – rules;
- reflect market prices;

- be recorded in the applicants' accounts, be identifiable and verifiable and be backed up by original supporting documents.

The total cost of the investments amounts to 700 €/mln.

Target Population

Municipalities, sport federations, other associations and entities with competences in sport are direct beneficiaries of the financial contributions.

The citizens are the purpose of this project proposal, especially young and disadvantaged people living in deprived areas.

State aid compliance

The Sport and Social Inclusion project intends to respect the state aid rules in order to prevent distortions of competition that would lead to a loss of general welfare within the EU.

In this regard, the only access of beneficiaries to funds is allowed to public authorities such as Regions, Provinces, Cities, sport associations, schools (schools have to make accessible its sport infrastructures to all citizens during school time), no profit organizations as well as oratories provided with sport infrastructures (Eligible Applicants).

Timeline

The implementation period is estimated to be from 2021 to 2026.

4. Open strategic autonomy and security issues

N.A.

5. Cross-border and multi-country projects

N.A.

6. Green dimension of the component

The Regulation establishing a Recovery and Resilience Facility sets a binding target of at least 37% of the plan's total allocation to contribute to the green transition or to the challenges resulting from it.

Investments included in the Component, such as “Innovative Plan for Housing Quality”, and “Urban Integrated Plans”, which are aimed at improving social inclusion and reducing vulnerable people marginalisation, promote urban regeneration and renovation of buildings taking into consideration green aspects concerning renovation of green areas in cities or increasing existing buildings' energy efficiency, etc.. Other investments included in the Component do not have specific impacts on green transition, but they ensure the full respect of the “do not significant harm” principle.

In this context, the Component is coherent with policy objectives of the new structural funds programming period and with the Partnership Agreement 2021-2027, whose draft has been shared with European Commission for a first evaluation. The Component, in fact, can contribute to two specific objectives of Policy 2 “Greener Europe”, namely promotion of energy efficiency measures and transition to circular economy.

Investments included in this Component are also in line with provisions of the Integrated National and Climate Plan and, more specifically, with the dimension “Energy efficiency”. The Plan, in fact, clarifies that the significant potential for efficiency in the building sector may be better exploited through measures such as the energy renovation of buildings and neighbourhoods, together with the structural renovation, earthquake proofing, systems upgrading and refurbishment, also in line with the strategy on energy renovation of the building stock by 2050. The above-mentioned projects are aimed at promoting social inclusion by solving housing availability problems for vulnerable people, also taking into consideration buildings’ energy performance, as well as renovating urban areas paying attention to the balance between built and green areas.

Moreover, the Component can contribute to the Goals of the UN Agenda 2030 for Sustainable development, such as n. 11.3 “By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries” and n. 11.7 “By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities”, ensuring its compliance with the EU Green Deal and the National Strategy for Sustainable Development as well.

7. Digital dimension of the component

The Regulation establishing a Recovery and Resilience Facility sets a binding target of at least 20% of the plan’s total allocation to contribute to the digital transition or to the challenges resulting from it.

The Component is coherent with the EU and national policies in the field of digital transition, with reference to the investments “Autonomy patterns for people with disabilities” and “Urban Integrated Plans”, aimed at improving autonomy of people with disabilities, promoting community and home-based social and health services by removing barriers in accessing housing and job opportunities, also considering new possibilities offered by information technology and domotics.

The Component is therefore in line with the Communication “Shaping Europe’s digital future”, that describes EC key objectives for next 5 years and, more specifically, with the objective “Technology that works for people: Development, deployment and uptake of technology that makes a real difference to people’s daily lives. A strong and competitive economy that masters and shapes technology in a way that respects European values”.

Moreover, as highlighted by the EC Communication of 30th June 2020 “European Skills Agenda for sustainable competitiveness, social fairness and resilience”, Covid-19 pandemic has accelerated the process to digital transition: teleworking and distance learning spread among millions of people in whole Europe and relevant digital gaps have emerged. In this context, training and upskilling activities on digital competences are essential for people with disabilities and, more generally, vulnerable ones.

Impact on green and digital transition.

Table 2 on Green and Digital Impact

8. Do no significant harm

DNSH assessments attached.

9. Milestones, targets and timeline

Please see attached Table 1 on Milestones and targets

10. Financing and costs

Investment 1: Supporting vulnerable people and preventing institutionalization

- ***Intervention 1: Actions aimed to support parenting skills and to prevent vulnerability of families and children***

On the basis of the minimum amount per each social district, established in decrees adopted for allocating resources of the National Fund for social politics, it is estimated a unitary cost of € 70,500.00 per each social district per year. While PNRR will allow the financing of investment, related services will be financed through National fund thereafter. Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average, according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” which aim at the de-institutionalization and at guaranteeing the possibility to live an autonomous life for as long as possible.

- ***Intervention 2: Actions for an autonomous life and the deinstitutionalisation for elderly people***

On the basis of the minimum amount per each social district, established in decrees adopted for allocating resources of the National Fund for social politics, it is estimated a unitary cost of € 70,500.00 per each social district per year. While PNRR will allow the financing of investment, related services will be financed through National fund thereafter. Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average, according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” which aim at the de-institutionalization and at guaranteeing the possibility to live an autonomous life for as long as possible.

- ***Intervention 3: Reinforcing home social services to guarantee early supported discharge and prevent hospitalization***

It is estimated a unitary cost of intervention of 0.33 € million (110.000 euro per year). The intervention will be implemented on 200 territories (social districts). The unitary cost covers investment in training and services for up to three years. It is equivalent to having an equip of 3 professionals. The measure will be financed through National social funds of other EU funds after the three years. Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average,

according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” that must be guaranteed to all.

- ***Intervention 4: Strengthening social services and preventing burn out among social workers***

It is estimated a unitary cost of intervention of 0,21 € million (70.000 euro per year). The intervention will be implemented on 200 territories (social districts). The unitary cost covers investment in training and services for up to three years. The amount needed is calculated on the base of the labour cost of a social worker, which has been standardised to 40000 euros per years in the budget law for 2021 (law 178/2000, art. 1 comma 797). The measure will be financed through National social funds of other EU funds after the three years. Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average, according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” that must be guaranteed to all.

Investment 2: Autonomy patterns for people with disabilities

It is estimated a unitary cost of intervention of 0.71 € million (0.5 € million in investment and 0.21 € million for three years related services; about 700 interventions will be implemented on 500 territories (social districts). After the three years, the services will be financed through National funds. Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average, according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” that must be guaranteed to all.

Investment 3: Housing First and Post Stations

It is estimated a unitary cost of intervention of 0.71 € million for housing first (0.5 € million in investment and 0.21 € million for three years related services; such intervention will be implemented on 250 territories (social districts). For Post Stations it is estimated a unitary cost of intervention of 1.09 € million (0.91 € million in investment and 0.18 € million for three years related services); also, such intervention will be implemented on 250 territories (social districts). After the three years, the services will be financed through National funds (National fund for people non self-sufficient, 700 € millions yearly in the National budget). Indeed, Italian local expenditure on social services, at 0.7 points of GDP, stands in Italy at 1/3 of the EU average, according to Eurostat. However, national financing of social services has been increasing in the last few years and a strategy has been deployed aimed at establishing and maintaining national minimum standards valid in all the social districts. Such intervention is one of those that are envisaged as such “minimum levels of social assistance” that must be guaranteed to all.

Investment 4: Investments in projects of urban regeneration, aimed at reducing situations of marginalization and social degradation

The heterogeneity and diversity of the works that make up the proposals eligible for funding does not allow the identification of a parametric cost that can be estimated in the writing phase of the call for proposals. The Programme finances, in fact, interventions on the built heritage, demolition and reconstruction interventions, open or built public spaces, infrastructures, services, sustainable mobility, works of reclamation, primary and secondary urbanization and underground services, etc. About the monitoring and verification of fairness of costs, the development of project proposals is carried out based on final and executive level projects (paragraphs 7 and 8, Article 23, Legislative Decree n. 50/2016) for which the preparation of estimated metric calculations is envisaged (respectively in paragraph 2, point m of article 24 and paragraph 1, point g of article 33 of Presidential Decree no. 207 of October 5, 2010): this metric calculation is prepared by applying to the quantities of the works the unit prices deduced from the current price lists of the contracting station. Finally, it should be noted that Legislative Decree 163/2006, in paragraph 8 of article 133, states that the contracting authorities must update their price lists annually, with reference to the list items related to those products intended for construction, which have been subject to significant price variations linked to market conditions.

Investment 5: Urban Integrated Plans

The heterogeneity and diversity of the works that make up the proposals eligible for funding does not allow the identification of a parametric cost that can be estimated in the writing phase of the call for proposals. The Programme finances, in fact, interventions on the built heritage, demolition and reconstruction interventions, open or built public spaces, infrastructures, services, sustainable mobility, works of reclamation, primary and secondary urbanization and underground services, etc. About the monitoring and verification of fairness of costs, the development of project proposals is carried out based on final and executive level projects (paragraphs 7 and 8, Article 23, Legislative Decree n. 50/2016) for which the preparation of estimated metric calculations is envisaged (respectively in paragraph 2, point m of article 24 and paragraph 1, point g of article 33 of Presidential Decree no. 207 of October 5, 2010): this metric calculation is prepared by applying to the quantities of the works the unit prices deduced from the current price lists of the contracting station. Finally, it should be noted that Legislative Decree 163/2006, in paragraph 8 of article 133, states that the contracting authorities must update their price lists annually, with reference to the list items related to those products intended for construction, which have been subject to significant price variations linked to market conditions.

Investment 6. - Innovative Plan for Housing Quality

The heterogeneity and diversity of the works that make up the proposals eligible for funding does not allow the identification of a parametric cost that can be estimated in the writing phase of the program. The Programme finances, in fact, interventions on the built heritage, demolition and reconstruction interventions, open or built public spaces, infrastructures, services, sustainable mobility, works of reclamation, restoration or environmental protection, primary and secondary urbanization and underground services, etc. About the monitoring and verification of fairness of costs, the development of project proposals is carried out based on final and executive level projects (paragraphs 7 and 8, Article 23, Legislative Decree n. 50/2016) for which the preparation of estimated metric calculations is envisaged (respectively in paragraph 2, point m of article 24 and paragraph 1, point g of article 33 of Presidential

Decree no. 207 of October 5, 2010): this metric calculation is prepared by applying to the quantities of the works the unit prices deduced from the current price lists of the contracting station.

Investment 7 - Sport and social inclusion

On the basis of data and information obtained from previous projects of “Sport e Periferie” already financed and the current call for proposals, two main categories of assistance can be identified:

- Interventions for requalification of pre-existing sports facilities;
- Interventions for the realization of new sports facilities.

The estimation of the costs for the financial coverage for both categories of interventions is affected by a wide range of parameters and factors, but it is possible, thanks to the wide range of projects already completed, to make a first estimate, considering that:

- cost of interventions for pre-existing plant - preliminary estimate: € 500.000,00 - € 2.000.000,00.
- cost for Interventions for the construction of new plants - preliminary estimate: € 2.000.000,00 - € 20.000.000,00.

It was considered that the average cost per operation under the project “Sport and social inclusion” could realistically be estimated at:

- average cost for interventions for requalification of pre-existing sports facilities: preliminary estimate € 500.000,00 - € 7.000.000,00;
- average cost for interventions for the construction of new sports facilities: preliminary estimate € 7.000.000,00 - € 70.000.000,00.

As a result, an intervention reference value of 7 million/€ has been estimated. This value is a simple extrapolation and does not relate to the actual maximum availability of financial coverage that will be offered for the implementation of the interventions under the investment. On the basis of these considerations, a minimum value of 700.000.000,00 EUR (reference objective) for the start-up and finalisation of the activities covered by the investment, which lists a complex programme of activities.

Annex II: M/Ts of Component 2 of Mission 5

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
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| Q4-2021 | <p>R1. Framework law for disability</p> <p>Milestone. Adoption by the Council of Ministers of a Framework Law, which consists of a delegation law, to strengthen the autonomy of people with disabilities, according to the principles of UNCRPD and European Strategy 2021-2030 for the rights of persons with disabilities, which should as a minimum include: (i) the comprehensive definition and enhancement of the offer of social services for disabled people together with the promotion of de-institutionalisation and independent living, (ii) the simplification of procedures for access to health and social services, and (iii) the review of procedures for assessing the condition of disability, towards a multidimensional evaluation of the condition of every person.</p> | <p>People with disabilities are those defined, according to the principles of the UN CRPD, by the Law n. 104/1992. In Italy the assessment process is under competence of the Regions and the person is evaluated by the Local Health Services or by the National Institute of Social Welfare.</p> <p>The law will be proposed by the Minister for the Disabilities for the approval by the Council of Ministers, according the set road map.</p> <p>The adoption of the Framework Law will be followed up by the reorganization of the social services on the territories, the definition of quality standards and by providing ICT platform to enhance and make more efficient the services.</p> | <p>By the end of 2021 (Q4 2021) the draft law will be approved by the Council of Ministers.</p> <p>The draft law will be submitted to the Parliament for approval that, usually, could be scheduled in 18 months (Q2 2023).</p> <p>By the 12 months from the Parliament approval, the Council of Minister will approve definitely the legislative decrees (Q2 2024).</p> | <p>#1 The system of social and health services consists of a lot of different processes according the needs of every person. The objective of the reform is not only to reduce the number of days following the request, but, firstly, to make tailored services to the needs of the person with disabilities and to make a more effective and efficient system.</p> <p>#2 For the implementation of the framework law, national financial resources have been already allocated by the Budget Law 2020. So this reform – as other reforms in PNRR – is no directly funded by RRF but it is strictly related to</p> |

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| | | | | <p>the other projects in the component M5C2.</p> <p>Consequently, the Minister for Disabilities - that is the political Authority on the matter and. as the PNRR states, will assure a coherent action of the other Ministries – will be involved in the process of implementation of the actions of the component.</p> |
| Q2-2024 | <p>Finalisation of the reform through the parliamentary adoption of the Framework Law and governmental adoption of the legislative decrees that develop the provisions set out by the Framework Law to strengthen the autonomy of people with disabilities. The Law should as a minimum set out provisions to, (i) simplify and provide Points of Single Contact for social and health services, (ii) review the procedures for assessing the condition of non self-sufficient elderly person, and (iii) increase the set of social and health care services that can be provided at home.</p> | | | |
| Q1-2023 | <p>Adopt a Framework Law which strengthens the actions in favour</p> | | | |

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| | of non self-sufficiency elderly people. The Law should as a minimum set out provisions to, (i) simplify and provide Points of Single Contact for social and health services, (ii) review the procedures for assessing the condition of non self-sufficient elderly person, and (iii) increase the set of social and health care services that can be provided at home. | | | |
| Q1- 2024 | Adoption of the Law and the legislative decrees that develop the provisions set out by the Framework Law to strengthen the actions in favour of non self-sufficiency elderly people. | | | |
| Q4-2021 | <p>II. Supporting vulnerable people and preventing institutionalization</p> <p>Milestone. Approval of the operational Plan defining the requirements of projects that can be presented by local entities, which relate to four dimensions: (i) support to parents, (ii) support to elderly autonomy, (iii) home services to elderly, and (iv) support to social workers.</p> | <p>Action ‘Support to parents’ will consist as a minimum of providing support to the family of at least 18 months with (i) a pre-assessment of the family environment and children situation, (ii) an assessment of the situation made a multidisciplinary team of qualified professionals and (iii) provide at least one of the following services: home services, participation to support groups for parents and children; cooperation among schools, families and social services and/or shared family care services.</p> <p>The action ‘elderly autonomy’ will consist as a minimum of reconverting retirement homes for elderly people in groups of autonomous apartments, equipped with all necessary facilities and services, including domotics, telemedicine and remote monitoring.</p> <p>The action ‘home services to elderly’ is aimed at providing specific training to professionals for home services to elderly.</p> | <p>Call for proposals dedicated for municipalities (single or in association). Social districts will be requested to participate to non-competitive calls and submit projects through which they will declinate the project with reference to their local environment needs and characteristics within a common framework.</p> | |

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| | | The action 'support to social workers' will consist of supporting social operators and reinforcing their professionalism and sharing competences, mainly by introducing instruments for sharing competences and super visioning operators work. | | |
| Q1 - 2026 | <p>I1. Supporting vulnerable people and preventing institutionalization</p> <p>Target. At least 85% of the of social districts (which are currently about 600) with at least one of the following results: (i) support to parents, (ii) elderly autonomy, (iii) home services to elderly or (iv) favour social workers to prevent burnout</p> | <p>The actions envisaged under the four dimensions and the relevant requirements are those defined in the operational Plan, set to be approved in Q3-2021.</p> <p>Territorial distribution will be on the entire national territory. All social districts will be solicited to participate, the strategy being that such project open the path to stabilize services through formal recognition of essential level of social assistance to be granted on the entire territory.</p> | Call for proposals dedicated for municipalities (single or in association). Establishment of dedicated technical assistance for municipalities by the Ministry of Labour and Social Policies. | |
| Q4-2022 | <p>I.2 Autonomy patterns for people with disabilities</p> <p>Milestone. At least 500 social districts have delivered at least one project in relation to the renovation of home spaces and/or provision of ICT devices to disabled people, accompanied by training on digital skills.</p> | | | |
| Q1 - 2026 | <p>I.2 Autonomy patterns for people with disabilities</p> <p>Target. At least 5,000 disabled people supported which have received renovation of home space and/or provision of ICT devices. The services shall be accompanied by training on digital skills.</p> | <p>The baseline is 1,000</p> <p>Disabled people definition (based on ICF) is set in the National plan for non-self-sufficient people 2019 21 (https://www.lavoro.gov.it/documenti-e-norme/normative/Documents/2019/DPCM-del-21112019-adozione-Piano-Nazionale-Non-Autosufficienza.pdf). Furthermore, guide line for project of autonomy for disable people are already been developed (see for example</p> | Call for proposals dedicated for municipalities (single or in association) - Social districts will be requested to participate to non-competitive calls and submit projects | |

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| | | <p>https://www.lavoro.gov.it/notizie/Pagine/Linee-Guida-Vita-Indipendente-anno-2018.aspx) as such project extend on a large scale, which should involve the entire National territory two smaller similar projects, one dedicated to all people with disabilities and the second targeted specifically to those that are on the verge of being left alone by their parents (projects "dopo di noi" [after us] with followed the approval of a specific law n. 112/2016 and the establishing of a specific national fund - https://www.gazzettaufficiale.it/eli/id/2021/03/13/21A01507/sg)</p> <p>Territorial distribution will be on the entire national territory. All social districts will be solicited to participate, the strategy being that such project open the path to stabilize services through formal recognition of essential level of social assistance to be granted on the entire territory.</p> | through which they will declinate the project with reference to their local environment needs and characteristics within a common framework. | |
| Q1-2022 | <p>I3. Housing First and Post Stations Milestone. Approval of the operational Plan regarding projects on Housing First and Post Stations, defining the requirements of projects that can be presented by local entities, and launch of call for proposal.</p> | <p>Projects on Housing First envisage that local entities make flats available for single individuals, small groups or families up to 24 months, preferably through buildings' refurbishment and renovation of State property. This should be complemented by development and autonomy programmes.</p> <p>Projects on Post Stations envisage the development of service and inclusion centres for homeless people. This will be complemented by job placement programmes, in collaboration with employment centres.</p> | | |
| Q1-2026 | <p>I3. Housing First and Post Stations Target. At least 25,000 people living in severely material deprivation taken in charge by projects on Housing First and</p> | <p>People with severely deprivation are defined as follows: see Linee di indirizzo per il contrasto alla grave emarginazione in Italia ,approved by the Conferenza Unificata il 5.11.2015 and art. 5 of the Annual Decree on the Poverty fund 2018 where (art. 5) for this aim they are identified as a) living in the street or in precarious shelter; b) using public</p> | Call for proposals dedicated for municipalities (single or in association) - Social districts will be requested to | |

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| | Post stations for at least 6 months. | dormitory; c) are hosted in hostels for the deprived; d) are exiting from structures (included jail) and have not a place to live in. The services provided under Housing First and Post Stations are the ones defined in the relevant operational Plan, set to be approved in Q4-2021. Territorial distribution will be on the entire national territory, however area where problems of homelessness and hard poverty are more urgent (metropolitan areas but also some rural areas were seasonal workers - many of which foreigners - are in large numbers) will be privileged | participate to non-competitive calls and submit projects through which they will declinate the project with reference to their local environment needs and characteristics within a common framework. | |
| Q1 - 2022 | I4. Urban regeneration Milestone. Award of grants to at least 300 municipalities of more than 15 000 inhabitants for investments in urban regeneration to reduce situations of marginalisation and social degradation, with projects in line with the RRF objectives including the DNSH principle. | The grants are awarded to municipalities of more than 15 000 inhabitants which are not the provincial capitals, the provincial capital municipalities and the metropolitan city headquarters. Projects of urban generation will consist of at least one the following interventions: 1. Reuse and re-functionalization of public areas and existing public building structures for purposes of public interest, including the demolition of abusive works carried out by private individuals in the absence or total discrepancy from the building permit and the arrangement of the relevant areas; 2. Improvement of the quality of the urban decorum and of the social and environmental fabric, including through building renovation of public buildings, with particular reference to the development of social and cultural, educational and didactic services; 3. Green, sustainable and smart transport projects. The maximum amounts per municipality is the following: | Call for proposals dedicated for municipalities (single or in association) | |

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| | | 5,000,000 euros for municipalities with populations ranging from 15,000 to 49,999 inhabitants; 10,000,000 euros for municipalities with a population of between 50,000 and 100,000 inhabitants; 20,000,000 euros for municipalities with a population greater than or equal to 100,001 inhabitants and for municipalities that are provincial capitals or metropolitan cities. | | |
| Q2 2026 | 14. Urban regeneration Target. Completing interventions covering an area of at least 1 million sqmt by at least 300 municipalities of less than 15,000 inhabitants. | The interventions are the ones defined in the relevant Milestone for Urban Regeneration interventions. Details on territorial distribution will be provided through reporting. | | |
| Q4-2022 | 15. Urban Integrated Plans – general project Milestone. Adoption of the investment Plan for urban regeneration projects in metropolitan areas establishing a set of criteria in line with the RRF objectives, including the DNSH principle. The urban regeneration projects will refer to the following type of interventions, a) Maintenance for the reuse and re-operation of public areas. b) Improvement of the quality of urban décor and the social and environmental fabric. | Metropolitan cities are fourteen "territorial entities of large area" which have replaced the corresponding provinces as per Law n.56/2014. They are: Roma Capitale, Turin, Milan, Venice, Genoa, Bologna, Florence, Bari, Naples, Reggio Calabria, Cagliari, Catania, Messina, Palermo. The projects shall involve at least one of the following interventions: 1. Maintenance for the reuse and re-operation of public areas and existing public building structures for purposes of public interest, including the demolition of abusive works carried out by individuals in the absence or total deformity of the building permit and the arrangement of the relevant areas; 2. Improvement of the quality of urban décor and the social and environmental fabric, including through refurbishment of public buildings, with particular reference to the development of social and cultural facilities, education and learning, or the | The Strategy should also include the indicative distribution of resources per region following a formula which combines the weight of the resident population of each metropolitan city, and its position in the Social and Material Vulnerability Index | |

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| | c) Improvement of the environmental quality and digital profile of the urban areas. | <p>promotion of cultural and sporting activities and improvement of urban areas to ensure better safety and security;</p> <p>3. Improvement of the environmental quality and digital profile of the urban areas thorough the support to digital technologies and to technologies with lower CO2 emissions, and support to ecological transition (energy efficiency) in urban areas, through refurbishment of public and private buildings, renewal, regeneration and valorisation of under-used or unused urban areas (brownfield and greenfield), improvement of green, sustainable and smart local mobility systems.</p> | | |
| Q2-2026 | <p>I5. Urban Integrated Plans – general project Target. Completing integrated planning actions over an area of at least 3 million sqmt by all 14 metropolitan cities in at least one of the three dimensions defined in the relevant milestone.</p> | <p>Details on territorial distribution will be provided through reporting</p> | | |
| Q1-2022 | <p>I5a. Urban Integrated Plans – Overcoming illegal settlements to fight labour exploitation in agriculture Milestone: Approval of the mapping of illegal settlements by the “Tavolo di contrasto allo sfruttamento lavorativo in agricoltura” and adoption of a ministerial decree to allocate resources.</p> | <p>Standard of temporary and long-term housing solutions will be defined Details on territorial distribution will be provided through reporting</p> | <p>A monitoring system of illegal settlements will be established in order to update regularly the mapping</p> | |

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| Q1-2025 | <p>15a. Urban Integrated Plans – Overcoming illegal settlements to fight labour exploitation in agriculture</p> <p>Target: activities completed on at least 90% of the areas identified as illegal settlements in the local Plans.</p> | <p>Details on territorial distribution will be provided through reporting.</p> <p>Following the allocation of resources, a “local action Plan” will be provided by the relevant administration for each illegal settlement identified</p> | | |
| Q3-2022 | <p>15.b Urban Integrated Plans (EIB Fund-of-Fund)</p> <p>Milestone</p> <p>Adoption of the investment strategy for the Fund establishing a set of eligibility criteria in line with the RRF objectives, including the DNSH principle, and signature of the funding agreement and operational agreements with the financial intermediary(ies).</p> | <p>The Fund’s investment strategy defines as a minimum: (i) the nature and scope of the investments supported, which shall promote sustainable urban regeneration and development projects and be in line with the RRF objectives, including in relation to compliance with the Do No Significant Harm principle, as further specified in the Commission guidance note of 12 February 2021, (ii) the operations supported, (iii) the targeted beneficiaries, which shall be private promoters of financially self-sustainable projects for which public support is justified by a market failure or the risk profile, and their eligibility criteria, (iv) the eligibility criteria of financial beneficiaries and their selection through an open call; (v) the inclusion of a specific line for decent housing solutions for the workers in the agriculture and industrial sector, and (vi) provisions to re-invest potential reflows for the same policy objectives, also beyond 2026.</p> <p>The contractual agreement with entrusted entity requiring shall require the use of the DNSH guidance.</p> | | <p>In order to stimulate and attract private financing into urban regeneration projects, to leverage and multiply total investment mobilized under this objective, the creation of a dedicated Thematic Fund for Urban Regeneration as a compartment of the EIB Fund of Funds (FoF) targeting the support of private intervention in the urban regeneration is envisaged.</p> |

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| Q2 - 2026 | 15.b Urban Integrated Plans (EIB Fund-of-Fund) Target. At least two times the amount of the allocation financed by the Recovery and Resilience Facility contributed to the thematic fund and/or support to at least 10 urban projects | Details on territorial distribution will be reported | | Note: should the EIB FoF be financed with 10% of total funding available to Urban Integrated Plans (i.e. 272 €/million), mobilized investments at Q2-2026 will amount to at least 545 €/million |
| Q1-2022 | 16. Innovative Plan for Housing Quality Milestone: Signature of agreements with at least 15 Regions and Autonomous Provinces (including municipalities and/or metropolitan cities located in those territories) for redeveloping and increasing social housing. . | <p>Building: new public housing accommodations to:</p> <ul style="list-style-type: none"> • redevelop, reorganize and increase the assets intended for public housing; • re-functionalize areas, spaces and public and private properties also through the regeneration of the urban and socio-economic fabric; • improve the accessibility and safety of urban areas and the provision of services and urban-local infrastructures; • regenerate areas and spaces already built, increasing environmental quality and improving climate resilience to climate change also by means of operations with impacts on urban densification; • identify and use innovative management and inclusion models and tools, social and urban welfare, as well as participatory processes. <p>Housing units and public spaces supported shall be intended as benefitting from the activities described in the related milestone.</p> | | |
| Q1-2026 | 16. Innovative Plan for Housing Quality | | | |

| | | | | |
|----------------|--|--|--|--|
| | Target: At least 10,000 housing units supported (in terms of both construction and rehabilitation) and at least 800,000 sqmt of public spaces supported. | | | |
| Q1-2023 | <p>17. Sport and Social Inclusion Milestone: Approval of projects meeting the conditions established in the call for proposal, which should consist of at least one of the following elements:</p> <ol style="list-style-type: none"> 1. construction of new sport facilities, located in the disadvantaged areas of the country. 2. Provision of sports equipment, including the application of technology to sport); 3. requalification and adaptation of existing sports facilities (for examples:, removal of architectural barriers, energy efficiency, etc). | <p>The project aims to ensure the regeneration of urban areas through a focus on sport facilities, in order to promote social inclusion and integration, especially in the most deprived areas of Italy. In a wide meaning of the term deprivation concerns to a standard of living or a quality of life below that of the majority including hardship, inadequate access to the resources and underprivilege. In the Sport and Social Inclusion project, we intend to measure the deprivation through the vulnerability index (material and social vulnerability by the Italian National Institute of Statistics - ISTAT). IVSM (Indice di Vulnerabilità Sociale e Materiale, in Italian) is a scalar meta-index, computed by ISTAT.</p> <p>The evaluation of this index will be included in the mandatory requirements of the Call for proposal which is foreseen in the project.</p> <p>*****</p> <p>In general, it is envisaged one sport facilities for each contract awarded, including in sport facilities also the multi-purpose/multi-functional sports facilities.</p> <p>However, it will be possible to cover by each contract awarded also those proposals including more than one sport facilities interconnected. The applicant shall provide evidence for the functional interconnection between these sport facilities.</p> | | <p>The assessment of project completeness will be performed in compliance with the Italian public procurement Code (Decreto legislativo 18 aprile 2016, n. 50) and Public contracts in the EU and all relevant and applicable norms and laws (providing relevant documentation and evidence necessary to the compliance of sport facilities completeness).</p> |
| Q2-2026 | 17. Sport and social inclusion | The contracts concerning sport facilities related to interventions described in the relevant milestone. | | |

| | | | | |
|--|---|--|--|--|
| | Target: Complete at least 100 interventions related to the contracts concerning sport facilities, covering an area of at least 200,000 sqmt. | | | |
|--|---|--|--|--|

| Mission | Componen Id | |
|----------------|--------------------|--------|
| M5 | C2 | Ref1.1 |
| M5 | C2 | Ref1.2 |
| M5 | C2 | Inv1.1 |
| M5 | C2 | Inv1.2 |
| M5 | C2 | Inv1.3 |
| M5 | C2 | Inv2.1 |
| M5 | C2 | Inv2.1 |
| M5 | C2 | Inv2.3 |
| M5 | C2 | Inv3.1 |

Name

Framework law on disability

System of intervention for care of older people

Supporting vulnerable people and preventing institutionalization

Autonomy patterns for people with disabilities

Housing First and Post Stations

Investments in projects of urban regeneration, aimed at reducing situations of marginalization and soci

Urban Integrated Plans

PINQuA - Innovation Programme for Housing Quality

Sport and Social Inclusion

ial degradation

DNSh assessment

| | |
|--|---------------------------------------|
| Version | M2 |
| Cluster | C2 |
| Related Measure (Reform or Investment) | Reforms - Framework law on disability |
| Responsibility for research and implementation | Ministry of disability |
| Date | |

| Environmental objectives | Step 1 | | Questions | Yes/No | Substantive justification if NO has been selected |
|---|---|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, E or C has been selected | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not lead to an increase in CO2 production, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with climate change adaptation, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with the use of water and marine resources, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with the circular economy, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to: (i) result in a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiency in the direct or indirect use of any natural resource at any stage of its life cycle which are not increased by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Framework)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with air, water or land pollution, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DDOs for the relevant objective | The reform intends to make a normative reorganization of the system of intervention towards people with disability in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with biodiversity and ecosystems, but rather to zero pre-existing activities. No resources are in fact used to finance a reorganization of social services. | Is the measure expected to: (i) significantly deteriorate the good condition and resilience of ecosystems; or (ii) deteriorate the conservation status of habitats and species, including those of Union interest? | | |

DNSh assessment

| | |
|---|---|
| Version | 02 |
| Cluster | 02 |
| Related Measure (Reform or Investment) | Reforms - System of Intervention for care of older people |
| Responsibility for research and implementation | Ministry of Labour and social policies |
| Date | |

| Environmental objectives | Step 1 | | Questions | Step 2 | |
|---|--|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not lead to an increase in CO2 production, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with climate change, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with the use of water and marine resources, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with the circular economy, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to: (i) result in a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiency in the direct or indirect use of any natural resource at any stage of its life cycle which are not necessarily adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with air, water or land pollution, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DGG for the relevant objective | The reform intends to make a normative reorganization of the system of intervention for care of older people in order to promote an autonomous life and ensure a fully deinstitutionalization. This is a very low impact measure as the projects do not interfere with biodiversity and ecosystems, but rather fit into pre-existing activities. The measure is in fact used to finance a reorganization of social services. | Is the measure expected to: (i) significantly deteriorate the good condition and resilience of ecosystems; or (ii) deteriorate the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

| | | |
|---|------------------|--|
| Mission | Mission | M4 |
| Cluster | Cluster | 2 - Social infrastructures, facilities, communities and third sector |
| Related Measure (reform or investment) | Product/Policy | Healthy Start and Fast Starters |
| Responsibility for reporting and implementation | Reference person | |
| Date | Date | |

| | Step 1 | | Step 2 | | |
|---|---|--|---|--------|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been reflected |
| Environmental objectives | | | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>The measure is not expected to lead to significant GHG emissions, or demand.</p> <p>The measure consists in renovation of existing building (generally public properties) in order to guarantee habitability and the residential character and to ensure the implementation of housing first goals from the support people and families in severe residential deterioration. The measure will take into consideration energy efficiency demand relating to heating/cooling systems.</p> <p>The building will not be dedicated to extraction, storage, transport or manufacture of fossil fuels.</p> | <p>Is the measure expected to lead to significant GHG emissions?</p> | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>Given the analysis of the climate-related risks that could affect the measure, the effects that may affect both the current and future climate were assessed and no influence was highlighted related to sea level rising, drought and temperature.</p> | <p>Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?</p> | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>The activity that is supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and primary indirect effects across the life cycle. No environmental degradation risks related to preserving water quality and quantity are expected.</p> | <p>Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters?</p> | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | <p>Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant greenhouse gas emissions, or (iii) lead to a significant loss of any natural resource at any stage of its life cycle which are not included in adequate measures; or (iv) cause significant and long-term harm to the environment in respect to the circular economy (art. 21 of the Taxonomy)?</p> | NO | <p>Given Minimum Guarantees (MIG) under 2021 environmental assessment criteria for preparing services and works assignment of new constructions, renovation and extensions of public buildings' local and regional public law, following systems for products from reused materials and suitable for recovery and recycling.</p> <p>1) The non-hazardous construction and demolition waste (including naturally occurring material defined as 170604 "fill" and soil) shall undergo a quantitative share of use after year 170601, 170602 or 170607 in the EU market generated on the construction site must be prepared for use or sent for recycling or other material recovery.</p> |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>All expected impact of the activity supported by the measure with respect to this environmental objective is negligible as it does not affect the parameters that characterise biodiversity and ecosystems, also in consideration of the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?</p> | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | <p>The expected impact of the activity supported by the measure with respect to this environmental objective is negligible as it does not affect the parameters that characterise biodiversity and ecosystems, also in consideration of the direct and indirect effects over the entire life cycle.</p> | <p>Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of interest concern?</p> | | |

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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

M5 - Inclusione e coesione

C2 - Social infrastructures, families, communities and third sector

Investments in projects of urban regeneration, aimed at reducing situations of

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems

of marginalization and social degradation

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

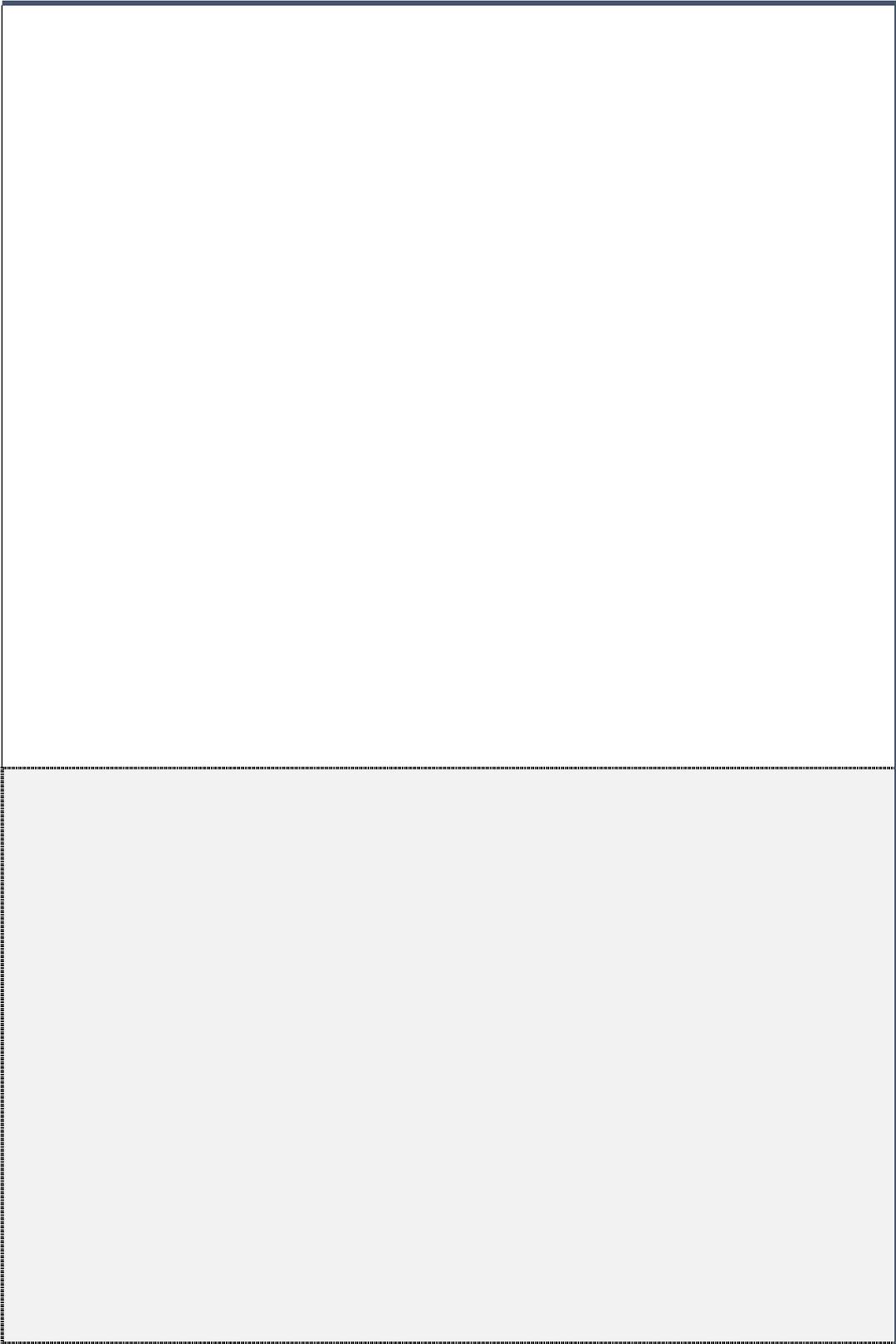
A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective



Step 1

Justification if A, B or C has been selected





There are no interventions within protected areas and/or that impact biodiversity; construction activities are carried out on already built-up urban areas and recovery activities are carried out taking into account national regulatory constraints on environmental compensation and furthermore no impact is considered for these activities (draft delegated taxonomy act Annex 1 - Paragraph 7.2 - where NA is reported for Objective 6). Further, the legislative decree no. 2006/152 "Environmental norms", second part, introduces requirements for the drafting of EIAs and SEAs, where the latter has the purpose of ensuring that anthropogenic activity is compatible with the conditions for sustainable development, and therefore with respect of the regenerative capacity of ecosystems and resources, of safeguarding biodiversity and an equitable distribution of advantages connected with economic activity.



Questions

Is the measure expected to lead to significant GHG emissions?

Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?

Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters?

Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?

Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land??

Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?



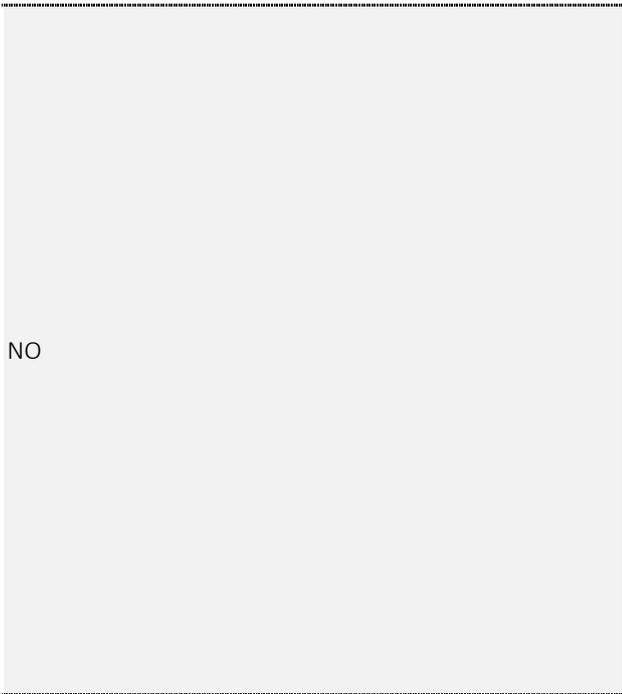
Step 2

Yes/No

NO

NO

NO



NO

NO



Substantive justification if NO has been selected

The measure is not expected to produce any harmful effect on the environmental objective of climate change mitigations. The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels (see the Annexes of the draft Delegated Act of Regulation 2020/852). In addition, national energy legislation defines a specific framework to ensure the energy efficiency of

The measure is not expected to produce any harmful impact connected to the objective. Indeed, the legislative decree no. 2006/152 "Environmental norms", in the second part, introduces EIAs and SEAs which address the possible impact of the measures on environment and climate change. National measures to implement the European Guidelines on how to address explicitly climate change adaptation as part of the EIAs and SEAs are being finalised and will soon be nationwide applied. At the same time, several regional and local authorities have anticipated the national requirement and already implemented the EU Guidelines in their territories. **Furthermore, the various interventions will be financed in accordance with the "do no significant harm" principle, therefore**

The measure has no detrimental impact on water sustainability and protection. The intervention will not affect the coastal and marine environment and does not significantly impact (i) affected water bodies (in accordance with the requirements in Directive 2000/60/EC Water Framework Directive) or (ii) protected habitats and species directly dependent on water. The interventions financed do not pose any particular risk to river basins and the preservation of water quality, as construction activities are carried out on already built-up urban areas and recovery activities are carried out taking into account national regulatory constraints on environmental compensation. In addition, there is a regional and local water management plan managed and monitored by the municipalities' water concessionaires to ensure that no harmful activity is performed on water resources and basins.

Legislative decree no. 2006/152 "Environmental norms", third part, defines a set of rules to protect the water resources. These specifically focus on a) preventing and reducing pollution and implement sanitation of water bodies; b) improving the state of the waters and protecting waters intended for particular uses; c) pursuing sustainable and durable uses of water resources, with priority for drinking water; d) keeping the natural capacity for self-purification of water bodies, including the the ability to support large and well-diversified animal and plant communities.

These norms must be complied with by all existing and new buildings, with particular reference to sewage systems and wastewater treatment. Specific law enforcement authorities are envisaged to ensure it. **All new relevant water appliances must be in the top two classes of the EU Water Label for water consumption.**

According to art. 181 of d.lgs. 2006/152 at least 70% of non-hazardous construction and demolition waste is prepared for re-use, recycling and other material recovery in accordance with the waste hierarchy EU Construction and Demolition Waste Management Protocol. The competence is shared between Ministries, Regions and ATOs or Municipalities. In Italy, the management of waste has been carefully implemented, reaching already in 2018 the goal of 74% of construction and demolition waste being prepared for re-use, recycling and recovery of material as specified in the legislation. (source: ISPRA - the national authority on environmental studies - 2020 report on special waste)

The best available techniques are employed in order to limit waste generation related to construction and demolition, using selective demolition to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials.

Resource efficiency, adaptability and flexibility in building design and construction is also guaranteed by law (D.lgs. n. 81/2008, L. 152/2006, L. 257/1992). **Furthermore, the various interventions will be financed in accordance with the "do no significant harm" principle, therefore verifying for each specific line of intervention the respect of the environmental criterias.**

The approval of the EIA as defined in Legislative Decree 2006/152 is subject to the presentation of the project which must contain the information required by Annex IV to Regulation 2011/92 / EU, including any emissions of pollutants and the measures envisaged to reduce or compensate them. Further specifications of these measures are included in guidelines issued by ARPAs as a reference while drafting either the projects to be submitted for approval, or the tender specifications.

Building components and materials used in the renovations do not contain asbestos nor substances of very high concern as identified on the basis of the list of substances subject to authorisation set out in Annex XIV to Regulation (EC) No 1907/2006;

Components and materials that may come into contact with occupiers emit less than 0,06 mg of formaldehyde per m³ of material or component and less than 0,001 mg of categories 1A and 1B carcinogenic volatile organic compounds per m³ (with reference, if applicable, to standards such as CEN/TS 16516 and ISO 16000-3)

Measures will be taken to reduce noise, dust and pollutant emissions during construction or maintenance works. Furthermore, the various interventions will be financed in accordance with the "do no significant harm" principle, therefore verifying for each specific line of intervention the respect of the environmental

| |
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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

M5 - Inclusione e coesione

C2 - Social infrastructures, families, communities and third sector

Urban Integrated Plans

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective



Step 1

Justification if A, B or C has been selected





There are no interventions within protected areas and/or that impact biodiversity; construction activities are carried out on already built-up urban areas and recovery activities are carried out taking into account national regulatory constraints on environmental compensation and furthermore no impact is considered for these activities (draft delegated taxonomy act Annex 1 - Paragraph 7.2 - where NA is reported for Objective 6). Further, the legislative decree no. 2006/152 "Environmental norms", second part, introduces requirements for the drafting of EIAs and SEAs, where the latter has the purpose of ensuring that anthropogenic activity is compatible with the conditions for sustainable development, and therefore with respect of the regenerative capacity of ecosystems and resources, of safeguarding biodiversity and an equitable distribution of advantages connected with economic activity.



Questions

Is the measure expected to lead to significant GHG emissions?

Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets?

Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters?

Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?

Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land??

Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?



Step 2

Yes/No

NO



NO

.....

NO

.....

NO

.....

.....

NO



Substantive justification if NO has been selected

The measure is not expected to produce any harmful effect on the environmental objective of climate change mitigations. The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels (see the Annexes of the draft Delegated Act of Regulation 2020/852). In addition, national energy legislation defines a specific framework to ensure the energy efficiency of buildings (DLgs n. 192/2005, n. 28/2011, n. 102/2014). Furthermore, the guidelines for the selection of the projects to be supported by the measure will include precise indications to ensure that no harmful effect is caused in respect to climate change mitigation.

The measure is not expected to produce any harmful impact connected to the objective. Indeed, the legislative decree no. 2006/152 "Environmental norms", in the second part, introduces EIAs and SEAs which address the possible impact of the measures on environment and climate change. National measures to implement the European Guidelines on how to address explicitly climate change adaptation as part of the EIAs and SEAs are being finalised and will soon be nationwide applied. At the same time, several regional and local authorities have anticipated the national requirement and already implemented the EU Guidelines in their territories.

Furthermore, the guidelines for the selection of the projects to be supported by the measure will include precise indications on long-term analyses of the risks related to climate change and the related measures to adapt and combat these risks that are foreseen.

The measure has no detrimental impact on water sustainability and protection. The intervention will not affect the coastal and marine environment and does not significantly impact (i) affected water bodies (in accordance with the requirements in Directive 2000/60/EC Water Framework Directive) or (ii) protected habitats and species directly dependent on water. The interventions financed do not pose any particular risk to river basins and the preservation of water quality, as construction activities are carried out on already built-up urban areas and recovery activities are carried out taking into account national regulatory constraints on environmental compensation. In addition, there is a regional and local water management plan managed and monitored by the municipalities' water concessionaires to ensure that no harmful activity is performed on water resources and basins.

Legislative decree no. 2006/152 "Environmental norms", third part, defines a set of rules to protect the water resources. These specifically focus on a) preventing and reducing pollution and implement sanitation of water bodies; b) improving the state of the waters and protecting waters intended for particular uses; c) pursuing sustainable and durable uses of water resources, with priority for drinking water; d) keeping the natural capacity for self-purification of water bodies, including the the ability to support large and well-diversified animal and plant communities.

These norms must be complied with by all existing and new buildings, with particular reference to sewage systems and wastewater treatment. Specific law enforcement authorities are envisaged to ensure it. **All new relevant water**

According to art. 181 of d.lgs. 2006/152 at least 70% of non-hazardous construction and demolition waste is prepared for re-use, recycling and other material recovery in accordance with the waste hierarchy EU Construction and Demolition Waste Management Protocol. The competence is shared between Ministries, Regions and ATOs or Municipalities. In Italy, the management of waste has been carefully implemented, reaching already in 2018 the goal of 74% of construction and demolition waste being prepared for re-use, recycling and recovery of material as specified in the legislation. (source: ISPRA - the national authority on environmental studies - 2020 report on special waste)

The best available techniques are employed in order to limit waste generation related to construction and demolition, using selective demolition to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials.

Resource efficiency, adaptability and flexibility in building design and construction is also guaranteed by law (D.lgs. n. 81/2008, L. 152/2006, L. 257/1992).

The approval of the EIA as defined in Legislative Decree 2006/152 is subject to the presentation of the project which must contain the information required by Annex IV to Regulation 2011/92 / EU, including any emissions of pollutants and the measures envisaged to reduce or compensate them. Further specifications of these measures are included in guidelines issued by ARPAs as a reference while drafting either the projects to be submitted for approval, or the tender specifications.

Building components and materials used in the renovations do not contain asbestos nor substances of very high concern as identified on the basis of the list of substances subject to authorisation set out in Annex XIV to Regulation (EC) No 1907/2006;

Components and materials that may come into contact with occupiers emit less than 0,06 mg of formaldehyde per m³ of material or component and less than 0,001 mg of categories 1A and 1B carcinogenic volatile organic compounds per m³ (with reference, if applicable, to standards such as CEN/TS 16516 and ISO 16000-3)

Measures will be taken to reduce noise, dust and pollutant emissions during construction or maintenance works.

DNSh assessment

| | |
|--|---|
| Title | MI |
| Owner | CI |
| Related Measures (Building or Investment) | EPICMA - Innovation Programme for Housing Quality |
| Responsibility for reporting and implementation | Barbara CHAGARRON |
| Date | 16.06.2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|--|---|--|--------|--|
| | Does the measure have an or insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | The measure is not expected to lead to significant GHG emissions because: The building is a new building. The construction programme for the project includes energy efficient measures, leading to a substantial improvement in energy performance of the building concerned, and hence GHG emissions. Therefore, it will contribute to the national target of energy efficiency increase per year, set out according to the Energy Efficiency Directive (2012/27/EU) and the contribution to the Paris Climate Agreement established at the national level. The construction programme will, amongst others, include the replacement of fossil based heating systems with gas condensing boilers. The construction programme will include, as part of its energy efficiency measures, energy efficient lighting, energy efficient heating systems, and leading to substantial improvement in energy performance. |
| 2. Climate change adaptation | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | NO | The measure is not expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets. Compliance with these criteria is an essential condition for the eligibility of the project within the programme. In addition, the activities related to the renovation of buildings will allow the current regulations, ensuring clear energy saving, improvement in terms of resilience of the buildings to extreme climate. In case of interventions over 10 m ² , a specific vulnerability and climate risk assessment, including flooding, snow, strong winds, landslides, etc., will be performed in order to identify, to select and to implement the relevant adaptation measures, according to the EU standards. Therefore, there are no risks of negative climate impacts on other people, nature or assets. |
| 3. The sustainable use and protection of water and marine resources | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | NO | The Programme primarily involves activities to rehabilitate existing buildings. The foreseeable impact of these activities on the use or exploitation of water resources is therefore negligible. In addition, there are no risks of environmental degradation under the programme in terms of water quality and quantity. The construction programme will, amongst others, include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will also include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will also include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at the stage of its life cycle which are not remedied by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The measure is not expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste. The measure is not expected to lead to significant inefficiencies in the direct or indirect use of any natural resource at the stage of its life cycle which are not remedied by adequate measures. The measure is not expected to cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy). The construction programme will include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will also include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | The measure is not expected to lead to a significant increase in the emissions of pollutants into air, water or land. The construction programme will include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will also include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective in relation to the direct and primary indirect effects of the measure across the life cycle, given its nature, scale and such as considered compliant with DNSh for the relevant objective | The measure has no or an insignificant foreseeable impact on the environmental objective in relation to the direct and primary indirect effects across the life cycle. The building renovation programme includes the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | NO | The measure is not expected to be significantly detrimental to the good condition and resilience of ecosystems, or to be detrimental to the conservation status of habitats and species, including those of Union interest. The construction programme will include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. The construction programme will also include the replacement of water meters by smart meters, leading to a better management of water resources by the building users. |

DNSH assessment

| | |
|--|--|
| Mission | 5 |
| Cluster | 2. Social Infrastructures, families, communities and third sector |
| Related Measures, Reforms or Investments | Sport and Social Inclusion |
| Responsibility for reporting and implementation | Lemnos Municipality |
| Date | |

| Environmental objectives | Step 1 | | Questions | Step 2 | |
|---|---|---|---|--------|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (if A, B or C has been selected) | | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | For project Sport and Recreation (SAR) aimed at regenerating urban areas housing sport facilities, in order to promote social cohesion and integration, including including renovations and the repair of new sports facilities. SAR project implementation is structured in three phases. The phase 1 includes the setting up of a Technical Working Group (TWG) developing implementation the project activities. The TWG shall identify all the mandatory requirements and good practice trends to be followed. Their relative weighting and how they will be scored by doing so, the TWG will recognize importance of DNSH objectives in coherence with the priority of the SAR project. Furthermore, all interventions shall follow the green procurement rules established in Italy. According to Italian regulations on public contracts, contracting authorities that intend to purchase goods, works and services falling within certain categories, have to include mandatorily in the relevant calls for tenders the technical specifications and contractual clauses identified by the so-called Italian Environment Criteria (in Italian: "Criteri Ambientali Minimi - CAM") in the regard. Italian GPP regulation foresees the inclusion of clear and verifiable environmental clause in products and services in the public procurement process, as requested by European Commission. In this view, particular interest is also addressed to the interventions focused to replace outdoor staff with new generation energy friendly equipment, aimed at improving energy performance, reducing conflict, usability, and health and safety of sport facilities (for example non-flammable heating and cooling systems, such as heat pumps) and also in the case of new sport facilities. Furthermore, the use of renewable energy may be effective for |
| 2. Climate change adaptation | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or people, nature or assets? | NO | The measure does not foreseen interaction with any phenomena characterized by the adaptation, about the SAR project is aimed at regenerating urban areas housing sport facilities, including the creation of urban green spaces (potential benefits) as widely recognized also in terms of climate change adaptation. In case of an investment over 500,000 EUR, a specific vulnerability and climate risk assessment, related to flooding, storm, winter sea level, landslides, etc. will be performed in order to identify, to select and to implement the relevant adaptation measures, according to the framework. |
| 3. The sustainable use and protection of water and marine resources | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | NO | All the activities provided in the GPP provided will not affect the quality of surface and marine resources. In case of new facilities and/or more in general projects which could have indirect impact, the use of water resources shall be comply with River Basin Management Plans and all relevant applicable rules and regulations. Moreover, in order to protect water resources projects will agree to the water reuse, all relevant water applications (where applicable) will be submitted to the relevant authorities in order to obtain the necessary authorizations. |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to be detrimental: (i) to the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) to the significant coefficients in the direct or indirect use of any natural resources at any stage of its life cycle which are not recyclable (significant and/or life cycle) in the environment (relevant to the circular economy (i.e. 27 of this framework)? | NO | Contract Law No. 108/2016 (art. 100, c. 1, 2, 3, 4, 5) as well as the National Action Plan provided. Furthermore (PAA) GPP includes important criteria for construction and demolition waste management (see above). Along with these criteria, the project Sport and Recreation (SAR) intends to follow up the construction (SD) strategy promoted by European Commission in line with the new circular economy action plan. In this regard, priority will be given to the quality practices promoted in the paper "Circular economy principles for building design", whenever applicable. |
| 5. Polluter prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants (air, water or land)? | NO | The expected impacts of the activities supported by the measure with respect to this environmental objective is negligible as it does not affect significantly the quality of the natural resources, also in consideration of the direct and indirect effects over the entire life cycle. Some aspects of impacts are potentially associated with construction phase. In this regard, appropriate solutions will be adopted to reduce the pollution and to be adopted both in the practices, construction environmental plan, etc. Moreover, all awarded projects in SAR shall aim to promote and encourage continuous improvement of environmental performance and projects will be reported regularly. |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across the cycle, given its nature, scale and location, considered compliant with DNSH for the relevant objective | The measure with respect to this environmental objective is negligible as it does not affect significantly the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) to the significant coefficients in the direct or indirect use of any natural resources at any stage of its life cycle, which are not recyclable (significant and/or life cycle) in the environment (relevant to the circular economy (i.e. 27 of this framework). | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of interest (biodiversity)? | | |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 3: Special interventions for territorial cohesion

1. Description of the component

Title of the Component: Special interventions for territorial cohesion

Policy area/domain: INCLUSION AND COHESION

- (i) Resilience Plan for inner areas
- (ii) Special projects for the South

Objective:

This component aims at reducing the gaps between the different areas of the Country.

In order to tackle the fragmented regional development and social inequalities, a common vision focused on territorial interdependence and cohesion is needed.

Specifically, this component aims at tackling marginalization issues characterized by different types of gaps:

- “Demographic and services divide”, directly linked to the divide between inner/rural, mountain, peripheral areas and urban areas, in order to ensure the same levels of essential services and the relaunch of specific productive vocations;
- “Divide on skill development”, in an open innovation perspective involving businesses, research centres and public authorities;
- “Investment divide” which is a long-term trend for the South, and “Social and economic divide” in the Southern regions, where the economic crisis is affecting a weaker production chain, a more fragmented labour market and a less inclusive community.

In order to achieve these objectives, the component has two intervention areas:

(i) Plan for resilience of internal, peripheral and mountain areas, through the strengthening of the Inner Areas. The purpose of those investments is to promote an integrated development of the Country, to avoid the depopulation of those areas not directly connected to the primary road network;

(ii) Projects for the development of the South, including investments for tackling education poverty, as well as the enhancement of assets confiscated from the organised crime and infrastructural investments in the enhancement of the Special Economic Zones.

Reforms and investments

Reform

1. Special Economic Zones (SEZ): Reviews of the procedures and renovation of the Commissarial Role

Investments:

1. Investments for Inner Areas
 - a. Enhancement of community social services and infrastructures. Aiming at increasing the provision of community social services and infrastructures in order to improve the quality of life and curb depopulation in those territories mapped by the National Strategy for Inner Areas.
 - b. Strengthening the local health network, providing an easier access to the National

Health Service and drugs.

2. Rehabilitation of assets confiscated from organised crime: investments in Southern Italy, focused on the reuse of real estate assets confiscated from organised crime, according to all Objective 2 actions of the National Strategy, approved by CIPE¹ Resolution n. 53/18.
3. Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector: investments to face educational poverty and early school leaving in areas of high social and cultural exclusion, by activating new local training networks with the involvement of the Third Sector.
4. Special Economic Zones (SEZ): investments to improve infrastructural assets for the Special Economic Zones, in order to promote the attractiveness of investments and the competitiveness of these areas.

Estimated cost: EUR 1.975 billion, of which EUR 1.975 billion are covered by RFF.

2. Main challenges and objectives

a) Main challenges

Curbing the marginalisation of large areas of the Country

The 2020 Country Report of the European Commission highlights that in recent decades, territorial inequalities have increased in Italy. The territorial disparities do not only concern Southern Italy versus Northern Italy, but also the so called “inner areas”, the suburbs versus the city centres, the smaller towns versus the medium-sized cities, the de-industrialised countryside versus the former industrial sites. Due to the Covid-19 crisis, these inequalities have worsened, making the need for urgent intervention more evident (The current situation calls for targeted policy responses – Country Specific Recommendations, pt. 9).

However, the phenomenon of marginalisation affecting ever larger areas of the country has causes prior to the epidemic crisis. The progressive reduction of investments in the South has also weakened the North, because of economic integration between the two areas. According to the overall scenario provided by the Sistema dei Conti Pubblici Territoriali, at the Territorial Cohesion Agency (ACT, 2009), the total capital expenditure of the PA in Southern Italy in 2018 has more than halved compared to 2008 trend (from 21 to 10.3 billion) (2030 South Plan – II. Resources. A commitment for the 2020-2030 decade).

In this regard, the National Recovery and Resilience Plan (NRRP) becomes an opportunity to both tackle the effects of Covid-19 crisis and change the macro-economic trends of the Country and, more specifically, of marginalised areas.

Moreover, the European Commission stresses that it will be important to anticipate ongoing investment projects and to promote private investments, in order to foster economic and social recovery, also through NRRP investments.

Green transition investments will also be particularly relevant to boost the recovery and increase

¹ National Committee for Economic Planning

future resilience.

Therefore, curbing the marginalisation of large areas of the Country can be summarised in the following gaps:

Reduction of the essential service supply to people

Due to the reduction of public investment triggered by austerity during the economic crisis in 2008, the indicators measuring access to essential services in the South and marginalised areas, with particular reference to education, health and social assistance (2020 Svimez Report - The territorial distribution of public expenditure and access to services), diverged from the national average levels.

As an example, the per capita expenditure of the municipalities for socio-education services, addressed to children aged 0-2, is EUR 1,468 in the Central regions, EUR 1,255 in the North-East and then falls to just EUR 277 in the Southern regions.

Lack of economic development and joblessness

Negative demographic trends, the poor conditions of the labour market, the lack of quality services, all weaken the growth prospects of these areas, leading to the depopulation of the South and of rural areas.

Missing valorisation under sustainable perspective

The South, Inner Areas and islands are among the areas more affected by climate change and by the process of social and territorial marginalisation related to the current development model. It is essential to promote actions aimed at achieving a **fair ecological transition**. It is also crucial to boost best practices in the field of **circular economy**. For example, promoting, particularly in the Southern regions, the **reusing assets confiscated to organized crime**. As the extraordinary maintenance operations and rehabilitation of existing infrastructures avoid consumption of new land.

b) Objectives

Coherently with the challenge of reducing socio-economic and geographical marginalization in large areas of the Country, the proposed package of reforms and investments intervenes on infrastructures, services, on new job opportunities and knowledge, considering also the crosscutting role that sustainability and technological innovation play.

The component with reforms and investments aims at reactivating the enabling conditions for reversing the negative trends (depopulation, collapse of public investment, lack of productivity gains, worsening attractiveness of these areas, etc.) that affect the development potential of these areas.

Strengthening of security and recovery of territories

- Contribute to the hydro-geological rehabilitation of the territory, first and foremost in inner areas and more marginalised areas;
- Supporting the restart process for places that have been affected by seismic events.

Revival of essential public services

- Provide strategic infrastructures to the population;
- Rebalancing the supply of essential services in favour of the most vulnerable members of the population and in particular marginalised areas. The main areas of intervention include education, health and mobility;

- Relaunching the attractiveness of the territories in order to improve life conditions of people living in these areas and positively affecting the demographic dynamics of the target places.

Reactivation of economic development

- Favouring job opportunities especially for the human capital that is potentially best suited to trigger development phenomena (from brain drain to brain gain; from the loss of mature activities to generational changeover);
- Developing contexts capable of building cutting-edge skills, by setting up a system of training and production within the territory;
- Promoting technology as an enabling element for productivity growth and as a trigger for the unexpressed potential of the South.

Investments for sustainability in marginalized areas

- Enhance investments and economic activities, respecting territories and their specificities, using in a sustainable way the natural, landscape and cultural characteristics;
- Promoting the dissemination of experiences in line with the European paradigm of the circular economy and more in general of the reusing best practice;
- Recovering infrastructure in use or disused, avoiding extra soil erosion.

The mentioned objectives are closely correlated (e.g.: the repopulation of places encourages their maintenance; the maintenance of places increases their attractiveness which fosters population settlement; the presence of a minimum number of people makes services and commercial activities sustainable, etc.). The selection of projects in this component has taken into account initiatives capable of favouring the achievement of these objectives and capable of generating directly and indirectly relevant positive impacts.

Despite the economic crisis arising from the pandemic, Italy has an unprecedented opportunity to promote a socio-economic recovery at national and local level, combining economic growth and territorial cohesion with the sustainable development issue. It will be possible to steer economic processes towards greater intergenerational, social and environmental sustainability and ensure opportunities for the revitalization of the marginalised areas.

The investments of this component are related to the existing European and National programmes (NRP, NSIA, 2030 South Plan, National Strategy for Green Community, National Strategy for confiscated assets rehabilitation through Cohesion Policy, 2030 National Integrated Energy and Climate Plan, 2021-2027 Partnership Agreement, Green Deal, etc.). These coordinated policies design an overall strategy that contributes to the macro-objective of reducing development gaps and tackling marginalisation.

Contributing to the implementation of the above-mentioned National and European plans also ensures compliance with the Commission's recommendations, including CSR and Country Report recommendations.

3. Description of the reforms and investments of the component

a) Reforms

1. SEZ

The Special Economic Zones (SEZ) are geographical regions, introduced in Italy with the “Mezzogiorno” Decree, whose economic legislation is different from the specific legislation of the Country. Moreover, they have special tax advantages: SMEs investments and, more in general, all investments up to 50 million of euros are eligible for tax credits.

The Commission recently funded a SEZ-related project, which ended last January. During this technical assistance, the main new elements proposed in the PNRR were also analyzed. In particular, the analysis had focused on the single authorization and on the role of the Services Conference.

To date, the following SEZs have been established:

- SEZ Campania Region
- SEZ Calabria Region
- SEZ Ionian Interregional (including Apulia Region and Basilicata Region)
- SEZ Adriatica Interregional (including Apulia Region and Molise Region)
- SEZ Western Sicily
- SEZ Eastern Sicily
- SEZ Abruzzo Region.

In addition, the establishment of the new SEZ Sardinia Region is in its final stage.

The following table summarizes the SEZ Areas in term of surface (in hectares):

| <i>TYPE OF AREAS</i> | <i>Port</i> | <i>Airports -</i> | <i>ASI industrialists</i> | <i>P.I.P.</i> | <i>TTR</i> | <i>Community - private</i> | <i>Other industrialists</i> | <i>Other areas</i> | <i>Total</i> |
|-----------------------------|--------------------|--------------------------|----------------------------------|----------------------|-------------------|-----------------------------------|------------------------------------|---------------------------|---------------------|
| Abruzzo | 47,00 | 0,00 | 934,10 | | 43,50 | 433,40 | | 245,00 | 1.703,00 |
| Campania | 221,40 | 74,00 | 3.953,20 | 157,68 | | | 245,14 | 502,80 | 5.154,22 |
| Adriatic | 330,21 | 68,72 | 1.336,47 | 200,95 | | | 833,57 | 224,97 | 2.994,89 |
| Yonics | 378,70 | 12,59 | 1.082,87 | 507,77 | | | 244,45 | 264,18 | 2.490,56 |
| Calabria | 509,00 | 75,00 | 1.862,00 | | | | | | 2.446,00 |

| | | | | | | | | | |
|-----------------------|-----------------|---------------|------------------|---------------|-----------------|---------------|-----------------|-----------------|-----------------|
| Eastern Sicily | 776,00 | 30,00 | 1.069,00 | | 1.448,00 | | | 99,00 | 3.422,00 |
| Western Sicily | 372,00 | 2,00 | 1.264,00 | | 4,00 | | | 54,00 | 1.696,00 |
| Sardinia * | 385,00 | 25,00 | 1.795,22 | | 12,00 | | | 185,00 | 2.402,22 |
| Total | 3.019,31 | 287,31 | 13.296,86 | 866,40 | 1.507,50 | 433,40 | 1.323,16 | 1.574,95 | 22.308,9 |

Challenges

The governance structure and management processes need to be reformed, in order to identify clearly and effectively specific structures that can carry out the required investments on time and within the deadlines laid down in the NRRP. Therefore, the scope of the intervention is to set up special commissioners to manage the SEZs, who would work with the support of the regional technical structures directly involved.

Objectives

- Simplify the governance system;
- Reducing the implementation time of interventions.

Implementation:

The reform provides for a multidimensional approach and concerns all the issues related to the attraction and establishment of economic investments. In particular, the aim of the intervention is to update the authorisation framework by providing for a single procedure for setting up or investing in production units (Digital One Stop Shop SEZ). The single authorisation will reduce time and simplify the dialogue between private and public bodies (responsible for issuing authorisations).

Moreover, the reform aims at simplifying administrative procedures with a regulatory intervention that strengthens the role of the Commissioner, placing him at the center of the governance and providing him substantial powers in order to make investments in a short time.

The organizational structure of the SEZs is currently based on the role of the Commissioner as a mere coordinating body, devoid of real decision-making power. The reform goes in the sense that the Commissioner becomes the real director of the Services Conference, as well as the Authority that issues each single final permission provision. The Commissioner will be equipped with an administrative support structure that will help him to fulfil his mandate. In this framework, economic actors will have the Commissioner as the only interlocutor.

Target population:

Management structures of SEZ

Timeline:

The reform will be implemented by Q4 2021.

b) Investments

1. Inner Areas

These proposals are aimed at strengthening the national policy related to the Inner Areas, complementing its full implementation throughout supplementary economic measures aimed at addressing specific weaknesses of such areas.

About three fifths of the Italian territory is classified as an inner area. These areas are located across Italy from North to South and have similar characteristics: a) great natural and cultural heritage; b) distance from urban and service centres; c) significant opportunities of development by combining innovation with tradition.

In order to revitalize and enhance the inner areas, it is necessary to support investments that increase their attractiveness, while reversing their declining trends (infrastructural, demographic and economic).

The investment proposal consists of the following intervention areas:

1. Community services and infrastructures to tackle the issues of limited access to basic services (services for elderly, service for young people at risk of exclusion, social care services), also through the dialogue with the local communities;
2. Strengthening the local health network, providing an easier access to health services.

Challenges

Despite the relevant investment made with both ESI and national fund, the Italian Inner Areas still face the lack of community services, to be tackled by identifying organisational and innovative solutions that allow to adequately respond to the daily problems of people living in such particular contexts, in order to contrast the deterioration of the quality of life in these areas.

Objectives

The proposal aims to adapt both the quality and quantity of education, health and mobility services (citizenship), and promote initiatives that enhance the natural and cultural heritage of these areas, also focusing on local production chains (market).

In particular, the goal of the measures financed within the Recovery Fund is to provide a wider and denser network of services:

- more and well-maintained social services infrastructures;
- health facilities accessible through the capillary network of pharmacies.

These investments also aims at achieving the following impacts, that are foreseen to be correlated among each other:

- promoting the economic and social recovery of the areas;
- increasing the deployment of community services and social infrastructure to improve the quality of life;
- tackling depopulation in the areas mapped by NSIA;

- enhancing the level of knowledge of local authorities' assets, according to standardized procedures consistent with current regulations, as well as carrying out the consequent mitigation measures;
- strengthening the local health network.

Implementation:

This proposal is based on the following three interventions, with a total financial allocation of about EUR 825 million:

(i) Enhancement of community social services and infrastructures

The intervention aims at tackling the issues of social exclusion and marginalisation, by intensifying the provision of services through the increase of funds for public services delivered by the local authorities (the delivery mechanism consists in providing grants to the municipalities). Financed projects may concern: home care services for the elderly; community nurses and midwives; strengthening of small hospitals (those without first aid or some basic services (i.e. radiology, cardiology, gynecology) and outpatient centres; infrastructures for helicopter rescue; strengthening centres for the disabled; counselling centres, cultural services, sports services and migrant reception. The intervention aims either at creating new services and infrastructures and at improving the existing ones through an increase in the number of recipients or in the quality of supply.

The intervention provides for a total of EUR 725 million, of which 500 for the municipalities of the Inner Areas and 225 for municipalities in Southern Italy (based on the Prime Ministerial Decree of 17 July 2020).

At least 2 million inhabitants of Inner Areas and, at least, an additional 5% of the population in Southern Italy (about 900,000 inhabitants) would be reached by developed or improved social services and infrastructures.

This intervention is fully consistent with the National Strategy for Inner Areas and is aimed at reducing a gap that may not be filled by European cohesion policy, given the lower amount of resources provided in Policy Objective 4 – ERDF for the 2021-2027 cycle.

The successful completion of this intervention is likely to be related also to the role of municipalities and their capability to implement the projects in time to reach the agreed milestones and targets. In order to monitor projects' implementation we expect the involvement of the Agency of Territorial Cohesion that may offer its expertise in providing support and coordination to local authorities. Furthermore, a competition for the recruitment of 2,800 technical figures to be included in the public administrations of the South has already been launched. These new resources will provide a rapid improvement of beneficiaries' capacities to carry out scheduled interventions.

(ii) Territorial proximity health facilities

The intervention aims at consolidating subsidized rural pharmacies as local health services (Rural pharmacies are defined on the basis of L. 27 March 1968, n. 221.). In Italy there are 4,119 subsidized rural pharmacies, which operate in municipalities with less than 3,000 inhabitants and which, due to the reduced catchment areas, receive a (sometimes extremely low) regional subsidy. Overall, their catchment area is around 5 million inhabitants.

This measure, that is not fully eligible under the European cohesion policy, intends to give immediate support to subsidized rural pharmacies that during the Covid-19 emergency, have been a fundamental point of reference for the local population. By consolidating their role in providing

health facilities, pharmacies can keep being a central element of community life, bringing healthcare as close as possible to citizens.

In detail, these pharmacies may strengthen their role by: (i) taking part in the integrated home assistance service; (ii) providing second-level services, in accordance with diagnostic-therapeutic paths envisaged for specific pathologies; (iii) dispensing drugs that the patient is now forced to collect in the hospital; (iv) monitoring the patient with the Electronic Health Record and the Pharmaceutical Dossier.

The measure consists of a public contribution by EUR 100 million to sustain rural pharmacies' investments. This contribution will require additional private investments equal to a half of the received public contribution. Overall, we expect to increase rural pharmacies' investments by EUR 150 million.

The measure may produce the following additional results:

- a substantial decongestion of hospitals (especially as regards emergency rooms) and an optimization in the provision of first and second level services;
- a strengthening of the local health network, with the possibility of digital interconnection and sharing of individual paths;
- an easier access to the National Health Service and drugs.

The measure is implemented by the Agency for Territorial Cohesion.

By the fourth quarter 2021, the Agency will launch a tender for pharmacies in municipalities with a population of less than 3,000 inhabitants. The delivery mechanism of resources will be based on effective purchases of health facilities.

State Aid:

Enhancement of community social services and infrastructures

According to the State aid self-assessment, based on the “Practical guidance to Member States for a swift treatment of State aid notifications in the framework of the Recovery and Resilience Facility” provided by the EC services, it can be excluded that State aid is involved, by taking into account that social infrastructures will be realized by local authorities (in compliance with the already in force DPCM 17 July 2020, which already implemented the same measure).

In any event, in case State aid elements emerge in the implementation phase of the measure, investments will be financed on the basis of a new State aid measure which – depending on more detailed elements which are going to be finalized (e.g. services of general economic interest, SGEI) - will comply either with de minimis rules, or with the GBER or with the pertinent rules for aid schemes to be notified to the European Commission.

Territorial proximity health facilities

According to the State aid self-assessment, based on the “Practical guidance to Member States for a swift treatment of State aid notifications in the framework of the Recovery and Resilience Facility” provided by the EC services, it is excluded that State aid is involved, by taking into account that the intervention will be implemented through a public private partnership, not selective, as it is addressed to all rural pharmacies which are already subsidized due to their small size and limited turnover.

In any event, in case State aid elements emerge in the implementation phase of the measure, investments are likely to be financed on the basis of a new State aid measure which – depending on more detailed elements which are going to be finalized - will comply with de minimis rules.

Target population:

Disadvantaged groups (elderly, young people at risk of social exclusion), Inner Areas' citizenship, Inner Areas' visitors/tourists.

Timeline:

The intervention will be implemented from 2021 to 2026 and will benefit all Inner Areas of the Country.

2. Rehabilitation of assets confiscated from organised crime

The investment, amounting to EUR 300 million, aims at implementing the National Strategy for Confiscated Assets Rehabilitation, by promoting the reuse for social, economic, employment and institutional purposes of 200 assets confiscated from organised crime, and located in the 8 Southern regions. These needs may not be satisfied under the European cohesion policy, given the lower amount of resources provided in Policy Objective 4 – ERDF for the 2021-2027 cycle.

The list of assets eligible for renovation is available on the website <https://www.benisequestraticonfiscati.it/> of the “Agenzia Nazionale per l'amministrazione e la destinazione dei beni sequestrati e confiscati alla criminalità organizzata”.

Challenges:

Reducing the social and economic impact of the crisis through the rehabilitation of the assets confiscated from organised crime, in order to boost economic, social and territorial cohesion, restore growth potential, and foster the creation of new jobs.

Strengthening and improvement of public services for citizens.

Objectives:

The project promotes the economic, social and civil development of areas affected by organised crime, pursuing actions of confiscated assets rehabilitation, according to the Objective 2 of the National Strategy for Confiscated Assets Rehabilitation through Cohesion Policy, approved by the CIPE with resolution 53/18.

Through this rehabilitation to the community and a more effective and efficient use of the confiscated assets for economic, social and institutional purposes, the project creates the conditions for a transparent market economy. At the same time, the project ensures greater wealth and employment opportunities in the regions of Southern Italy, in compliance with legality and social justice.

Specifically, the confiscated assets rehabilitation aims to:

- social/housing inclusion of people living in conditions of exclusion (people at risk of poverty, homeless people, victims of violence, elderly people, people with limited autonomy, Roma, etc.) through the creation of facilities, social/health residences, day centres, co-housing or flat sharing;

- integration through the regeneration of public spaces, in order to improve services to citizens (community social services, such as nursery schools, leisure centres, socio-educational services for early childhood, toy libraries and day centres for minors, socio-educational communities, gyms, labs);
- socio-cultural gathering spaces for young people, managed by voluntary associations or networks (mini-libraries, spaces for music groups, community or neighbourhood gathering places, etc.);
- support for new job opportunities for young people and people at risk of exclusion, while at the same time producing goods and services of public interest through the creation of spaces for creativity, innovation and social entrepreneurship (hubs);
- Legality and territorial security sites (barracks, police/carabinieri stations, civil protection, etc.), in order to promote a more transparent and legal economy and foster the replacement of buildings for which the public administration pays rent;
- facilities for hosting, mediation and integration, by supporting migrants in the territory and steering them to the competent services (health facilities, employment centres, etc.).

Implementation:

For the purposes of carrying out the aforementioned interventions, the first step is to sign one or more agreements in which criteria for resource allocation and project selection are defined; these agreements will be signed between the "Confiscated Assets" Agency and the Territorial Cohesion Agency and will involve local authorities according to needs. The second step is to open calls for Local Authorities and Third Sector Organisations who are responsible for the renovation and management of the assets.

By second quarter-2024, interventions will be selected for each of the 8 Regions, as a result of the regional calls, with an estimated average cost of EUR 1,5 million, by the Territorial Cohesion Agency.

The assets should be devoted to one of the following purposes:

- Social/housing inclusion of people living in conditions of exclusion.
- Integration in public spaces, in order to improve services to citizens.
- Socio-cultural gathering spaces for young people.
- Legality and territorial security sites such as barracks, police/carabinieri stations or civil protection.

Once the selected projects have been approved, the Beneficiary Bodies will activate the procurement procedures, in order to allow the awarding and delivery of construction sites and the start of the works. The following two-year period (2022-2026) will be dedicated to building renovation infrastructural activities. The half of the assets will be renewed due the second quarter 2025, and the second half of the projects will be completed no later than the second quarter of 2026.

Municipalities will contribute to the implementation of this measure as far as their own assets are concerned. In order to guarantee the completion of projects in time to reach the agreed milestones and targets, we expect the collaboration of the Agency of Territorial Cohesion, which will be involved in the constitution of specific task-forces. Indeed, the Agency may offer its expertise in

providing support and coordination to local authorities and in the coming years it will benefit from the interventions for strengthening administrative capacity foreseen in the 2021-2027 European programming. Furthermore, a competition for the recruitment of 2,800 technical figures to be included in the public administrations of the South has already been launched. These new human resources, as already mentioned, will provide a rapid improvement of beneficiaries' capacities to carry out scheduled interventions.

The implementation phase will be carried out through two specific actions aimed to support local authorities in their project planning and sustainability. Therefore, this action makes highly skilled human resources available to local authorities involved in processes of identifying the future use of confiscated assets, as well as in the selection of organisations responsible for the management process. The technical resources thus support the administrations for a limited period without replacing them in responsibilities, identifying ways of confiscated assets rehabilitation with the involvement of private organisations at local and national level.

State Aid:

According to the State aid self-assessment, based on the “Practical guidance to Member States for a swift treatment of State aid notifications in the framework of the Recovery and Resilience Facility” provided by the EC services, it is excluded that State aid is involved, by taking into account that the resources will be used by local authorities which are the owners of the confiscated assets.

In any event, in case State aid elements emerge in the implementation phase of the measure, the investments are likely to be financed on the basis of a new State aid measure which – depending on more detailed elements which are going to be finalized (e.g. services of general economic interest, SGEI) - will comply either with de minimis rules, or with the GBER or with the pertinent rules for aid schemes to be notified to the European Commission.

Target population:

About 38 local authorities (municipalities, provinces, metropolitan cities) and third sector organisations for each of the 8 Southern Regions.

Local citizenship and specific categories of recipients who will benefit from the property.

Timeline:

The project will start in 2021; the conclusion of the interventions is expected by the end of 2026.

3. Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector

The intervention supports the Third Sector by providing resources (EUR 220 million) for the implementation of socio-educational interventions targeted to minors in Southern regions of Italy. This measure is complementary to the one in Mission 4 in the field of educational poverty, which is mainly aimed at improving the educational offer of Italian schools by increasing the school time and reducing early school dropout. This intervention instead enhances, through the involvement of the Third Sector, private training networks in Italian Southern regions, which are typically characterized by a lower supply of socio-educational services.

Challenges:

The measure aims at fighting against educational poverty in the South of Italy through the support of the third sector for the implementation of socio-educational interventions targeted to minors. The measure is directed to Southern regions of Italy, where there are difficulties in accessing educational paths that are typically stronger and may reduce an already low level of female labour supply. In this light, the measure contributes to addressing the provisions of the Country Recommendations COM (2019) 512 final ensuring that "social policies are effectively integrated and involve especially young people and vulnerable groups".

Objectives:

The measure aims at fostering the third sector in Southern regions (Abruzzo, Basilicata, Campania, Calabria, Molise, Puglia, Sardinia and Sicily) and at supplying socio-educational services to minors in connection with the provisions of the Partnership Agreement for the 2021-2027 programming period of European cohesion policies.

Third sector organizations play a key role in supporting and complementing the public sector in the delivery and innovation of basic services, particularly in most fragile areas of the Italian South. COVID-19 effects heavily struck educational systems, further marginalizing the condition of disadvantaged children, youth and their families. The Ministry of the South, through the Agency for Territorial Cohesion (ACT), has recently taken action with a pilot measure to tackle educational poverty in the South (EUR 20 million of national funds) led by the third sector, in partnership with schools and local authorities. RRF's support, by fulfilling its mission to contribute to territorial cohesion, will allow it to further expand and innovate this action.

Relative to Cohesion policy funds programming, RRF provides relevant advantages fit for this measure, including:

- 1) to provide, through the Agency for Territorial Cohesion, a direct, dedicated, centralized and existing governance structure, providing continuity and consolidation to the action in 2021 and the immediately following years and avoiding creating an additional National Program vehicle (whose reduction represents a EC-MS shared goal for 2021-2027 programming);
- 2) to support and strengthen the measure throughout 2021-2026, after which could be absorbed by 2021-2027 European Social Fund programs' in Less Developed Regions that will by then be fully operational.

Implementation:

Implementation will be carried out by the Agency for Territorial Cohesion, that is expected to sign specific protocols with the Foundations already operating in the sector. These protocols will contain the characteristics of the projects to be financed and the methods of evaluation, selection (also with the use of independent evaluators) and monitoring of projects, in order to ensure transparency and the best use of resources. The selection of the projects will be carried out with public notices, with the participation of public-private partnerships made up of a leader of the private social sector, by other subjects belonging to the world of the third sector and possibly by public and private bodies belonging to the world of institutions, schools or universities.

The intervention will include 4 public notices of 50 million each and a public notice by 20 million,

for a total amount of EUR 220 million. The public notice will be annual and financed interventions proposed by the third sectors will last up to two years.

The measure has already been activated with national resources: the first public notice closed on 1 February 2021 and 648 applications were submitted.

The amount of resources proposed would represent an unprecedented stimulus to the Third Sector in Southern Italy, with potential spillover effects on social values and cohesion, fundamental assets for recovery and resilience.

In particular, such a program would reach 44,000 minors involved in educational projects (20,000 due the second quarter 2023 and in total 44,000 minors due the second quarter 2026).

These indicators are based on historical objective data extrapolated from recent public notices with objectives, activities and implementing subjects strictly similar to this measure.

The interventions of each project proposal must fall into one of these areas:

- interventions for children aged 0-6, that aim, for example, at strengthening the conditions of access to nursery and kindergarten services and at supporting parenthood;
- interventions for children aged 5-10, which aim at promoting the well-being and harmonious growth of minors, guaranteeing effective educational opportunities and early prevention of various forms of discomfort (school dropout, bullying and other phenomena of distress);
- interventions for children aged 11-17, which aim at improving education supply and preventing the phenomenon of early school leaving.

State Aid:

Not applicable for this measure

Target population:

Minors in Southern Italy.

Timeline:

The project will include annual public notices, from 2021 to 2025. Financed interventions are expected to end by the second quarter of 2026.

4. Infrastructural investments for the Special Economic Zones (SEZ)

The scope of these investments is to ensure the effectiveness of the reform introducing SEZs, by avoiding further economic development delay in Southern areas with relevant industrial vocation.

Moreover, the selected projects aim at fostering competitiveness and economic development in the SEZs through the construction of primary urbanization works and the connection of these areas to the road and railway networks.

Interventions intend to make SEZs more suitable for the localization of productive activities and are

not strictly related to ports, as they typically concern the related areas.

Selection criteria favoured most advanced projects, whose works will be completed by mid-2026.

Challenges:

All SEZ strategic plans identify strengthening logistics and transport as a key first objective for effective development; without adequate development of the links of these areas with the national transport network, and in particular with the Trans-European networks (TEN-T), even the measure dedicated by the Relaunch Decree loses part of its propulsive push for investment, moreover designed precisely to develop logistics and make the SEZ areas really attractive to investors. The map shows all the located area and the interconnection with the TEN-T railway and road network.



It is therefore necessary, depending on the areas analyzed, to proceed with:

- "Last mile" link: to establish effective connections between industrial areas and the SNIT and TEN-T network, mainly railways, which allow production districts reduced time and cost in logistics;
- Primary urbanization: in some production areas the regional tables have agreements with economic operators ready to invest, but they need infrastructure the areas already identified in the strategic plans, as well as in the other regulatory instruments (municipal regulatory plans, regional country plans, etc...);
- resilient and efficient transport networks with local interventions aimed at strengthening the level of security of the works of art serving (often old), in relation to access to the main facilities (ports, production areas) and in any case according to the rules dictated by current technical regulations (NTC18) and dedicated guidelines.

Port interventions also fall into this phase, as they are dedicated to the quays arrangement or dredging.

Objectives:

This initiative therefore provides for:

- process output:
 - better-infrastructure industrial areas;
 - connections to effective and efficient national and European transport networks;

- resilient infrastructure systems that can serve the integrated logistics of these areas with each other and with the rest of the European single market;
- short- and medium-term outcome:
 - removal of obstacles to the effective attractiveness of these areas by private investors in the sectors (food, manufacturing, green economy) identified by the strategic plans for the various areas falling within the SEZ perimeter;
 - increased related activities with the benefit of the SMEs concerned (hauliers, personal services and business services);
 - consequent increase in the employment rate of these areas, resulting in an increase in territorial and social cohesion in the southern areas of the country, a true general objective of the entire SEZ project.
 - Railway's last mile interventions increase clean mobility;
 - Road's last mile rationalizes viability and remove vehicular traffic from built-up areas;
 - Some works (Lecce Surbo - Galatina) (Taranto) are preparatory for the start-up of factories for the reuse and recycling of products.
 - Works of urbanization are Reindustrialisation and environmental recovery interventions, consisting in: upgrading of primary, technological and logistic networks, also with green energy production; removal of pollution phenomena; monitoring of environmental matrices (air, water and soil) and their evolution deriving from economic activities. There will be no new land consumption.

It should be noted that these interventions are fully consistent with those foreseen for the development of the Country's infrastructures (Mission 3), with the aim to strengthen and make more effective the specific measures foreseen on harbours (e.g. Manfredonia, Taranto, Cagliari ed Augusta and those on railways, e.g. Valle di Ufita, about 2 km for the new Hirpinia station of the AV/AC Naples-Bari).

Implementation:

All these interventions are already promoted within the framework of the strategic development plans of the SEZs, and they are also integrated into a single macro-project aimed to strengthen the logistics and productive network in Southern Italy.

According to the analysis of the interventions plans drawn up by SEZ, as well as taking into account the analysis on the intersection of the industrial zones with the national SNIT network, it was therefore possible to select specific projects - for a total of EUR 630 million - to launch the infrastructural organisation of the 8 SEZ.

The Department of Cohesion, with the support of the Technical Mission Structure of the Ministry of Sustainable Infrastructure and Mobility, has carried out a survey of the necessary infrastructure interventions in the SEZ areas, involving the regions concerned, also through the consortia of the

Industrial Development Areas (ASI), the Committees and Commissioners of the SEZ areas and the Port Authorities concerned; the "conditions of engagement" agreed with the territorial authorities were as follows:

- Project in the Strategic Development Plans of the SEZ areas and in other territorial area planning tools, or in any case consistency with these tools;
- Advanced design phase at least equal to the technical and economic feasibility project.

In assessing the more than 50 projects submitted by local and regional authorities, the central structures agreed to prefer those interventions which, in addition to complying with the initial conditions and general indications provided, as a whole, a decisive and coherent strengthening of the logistics system and services useful to attract new investors to SEZ areas;

Other parameters taken into account were:

- Interconnection between interventions in order to strengthen the overall transport and logistics system of the areas and, in general, of the south of the country (general interventions of territorial and social cohesion);
- Number of ports and volumes and type of goods in transit;
- Length and state of infrastructure networks serving industrial areas;
- Number and extent of areas and production areas directly affected by the intervention;
- Interconnection between these and other areas of the SEZ or other SEZ and national production areas;
- Territory overall strengthened by intervention.

The various SEZs and Harbour Authorities will be entrusted, under the supervision of the Department for Cohesion, supported by the technical structures of the MIMS, the executive planning and management of the interventions.

The Agency for Territorial Cohesion will be responsible for leading the process, including the general interlocations with the various implementing bodies, the preparation of the allocation criteria and the awarding criteria for selecting the project. In addition, the Agency will be supported by the Technical Structure of Mission and the competent directorates of the Ministry of Sustainable Infrastructure and Mobility.

The implementing bodies will be identified according to the nature of the interventions: for example, RFI for railway interventions, ANAS for main road network interventions, local authorities for the relevant road structures, Harbour Authorities for interventions related to harbours and the areas close to the seaport, Regions for urbanisation and logistics interventions.

Infrastructural interventions will be carried out for each of the 8 SEZs, according to the specific needs, expecting implementation progress with the approval of the intervention programmes by Q4 2021. Moreover, the decree will allocate resources to the subjects responsible for implementation and define specific conditions to avoid any environmental impact of interventions.

The planned interventions are:

- "Last mile" link: to establish effective connections between industrial areas and the and TEN-T railway network; or
- Digital logistics and energy and environmental efficiency works; or
- Strengthening resilience and security of the infrastructure in relation to access to ports.

By the fourth quarter 2023, interventions will be started for at least 22 last-mile connections with ports or industrial areas of the ZES; at least for 15 interventions for digital logistics, urbanizations or energy efficiency works in the same areas; and for 4 interventions strengthening ports' resilience. Those interventions will be completed due the second quarter 2026.

The general supervision of milestones for each project is entrusted to the Agency for Territorial Cohesion, with the technical support of MIMS.

Focus on SEZ Abruzzo

Projects related to the Vasto and Ortona Harbours and the industrial areas of Saletti and Manoppello (network TEN-T comprehensive), have been positively evaluated for a total amount of EUR 62.9 million.

Focus on SEZ Campania

Projects related to the Salerno Harbour and the industrial areas of Uffita, Marcianise, Battipaglia and Nola have been positively evaluated for a total amount of EUR 136 million.

Focus on SEZ Adriatica Interregional Apulia Region - Molise Region

The interventions located in Manfredonia Harbour, in the ASI of Termoli, Brindisi and Lecce have been positively evaluated, for a total amount of EUR 89.092 million.

This is an interregional area, with internal interconnections between the areas of Termoli, Brindisi and Lecce, and the Manfredonia Harbour. There are also relevant interconnections with other centres (in particular Bari - Taranto) and with the ZES Campania Region, in the line Naples- Bari with Uffita-Foggia-Bari.

Focus on SEZ Ionian Interregional Apulia Region -Basilicata Region

The projects located in the Taranto harbours and in the ASI of Taranto, Potenza and Matera, have been positively evaluated, for a total amount of EUR 108.1 million. This is an interregional area, with internal interconnections between Tito, La Martella, Jesce and Taranto. There are also important interconnections with other centres (in particular Bari - Taranto) and with the ZES Campania on the Salerno - Battipaglia - Potenza - Bari - Taranto route.

Focus on SEZ Calabria

The projects located in the harbours of Gioia Tauro, Reggio di Calabria and Villa San Giovanni, as well as infrastructural interventions for accessibility to Gioia Tauro and upgrading of some strategic railway stations, have been positively evaluated, for a total amount of EUR 111.7 million.

Focus on SEZ Eastern Sicily

A series of interventions to improve accessibilities to the harbours of Augusta, Riporto, Sant'Agata di Mitello and Gela have been positively evaluated, for a total amount of EUR 52.208 million.

Focus on SEZ Western Sicily

An integrated project for harbour logistics and construction of a service pier has been positively evaluated, for a total amount of EUR 60 million.

Focus on SEZ Sardinia

The Sardinian SEZ, which is still in the final approval phase, have presented a project to improve accessibility to the industrial harbour of Cagliari, for a total amount of EUR 10 million.

State Aid:

According to the State aid self-assessment, based on the “Practical guidance to Member States for a swift treatment of State aid notifications in the framework of the Recovery and Resilience Facility” provided by the EC services, it is excluded that State aid is involved, by taking into account that the resources will be used by local authorities which are the owners of the confiscated assets.

In any event, in case State aid elements emerge in the implementation phase of the measure, the investments are likely to be financed on the basis of a new State aid measure which – depending on more detailed elements which are going to be finalized (e.g. services of general economic interest, SGEI) - will comply either with de minimis rules, or with the GBER or with the pertinent rules for aid schemes to be notified to the European Commission.

A tax credit is currently operating in the SEZ and granted under the GBER; the aid scheme, as prolonged by SA. 61598 (2021/X) until 31.12.2021, provides support to undertakings of all sizes (not only to SMEs), located in SEZ applying the maximum aid intensities envisaged by Regional Aid maps to the total cost of purchased goods, within the maximum investment threshold of EUR 50 million.

The extension of the measure until 31 December 2021, as shared with EC – DG Comp, was communicated through the SANI2 system in January 2021, in line with art.11 of regulation (EU) n.651/2014 and is recorded under case number SA. 61598 (2021/X).”

Regarding infrastructural investments in the SEZ, according to the State aid self-assessment, based on the “Practical guidance to Member States for a swift treatment of State aid notifications in the framework of the Recovery and Resilience Facility” provided by the EC services, it is excluded that State aid is involved, by taking into account that the beneficiaries are public authorities.

In case State aid elements emerge in the implementation phase of the measure, the investments are likely to be financed on the basis of a new State aid measure which – depending on more detailed elements which are going to be finalized - will comply with the GBER or with the pertinent rules for aid schemes to be notified to the European Commission.

Target population:

Companies and workers in target areas

Timeline:

The projects will start in 2021; the conclusion of the whole interventions is expected by the end of 2026.

4. Open strategic autonomy and security issues

Member States are invited to describe to what extent the relevant reforms and investments will help make the Union more resilient by diversifying key supply chains and thereby strengthening the strategic autonomy of the Union alongside an open economy.

Specifically for investments in digital capacities and connectivity, Member States should provide a security self-assessment. This self-assessment should detail how identified issues will be addressed in order to comply with the relevant national and Union laws and policies. In particular for investments in connectivity, it should make reference to the actions set out in the EU toolbox

Not applicable for this component

5. Cross-border and multi-country projects

Member States should indicate any cross-border and multi-country projects in the plan. Member States should indicate which other Member States are involved in such projects, the modalities for reporting, milestones and targets, and disbursements should be clearly divided between the concerned Member States to avoid overlaps and delays in assessment and implementation.

Not applicable for this component

6. Green dimension of the component

The above-mentioned projects promote the green dimension of the component mainly through the following *drivers*:

- investments aimed at rehabilitating civil and industrial buildings, even by using technologies to reduce environmental impact and avoiding new soil erosion
- through investments, mainly for SEZ, aiming to improve the skills needed to support eco-sustainable investments for qualifying the productive vocations of the territory, whilst promoting innovation and fostering employment and economic growth.

Please see attached TABLE 1

7. Digital dimension of the component

Not applicable

Please see attached TABLE 1

8. Do not significant harm

Please see attached files

9. Milestones, targets and timeline

Please see attached TABLE 2

10. Financing and costs

1. Inner Areas

(i) Enhancement of community social services and infrastructures

The financial requirement has been estimated on the basis of the average cost per inhabitant served by new or improved basic services in the similar design approved as part of the National Strategy of Internal Areas in implementation in the 2014-2020 cycle. In particular, this estimate derives from projects that were already approved in October 2020 and considers only costs related to the improvement of services (<https://www.agenziacoesione.gov.it/strategia-nazionale-aree-interne/>). On the basis of this information, we expect an average cost per inhabitant of about EUR 250. The total financial requirement for all the Inner Areas of the Country, consisting of a total population of about 13 million, would be about EUR 3,3 billion. In order to achieve at least 15% of the population (i.e. about 2 million of inhabitants), the overall financial requirements is estimated at about EUR 500 million. As far as municipalities in Southern Italy are concerned, we expect to reach at least 900.000 inhabitants, equal to about 5% of the total population.

When the improvement of services will be fully operational, the related current costs will be covered by local authorities' ordinary budget. Local authorities will guarantee specific commitments as a prerequisite for the financing.

(ii) Territorial proximity health facilities

In Italy there are 4,119 subsidized rural pharmacies, which operate in municipalities with less than 3,000 inhabitants and which, due to the reduced catchment areas, receive a (sometimes extremely low) regional subsidy. Overall, their catchment area is around 5 million inhabitants.

The measure consists of a public contribution by EUR 100 million to sustain rural pharmacies' investments. This contribution will require additional private investments equal to a half of the received public contribution. Overall, we expect to increase rural pharmacies' investments by EUR 150 million.

We expect that almost a half of rural pharmacies in municipalities with less than 3,000 inhabitants could benefit from this intervention, with an average investment per pharmacy equal to 72,000 euro (48,000 euro from the public contribution and 24,000 euro from the private one). Data on investments are estimated on the basis of market costs by Federfarma and reported in the following table.

| |
|---|
| Average investments in euros per rural pharmacy depending on the amount of annual revenues |
|---|

| | < 600,000 euro | >= 600,000 euro | Total |
|---|----------------|-----------------|---------------|
| Reorganization of the drug dispensing area | 20,000 | 30,000 | 23,070 |
| Hardware | 600 | 1,200 | 784 |
| Staff training | 1,200 | 2,400 | 1,568 |
| Software | 1,800 | 1,800 | 1,800 |
| Workstation for taking charge of the patient | 15,000 | 25,000 | 18,070 |
| Device rental | 9,900 | 13,500 | 11,005 |
| Area for the provision of diagnostic services | 15,000 | 20,000 | 16,535 |
| Total | 63,500 | 93,900 | 72,833 |

Source: Federfarma (<https://www.federfarma.it/Farmacie-e-farmacie/La-Farmacia-Italiana-2015.aspx>).

2. Rehabilitation of assets confiscated from organised crime

On the basis of matured experiences during the 2014-2020 Cohesion policy period, the cost of renovation of confiscated assets is on average EUR 1,5 million, ranging from EUR 140,000 to EUR 1,5 million².

The initiative, proposed by the Minister for the South and Territorial Cohesion, promotes total investments of EUR 300 million for 200 interventions to enhance the value of public real estate (buildings and land), to be selected in agreement with the regions and with the involvement of the beneficiary entities.

The choice of financing small-scale investments within the Recovery fund is coherent with analysis on historical data of investments elaborated by the Agency for territorial cohesion in a recent study.

² see documentation for Campania <http://porfesr.regione.campania.it/it/news/primo-piano/riuso-e-rifunzionalizzazione-di-beni-confiscati-alla-criminalita-organizzata> and Sicily <https://ponlegalita.interno.gov.it/comunicazioni/notizie/recupero-beni-confiscati-il-pon-legalit%C3%A0-finanzia-sicilia-18-progetti>

More expensive intervention will be financed with national or cohesion policy resources that have a larger time span. Moreover, the most recent experience in Campania showed that the average request for funding in this kind of projects is around EUR 1,5 million.

The investment considers an average of 38 actions for each of the eight regions (Abruzzo, Basilicata, Calabria, Campania, Molise, Apulia, Sardinia and Sicily), aimed at ensuring the assets reuse for social, economic, employment and institutional purposes, as well as promoting a more transparent and legal economy.

3. Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector

The action will move from 4 public notices of 50 million each and a public notice of 20 million, for a total amount of EUR 220 million. The public notice will be annual and financed interventions proposed by the third sectors will last up to two years.

In particular, projects' unit costs are estimated combining evidence from two recent public calls aimed at the third sector and financing activities to tackle educational poverty:

(i) an average rate of 80% as share of total potential eligible costs covered by public grants requested by third sector organizations in the projects approved within the EduCare program (late 2020, Department of Family Policies, Presidency of the Council of Ministers);

(ii) an average request of EUR 415,000 (against a maximum possible financing of EUR 500,000) from the 648 projects proposed by third sector organization and currently under evaluation within the program initiative led by the Agency for Territorial Cohesion (EUR 20 million).

4. Infrastructural investments for the Special Economic Zones (SEZ)

All the selected investments are in an advanced status in terms of feasibility project; the estimates derive from the economic framework for each project. The following table summarizes interventions per each SEZ and the required investment.

| Region | Area | Project | Requirement |
|----------------|----------------------------|---|-------------|
| <i>Abruzzo</i> | Industrial Area SALETTI | enhancement of the regional railway line and logistics plate for goods exchange | 24,450 |
| | Industrial Area Manoppello | strengthening the Abruzzo logistics network in the manoppello rrt hub | 10,000 |

| | | | |
|-----------------|---------------------------------|---|--------|
| | Ortona Port | last mile connection with the port and enhancement of related infrastructures, reactivation of the railway section of the north pier and deepening of the seabed through drainage and dock consolidation | 19,800 |
| | Vasto Port | road ss16 connection with the port and related works; port extension - levant quay, hammer quay and breakwater | 8,650 |
| <i>Campania</i> | Industrial Area Marcianise | infrastructure for goods mobility. interventions to upgrade the network for the logistics | 30,000 |
| | Industrial Area Valle Ufita | freight yard terminal with adjoining area for sorting, loading and unloading containers and swap bodies and intermodal rail-road junction for loading semi-trailers. | 26,000 |
| | Industrial Area NOLA (Naples) | reindustrialisation and environmental recovery interventions, consisting in: upgrading of primary, technological and logistic networks, also with green energy production; removal of pollution phenomena; monitoring of environmental matrices (air, water and soil) and their evolution deriving from economic activities | 30,000 |
| | Salerno Port | redevelopment of access roads to Salerno port, new underground station (RFI) and upgrading of the logistics area of Battipaglia | 50,000 |
| <i>Molise</i> | Cosib – Industrial Area Termoli | extraordinary maintenance, securing and completion of the consortium viability, construction of a third processing plant and creation of a customs-free zone building | 24,350 |
| <i>Puglia</i> | Industrial Area Brindisi | areas acquisition and factories construction, completion and efficiency of service networks (lighting, water, sewage, road); creation of a circular economy competence centre; refreshment centre; energy efficiency of the consortium office building. | 8,659 |
| | Industrial Area Lecce | reactivation of the freight yard and track reconstruction in Surbo (LECCE); restructuring, upgrading and completion of service networks, efficiency of real estate services and creation of a product research and innovation centre - engineering sector (Surbo, and fashion and design - Soletto); digital services | 16,283 |
| | Manfredonia Port | recovery and re-functionalization of the “alti fondali” basin | 41,000 |

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|-------------------|---------------------------------------|--|--------|
| | | (overall cost 120 millions) | |
| | Industrial Area Taranto | 6 integrated photovoltaic systems (555 kwh) and an accumulation system (200 kwh) based on hydrogen technologies; transport service center in the rear port area. | 8,100 |
| | Taranto Port | primary infrastructure and road rail accessibility of the "eco industrial park" area (part of Ilva) | 50,000 |
| <i>Basilicata</i> | Industrial Area Potenza | primary, secondary and service infrastructures of the portion of the sez area of tito not parceled out | 20,000 |
| | Industrial Area Matera | primary, secondary and service infrastructure of the entire sez area of Jesce e La Martella | 30,000 |
| <i>Calabria</i> | Interventi D'area | upgrading to 750 m module in Sibari, S. Pietro a Maida, Nocera Terinese and Rosarno plants - (RFI) | 57,700 |
| | Gioia Tauro Industriale Area And Port | functional upgrading of the road link to the ten-t S.Agata ss18 (ANAS) network and other junction works with the a2 at Rosarno (ANAS); enhancement and efficiency of material networks and photovoltaic park; completion of the western quay on the north side (16,5 millions) | 43,500 |
| | Reggio Calabria | adjustment and rehabilitation works of the Margottini quay | 6,500 |
| | Villa San Giovanni | technical-functional adaptation of the quay. structural rehabilitation of slipway 0 | 4,000 |
| <i>Sardinia</i> | Cagliari Port | road connecting the ro ro terminal to the west port of porto canale with the junction on the ss 195 | 10,000 |
| <i>Sicily</i> | Catania RRT | entering roads for access to the Catania interport | 2,000 |
| | Augusta Port | securing works of art at the service of access to the island port and construction of the third link between the port areas of the island and the mainland | 26,208 |
| | Riporto Port | connection of the port with the highway | 11,500 |

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|--------------------|---|--|----------------|
| | S. Agata Di Militello Port | connection of the port with the highway | 4,000 |
| | Gela Port | connection of the port and “mandria” site with the highway | 10,500 |
| | Termini Imerese Port - Intervento Autorità Portuale | new quay for logistics (overall costs 60 millions) | 36,000 |
| | Termini Imerese - Sicily Region | recovery and arrangement of an area to be intended for logistics | 3,000 |
| | Trapani Port And Industrial Area | port connection with Trapani industrial area | 17,800 |
| <i>SUMS</i> | | | 630,000 |

Please see attached TABLE 3

Annex II: M/Ts of Component 3 of Mission 5

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the Regulation.

| Timeline | CID | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|--|---|-------------------------------|--------------------|
| Q4-2022 | <p>II. Inner Areas Milestone: Award of the contracts for the interventions to improve social services and infrastructures in Inner Areas and for the support to pharmacies in municipalities of less than 3 000 inhabitants.</p> | <p>Q4-2021: Launch of the tender for the selection of municipalities and pharmacies</p> <p>Inner Areas are those identified in the Strategia Nazionale Aree Interne, from which 1077 municipalities with a total population of around 13 000 000 inhabitants are part</p> | | |
| Q4-2025 | <p>I.1 Inner Areas Target: At least 2 million inhabitants of inner areas (15% of local population) and, at least, and additional 5% of the population in Southern Italy (about 900,000 inhabitants) reached by developed or improved social services and infrastructures. These services should as a minimum include at least one of the following interventions,</p> <ul style="list-style-type: none"> • Home care services for the elderly; • Strengthening of small hospitals and outpatient centres; • Strengthening centres for the disabled; • Counselling centres, cultural services, sports services and migrant reception | <p>The interventions could also tackle community nurses and midwives and the provision of infrastructures for helicopter rescue</p> <p>Inner Areas are those identified in the Strategia Nazionale Aree Interne, from which 1077 with a total population of around 13 000 000 inhabitants are municipalities are part</p> <p>‘Small hospitals’ are considered those without first aid or some basic services (i.e. radiology, cardiology, gynecology)</p> | | |

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| | The intervention aims either at creating new services and infrastructures or at improving the existing ones through an increase in the number of recipients or in the quality of supply. | | | |
| Q4-2023 | I.1 Inner Areas Intermediate target: Provide support to at least 500 rural pharmacies in municipalities of less than 3000 inhabitants | Rural pharmacies are defined on the basis of L. 27 March 1968, n. 221. | | . Overall in Italy there are 4,119 rural pharmacies in municipalities with less than 3,000 inhabitants. Overall, it is expected that almost a half of them could benefit from this intervention |
| Q2-2026 | Target: Provide support to at least 2,000 pharmacies in municipalities of Inner Areas of less than 3000 inhabitants. | | | |
| Q2 2024 | I2. Rehabilitation of assets confiscated from organised crime Milestone: Completion of all the tenders for interventions on assets confiscated from organized crime, which meet the conditions set up in the Agreement signed between the "Confiscated Assets" Agency, the Territorial Cohesion Agency and local authorities that will define criteria for resource allocation and project selection. The assets should be devoted to one of the following purposes, | | | |

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| | <ul style="list-style-type: none"> • Social/housing inclusion of people living in conditions of exclusion. • Integration in public spaces, in order to improve services to citizens. • Socio-cultural gathering spaces for young people. • Legality and territorial security sites such as barracks, police/carabinieri stations or civil protection. | | | |
| Q2-2025 | <p>I2. Rehabilitation of assets confiscated from organised crime Target (intermediate): Rehabilitation of at least 100 assets confiscated from organised crime.</p> <p>The assets should be devoted to one of the following purposes,</p> <ul style="list-style-type: none"> • Social/housing inclusion of people living in conditions of exclusion. • Integration in public spaces, in order to improve services to citizens. | | | |

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|---------|--|--|--|--|
| | <ul style="list-style-type: none"> • Socio-cultural gathering spaces for young people. • Legality and territorial security sites such as barracks, police/carabinieri stations or civil protection. | | | |
| Q2-2026 | <p>I2. Rehabilitation of assets confiscated from organised crime Target: Rehabilitation of at least 200 assets confiscated from organised crime. Final Target</p> <p>The assets should be devoted to one of the following purposes,</p> <ul style="list-style-type: none"> • Social/housing inclusion of people living in conditions of exclusion. • Integration in public spaces, in order to improve services to citizens. • Socio-cultural gathering spaces for young people. • Legality and territorial security sites such as barracks, police/carabinieri stations or civil protection. | | | |

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|-----------------------|--|--|--|--|
| <p>Q2-2023</p> | <p>I3. Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector Target (intermediate): At least 20,000 minor aged from 0 to 17 years with educational support.</p> <p>The projects should be in the following areas:</p> <ul style="list-style-type: none"> • Interventions for children aged 0-6 aimed at strengthening the conditions of access to nursery and kindergarten services and at supporting parenthood; • Interventions for children aged 5-10 aimed at guaranteeing effective educational opportunities and early prevention of school dropout, bullying and other phenomena of distress; • Interventions for children aged 11-17, which aim at improving education supply and preventing the phenomenon of early school leaving. | <p>Key elements of the tender:</p> <ul style="list-style-type: none"> - Public notices should account for EUR 50 ml each - The third sector entities projects should last at least one year and up to two years. - The actions will take place in the regions of Abruzzo, Basilicata, Campania, Calabria, Molise, Puglia, Sardegna and Sicilia. | | |
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| Q2-2026 | <p>I3. Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector</p> <p>Target: At least 44,000 minors aged from 0 to 17 years are provided with educational support</p> <p>The projects should be in the following areas:</p> <ul style="list-style-type: none"> • Interventions for children aged 0-6 aimed at strengthening the conditions of access to nursery and kindergarten services and at supporting parenthood; • Interventions for children aged 5-10 aimed at guaranteeing effective educational opportunities and early prevention of school dropout, bullying and other phenomena of distress; • Interventions for children aged 11-17, which aim at improving education supply and preventing the phenomenon of early school leaving. | <p>Key elements of the tender:</p> <ul style="list-style-type: none"> - Public notices should account for EUR 50 ml each - The actions will take place in the regions of Abruzzo, Basilicata, Campania, Calabria, Molise, Puglia, Sardegna and Sicilia. | | |
| Q4-2021 | <p>I4. Infrastructural investments for the Special Economic Zone</p> <p>Milestone: Adoption of Ministry Decrees approving operational plan for all 8 Special Economic Zone</p> | <p>The decree will allocate resources to the subjects responsible for implementation and define specific conditions to avoid any environmental impact of interventions.</p> | | |

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| Q4-2023 | <p>I4. Infrastructural investments for the Special Economic Zone</p> <p>Target (intermediate): Interventions should have started for at least 22 last-mile connections with ports or industrial areas of the ZES; at least 15 interventions for digital logistics, urbanizations or energy efficiency works in the same areas; 4 interventions strengthening ports' resilience.</p> | <p>The planned interventions are:</p> <ul style="list-style-type: none"> • "Last mile" link: to establish effective connections between industrial areas and the and TEN-T railway network; OR • Digital logistics and energy and environmental efficiency works; OR • Strengthening resilience and security of the infrastructure in relation to access to ports | | |
| Q2-2026 | <p>I4. Infrastructural investments for the Special Economic Zone</p> <p>Final Target: Complete at least 22 last-mile connections with ports or industrial areas of the ZES; make at least 15 interventions for digital logistics, or urbanization, or energy efficiency works in the same areas; 4 interventions strengthening ports' resilience</p> | <p>The planned interventions are:</p> <ul style="list-style-type: none"> • "Last mile" link: to establish effective connections between industrial areas and the and TEN-T railway network; OR • Digital logistics and energy and environmental efficiency works; OR • Strengthening resilience and security of the infrastructure in relation to access to ports <p>The indicative list of interventions will take place in the following areas,</p> <ul style="list-style-type: none"> • Completion of the TEN-T comprehensive network infrastructure in the harbours of Vasto and Ortona Harbours and the industrial areas of Saletti and Manoppello (Abruzzo) • Infrastructure in the port of Salerno and the industrial areas of Uffita, Marcianise, Battipaglia and Nola (Campania) | | |

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|--|--|---|--|--|
| | | <ul style="list-style-type: none">• Interconnections between the port of Manfredonia and in the urban areas of Termoli, Brindisi and Lecce (Puglia and Molise)• Interconnections between the port of Taranto and the urban areas of Taranto, Potenza and Matera (Puglia and Basilicata)• Infrastructural interventions for accessibility to the port of Gioia Tauro (Calabria)• Infrastructure accessibility to the port of Cagliari (Sardegna)• Infrastructural interventions for accessibility to the ports of Augusta, Riporto, Sant'Agata di Mitello and Gela (Sicilia) | | |
|--|--|---|--|--|

| Mission | Component | Id | Name |
|----------------|------------------|-----------|---|
| M5 | C3 | Inv1.1 | NSIA Enhancement of community social infrastructures |
| M5 | C3 | Inv1.2 | NSIA Territorial proximity health facilities |
| M5 | C3 | Inv2 | Rehabilitation of assets confiscated from organised crime |
| M5 | C3 | Inv3 | Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector |
| M5 | C3 | Ref1 | Special Economic Zones (SEZ): Reviews of the procedures and renovation of the Commissarial Role |
| M5 | C3 | Inv4 | Infrastructure investments for special economic zones |

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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

5. INCLUSION AND COHESION

3 - Special interventions for social cohesion

Investment 1.1: NSIA Enhancement of community social infrastructures

Agency for Territorial Cohesion

21/04/2021

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems



Ste

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

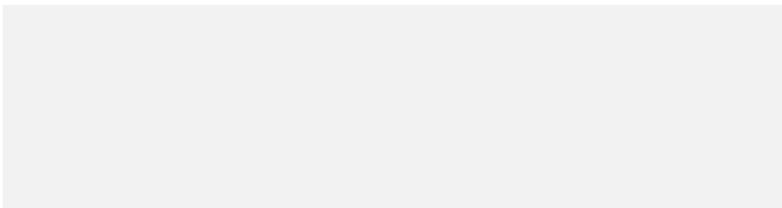
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D. No, the measure requires a substantive DNSH assessment.



p 1

Justification if A, B or C has been selected







| Questions | Yes/No |
|--|--------|
| Is the measure expected to lead to significant GHG emissions? | NO |
| Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | NO |
| Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | NO |

| | |
|--|----|
| <p>Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?</p> | NO |
| <p>Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?</p> | NO |
| <p>Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest?</p> | NO |

Step 2

Substantive justification if NO has been selected

The measure is complemented with evidence that the energy mix is on a path to decarbonise in line with the GHG emissions reduction targets by 2030 and 2050, and is accompanied by increased renewables generation capacity.

The measure is compatible with achieving the GHG emissions reduction target by 2030 and with the objective of reaching climate neutrality by 2050.

The measure respects green public procurement criteria.

Furthermore, the measure is not expected to result in significant greenhouse gas emissions as:

- the building is not intended for the extraction, storage, transport or production of fossil fuels;
- the program of interventions relates to the construction of new buildings with high energy efficiency characterized by a primary energy demand that it is at least 20% lower than the requirements of the NZEB buildings and it is therefore compatible with the achievement of the objective of reducing greenhouse gas emissions and of climate neutrality.

In this sense, it will contribute to the achievement of the national target of annual increase in energy efficiency established under the Energy Efficiency Directive (2012/27 / EU) and it will allow the respect of the agreements stated at national level within the Paris Agreement on climate.

Through specific provisions in tenders and contracts, the measure will require economic operators to ensure that technical building systems in refurbished buildings are based on state-of-the-art technologies, as well as optimized to provide thermal comfort to occupants even at those temperatures. extreme.

The measure does not affect water bodies or protected habitats and species.

All relevant new water appliances (shower solutions, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) must be in the top 2 classes for water consumption of the EU Water Label.

The measure meets the criteria of green public procurement in compliance with current national directives (CAM-Minimum Environmental Criteria for the building sector - Ministerial Decree 11.10.2017) and respects the principles of the sustainability of the products and of the waste hierarchy, with priority on the waste prevention and on a management focused on the preparation the reuse and recycle of materials.

The measure will also cover the costs for the sustainable management of the construction and demolition waste and for the use of recycled aggregates, ensuring compliance with the expected environmental performance levels also through specific reporting of the materials used by the economic operators awarded of the activities.

Elements of the measure contained, for the selection of economic operators, the use of rewarding criteria aimed at improving the environmental performance levels of the project and tested on ISO 14001 certification and / or EMAS registration of operators. Furthermore, through specific clauses in the tenders and contracts, it will be required to the economic operators who renovate buildings to ensure that a significant proportion of non-hazardous construction and demolition waste (excluding the material in its natural state referred to the item 17 05 04 of the European List of Wastes established by Decision 2000/532 / EC) produced on the construction site will be prepared for reuse, recycling and other types of material recovery, including backfilling operations that use waste to replace other materials, in accordance with the waste hierarchy and the EU protocol for the management of construction and demolition waste

The measure complies with existing national and regional pollution reduction plans. Furthermore, it is expected that the measure won't lead to a significant increase in emissions of pollutants to air, water or soil because:

- the operators entrusted with the construction of the building will be required to use components and building materials that do not contain asbestos or substances of very high concern included in the list of substances subject to authorization in Annex XIV of Regulation (EC) no. 1907/2006;
- the ground area of the new building is located within an area already built and therefore, presumably, free of potentially contaminating substances;
- measures will be taken to reduce noise emissions and emissions of dust and pollutants during construction works.

It is also guaranteed that:

- the components and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the European REACH regulation;
- there will be taken in place, as far as possible, actions aimed at using of materials and products characterized by a low environmental impact evaluated in terms of analysis of the whole life cycle (LCA) as certified by declarations made by credible and recognized independent bodies (EU Ecolabel or other type I environmental labels, EPD or other type III environmental labels)

The interventions included in the measure do not alter or are not located in sensitive areas from the point of view of biodiversity or in proximity to them (including the network of Natura 2000 protected areas, the UNESCO world heritage sites and the main areas of biodiversity), as well as others protected areas.

| |
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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

5. INCLUSION AND COHESION

3 - Special interventions for social cohesion

Investment 1.2 NSIA Territorial proximity health facilities

Agency for Territorial Cohesion

15/04/2021

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems



Step 1

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective

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Justification if A, B or C has been selected

The measure consists in co-financing investment of pharmacies in rural areas in order to guarantee easier access to health services to citizens. In particular, the kind of activities involved are: (i) taking part in the integrated home assistance service; (ii) providing second-level services, in accordance with diagnostic-therapeutic paths envisaged for specific pathologies; (iii) dispensing drugs that the patient is now forced to collect in the hospital; (iv) monitoring the patient with the Electronic Health Record and the Pharmaceutical Dossier. Hence, no impact on climate change is foreseeable

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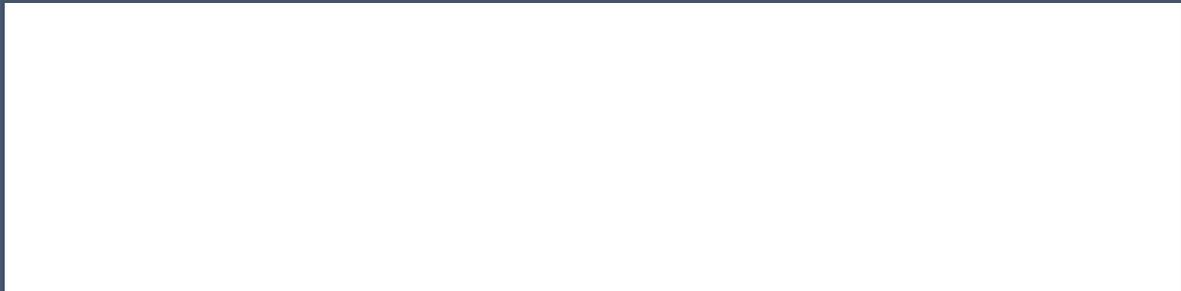
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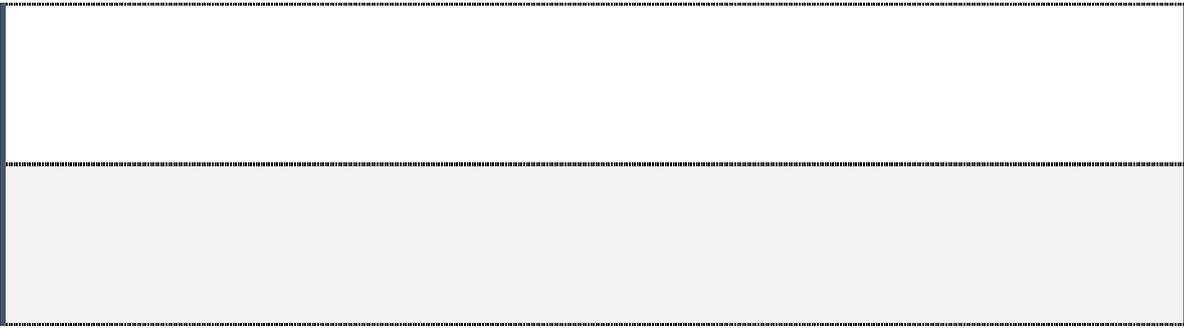
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Questions







Step 2

Yes/No

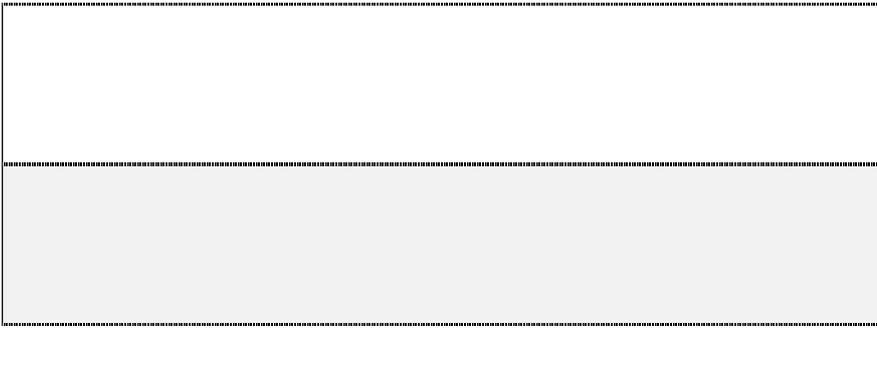


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Substantive justification if NO has been selected



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| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

5. INCLUSION AND COHESION

3 - Special interventions for social cohesion

Investment 2 - Rehabilitation of assets confiscated from organised crime

Agency for Territorial Cohesion

21/04/2021

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems



Ste

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

D. No, the measure requires a substantive DNSH assessment.

D. No, the measure requires a substantive DNSH assessment.

A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective

D. No, the measure requires a substantive DNSH assessment.

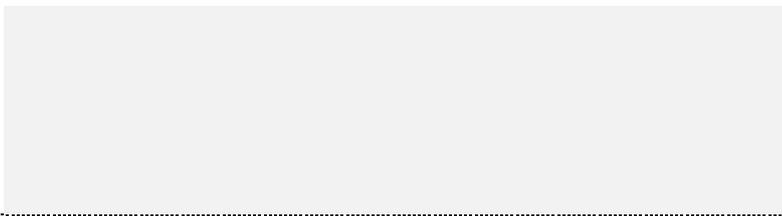
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p 1

Justification if A, B or C has been selected



The measure does not affect water bodies or protected habitats and species.
All relevant new water appliances (shower solutions, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) must be in the top 2 classes for water consumption of the EU Water Label.

The extraordinary maintenance operations and rehabilitation of existing infrastructures avoid consumption of new land.

The measure is not expected to lead to a significant increase in polluting emissions as it is aimed at reducing polluting emissions, in accordance with the plan for the ecological transition to 2030 and 2050.

In renovation techniques, the use of hazardous substances, such as asbestos, is excluded.

The emission of noise, dust and pollutants will be limited during the renovation works.

Therefore, as far as possible, the implementation will make sure that action aimed at using materials and products characterized by a low environmental impact evaluated in terms of analysis of the whole life cycle (LCA) as certified by declarations made by credible and recognized independent bodies (EU Ecolabel or other type I environmental labels, EPD or other type III environmental labels).

The interventions included in the measure do not alter or are not located in sensitive areas from the point of view of biodiversity or in proximity to them (including the network of Natura 2000 protected areas, the UNESCO world heritage sites and the main areas of biodiversity), as well as others protected areas.



| Questions | Yes/No |
|--|--------|
| Is the measure expected to lead to significant GHG emissions? | NO |
| Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | NO |
| | |

| | |
|--|----|
| <p>Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)?</p> | NO |
| | |
| | |

Step 2

Substantive justification if NO has been selected

The measure is complemented with evidence that the energy mix is on a path to decarbonise in line with the GHG emissions reduction targets by 2030 and 2050, and is accompanied by increased renewables generation capacity.

The measure is compatible with achieving the GHG emissions reduction target by 2030 and with the objective of reaching climate neutrality by 2050.

The measure respects green public procurement criteria.

Furthermore, the measure is assignable to the intervention field 025ter "Construction of new energy efficient buildings" in the annex of the RRF regulation, with a climate change coefficient of 40%. The building must comply with all applicable national / regional regulations regarding energy performance and CO2 emissions and with a primary energy demand that is at least 20% lower than the requirement for nearly zero energy buildings (NZEB - national directives). The measure is not expected to result in significant greenhouse gas emissions as: the building is not intended for the extraction, storage, transport or production of fossil fuels; the program of interventions relates to the construction of new buildings with high energy efficiency characterized by a primary energy demand that it is at least 20% lower than the requirements of the NZEB buildings and it is therefore compatible with the achievement of the objective of reducing greenhouse gas emissions and of climate neutrality. In this sense, it will contribute to the achievement of the national target of annual increase in energy efficiency established under the Energy Efficiency Directive (2012/27 / EU) and it will allow the respect of the agreements stated at national level within the Paris Agreement on climate.

The measure will require to the economic operators, through specific clauses in the calls for tender and contracts, to optimize the new buildings in terms of technical systems and plant solutions by using the best possible technologies, in order to ensure thermal comfort to the occupants even at extreme temperatures. There is therefore no evidence of significant adverse effects related to the direct effects and primary indirect effects of the measure over its life cycle in relation to this environmental objective. A specific vulnerability and climate risk assessment, related to flooding, snow, arising sea level, rainfalls, etc. will be performed in order to identify, to select and to implement the relevant adaptation measures, accordingly to the EU

The investment foresees that economic operators will in particular limit the production of waste in demolition and reconstruction operations in accordance with the EU protocol. The design and construction techniques take into consideration the possibility of reuse and recycling of waste in accordance with the national rules.

The Minimum Environmental Criteria (CAM) and Green procurement protocols will be applied for the construction of the renovation works of existing buildings.

| |
|---|
| Mission |
| Cluster |
| Related Measure (Reform or Investment) |
| Responsibility for reporting and implementation |
| Date |

DNSH assessment

5. INCLUSION AND COHESION

3 - Special interventions for social cohesion

Structured socio-educational interventions to combat educational poverty in the South supporting the Third Sector

Agency for Territorial Cohesion

15/04/2021

Environmental objectives

1. Climate change mitigation

2. Climate change adaptation

3. The sustainable use and protection of water and marine resources

4. The circular economy, including waste prevention and recycling

5. Pollution prevention and control to air, water or land

6. The protection and restoration of biodiversity and ecosystems



Step 1

Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective?

A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective

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Justification if A, B or C has been selected

The measure consists in socio-educational interventions targeted to minors in Southern regions of Italy, hence it shouldn't have any environmental impact

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Questions



Step 2



DNSH assessment

| | |
|---|--|
| Initiative | 1 |
| Cluster | 1 |
| Related Measures (Policy or Investment) | 1. Spatial Economic Zones (SEZ) Review of the procedures and requirements of the Commission's file |
| Responsibility for reporting and implementation | Ministry for the South and Territorial Cohesion/Government |
| Date | 2024/2025 |

| Environmental objective | Step 1 | | Step 2 | | |
|--|--|--|------------|--------|---|
| | Does the measure have or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification (if A, B or C has been selected) | Conditions | Yes/No | Substantive justification if NO has been selected |
| 1 Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on the environmental objective. | | | |
| 2 Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on climate change. | | | |
| 3 The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on the water and marine resources. | | | |
| 4 The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on the waste prevention and recycling. | | | |
| 5 Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on air, water and land. | | | |
| 6 The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such a consistent compliance with DNSH for the relevant objective. | The reform consists in the simplification and acceleration of administrative procedures to guarantee the effectiveness of Special Economic Zone policy. Moreover, one of the conditions to create investments in such areas is, basically, the reform will tackle such problems and give incentives to local and national administrations. Hence, the measure has no foreseeable impact on the biodiversity and ecosystems. | | | |

Valutazione DNSH

| | |
|--|---|
| Mission | M5 |
| Cluster | 3 - Special Interventions for territorial cohesion |
| Related Measure (Reform or Investment) | Infrastructure Investments for special economic zones |
| and implementation | Giuliano Colanelli |
| Date | 24/04/2021 |

| Environmental objectives | Fase 1 | | Fase 2 | |
|---|---|--|---|--|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No Substantive justification if NO has been selected |
| 1. Climate change mitigation | B. The measure is tracked as supporting a climate change or environmental objective with a coefficient of 100%, and as such is considered compliant with DNSH for the relevant objective | The interventions, characterized by an increase in network functionality and TEN-T nodes in the South of the country, can be broken down for this analysis into: Interventions to enhance logistics and urbanization efficiency; redevelopment and energy efficiency interventions, also relating to the lighting of the ASI, or in any case neutral for this mitigation; interventions to upgrade the "last mile" connections: make the connections of the nodes (ports, interports) and / or industrial areas with the SEZ network more efficient, making transport operations more efficient and favoring the reduction of climate-altering gas emissions (the part of the increase in structural safety is considered neutral for this purpose); port enhancement interventions; considered neutral for these objectives. The measure is assignable to the intervention field 078 "Trasporti multimodali (TEN-T)" in the annex 6 of the RRF regulation, with a climate change coefficient of 40%. The measure is not expected to result in significant greenhouse gas emissions as: - the program of interventions relates to the construction and/or upgrade of the transportation infrastructure with high energy efficiency characterized by a primary energy demand that it is at least 20% lower than the requirements of the NZEB buildings and it is therefore compatible with the objectives of the European Green Deal and the objectives of the Taxonomy. The measure will require, through specific clauses in the calls for tender and contracts, the optimization of new infrastructure in terms of technical systems and plant solutions by using the best possible technology. There is therefore no evidence of significant adverse effects related to the direct effects and primary indirect effects of the measure over its life cycle in relation to this environmental objective. | Is the measure expected to lead to significant GHG emissions? | NO |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective | The measure will require, through specific clauses in the calls for tender and contracts, the optimization of new infrastructure in terms of technical systems and plant solutions by using the best possible technology. There is therefore no evidence of significant adverse effects related to the direct effects and primary indirect effects of the measure over its life cycle in relation to this environmental objective. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | NO |
| 3. The sustainable use and protection of water and marine resources | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | Regarding the infrastructure interventions on ports, the measure concerns the implementation of best environmental practices or the alignment with the benchmarks of excellence indicated in the sectoral reference documents adopted pursuant to Article 46 (1) of Regulation (EC) No. 1211/2009 on voluntary participation by organizations in a Community eco-management and audit scheme (EMAS). For other interventions, the measure fulfills the GPP criteria. All relevant new water appliances (shower showers, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) must be in the top 2 classes for water consumption of the EU Water Label. Additionally, the risks of environmental degradation related to the protection of water quality and the prevention of water stress are identified and taken into account in accordance with the requirements of Directive 2000/60/EC (Water Framework Directive) and through a river basin management plan developed for the water body (s) potentially affected, in consultation with relevant stakeholders. |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | The measure meets the criteria of green public procurement to compliance with current national objectives for economic environmental Criteria for the building sector - Ministerial Decree 11.10.2017 and respects the principles of the sustainability of the products and of the waste hierarchy, with priority on the waste prevention and on a management focused on the preparation the reuse and recycle of materials. The measure will also cover the costs for the sustainable management of the construction and demolition waste and for the use of recycled aggregates, ensuring compliance with the expected environmental performance levels also through specific reporting of the materials used by the economic operators awarded of the activities. Elements of the measure contained, for the selection of economic operators, the use of rewarding criteria aimed at improving the environmental performance levels of the project and tested on ISO 14001 certification and / or EMAS registration of operators. The interventions will follow the criteria established by the Taxonomy. - Re-use parts and use recycled material during the renewal, upgrade and construction of infrastructure. - At least 70% (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the EU waste list) generated on the construction site must be prepared for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials. This can be achieved by executing the construction works in line with the good practice guidance laid down in the EU Construction and Demolition Waste Management Protocol. Furthermore, through specific clauses in the tenders and contracts, it will be required to the economic operators who carry out the work to ensure that a significant proportion of non-hazardous construction and demolition waste (excluding the material in its natural state referred to the item 17 05 04 of the European List of Wastes established by Decision 2000/532 / EC) produced on the construction site will be prepared for re-use, recycling and other material recovery. |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land?? | It is expected that the measure won't lead to a significant increase in emissions of pollutants to air, water or soil because: - the operators entrusted with the construction will be required to use components and building materials that do not contain asbestos or substances of very high concern included in the list of substances subject to authorization in Annex XIV of Regulation (EC) no. 1907/2006; the ground area of the new infrastructures is located within an area already built and therefore, presumably, free of potentially contaminating substances; - minimize noise and vibrations from use of infrastructure by introducing open trenches/ wall barriers/ other measures and comply with the Environmental Noise Directive 2002/49/EC - minimize noise, dust, emissions pollution during construction / maintenance works. The components and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the European REACH regulation; - there will be taken in place, as far as possible, actions aimed at using of materials and products characterized by a low environmental impact evaluated in terms of analysis of the whole life cycle (LCA) as certified by declarations made by credible and recognized independent bodies (EU Ecolabel or other type I environmental labels, EPO or other type II environmental labels). Additionally, the efficiency of the logistics and transport systems follows the requirements scale: 1. efficiency of the logistics areas to optimize subsequent transport; 2. creation of "last railway mile" connections between the industrial area and / or the punctual infrastructure and the TEN-T rail network; 3. efficiency and safety of the road infrastructures with "last mile" connections, if it is not possible to prepare point 2. Thus, at this hierarchical scale, the networks of urban areas are decongested (eg port of Gioia) with a reduction of infrastructure for low carbon transport is land use intensive and is a major factor of ecosystem deterioration and biodiversity loss. Projects should ensure that: - Environmental Impact Assessment (EIA) has been completed in accordance with EU Directives on Environmental Impact Assessment (2001/42/EU) and Strategic Environmental Assessment (2001/42/EC) or other equivalent national provisions. - Such impact assessments should, at the very least, identify, evaluate, and mitigate any potential negative impacts of the designated activities, projects, or assets on ecosystems and its biodiversity and should be assessed and conducted in compliance with the provisions of the EU Habitats and Birds Directives. - Invasive plants are appearing very often along transport infrastructure and are sometimes even spread due to transport infrastructure, which might negatively impact natural ecosystems (e.g. natural fauna). Care should be taken not to spread any invasive plants through proper maintenance. - Wildlife collisions is a problem and should be considered. Solutions developed for should be applied for the detection and avoidance of potential traps that may cause the unnecessary death of animals. - Mitigation options exist and different types of measures can be beneficial for wildlife, such as: - Wildlife warning systems combined with heat sensors can reduce the number of collisions. - Benches along areas with high stalker risk. - Viaducts, tunnels, overpasses and bridges, etc. - Warning signs that are triggered by appropriate lights, particularly in areas of high stalker risk. |
| 6. The protection and restoration of biodiversity and ecosystems | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | It is expected that the measure won't lead to a significant increase in emissions of pollutants to air, water or soil because: - the operators entrusted with the construction will be required to use components and building materials that do not contain asbestos or substances of very high concern included in the list of substances subject to authorization in Annex XIV of Regulation (EC) no. 1907/2006; the ground area of the new infrastructures is located within an area already built and therefore, presumably, free of potentially contaminating substances; - minimize noise and vibrations from use of infrastructure by introducing open trenches/ wall barriers/ other measures and comply with the Environmental Noise Directive 2002/49/EC - minimize noise, dust, emissions pollution during construction / maintenance works. The components and construction materials do not contain asbestos or substances of very high concern as identified on the basis of the authorization list of the European REACH regulation; - there will be taken in place, as far as possible, actions aimed at using of materials and products characterized by a low environmental impact evaluated in terms of analysis of the whole life cycle (LCA) as certified by declarations made by credible and recognized independent bodies (EU Ecolabel or other type I environmental labels, EPO or other type II environmental labels). Additionally, the efficiency of the logistics and transport systems follows the requirements scale: 1. efficiency of the logistics areas to optimize subsequent transport; 2. creation of "last railway mile" connections between the industrial area and / or the punctual infrastructure and the TEN-T rail network; 3. efficiency and safety of the road infrastructures with "last mile" connections, if it is not possible to prepare point 2. Thus, at this hierarchical scale, the networks of urban areas are decongested (eg port of Gioia) with a reduction of infrastructure for low carbon transport is land use intensive and is a major factor of ecosystem deterioration and biodiversity loss. Projects should ensure that: - Environmental Impact Assessment (EIA) has been completed in accordance with EU Directives on Environmental Impact Assessment (2001/42/EU) and Strategic Environmental Assessment (2001/42/EC) or other equivalent national provisions. - Such impact assessments should, at the very least, identify, evaluate, and mitigate any potential negative impacts of the designated activities, projects, or assets on ecosystems and its biodiversity and should be assessed and conducted in compliance with the provisions of the EU Habitats and Birds Directives. - Invasive plants are appearing very often along transport infrastructure and are sometimes even spread due to transport infrastructure, which might negatively impact natural ecosystems (e.g. natural fauna). Care should be taken not to spread any invasive plants through proper maintenance. - Wildlife collisions is a problem and should be considered. Solutions developed for should be applied for the detection and avoidance of potential traps that may cause the unnecessary death of animals. - Mitigation options exist and different types of measures can be beneficial for wildlife, such as: - Wildlife warning systems combined with heat sensors can reduce the number of collisions. - Benches along areas with high stalker risk. - Viaducts, tunnels, overpasses and bridges, etc. - Warning signs that are triggered by appropriate lights, particularly in areas of high stalker risk. |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 1: Proximity networks, facilities and telemedicine for territorial healthcare assistance

1. Description of the component

Summary box - Proximity networks, facilities and telemedicine for territorial healthcare assistance

Policy area/domain: Health - Fostering economic and social cohesion in the EU and supporting green and digital transition

Objective: The component aims to at boosting and aligning the Italian National Health Service (NHS) with the communities needs for local care and assistance, as well as enhancing health protection and response to environmental and climate-change related health risks, also in light of the pandemic emergency, ultimately achieving higher levels of welfare for the citizens, regardless of where they live and their socio-economic conditions.

Reforms and/or investment:

Proximity networks, facilities and telemedicine for territorial healthcare assistance: systemic and multilayer reform aimed at providing an effective equality in the access to medical services and overcome a sector-based approach to the concept of health, also considering environmental and climatic health determinants and challenges, in synergy with the sustainable economic and social development of the country, particularly in post-pandemic recovery.

Projects aim at fostering territorial healthcare assistance enhancing the role of the patient, integrating care services in a "one health" (holistic) approach focusing on strengthening local healthcare services: investments foreseen include the construction and modernization, both from a technological and an organizational side, of the Italian NHS. All investments are linked to the reform mentioned above.

The component, in order to guarantee health not only as the mere absence of disease, but as a state of bio-psycho-social well-being of the person, as indicated by the WHO, aims to:

- Implement a reform measure that updates/defines the regulatory framework in the context of:

- proximity health care through the definition of organisational, technological and quality standards of territorial care;
- disease prevention and health promotion, through the definition of a new institutional system (network) addressing the challenges in health, environment and climate change, in synergy with the Country's economic and social development, also related to the digital and green transition.

- Carry out an investment measure that will allow to

- strengthen proximity health care structures and services, as well as Home Care services, in order to ensure that all citizens have the same possibilities of care regardless of their social and geographical context, as requested, most recently, also by the WHO in the document "Realising the Full Potential of Primary Health Care";

Estimated cost overall: 7,000,000,000 EUR.

Other interventions on home care are also in Mission 5, Component 2 (M5C2).

The following table summarises the reforms and investments concerning Component 1 of “Health” Mission, while its main elements will be described in detail in the following paragraphs.

| Measure | Sub-measure | Total |
|---|--|-----------------|
| Reform measure: Proximity networks, facilities and telemedicine for territorial health care and National network of health, environment and climate | | 0 € |
| Investment measure: Strengthening of health care and territorial health network | 1.1: Community Health House to improve territorial health assistance | 2.000.000.000 € |
| | 1.2: Home as the first place of care and telemedicine | 4.000.000.000 € |
| | 1.3: Strengthening Intermediate Healthcare and its facilities (Community Hospital) | 1.000.000.000 € |
| Total | | 7.000.000.000 € |

2. Main challenges and objectives

a) Main challenges

The Covid-19 pandemic has made clear the universal value of health and its true nature as fundamental public good. The Italian NHS continues to be recognized throughout the world as one of the most efficient systems that, in guaranteeing health as a fundamental right, manages to achieve good results (higher life expectancy at birth and lower mortality values compared to OECD countries averages) and, at the same time, manages to limit health expenditure (3,649 US\$ per capita in 2019, versus 4,223 US\$ OECD countries average). These achievements are the result of a widely offered healthcare, especially through hospitals, high professional competence of health operators and valuable scientific and research outputs, provided by Scientific Institutes for Hospitalization and Care (IRCCS) as well as by other Italian NHS entities, such as, for example, university hospitals. During the pandemic emergency, universal health care systems have shown a better resilience capacity that has allowed Countries to face the pandemic in a timely manner. The Italian NHS has contributed to shape good practices, that have helped also other Countries in facing the emergency.

Nonetheless, the Italian NHS has come to the test of Covid-19 showing elements of relative weakness compared to the main European partners, and the persistence of significant disparities between the Italian regions, which need to be addressed. The Covid-19 emergency has therefore strengthened the need to intervene and to renew some key elements of the Italian NHS, also in consideration of structural (i.e. demographic) and current (i.e. epidemiological) trends. In fact, considering the ongoing increase of the elderly population, the Italian NHS will face an increasing demand for health and more complex needs, which require an effective response in terms of integrated services provided through the territorial assistance network.

Critical issues emerged can be summarized as follows: (i) an excessive gap between health levels provided by the Italian Regions, especially in terms of prevention and territorial assistance and - within these Regions -, the inequality between urban areas and internal areas; (ii) a poor capacity in integrating hospital services, local health services and social services; (iii) a delay in the implementation of local healthcare services and prevention services, also with significant disparities among Regions, especially in relation to hospital-territory integration; (iv) the lack of efficiency and synergy in the definition of prevention and response strategies of the health service with respect to environmental and climate risks, i.e. the multiple physical, chemical, biological factors external to the person which are impacting people's health and well-being, including climate and global environmental changes, such as loss of biodiversity.

In addition, the Covid-19 emergency has highlighted the crucial importance of having technological/digital solutions for public health, strong digital skills and adequate processes for care services. Digital health in the post-emergency phase shall provide an important contribution in the management of public care and assistance processes, e.g. in outpatient services, and in facilitating the communication between healthcare professionals and patients. An important acceleration of investments in digitization of the Italian NHS is therefore necessary, especially in the fields of: telemedicine, management of basic medicine activities, outpatient visits, pre-triage, pre-screening, monitoring of patients treated at home, tele-consultation and digital collaboration between hospitals and local health units (ASL) for the management of information or between emergency departments, intensive care and infectious diseases and local assistance; patient relationship management capable in informing citizens, especially the fragile categories, detecting their health conditions, communicating with them and managing the territorial and hospital emergency networks. To this end, developing and deploying innovative technologies such as Artificial intelligence, Internet of medicine and big data applications is crucial.

In line with this context, the component contributes to respond to two main challenges:

1. Enhancement of health assistance and territorial healthcare network

1. WHAT: Fragmentation and disparities of territorial healthcare across the Italian regional systems lead to inhomogeneity in the provision of the so-called "essential levels of assistance" (LEAs) and could compromise quality and appropriateness of care services provided. Strengthening and reorganizing primary care, also by leveraging the experience of the pandemic, implies the need to overcome the fragmentation of healthcare responses through the effort to ensure continuity of care, multiprofessional and multidisciplinary approaches, integrated hospital-home pathways, improved clinical governance of care pathways and socio-health integration.
2. WHY: The analysis of data and information on local healthcare assistance in Italy highlights a very uneven picture between Regions and some widespread structural weaknesses:
 - low presence of integrated home care services, compared to other OECD Countries guaranteeing accessibility to home care (5.1% elderly patients compared to the OECD average of 6%);
 - inhomogeneity of mortality among geographical areas (e.g. average death rate - deaths per 1,000 individuals per year - in Italy of 10.5, from P.A. Bolzano 8.3 to Liguria 14.3. The figure is obviously affected by the different demographic distribution of the elderly population among the Italian Regions);
 - territorial inequalities in terms of years in good health and quality of life especially in older age (average life expectancy 83 years, from Campania equal to 81.4 to Trento equal to 84);

- low integration between hospital and healthcare territorial services and between health and social services.
- 3. RECOMMENDATION: The challenge is also highlighted in the country-specific recommendations and aligns with the European objective to ensure economic, social and territorial cohesion related to - and valid beyond - the Covid-19 emergency (Art. 4(1) of the proposal for a Regulation COM (2020) 408 final). In order to pursue this aim, the component intends to: i) support the economic policy linked to investments in research and innovation and the quality of infrastructures, taking into account regional disparities; ii) improve the efficiency of public administration, in particular by investing in skills of public servants, accelerating digitalization and increasing the efficiency and quality of local public health services (Recommendation no. 3 of COM (2019) 512 final). The proposal also concerns the area of “Health and Prevention”, in line with the Sustainable Development Goals (SDGs), in particular Goal No. 3, of the 2030 Agenda and the public health measures provided for by the Treaties, in particular art. 168.

2. Health, environment, and climate: national reform plan and investments in public health for resilience and sustainable recovery.

1. WHAT: According to the recent WHO Global Strategy on Health, Environment and Climate Change 2030, preventive approaches are the paramount ways (also in cost-effective term) to reduce morbidity and premature mortality, and to contribute to economic growth and development by assuring a wider sustainability and health promotion. To preserve citizens’ health against environmental and climatic hazardous determinants, as well as to contrast the impact of environmental changes, entail the reduction of negative health outcomes at their source and the ready and more effective responses to environmental and climate-related risks, potentially related to the expected growth of competitive, dynamic and innovative economy. This requires the adoption of the "One-Health" approach, towards its evolution of the “planetary health” vision, incorporating the interdependencies of human and natural systems. This innovative fits into the institutional structure of the Italian NHS with the aim to achieve international organizations’ and EU targets by re-designing a proactive role and a stronger leadership of health in development and environmental stewardship efforts.
2. WHY: Data and information available show an urgent need to address the current fragmentation of interventions meant to guarantee a cohesive, harmonized approach across the Healthcare, Environment and Climate sectors in Italy. The Country has faced many environmental crises and climatic emergencies over the years, often resulting in health emergencies, highlighting critical serious issues in prevention actions. The socio-sanitary relevance of environmental determinants is exemplified by data on air pollution that place Italy among the most critical European areas (about 30 thousand deaths per year due to fine particulate matter, which represent 7% of all deaths - excluding accidents). It is widely recognized the role of environmental determinants as risk factors for pathologies that represent the majority of morbidity and mortality in European countries (cardiovascular and respiratory diseases, tumours, metabolic syndrome, neurological and reproductive pathologies) and for rarer but of absolute importance pathologies such as congenital anomalies (affecting 5-6% of children in the first year of life in Italy in some contaminated sites). The poor capacity, dynamism and resilience of the Italian NHS in the proactive assessment of the impacts of environmental exposures and climate change on health - in a Country located in the Mediterranean area that is among the most fragile with respect to climate change, seismic risks and

hydro-geological instability - is related to a limited interdisciplinary and intersectoral culture and models - from governance, to management, to public health professionals, to risk assessment.

3. RECOMMENDATION: A new institutional and systemic strategy and organization, functional to manage the health-environment-climate matter, is necessary to ensure the compliance of the Country towards international organizations' targets, and in particular: a) the Global Action Plan for the Prevention and Control of non communicable diseases 2013-2020 by the WHO; b) the Sustainable Development Goals of the UN 2030 Agenda; c) the indications of the Sixth Ministerial Conference on Environment and Health of the Ministers of the WHO European Region in Ostrava in June 2017, aimed at ensuring "better health, a healthier environment and sustainable choices". At the same time, in line with the European recommendation on the Italian reform program [20.5.2020 COM (2020) 512 final] and with the other relaunch and resilience guidelines [including EU Public Health Policy - PE 652.027 - July 2020, Brussels, 27.5.2020 COM (2020) 456], it is necessary for the Country to strengthen the resilience of healthcare and environmental policies and institutions, enhancing their human, cultural and instrumental capital, guaranteeing the effectiveness of health promotion in synergy with other reform programs (first of all, the green and digital transition), taking into account the potential impacts of post-Covid-19 growth on the environment and health, also in light of the climate change risks. Within the above framework, it is recommended to establish in Italy an unprecedented integration of the environment and health policies and actions, and made the health community capable to a timing prevention and response of environmental-climate related health risks and challenges, to support socioeconomic development, by assuring environmental protection, health and well-being.

b) Objectives

In light of the above-mentioned challenges, this component aims at enhancing health assistance and territorial health network, improving the quality and sustainability of home care, community-based care and long-term care aiming to ensure better assistance levels throughout the whole Country. To this end, the component also aims at addressing fragmentation and lack of homogeneity of healthcare and environmental health prevention services offered in the different Italian Regions, in line with the 2019 and 2020 EC Country-specific recommendations and the strategic objectives set at national level. Finally, this component aims to redesign and strengthen a part of the NHS by applying the holistic "one-health" approach, in planning and managing health, environment, climate and health prevention and response services. This is functional to improve the protection of the health of Italian citizens to environmental-climate risks and challenges, and to assure sustainable and healthy development and economic growth, especially related to the green transition, digital transformation, inclusive growth and jobs, social and territorial cohesion.

More specifically:

1. consolidate the role of the Italian local healthcare District¹ in planning of actions, of primary and secondary prevention in the health and social field, with a specific concern for populations in

¹ In Italy, the Azienda Sanitaria Locale (ASL) is the local health authority that has to plan and organize the health and medical assistance for the population that lives in its territorial area, supplying diagnosis and treatments by public and/or private providers. The ASLs are divided in Distretti ("Health" or "Social Health" Districts) that plan the territorial medical assistance, coordinating the general practitioners' activities with the other health structures on their territory, and supplying some health services (mental health, drug addiction, service for people with disabilities and others). These Districts thus play a key role in establishing the range of

situations of vulnerability, as well as in rehabilitation through the preparation and governance of treatment paths;

2. consolidate the role of the community, through the identification of a facility, the so-called “Community Health House”, making it a local reference point for social and health matters for individuals. This place shall guarantee care of chronic patients, which is one of the greatest challenges for health and social systems in an ageing population;
3. implement processes for assessing the needs of the population by level of complexity through the strengthening of socio-health single access points (“punti unici di accesso” - PUA) and multidimensional assessment units (“unità di valutazione multidimensionale” - UVMD);
4. enhance home care, especially for vulnerable and disabled people, through the development of remote monitoring techniques and home automation;
5. enhance the health workers’ professional skills, also in the domain of new technologies;
6. ensure the proactivity of healthcare services in the field of public hygiene as a means to guarantee the health of the population, by strengthening the planning, monitoring and coordination of interventions, as well as ensuring adequate technological supply;
7. design and implement a strategic reform and investment plan aimed at creating and functioning a national system for the protection and promotion of health with respect to environmental and climatic determinants according to the holistic "One-Health" approach, to strengthen the capacity and commitment of the health sector for intersectoral action (“health in all policies” approach) to assure timing, effective preventive actions in relevant sectors and healthy life choices;
8. enable crucial functions of stewardship, leadership and coordination of health matters with cross-sectoral scope, with focus on health co-benefits of climate action, green and digital transition (e.g., sustainable transport, energy, healthy urban planning sectors);
9. increase the provision of essential levels of assistance (“Livelli Essenziali di Assistenza”, LEA) by improving the results of the core and non-core indicators contained in the New Guarantee System (“Nuovo Sistema di Garanzia”) of the Italian Ministry of Health.

The component-related set of investments falls within the Italian national strategic context in the healthcare sector and within the budgetary policy objectives for 2021-2023, in line with European programming. These investments are also part of the Italian national strategic health plan which is going to be defined by the Italian Ministry of Health, in collaboration with other Italian public administrations. Furthermore, the component is consistent with the Italian national energy and climate plan, pursuant to Regulation (EU) 2018/1999, as well as with the territorial plans for a transition under the Just Transition Fund, with partnership agreements and operational programs based on EU funds, as well as with the contents of the White Paper on artificial intelligence - an European approach to excellence and trust from the European Commission (dated 19/02/2020). The program, with an interdisciplinary value, also has a role in contributing to achieve the objectives set out in the European Green Deal.

Furthermore, in May 2020, the Italian Government approved the Decree no. 34 (the so-called “Decreto Rilancio”, or “Relaunch Decree”), which introduced urgent measures to support families and businesses to recover from the economic consequences of the Covid-19 emergency, while confirming the effort to guarantee everyone’s health and safety.

services to be provided and in guiding the different players involved in disease prevention, health promotion, social and disability services.

3. Description of the reforms and investments of the component

1) Reform project

Reform 1: Definition of a new organisational model for Territorial healthcare assistance network, through the definition of a regulatory, which identifies structural, technological and organizational standards across Regions and definition of a new institutional structure of NHS component for Health-Environment-Climate policies, activities and performance

Challenges and Objectives: The reform, as a preparatory element for the interventions of the Component, intends to:

Establish a new model of territorial healthcare assistance, which has to be closer to citizens' needs, granting the population with effective equity of access to healthcare and social services, through the definition of homogeneous qualitative and quantitative standards, the strengthening of the network of district services, as well as through the consolidation of the hospital and the emergency network integrated within it. The reform pursues the redefinition of services to guarantee that healthcare territorial services could be increasingly close to the needs of people (including those who live in rural or disadvantaged areas), integrating with social services, capable of enhancing the peculiarities of the various communities (territorial, professional and scientific). Through this reform and its related investments, the Italian NHS gives continuity and further enhances the actions and programs aimed at strengthening the coordination between the National and Regional level able to ensure uniform "Essential levels of assistance" (LEA) throughout the National territory, contrasting regional variability and high health mobility rates from Southern Regions to the Northern ones. The Ministerial Decree 70/2015, which governs the reorganization of the hospital network, has launched a gradual modernization of the hospital system by improving the governance of the NHS in terms of the quality of assistance and the organization of health services, through the definition of qualitative, structural, technological and quantitative standards relating to hospital care and the emergency network. In addition to contributing to the achievement of these objectives, the Reform will also enable the strengthening of the territorial network and ensure greater proximity to the citizen, to better distribute care activities while avoiding overloading the hospital network. Ensuring greater integration between hospital and local facilities is indeed a crucial element to provide a better access to care and a uniform level of provision of the "Essential Levels of Assistance" (LEA) at National level.

The second parallel and synergic reform action is consistent with the Italian National Prevention Plan 2020-2025, and aims to enhance strategy and activities on environment and health at national, regional and local levels, through the establishment of a network of all the bodies, organisations and structures involved in the public health, environment and climate sector (National System on health, climate and environment - SNPS). The new integrated system is conceived to improve and harmonize policy, management and implementation strategy in preventing and response the acute and chronic conditions due to communicable and non-communicable diseases associated to environmental risks, by also a systematic interfacing with the existing National System for Environmental Protection (SNPA). This is also functional to intensify health-promoting multisectoral policies to drive health co-benefits of climate action in sectors other than health, such as energy, transport, urban planning and other major systems. The reform encompasses the definition of SNPS objectives, standards and legal instruments to protect in an equitable way the health of population through primary prevention, with focus on communities vulnerable or in vulnerable situations. The functions of SNPS converge to prevent exposure to

environmental and climate related risks, to ensure efficient, harmonized and dynamic preventive actions (e.g., new effective and timing approach for health impact assessment of policy, programmes, projects, technological innovation, industrial sites; identification and assessment of new environmental, climatic and health issues), to define criteria, methods and systems of environmental monitoring and health integrated surveillance (i.e., acquisition, analysis, integration and interpretation of environment-health-climate related models and data in online shared platforms), to assure tracking of progress on health-environment and climate primary prevention, to define early warning strategies and updated response to environmental-health emergencies. Added values of SNPS are also foreseen in supporting evidence-based and efficient communication in environmental, climatic and health issues, as well as in defining training and competencies of health workforces on environment and climate risks – including their capabilities for cross-sectoral actions according to the SDG vision.

Specific health-environment-climate intervention areas of SNPA-SNPA encompass inter alia: (a) Central actions for the health system: prevention and reduction of health risks related to indoor and outdoor air pollution; prevention and mitigation of risks for populations within contaminated sites, safe and sustainable management of soils and the waste cycle; universal access to water: safely managed water supply and sanitation, healthy human use and reuse of water, coasts, marine environments; prevention and reduction of physical risks (including ionizing and non-ionizing radiation) and risks associated with chemicals and processes; reduction of direct and indirect risks to human health associated with climate change; hygiene, resilience and sustainability of primary production and of the agri-food supply chains as a whole with respect to environmental-climatic risks; promotion of health-environment, climate in the early stages (infantile and maternal-infantile) of life; response to health needs in critical environmental circumstances, through an approach of proximity to the citizen. (b) Actions with high synergy with other institutions / sectors: prevention of emerging health risks associated with environmental and socio-economic changes, new technologies, energy policies, transport, green transition; international cooperation for sharing policies, best practices, translational research; support in the development of cities for healthier, more inclusive, safer, resilient and sustainable environments; promotion of choices directed towards natural environments, green and blue spaces; promotion of the digitization of environment-climate and health systems, in support of risk analysis and communication; applied research for health impact assessment of emerging issues such as sustainable technological development, new organization of work, increased migration, degrading of ecosystems and biodiversity etc.

Implementation: this reform will be implemented through the following key activities:

1. definition of a new organizational model of Territorial healthcare assistance network, through the definition of a regulatory which identifies structural, technological and organizational standards;

This action will be implemented through the approval of a Ministerial Decree by the Italian Ministry of Health, which will also constitute a Milestone of the Reform, as reported in paragraph 9. The aforementioned Ministerial Decree, in particular, will be adopted by the Ministry of Health following a bureaucratic process that envisages a proposal for a technical document prepared by a Working Group composed of representatives of the Ministry of Health/Regions/AGENAS² and an

² is the Italian National Agency for Regional Health Services

advisory opinion by the Italian State-Regions Conference. The process described is already ongoing and the technical document prepared by the Working Group will be completed by July 2021.

2. definition of a new institutional structure of Health-Environment-Climate prevention, according to the “One-Health” approach, and the more recent vision of “planetary health” to enhance the health sector in primary prevention and in cross-sectoral interactions concerning environment and health determinants and related monitoring; the ultimate aim is to pursue the highest possible level of health for all people, by a substantial reduction of environmental and climate change-related burden of diseases, in synergy with economic and social development of the Country.

This activity will be carried out through the approval of a legislative act that will also constitute a milestone of the reform, as reported in paragraph 9. In particular, this will involve the approval of an ordinary law of the State, according to the ordinary procedure provided for by the current framework which also defines objectives, functions, structural, technological and organizational standards of SNPS.

The reform also plans to improve the relationship between Healthcare and Scientific Research, as detailed in the Component Innovation, research and digitalization of national healthcare.

Assumptions/ risks

The reform measure presents the following typologies of obstacles:

- **administrative ones**, such as: the lack of homogeneity in the types of contract that regulate the interaction among the various health professionals; the number of administrations involved and the difficulty in harmonising the decision-making processes for entities belonging to different administrations;
- **organizational ones**, such as: the lack of advanced planning and control tools in the field of environment, health and climate; the lack of homogeneity of the Italian NHS bodies in governing complex organisational models on account of complexity of cross-cutting relationships of environmental and climate- health issues;
- **financial ones**, such as: the poor ability of the Italian NHS bodies to make the most of their intellectual and physical assets; the difficulty of operating according to the budget method.

In order to contain the risks listed above, the reform will be supported by a broad involvement of all the stakeholders concerned in the phases preceding the decision, especially including health and environmental institutions and agencies at central and regional level. Moreover, this activity will be integrated by a participated process especially involving scientists, professionals and third sector about the application fields subject to reform.

With respect to the additional risks listed, the intention is to strengthen and simplify the administrative procedures by strengthening the tools useful to promote contextual decisions and the unification of the decision-making and preliminary stages of the procedures. Finally, the reform will be accompanied by training actions aimed at reinforcing the planning and control skills of professionals in the territories, through the strengthening and involvement of the central State bodies involved in the various issues.

| Milestone/Target | Description | Value | Timeline |
|------------------|--|-------|----------|
| Milestone | MLS 1 – Entry into force of the secondary legislation (Ministerial Decree) envisaging the reform of the organisation of healthcare | | Q2 2022 |

1) Investment project

Investment 1: Enhancement of Health assistance and territorial healthcare network, the investment is carried out through three sub-investments as shown in the table below:

| Measure (Reform/Investment) | Sub-measure | Cost |
|---|--|-----------------|
| Investment 1 Enhancement of health assistance and territorial health care network | 1.1 Community Health House to improve territorial health assistance | 2.000.000.000 € |
| | 1.2 Home as the first place of care and telemedicine | 4.000.000.000 € |
| | 1.3 Strengthening of Intermediate Healthcare and its facilities (Community Hospital) | 1.000.000.000 € |

Investment 1.1: Community Health House to improve territorial health assistance.

Challenges: Chronic diseases in 2019 affected almost 40% of the Italian population - about 23.5 million people - of which 12.5 million have multi-chronicity, for a healthcare expenditure of nearly 67 billion euro (Osservasalute, 2019). The amount of chronically ill patients is also in progressive growth, with an impact on the future need to commit health, economic and social resources. Furthermore, according to data of the Italian National Institute of Statistics (Istat), in Italy there are 3.1 million people with disabilities, i.e. 5.2% of the Italian population. Of these, almost 1.5 million are over 75 years old (i.e. more than 20% of the Italian population in that age group). In addition, Italy has the highest share of elder population compared to the EU average - approximately 23.2% of the population is over 65 years old and 3.6% over the age of 80 (Istat) - and life expectancy at birth is among the highest in the world³, which results into an overall old and ageing population and a long-term pressure on the Italian NHS to be addressed.

The presence, in this context, of uncoordinated health and social assistance interventions in the territory, the slow increase of local healthcare facilities across the Italian Regions and the slow increase of the services offered in non-hospital facilities, are a cause of organizational inefficiency and hamper the quality of the service provided and perceived by the citizens. This issue has been particularly highlighted by the Covid-19 emergency, and it is now clear that there is the need for geographically widespread facilities, in order to avoid excessive use of hospital care, especially for non-urgent treatments that cannot be postponed.

Objectives:

The Community Health House is the place that has the function of primary care hub and follows a model of delivery and use of services by promoting the proximity of the facilities to the local community, being able

³ According to OECD, Italy ranks fourth, with an overall expectancy at birth of 83.4 years (OECD (2020), Life expectancy at birth (indicator). doi: 10.1787/27e0fc9d-en - accessed on 26 November 2020). Statistics may differ depending on the organisation or institute collecting and analysing them.

to filter access to acute care facilities and to coordinate and integrate all care services for chronic patients present in the area (e.g. a slight malaise or a small accident, the need for various tests such as non-communicable diseases, difficulty in managing a family situation and the need to find someone who takes care of the person, etc).

In particular, it is important to underline that it acts as a citizen's "single point of access" to health services and that, therefore, it develops and manages a single health database for each citizen, aiming at guaranteeing equal treatment in care and access to such facilities for all residents in the Country. The Community Health House will facilitate the integration of healthcare services as well as the tacking care of patients thanks to a systematic use of Electronic Health Record and developing personal medical database for each citizen (Regulation (EU) of the European Parliament and of the Council on the protection of natural persons with regards to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR), 679 (2016).

In the Community Health House, citizens can:

- consult a general practitioner and a nurse throughout the day;
- consult a health professional who welcomes citizen's requests, guides the citizen to services and takes care of activating proper health paths;
- solve adequately most of citizen's health problems in a single location;
- manage chronic diseases through shared and supervised care pathways.

The Community Houses are physical structures devoted to health services promoting an integrated and multidisciplinary model of intervention, as well as privileged venues for planning health and social integration interventions. The headquarters of the Community House must be visible and easily accessible to the community of reference because it is the place where the citizen can find an adequate response to various health or social-health needs.

In these facilities, in order to be able to provide all basic health services, General Practitioner (Medici di Medicina Generale) and Free Choice Paediatricians (Pediatri di Libera Scelta) work in teams, in collaboration with family or community nurses, outpatient specialists and other health professionals such as speech therapists, physiotherapists, dieticians, rehabilitation technicians and others. Social workers may also be present in order to coordinate with the municipal social services. Providing Community Health House with social workers will also strength territorial social services in order to prevent institutionalization or favor de-institutionalization especially for elderly and fragile patients. This intervention is in synergy with the Mission 5 Component 2 Investment 1.1 and Investment 1.2. The professional figures who will work in the Community Houses are professionals who nowadays already work in the territorial care in private practices, such as general practitioners and freely-chosen paediatricians, or in public practices, such as outpatient specialists, or within the different services of the district, such as nurses. The key figure in the Community House will be the family nurse, who, thanks to his or her knowledge and skills in the area of primary care and public health, becomes the professional responsible for nursing processes in the family and community. The figure of the family or community nurse, already introduced by Law Decree no. 34/2020, art. 1 c. 5, 0, finds the most appropriate setting to carry out its function in the establishment of Community Houses. These professional figures will be implemented when the Community Houses become fully operational.

The work activity of healthcare professionals who work within the Community Health House will be organized by the Community Health House's management. Every healthcare professional, regardless of their employment contract, included General Practitioner and Free Choice Paediatricians have to follow the

organizational model defined within the Community Health House in order to work in a more coordinated and integrated way.

The Community House guarantees access to and response to the needs of the population living in the municipalities of the reference territory or in the neighbourhoods of the urban centres for all those conditions of low assistance complexity. In particular, access is guaranteed to the following functions: reception and orientation (information point); administration (single booking centre); assessment of needs (single access point for social and health care, multidimensional assessment unit, social desk); assistance from the General Practitioner; assistance from the Free Choice Paediatricians; nursing assistance (continuity of care clinic and nursing clinic for the integrated management of chronic conditions); specialist assistance to support pathways (service point, distribution of prosthetic aids, distribution of pharmaceuticals); collective prevention and public health (e.g. vaccinations, screening); assistance for the elderly (e.g. inadequate health care); counselling for women, children and the younger generation, and for families; care for mental health problems and pathological addictions; a centre for cognitive disorders and dementia; specialist care; ultrasound and radiological instrumental diagnostics; and possibly also outpatient surgery; functional recovery and re-education; home care and palliative care network. In addition, professionals organise and/or participate in individual and collective health promotion activities. In the Community Health House with medium/high care complexity, facilities such as Community Hospital and Hospice may be optionally present.

More specifically, the investment consists in the **activation of 1,288 Community Health Houses** - in order to ensure equity of access, territorial proximity and quality of care to people regardless of age and their clinical picture (chronically ill patients, non-self-sufficient people needing long-term care, people with disability, mental distress, poverty), through the activation, development and aggregation of primary care services, and implementing assistance delivery centers (energy efficient) for a multi-professional response.

The number of 1,288 Community Health House to be built is the result of an initial stage of a project to strengthen primary health care close to the people. As a matter of fact, Italy, with Ministerial Decree no. 70/2015 identified the hub and spoke model as the optimal model for organising hospital care and intends to re-propose the same model in the field of territorial health care. The model, when fully operational, envisages a Community Health House for every 15,000 to 25,000 inhabitants. The above-mentioned catchment area has been identified with the aim of being able to take charge of the whole Italian population, in particular 23 million people with simple chronicity and, through proactive care, to postpone the transition to people with complex care needs (the priority challenge indicated by the WHO for all the health systems of the most advanced countries).

The 1,288 facilities, in particular, will derive either from restructuring/refunctionalization of already existing facilities such as, for example, outpatient territorial facilities that are obsolete or hospital wards to be reconverted, or they may be built from scratch. As of today, in Italy there is no specific information flow at national level to monitor the activity of the above-mentioned structures if operating, therefore, in estimating costs, the possibility of having to build almost all the structures ex-novo has been taken into account as a precaution. Each Community Health House will be equipped with 10-15 consulting and examination rooms, sampling point, basic diagnostic services (e.g. ultrasound, electrocardiography, radiology, spirometry, etc.), as well as an innovative data interconnection system.

The investment aims at integrating health care services and different stakeholders involved for a global care of the person in the Community Health Houses in order to improve care service of chronically ill patients and the most vulnerable population categories, such as people with disabilities (Community Health House can host Municipality's Services). More extensive and inclusive home and community-based care and long-

term care is the key to provide support to people with disabilities and other disadvantaged groups, as also mentioned in the 2019 country-specific recommendations.

Implementation: The Italian Ministry of Health also through its permanent government agencies will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, also through its permanent government agencies, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁴. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other.

This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the Country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources.

From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Italian Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory.

The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity.

In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed

⁴ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, Agenas, Italian National Institute of Health (Istituto Superiore di Sanità, ISS), Italian Regions, ASL.

Target population: This investment targets whole Italian population, in particular 23 million people with simple chronicity present in Italy.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks

The investment measure presents, among others, the following typologies of obstacles:

- **administrative ones**, such as: the lack of definition of structural, technological and organisational standards for territorial assistance; the number of bodies and administrations involved; the lack of connection between institutions; ambiguous national legislation in the field of primary assistance, with consequent uneven implementation at regional level; unevenness at regional level in the level of implementation of LEAs for health assistance; unevenness at regional level in the level of implementation of institutional accreditation.
- **organisational ones**, such as: poor capacity for coordinating professionals, especially those with contractual agreements; lack of homogeneity at regional level in the supply of services; difficulty in identifying suitable spaces made available by municipalities; poor capacity to involve the different stakeholders involved; insufficient number and competence of personnel dedicated to the activity; poor empowerment of citizens/patients in adhering to health promotion initiatives; poor integration between services; lack of specific training of operators;
- **financial ones**, such as: lack of *ad hoc* resources allocated to services; difficulties in financing activities that do not have a dedicated budget; difficulties in governance of the various sources of funding from different bodies and administrations.

In order to contain the risks listed above, the investment measure will be followed by:

- simplified tools to favour contextual decisions and the unification of the decision-making and preliminary stages of procedures, as well as the identification of innovative financing methods to remunerate services directed at people with chronic and fragile conditions (e.g. health budgets). These interventions, together with the implementation of the reform measure, will make it possible to overcome administrative obstacles;
- interventions aimed at clarifying the regulatory framework in the field of territorial care. The completion of the reform measure, together with the additional investments already provided for by Law Decree No. 34/2020, will make it possible to overcome organisational obstacles;
- central coordination in the planning, disbursement and control of funding for the implementation of the investment measure. This intervention, together with the identification of new participatory planning tools, will make it possible to overcome financial obstacles.

Total Cost of Investment 1.1: A total expenditure of € 2.000 €/Mln is estimated for the construction of the 1.288 Community Health Houses. Please refer to section 10 for details of the individual items and the calculation methodology.

Milestones and Investment Target 1.1: for details see section 9

| Milestone/target | Description | Value | Timeline |
|------------------|---|-------|----------|
| Milestone | MLS 1 - Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community health houses Institutional Development Contract | | Q2 2022 |
| Target | T.1 – At least 1,250 Community Health Houses renovated and technologically equipped Details on territorial distribution provided –Annex III | 1,250 | Q2 2026 |

Investment 1.2: Home as the first place of care and telemedicine

Challenges: As mentioned in the 2019 country-specific recommendations, more home and community-based care and long-term care are crucial in providing support to people with disabilities and other disadvantaged groups. Strengthening home care is one of the main challenges of the Italian NHS. Indeed, as provided for in the Decree of the President of the Council of Ministers of 12 January 2017 and in 2016 National Chronicity Plan (Piano Nazionale della Cronicità, 2016), home must be the preferred care setting when health, housing and family conditions permit. As of today, integrated home care is mainly provided to people aged over 65 (91.5% of cases). With the Law Decree No. 34/2020, Italy has intended to strengthen integrated home care, aiming to increase the current 5,1% of patients aged over 65 to be assisted from home up to 10%. This goal takes into consideration the OECD average value (6%) and some particularly virtuous examples in Europe, such as Sweden, at 10.9%, and Germany, at 9.5%. In addition, the aim is to mend the fragmentation and the lack of homogeneity of home services offered throughout the Country.

The Law Decree n. 34/2020, in line with the recommendations of the Council on PNR 2020 and with the 2019 country-specific recommendations, in the context of strengthening the NHS in relation to the Covid-19 emergency, provided for an increase in the staff necessary to ensure the provision of essential levels of

assistance, especially in the area of the homecare. The adoption of advanced ICT tools and the development of an artificial intelligence model aim at streamlining the communication systems between the various parties involved, thus allowing simplification of existing information flows and providing a contribution to operators in the provision of care and assistance and to decision makers in the governance and planning of services. In particular, the investment aims to promote continued and continuous home care of the patient throughout the Country, implementing the services provided for all “vulnerable individuals”, in line with art. 1, paragraph 4, of the Law Decree n. 34/2020, with particular attention to the various aspects related to chronicity.

Thus, the intervention intends to strengthen this type of care and shall reorganize and reengineer processes also through the development of innovative digital solutions to address artificial intelligence and telemedicine. The ability of connecting the patient’s residence with the healthcare environment can generate direct benefits for the patients and their families, who will be able to interact with healthcare professionals directly from their own homes, obtaining precise and targeted indications on care, thus contributing to the constant monitoring of their health.

Through the implementation of the NPRR, Italy commits to make a significant step-up in its virtual health capabilities. In particular, telemedicine is the cornerstone to address the main themes affecting the NHS: ageing population and related change in the pattern/penetration of most affecting diseases, with raising importance of chronic ones; need to make the system more flexible and resilient to shocks comparable to the Covid-19 pandemic; opportunity to capitalize on the recent significant improvements of digital health applications/use cases.

Institutionalizing telemedicine within the Italian NHS pursues three concurrent goals: (1) contribute to the closing of the geographical healthcare system care delivery gaps through the deployment of as homogenous as possible digital health solutions (2) improving healthcare outcomes as well as patients’ healthcare journeys (3) while at the same time increasing efficiency within regional healthcare systems (by fostering home and remote care delivery and remote patient monitoring).

The strategy for telemedicine underpinned by the NPRR measures is three-fold:

1. Foster large-scale adoption of telemedicine solutions (fostering experimentation and development);
2. Foster cross-pollination of successful experiences/applications and enhance the culture of digital health;
3. Fuel healthcare innovation and technology transfer, to build capabilities in the scientific community and create a pipeline of new applications.

Objective: This investment aims at radically improving the management of patients with chronic conditions especially those are over 65 years old, promoting a multilateral approach. In particular, this investment has three separate yet complementary objectives following detailed in three different sub-measure: (i) to increase the level of home care in Italy to the level provided by the most virtuous European countries, taking care of 10% of the population over 65 years old (1,509,814 people in 2026). (ii) to support the implementation of a new organizational model throughout the country creating Territorial Coordination Centres, in order to ensure continuity, accessibility and integration of care. (iii) promoting and financing the development and scale up of new telemedicine projects and solutions within regional healthcare systems. The measures planned within the investment 1.2 “Home as the first place of care and telemedicine” are in line and will be reinforced by the ones promoted and foreseen within the Mission 5 Component 2 Investment 1.1 and Investment 1.2. Indeed, the integration of homecare assistance with social ones will ensure the autonomy and independence of the persons in their home setting.

Investment 1.2.1: Homecare as first point of assistance

Objective: Increase the number of people treated in home care to reach 10% of the population over 65 (1,509,814 people in 2026). In order to reach the aforementioned objective, it will be necessary to **increase the number of people treated in home care by 807,970 people over 65** within 2026. Integrated home care is a service for people of all ages with one or more chronic diseases or a terminal clinical condition requiring continuous and highly specialised professional health and social care. Advanced age is the main risk factor for the development of one or more chronic conditions or terminal illnesses that require care at home. Therefore, considering the progressive ageing of the population and the increased life expectancy, the objective of investment 1.2.1 "Homecare as first point of assistance" has been calculated considering the over-65 population, but the intervention of integrated home care is intended for all those who find themselves in the clinical conditions that require it.

Currently, no region in Italy exceeds the threshold of 10% of the over-65 population. However, the Italian Regions Emilia Romagna (9.2%), Veneto (8.8%) and Toscana (8.3%) have the best results in term of people over-65 in homecare service. The Italian national average is still below the threshold value identified as the objective of this intervention and is equal to 5.1% of the over-65 population.

Implementation: The Italian Ministry of Health also through its permanent government agencies will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner "ad acta". With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences ("conferenze di servizi"). The Italian Ministry of, as the Responsible Administration, Health also through its permanent government agencies, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual "reward" fee of the National Health Fund⁵. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other.

⁵ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources.

From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Italian Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory.

The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity.

In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, Agenas, ISS, Italian Regions, local health units (ASL), businesses.

Target population: This investment mainly targets the over-65 aged population segment, i.e. around 14 million people in the Country.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks

The investment measure presents, among others, the following typologies of obstacles:

- **administrative ones**, such as: the lack of homogeneity at regional level in the implementation of the territorial LEAs, especially in the home care sector; fragmentary and ineffective healthcare integration; little harmonisation of the existing rules; the number of bodies involved; difficulties in harmonising the prevalence of the right to health and the right to data protection.
- **organisational ones**, such as scarce capacity to involve the different stakeholders involved; insufficient number and competence of staff dedicated to the activity; wide heterogeneity from North of Italy to South of Italy in terms of organisational models, with an extremely varied involvement of public and private bodies; inadequate level of computerisation in some health authorities, both in the administrative and care fields, with the consequent impossibility of reporting and analysing the activities carried out in a timely manner; absence of the use of domotics for the home care of the disabled; scarce professional training for a widespread implementation of techno-assistance on the territory; scarce investments in information security and therefore risk of health data violation.
- **financial ones**, such as: different reporting methods for home care between Italian Regions and between healthcare providers; lack of a standard tariff for all Italian Regions; difficulties in using the budget method for the implementation of care programmes.

In order to contain the risks listed above, the investment measure will be followed by:

- simplified tools to favour contextual decisions and the unification of the decision-making and preliminary stages of the procedures, as well as the identification of innovative financing methods to remunerate services directed to people with chronic and fragile conditions (e.g. health budgets). These interventions, together with the identification of measures aimed to facilitate the involvement of local authorities and other stakeholders involved, will make it possible to overcome administrative obstacles;
- interventions aimed to clarify the regulatory framework of reference in the field of territorial assistance. The completion of the reform mission, together with the additional investments already provided for by Law Decree No. 34/2020, in accordance with the other interventions planned in the area of the digitalisation of the ASL and the strengthening of cyber security, will make it possible to overcome organisational obstacles;
- a more precise analysis of the services rendered in home care, thanks to the gradual implementation of the actions provided for in the measure, which will also make it possible to standardise the methods of financing home care. Moreover, the provision to strengthen central coordination in the planning, disbursement and control of funding for the implementation of the investment measure will also make it possible, together with training measures, to strengthen the budget method as a tool for governing home care services. These interventions, together with the identification of new financing tools (e.g. the health budget), will make it possible to overcome financial obstacles.

Investment 1.2.2: The implementation of a new organizational model: Territorial Coordination Centres

Objective: Identify at National level a shared model for the strengthening of primary care overall, in order to support healthcare professionals in their clinical practice especially promoting tools that encourage telemedicine, telemonitoring and teleconsultations preferring the home care setting. Taking care of the patient/citizen is the act of taking in charge of the patient/citizen, assuming responsibility for planning and managing the interventions the user needs, taking into account his or her health and socio-sanitary needs and preferences. The shared model will be capable of making the most of the new possibilities offered by domotics, telemedicine, digitalisation of the system, as well as the new response and analysis capacities deriving from Artificial Intelligence and Machine Learning. This activity will result in the approval of Guidelines to be published within the National Guidelines System of the Italian National Health Institute (ISS), pursuant to Law no. 24/2017. Elements of home automation (domotics), telemedicine and remote monitoring will increase the effectiveness of the healthcare intervention as well as social intervention and will reduce the risk of institutionalization especially for elderly and fragile patients. This intervention is in synergy with Mission 5 Component 2 Investment 1.1 and Investment 1.2.

The implementation of a national shared model aimed at strengthening primary care sector useful to clinical management of patients, even within their home, will be realized throughout artificial intelligence and machine learning tools that should be tested in the primary care context. The creation of this model will be realized through the implementation in each ASL – Local Health Authority (125) a data interconnection system that allows clinical data (also deriving from medical devices, such as, for example, implantable devices, i.e. pacemakers) to be available in real time on the cloud. This action will support the implementation of innovative clinical management models to assist patients within their home, providing both healthcare professionals and patients/caregivers the tools to enhance telemedicine, digitalization as well as artificial intelligence and machine learning tools in the comprehensive context of primary care and within local health authorities.

Lastly, the crucial point of this intervention is the **introduction of 602 Territorial Coordination Centres** (“Centrali Operative Territoriali”) (1 for every 100,000 inhabitants) with the function of coordinating and linking the various territorial, social-health and hospital health services, as well as the emergency-urgency network, in order to ensure continuity, accessibility and integration of care. The Territorial Coordination Centres will be equipped with the technological means to ensure the remote control of the devices provided to the patients, will support the exchange of information between the health professionals involved in the care, will constitute a reference point for caregivers, both for training in self-care and for its implementation, and will act as a reference point in the event of further care needs of the patient. In order to carry out their informative and educational mission for healthcare professionals, patients and caregivers, Territorial Coordination Centres will be supported by the advanced version of “Portal of Transparency”, an informative platform developed by Agenas after consolidation and evaluation phases. The principal objectives of this platform are to allow citizens with easy access to social and healthcare services, by providing updated information on treatments and health facilities, and consequently guide them to an aware choice of health treatments and services. Moreover, a health intelligence system will set up, also with the use of artificial intelligence, capable of providing guidance to healthcare personnel and citizens, including the management of medical emergencies. In order to ensure a regular updating of the information flow from the whole Country regional support teams will be implemented. Providing the territorial healthcare assistance so Territorial Coordination Centres with artificial intelligence and machine learning tools and connecting them with platform that will support the implementation of telemedicine and teleconsultation will decrease the number of homecare accesses of healthcare professionals needed per patients without reducing the quality of care.

Implementation: The Italian Ministry of Health also through its permanent government agencies will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, also through its permanent government agencies, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁶. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other.

This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources.

From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory.

The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity.

In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

⁶ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, Agenas, ISS, Italian Regions, local health units (ASL), businesses.

Target population: This investment targets whole Italian population, in particular 23 million people with simple chronicity present in Italy.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks

The investment measure presents, among others, the following typologies of obstacles:

- **administrative ones**, such as: the lack of homogeneity at regional level in the implementation of the territorial LEAs, especially in the home care sector; fragmentary and ineffective healthcare integration; little harmonisation of the existing rules; the number of bodies involved; difficulties in harmonising the prevalence of the right to health and the right to data protection.
- **organisational ones**, such as scarce capacity to involve the different stakeholders involved; insufficient number and competence of staff dedicated to the activity; wide heterogeneity from North of Italy to South of Italy in terms of organisational models, with an extremely varied involvement of public and private bodies; inadequate level of computerisation in some health authorities, both in the administrative and care fields, with the consequent impossibility of reporting and analysing the activities carried out in a timely manner; absence of the use of domotics for the home care of the disabled; scarce professional training for a widespread implementation of techno-assistance on the territory; scarce investments in information security and therefore risk of health data violation.
- **financial ones**, such as: different reporting methods for home care between Italian Regions and between healthcare providers; lack of a standard tariff for all Italian Regions; difficulties in using the budget method for the implementation of care programmes.

In order to contain the risks listed above, the investment measure will be followed by:

- simplified tools to favour contextual decisions and the unification of the decision-making and preliminary stages of the procedures, as well as the identification of innovative financing methods

to remunerate services directed to people with chronic and fragile conditions (e.g. health budgets). These interventions, together with the identification of measures aimed to facilitate the involvement of local authorities and other stakeholders involved, will make it possible to overcome administrative obstacles;

- interventions aimed to clarify the regulatory framework of reference in the field of territorial assistance. The completion of the reform mission, together with the additional investments already provided for by Law Decree No. 34/2020, in accordance with the other interventions planned in the area of the digitalisation of the ASL and the strengthening of cyber security, will make it possible to overcome organisational obstacles;
- a more precise analysis of the services rendered in home care, thanks to the gradual implementation of the actions provided for in the measure, which will also make it possible to standardise the methods of financing home care. Moreover, the provision to strengthen central coordination in the planning, disbursement and control of funding for the implementation of the investment measure will also make it possible, together with training measures, to strengthen the budget method as a tool for governing home care services. These interventions, together with the identification of new financing tools (e.g. the health budget), will make it possible to overcome financial obstacles.

Investment 1.2.3: Telemedicine to better support patients with chronic diseases

Objective: The first pillar of the national telemedicine strategy consists in promoting and financing the **development and scale up of new telemedicine projects and solutions within regional healthcare systems**, and as such it represents a key (technological) enabler for the implementation of the enhanced remote care approach to health, with a particular focus on chronic patients. Of course, such projects will have to abide to the National Healthcare System’s guidelines on telemedicine already under development by the Ministry of Health. Projects can be focused on any clinical domain and span a broad range of functionalities, including for instance:

- Remote doctor-patient interactions and care delivery, supported as applicable with video/audio/instrumental data (such as via wearables);
- Remote consulting between HCPs around a specific diagnosis;
- Remote access to diagnostic reports/medical data in general;
- Remote patient monitoring
- Other activities and instruments.

The second pillar foresees the creation of a national platform for telemedicine aimed at screening all tried and tested telemedicine projects run by the Italian Regions and other private institutions, giving visibility to the best performing ones (Mission 6 Component 2 Investment 1.3). This measure will go a long way in fostering cross-pollination of best practices as well as fostering the adoption of successful platforms and “vertical” applications/solutions.

The third pillar entails the financing of ad hoc research initiatives on digital health and care technologies, to be potentially developed in synergy with the projects of pillar 1. This pillar is consistent with research

initiatives included in Mission 4 and other current or planned initiatives by the Italian Ministry of University and Research outside the scope of the NPRR.

Implementation: The Ministry of Health also through its permanent government agencies and in collaboration with the Ministry for Technological Innovation and the Digital Transition will be responsible for the overall management and oversight of the project.

The initiative will be implemented through a national contest aimed at allocating funding to projects proposed by the Italian Regions, where:

- The Italian Ministry of Health will define upfront priorities for the telemedicine projects financing process in accordance with the National Healthcare Strategies;
- The Italian Regions will participate to the contest, by proposing their projects;
- The Italian Ministry of Health will allocate the funding as co-financing of the proposals received;
- The Italian Regions will be in charge of implementing the projects awarded with funding.

The scope of projects admissible for financing will be open to all applications/solutions/use cases across all steps of the health journey (consultation, examination, report consultation, patient monitoring, etc.) and clinical domains (e.g., cardiac, orthopaedic, etc.).

However, two pre-conditions to funding will be enforced.

First, projects shall exhibit a data-driven approach, foreseeing a native integration of telemedicine solutions with the national Electronic Health Record: data collected through telemedicine projects will be created as digitally native and, where compatible, will automatically populate the Electronic Health Record, which is to become the main platform where telemedicine users can obtain patients' healthcare data, consistent with Mission 6 Component 2 Investment 1.3.

Second, submitted project proposals shall include clear quantitative KPIs (including targets that will allow to track impact in the first 12 to 24 months) related to key outcomes for the healthcare system, such as:

- Simplification of access to the health system (e.g. consultations);
- Enhancement prevention across medical disciplines;
- Monitoring improvement (more frequent) for post-acute and chronic diseases;
- Improvement of healthcare patients' care quality (e.g. lower hospitalization rates for chronic patients, lower waiting times);
- Also, and where applicable, they shall include forecasts of economic savings for the health system.

The disbursement of financing instalments shall be conditioned to the fulfilment of these impact monitoring KPIs.

Also, the awarding of funding will privilege those projects/initiatives that:

- Leverage existing (successful) experiences (ongoing projects, pilots, etc.), to accelerate time to impact;
- Aim to build scalable "telemedicine platforms", encompassing multiple applications/use cases and integrating them with an approach based on: open architecture and open interfaces (for easy integration of additional applications), standard off-the-shelf software, limited system integration requirement/effort to expand the scope to other applications/solutions;

- Ensure open/seamless integration with the Territorial Coordination Centers, to empower the Home care strategy (as described in this Component 1 of Mission 6: data collected through telemedicine projects, where compatible, will converge to a data platform used by Territorial Coordination Centers);
- Cover multiple Regions in the implementation scope, to favour standardization and with a particular eye reducing geographical health delivery gaps.

Evaluation and monitoring of telemedicine projects should be carried out by international standards, and, where possible through Randomized Control Trials (RCTs) in order to improve telemedicine and research on digital health in lockstep.

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, Agenas, ISS, Italian Regions, local health units (ASL), businesses.

Target population: This investment targets whole Italian population, in particular 23 million people with simple chronicity present in Italy.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks

The investment measure presents, among others, the following typologies of obstacles: (i) Compliance with the timing of the tender procedures and the identification of beneficiaries. (ii) Compliance with the timing of evaluating the proposals and defining the rankings of the beneficiaries.

In order to manage the risks mentioned above, the investment will be accompanied by:

- Preparation of an accurate gantt chart of the activities for each of the phases, and identification of the key milestones to ensure a thorough monitoring of the timing of the various procedures, with the institution of a “red flag” in the event of a failure in reaching the relevant progress stage.
- Institution of an internal task force ex ante, that will remodel the programme as a condition for the progress of the activities and will support the management over the next steps of the project.
- Definition within the tender documents of accurate rules and timelines for the different phases of the procedure and evaluation. Scrolling ranking.

Total Cost of Investment 1.2: A total expenditure of €4,000 €/Mln is estimated for the implementation of Investment 1.2. For details of the individual items and the calculation methodology please refer to paragraph 10.

Milestones and Targets Investment 1.2: For details see paragraph 9.

| Milestone/Target | Description | Value | Timeline |
|-----------------------------|---|-------|----------|
| Milestone intermediate step | MLS 1 - Approval of the Guidelines containing the digital model for the implementation of Home Care | | Q2 2022 |

| | | | |
|-----------|---|---------|---------|
| | Agreement approved in State-Region Conference publication on OJ | | |
| Milestone | MLS 2 - Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Home Care Institutional Development Contract | | Q2 2022 |
| Target | T.1 – At least 800,000 additional people over 65 treated in home care Details on territorial distribution provided – Annex II | 800,000 | Q2 2026 |
| Target | T.2 – At least 600 Coordination Centres fully operational Details on territorial distribution provided – Annex I | 600 | Q2 2024 |
| Milestone | MLS.3 - Assign programs/projects on telemedicine as a tool to support the management of patients to Regions | | Q4 2023 |
| Target | T.3: At least 200,000 number of people assisted by exploiting telemedicine tools | 200,000 | Q4 2025 |

Investment 1.3: Strengthening Intermediate Healthcare and its facilities (Community Hospital).

Challenges: The adverse effect of the lack of complete implementation and fragmentation of local health services, along with the consequent integration between territorial and hospital services, is one of the main challenges that the Italian NHS has to face. In particular, the difficulties of citizens in finding answers to their health needs locally generate important inefficiencies every year with repercussions also on safety and quality of services provided. The not sufficient level of territorial healthcare facilities negatively impacts the quality perceived by citizens of the Italian NHS, and can generate stress and a sense of abandonment, especially in most vulnerable individuals and people living in disadvantaged areas.

Objectives: The general objective of the investment is to ensure **the creation of Community Hospital.**

Community Hospitals are healthcare facilities for patients who, following an episode of minor acuity or the relapse of chronic pathologies, require low-intensity and short-term clinical interventions that can potentially be provided at home, but who are admitted to these facilities due to the lack of suitability of the home itself (structural and/or family).

The aforementioned facilities are equipped with 20 beds up to a maximum of 40 beds, as provided for by the State-Regions Agreement of 20/02/2020 (Glossary of acts n. 17/CSR).

In order to implement the provisions of the aforementioned Agreement of 20/02/2020, the following will be activated when fully operational Community Hospitals (CMOs) provided by 20 beds per 50,000 inhabitants in a uniform manner throughout the Country.

Considering the healthcare need of the population the priority is to build at least part of the Community Hospitals envisaged, it has been decided, in this first phase, to build about 380 facilities, consisting in 7,620 beds that has to be added to the 1,205 existing beds throughout the Italian Regions.

These facilities have a crucial function between patients, home and hospitalization. This intervention shall take place in the context of the general improvement of the primary care system in order to personalize local assistance, avoiding, if possible, the distress of a hospitalization, especially for the most vulnerable individuals.

This temporary hospitalization is intended to reduce hospitalization for people with acute or chronic diseases, as it would be dedicated to people who need continuous nursing and medical assistance. Patients may come from home or other residential facilities, from the emergency room or discharged from acute care hospitals.

Furthermore, this will foster the pertinence of hospital services by providing an alternative to improper access to the emergency room, especially for those who need health surveillance, but with already defined diagnosis. Finally, this will facilitate discharge by providing the family and local services with the time necessary to adapt the home environments to the needs that may have emerged, reducing the impact on the patients and their family and the income capacity of families.

Implementation: The Italian Ministry of Health also through its permanent government agencies will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, also through its permanent government agencies, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁷. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other.

This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources.

From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of

⁷ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory.

The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity.

In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, Agenas, ISS, Italian Regions, ASL.

Target population: Entire population.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks

The investment measure presents, among others, the following typologies of obstacles:

- **administrative ones**, such as: the lack of definition of structural, technological and organisational standards of territorial care; the lack of homogeneity in the contractual types of the different health professionals; delays in the issuing of the national reference act;
- **organisational ones**, such as: poor capacity for coordinating professionals and services; difficulties in involving staff with different types of contract; lack of homogeneity at regional level in the provision of services; high risk of litigation;
- **financial ones**, such as: the scarcity of *ad hoc* resources earmarked for territorial services; difficulties in financing activities that do not have a dedicated budget.

In order to contain the above-mentioned risks, the investment measure will be followed by

- simplified tools to favour contextual decisions and the unification of the decision-making and preliminary phases of procedures. These interventions, together with the implementation of the reform measure, will make it possible to overcome administrative obstacles;

- interventions aimed at clarifying the regulatory framework in the area of territorial assistance. The completion of the reform measure, together with the additional investments already provided for in Law Decree No. 34/2020, will make it possible to overcome organisational obstacles;
- central coordination in the planning, disbursement and control of funding for the implementation of the investment measure. This intervention, together with the identification of new participatory planning tools, will make it possible to overcome financial obstacles.

Total Cost of Investment 1.3: A total expenditure of € 1.000 €/Mln is estimated for the construction of 381 Community Hospitals. For details of individual items and calculation methodology please refer to paragraph 10.

Milestones and Targets Investment 1.3: for details see paragraph 9

| Milestone/Target | Description | Value | Timeline |
|------------------|---|-------|----------|
| Milestone | MLS 1 - Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community hospitals Institutional Development Contract | | Q2 2022 |
| Target | T.1 – At least 380 Community Hospitals renovated, interconnected and technologically equipped – Annex III | 380 | Q2 2026 |

Pillars

- **Social Cohesion:** the component focuses on strengthening social cohesion through the reduction of inequalities both in terms of access to and quality of the assistance provided, and in terms of the healthiness of the environment in relation to the economic dimensions supporting sustainable development. The component, in particular, through reform and investment measures intends to:
 - o reduce social costs due to medical tourism, as well as improving access to health services and participation in prevention initiatives for hard-to-reach population groups;
 - o strengthen the synergy in the field of environmental protection in a harmonious manner throughout the Country in order to enhance the national overall primary prevention by investment of resources on equity base, and by implementing preventive and coordinated actions to limit and rehabilitate critical areas.
- **Public health:** all measures of the component are aimed at strengthening the equity, effectiveness, credibility and resilience of the Italian NHS, also in the face of further health or environmental and climatic emergencies. The component, in particular, through reform and investment measures intends to:

- strengthen primary care and prevention activities by creating a care network of proximity territorial services, the core of which are the Community Houses and the strengthening of Home Care. These initiatives will make it possible, among other things, to ensure greater equity of access to the network of health, as well as to enhance the system's ability to modulate interventions on the basis of personal health conditions;
 - tackling environmental risks at their origin, by strengthening primary preventive actions and the promotion of healthy choices according to the "One-Health" approach. The creation of a network for the protection and promotion of human health with regard to environmental and climatic determinants of health and their changes, in particular, will make it possible to increase the number of healthy years of the population in correlation with the economic dimensions of the territories and their sustainable development as well as to reduce disease and related costs for the health sector.
- Green Transition: the component is based on cooperation with health leadership in all sectors that at different levels influence the goal of ensuring healthy, safe and accessible environments according to principles of equity and sustainability and therefore substantially supports the win-win relationship of green transition policies. The adoption of processes based on biological, chemical and physical risk analysis for prevention in health-environment interactions, among others, presides over the validation of safety of alternative energies, reuse/recycling of essential resources (such as wastewater, sludge and waste) for human uses and in safe waste management. The component will also be developed in the green and digital transition and in the other sectors of economic-productive development.
 - Digital transition: the component envisages many measures and sub-measures aimed at strengthening the digital development of the Italian NHS, the use of high-tech tools for the management and analysis of information (e.g., artificial intelligence systems, modelling, learning machines, etc.) and innovative tools that facilitate the population's access to health services and to know and care about their own health status in a safe and aware manner.
 - The component, in particular, through reform and investment measures intends to
 - closing the gap with other European Countries in terms of the use of internet platforms to access and obtain information on health services (Italy is currently below the European average in terms of both the use of the internet to access health information (33% of users against 51% of the European average for access to health information and 7% have booked a health service online against a European average of 13%);
 - developing integrated information systems which, through the use of big data, artificial intelligence and other technological tools, make it possible to: support a better development of predictive tools for the state of health aligned with the Component 2; facilitate access to health services/information; guarantee remote assistance as well as the integration of care. The implementation of the above-mentioned systems will make it possible, not only to improve the accessibility and quality of the care provided, but also to reduce health expenditure, thanks to the reduction in inappropriate healthcare services, in terms of hospitalization, drug consumption and other diagnostic services.
 - creating a national environmental and climate monitoring network, through the creation of site-specific models and projections, effectively linked to the development of health surveillance networks based on predictive approaches of risk analysis (early-warning) and

epidemiological analysis, to support the analysis of environmental and climate impacts on health, in all phases of development of economic and social sectors.

- Resilience: the component focuses on improving the resilience of the Italian NHS, especially in the event of health emergencies, such as pandemics.

The component also strengthens the ecological resilience in the face of global environmental change, promoting intergenerational equity, reducing high costs and inefficiencies of individual sector interventions. The above actions, together with increased organisational coherence, align health promotion policies with the goals of the UN 2030 Agenda.

The component, in particular, through reform and investment measures intends to:

- o implement prevention and monitoring activities on the health status of the population in order to make the system more timely in case of further pandemic emergencies;
- o develop primary prevention actions in risk management of emerging infectious diseases and pandemic zoonoses.

Redundant multi-barrier control measures for prevention and response are key resilience elements of the new system.

- Employment: the measures foreseen for the component are functional and synergetic to support the operations of sustainable growth from the environmental and health point of view and, consequently, to favour the increase of the employment level, both in the green and digital transition and in the other economic sectors. In terms of employment, it is also expected to increase training and specialisation activities and the recruitment of human resources at central and regional level in the NHS as a result of reform-related investments, as well as to decrease the number of working days lost due to illness;
- Growth: the component contributes to the growth of the Country through a profound reorganisation of Italian public health services, which will also be accompanied by training actions aimed at ensuring that public employees have the right skills to deal with the digital and green transition. The component also aims to develop the capacity of the Italian public administration to be a facilitator of innovation, especially in the area of access to health services and use of home care. In fact, the planned measures will contribute to improving the European Commission's index of digitisation of the economy and society, in which Italy ranks 25th out of 28 EU Member States. In addition, the planned measures will reduce the administrative and bureaucratic burden on users, professionals and NHS' entities. Finally, the objectives of the measures represent a prerequisite for general growth: the design of a new preventive healthcare system capable of fully managing the health-environment-climate issue is in fact a prerequisite for the health and environmental sustainability of the economic and social growth expected in the Country, both in the green and digital transition and in the other economic-productive sectors.

4. Open strategic autonomy and security issues

5. Cross-border and multi-country projects

Not Applicable.

6. Green dimension of the component

The component contributes to the development of the green transition by:

- improving of technological efficiency by enhancing all forms of innovation and optimization of production processes;
- providing a more efficient care service, which reduces the needs for travels to hospitals - which is cause to pollution generated by transport means - in favour of a local and home-driven approach;
- supporting energy efficiency renovation of the infrastructures and equipment;
- supporting risk prevention models and the management of both climate and non-climate related natural risks or risks linked to human activities, such as pandemic crisis.

7. Digital dimension of the component

The component generally contributes to the development of the digital transition by:

- strengthening of digital capabilities and implementing of advanced technologies in hospitals, consistent with the Italian Integrated National Plan for Energy and Climate;
- fostering a deep technological evolution of communication and data transmission systems from territorial units to hospital or territorial competent structures with large benefits on the appropriateness of the health services provided;
- strengthening the digitization of care by promoting the diffusion of care devices in connection with each other, especially for professionals and disadvantaged people in the field of telemedicine;
- redefining operational methodologies within the Italian NHS using digital technologies ensuring monitoring and remote assistance, integrating research activities with care activities.

Specifically, the investments address the following elements:

- **Home as the place of first care using a multilateral approach:** it sustains the development of the digital transition by involving investments in the implementation of telemedicine and the development of an artificial intelligence model aim at streamlining the communication systems between the various parties involved, thus allowing simplification of existing information flows, and providing a contribution to operators in the provision of care and assistance and to decision makers in the governance and planning of services. The interventions provided in this investment will enable patients to receive the necessary treatments in a timely manner and ensuring high quality of care. With respect to the green transition, the project will allow to keep patients at home, limiting their transfers of those of their families. In addition, transfers of caregivers will also be limited to cases of necessity. Better home care optimizes the consumption of drugs and disposable medical devices, through increasingly personalized and flexible plans.

Impact on green and digital transition.

Table 2 on Green and Digital Impact

8. Do no significant harm see excel file

9. Milestones, targets and timeline

| Milestone | Target | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|--------|------|------|------|------|------|------|
| Milestone 1: Entry into force of the secondary legislation (Ministerial Decree) envisaging the reform of the organization of healthcare | | | Q2 | | | | |

Investment 1.1

| Milestone | Target | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|---|---|------|------|------|------|------|------|
| Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community health houses | | | Q2 | | | | |
| | Target 1: At least 1,250 Community Health Houses renovated and technologically equipped | | | | | | Q2 |

Investment 1.2

| Milestone | Target | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|--|---|------|------|------|------|------|------|
| Milestone 1: Approval of the Guidelines containing the digital model for the implementation of Home Care – publication on OJ | | | Q2 | | | | |
| Milestone 2: Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Home Care | | | Q2 | | | | |
| | Target 1: At least 800,000 additional people over 65 to be treated in home care | | | | | | Q2 |

| | | | | | | | |
|---|---|--|--|----|----|----|--|
| | Target 2: At least 600 Coordination Centres fully operational | | | | Q2 | | |
| Milestone 3 – Assign programs/projects on telemedicine as a tool to support the management of patients to Regions | | | | Q4 | | | |
| | Target 2: At least 200,000 number of people assisted by exploiting telemedicine tools | | | | | Q4 | |

Investment 1.3

| Milestone | Target | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|--|---|------|------|------|------|------|------|
| MLS 1: Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community hospitals | | | Q2 | | | | |
| | T.1 – At least 380 Community Hospitals renovated, interconnected and technologically equipped | | | | | | Q2 |

10. Financing and costs

Investment 1.1 - Community Health House to improve territorial health assistance

| Cost item | Unit Cost (Euro) | Nr | Total |
|--|------------------|-------|-----------------|
| Item A – Operational support | - | - | 261,504 € |
| Item B - Structural costs | 1,280,000 | 1,288 | 1,648,640,000 € |
| Item C - Costs of interconnection and technological plants | 272,592 | 1,288 | 351,098,496 € |
| Total | | | 2,000,000,000 € |

Methodology

Community Health Houses to be activated: 1,288 (60,244,639 Italian population ISTAT 01/01/2020 /46.774 inhab. national minimum standards) at a cost of 1,648,640 € of which (1,280,000 X 1,288) € cost of structures + (272 592 x 1,288) € cost of technology.

The cost for each Community Health House is calculated taking into account the structural cost (item B), the cost of interconnection and technological plants (item C) the structure should be equipped with.

Item A: operational support to implement the measures

To carry out specialized support the implementation of interventions, it is planned to use 2 middle profiles (daily rate € 300) X 190 days, coordinated by 1 project manager (daily rate 500 €) X 87 days and 1 senior (daily rate 400 €) X 90 days of coordination with the central level. To this amount it is added the compensation of the cost relating to the social security charges to be borne by the commissioning party and VAT + 35%.

A total expenditure of 261,504 € is estimated for the operational support to carry out 1,288 Community Health Houses.

Item B: structural costs

Cost structures for Community House: € 1,280 000

In the absence of a dedicated information flow, it is estimated 100% of structures built ex novo with a floor area of 800 sqm, in compliance with the current estimations related to DPR 14/01/1997. 1,280 000 € for Community Health House = 800 sqm (14/01/1997 DPR) X 1,600 € (unit cost per square meter for construction, Resolution 09.03.2018, n. 4/2018 / G of the Court of Auditors)

A total expenditure of 1,648,640,000 € is estimated to carry out 1,288 Community Health Houses.

Item C: Costs of interconnection and technological plants

Technology Fee for Community Health House € 272,592 of which:

192,000.00 €: technological component equal to 15% (Section C.4 of the document entitled "Methods and procedures for the activation of investment programs in health care through the program agreements, referred to in Article 5 bis of Legislative Decree. December 30, 1992, n. 502 and subsequent amendments and program framework agreements art. 2 of law 662/1996 approved in the State-Regions Conference of 28 February 2008) of the investment cost to activate the Community Houses.

€ 80,592.00 for interconnection with health professionals working in the area:

€ 60 260.00 purchase technical package (€ 2,620 X 23 TP). Base CONSIP 2012 X 11 TP for Community House + 1 TP per 10 MMG + 1 TP per 2 PLS as affiliation)

4,945.00 € per unit cost of € 215 for installation and start-up of base CONSIP 2012 X 23 TP estimated

6,187.00 € per unit cost of € 269 for migrating data based CONSIP 2012 X 23 TP estimated

€ 9,200.00 per unit cost of € 400 for training use of the estimated 23 TP

Taking into consideration previous experiences, a total expenditure of 351,098,496 € is estimated for the technological part of 1,288 Community Health Houses.

A total expenditure of 2,000,000 000 € is estimated to carry out 1,288 Community Health Houses.

Regarding operating costs and their sustainability, please refer to Appendix 1.

Investment 1.2 - Home as the first place of care and telemedicine

| Cost item | Unit Cost (Euro) | Nr | Total (Euro) |
|--|------------------|---------|-----------------|
| Item A: Costs of patients taken in charge | | 807,970 | 2,720,000,000 € |
| Item B: ASL Interconnection and Territorial Coordination Centres | 465,116 € | 602 | 280,000,000 € |
| Item C: Telemedicine interregional projects | | | 1,000,000,000 € |
| Total | | | 4,000,000,000 € |

Methodology

The cost estimate relating to “Home as the first place of care and telemedicine” and the related sub-measure consists of costs of patients taken in charge (item A), interventions relating to Territorial Coordination Centres and ASL Interconnection (item B), Telemedicine interregional projects (item C).

Item A: Costs for patients taken in charge

It is estimated that are treated in home care a total of 807,970 people >65 years of age, that are the additional number to reach 10% of the population over 65 in 2026. The average cost is € 1,980.25 per person (calculated using the cost of the number of patients taken over in home care during the last year of intervention). A total expenditure of 2,720,000,000 € is estimated for patients taken in charge. This objective is aligned with the international and national best practices evidence, in particular at national level Emilia Romagna, Veneto and Toscana Regions represent the benchmark. The experience of these three Regions shows that the population assisted in home care is divided in the four levels of intensity of care according to the following percentages, that result from the mean value of both: 60% in basic home care, 20% in first-level home care, 10% in second-level home care, 4% in third-level home care and 6% in home palliative care. The average cost has been estimated taking into account the willingness to take charge in the last year:

- 484.782 people in basic home care with 1 access per month (5.817.385 accesses/year) at an average cost of € 18 per access;
- 161.594 people in first-level home care with 3 accesses per month (5.817.386 accesses/year) of which 16% of general practitioners at a cost of € 18.9 each and 84% from other operators at a cost of € 37.50 per access;
- 80.797 people in second-level home care with 7 accesses per month (6,786,949 accesses/year) of which 13% of general practitioners at € 18.9 per access and 87% of other operators at an average cost of € 56.25 per access;
- 32.319 people in third-level home care with 12 accesses per month (4.653.908 accesses/year) of which 11% of general practitioners at € 18.9 per access and 89% of other operators at the average cost of 75 € per access;
- 48.478 people in home palliative care with 15 accesses per month (8,726,077 accesses/year) of which 10% of general practitioners at € 18.9 per access and 90% of other operators at an average cost of € 75.

For the identification of access rates, consideration was given to DGR no. 1661/2018 of the Emilia Romagna Region and the National Collective Agreement of General Medicine and Free Choice Paediatricians (discipline of relations with General Practitioners pursuant to Article 8 of Legislative Decree no. 502 of 1992 and subsequent amendments and additions - 29 March 2018).

| Description | 2020 | 2021 | 2024 | 2028 | 2030 | Total |
|---|---------------|---------------|---------------|-----------------|-----------------|-----------------|
| Personnel cost for Homecare Assistants | 578.231.762 € | 760.889.632 € | 997.151.408 € | 1.283.890.954 € | 1.599.979.366 € | |
| National Health Fund comma 4 art. 1 D.L. n. 34/2020 | 265.028.624 € | 265.028.624 € | 265.028.624 € | 265.028.624 € | 265.028.624 € | |
| National Health Fund comma 5 art. 1 D.L. n. 34/2020 (parziale) | 235.000.000 € | 235.000.000 € | 235.000.000 € | 235.000.000 € | 235.000.000 € | |
| Recovery Fund | 78.203.138 € | 260.861.007 € | 497.122.784 € | 783.862.329 € | 1.099.950.742 € | 2.720.000.000 € |
| Additional number of people over 65 years old treated in homecare | 292.000 | 384.240 | 503.549 | 648.349 | 807.970 | |

Item B: Territorial Coordination Centres and ASLs Interconnection

602 centres: in the absence of a flow of information, it is conventionally considered one coordination center for about 60.244.639/100,000 inhab.

Cost of Territorial Coordination Centers to renovate existing buildings: € 90,300,000 € = 602 X 1,000 central € (Health Commission of the State-Regions Conference for the new construction/expansion of hospitals were used, and referred to Deliberation no. 4/2018/G of 9 March 2018 of Corte dei Conti - Sezione Centrale di Controllo sulla Gestione delle Amministrazioni dello Stato su “L’attuazione del Programma Straordinario per la Ristrutturazione Edilizia e l’ammodernamento tecnologico del Patrimonio Sanitario”) X 150 sqm (D.Lgs 81/2008, Rapporto ISS Covid-19 n.5/2020 Rev.2) for a total expenditure of 150,000 €.

Carrying out the interconnection tool in the ASLs 42,642,875 € = 341,143 x 125 ASLs

A cost of € 341,143 has been estimated for each ASL for the purchase of software, hardware, migration and data interconnection, as well as for staff training.

31,897,574 € = 257,238,5 € (unit cost of software development, CONSIP 2012) for 125 ASLs.

2,405,600 € = 19,400 € (unit cost of installation and launch, CONSIP 2012) per 125 ASLs.

3,187,420 = 25,705 € (data migration unit cost, CONSIP 2012) per 125 ASLs.

4,811,200 € = 38,800 € (training unit cost) for 125 ASLs.

Data Source. CONSIP - Procurement in open procedure under Law No. 163/2006, for the acquisition of software licenses and services for CRM solution, homes and Asset Management Department of General Administration, Personnel and Services of the Ministry of Economy and Finance - ID 1213 - Economic Offer - Part B.

Technological equipment for the implementation of 602 Territorial Coordination Centers and the enhancement of the primary healthcare sector to promote homecare as first point of assistance for citizens, are divided as follows:

Technology Cost: € 13,545,000 = 22,500 X 602 technological component equal to 15% (Accordo Stato-Regioni del 28 febbraio 2008 - art. 10 sulle modalità e procedure per l'attivazione degli investimenti in programmi sanitari attraverso gli Accordi di Programma, di cui all'articolo 5 bis del D.Lgs. n. 502/1992) of the investment cost to activate the Territorial Coordination Centres.

Piloting artificial intelligence and machine learning tools in the primary care context among a sample of national citizens (1 millions of Italians citizens) for a total expenditure of 50.000.000 € (10,000,000 € per year).

Consolidation and evolution of the “Portal of Trasparency”, the informative platform developed by Agenas for a total expenditure of 25,482,412 €.

Purchase device for the operators and patients at the average cost of 2215 € each (44 for each center) for a total expenditure of 58,029,713 € (Special contract specifications. Open procedure for the entrusting of the Service of home care and supplies support for users of the A.S.L. Benevento, 2019).

A total expenditure of 280,000,000 € is estimated for the technological and interconnection equipment of 602 Coordination Centers.

Item C: Telemedicine interregional projects

A total expenditure of 1,000,000,000 € is estimated for the implementation of telemedicine for interregional project to better support patients with chronic diseases and the procedures needed to competition of preliminary activity for the definition of the tender procedure and the evaluation of PoC projects (Proof of Concept).

Emanation of one voucher for Projects through a two-year public tender procedure for a total expenditure of 50,000,000 €. Similar public tender procedure for PoC Projects - Ministry of Health.

The amount and distribution of the individual projects is being defined on the basis of dialogue with the relevant stakeholders.

Regarding operating costs and their sustainability, more details are available in Appendix 1.

Investment 1.3 - Strengthening of Intermediate healthcare and its facilities (“Community hospital”)

| Cost item | Unit Cost | Unit | Total |
|--|------------------|-------------|------------------------|
| Item A: Operational support | | | 1,018,000 € |
| Item B: Structural cost | 2,280,000 € | 381 | 868,680,000 € |
| Item C: Structural technological costs | 342,000 € | 381 | 130,302,000 € |
| Total | | | 1,000,000,000 € |

Methodology

Community Hospitals to be activated: 381 (60,244,639 Italian population ISTAT 01/01/2020 / 158,122 inhab. estimated) for a cost of 868,680,000 € of which (2,280,000 X 381) for cost of structures + 130,302,000 € (342,000 x 381) € for cost of technology.

The realization of 381 Community Hospitals has been calculated, as a precautionary measure, ex-novo considering that, to date, in Italy there is no specific information flow at the national level to define and identify any structures available or suitable for upgrading.

For the calculation of the investment for the construction of 381 Community Hospitals, the parametric costs developed by the Health Commission of the State-Regions Conference for the new construction/expansion of hospitals were used, and referred to Deliberation no. 4/2018/G of 9 March 2018 of Corte dei Conti - Sezione Centrale di Controllo sulla Gestione delle Amministrazioni dello Stato su “L’attuazione del Programma Straordinario per la Ristrutturazione Edilizia e l’ammodernamento tecnologico del Patrimonio Sanitario”.

The cost of Community Hospital is calculated according to the structural cost (item B) and structural technological cost (item C).

Item A: Operational support to implementation of interventions

To carry out specialized support to implementation of interventions, it is planned to use 11 middle profiles (daily rate € 300) X 2 123 total days, coordinated by 1 project manager (daily rate 500 €) X 87 days and 2 seniors (daily rate 400 €) X 180 overall days of connection with the central level.

The compensation of the cost relating to the social security taxes to be borne by the commissioning parties and VAT + 35% is added to this amount.

Taking into consideration previous experiences, a total expenditure of € 1,018,000 is estimated for the operational support for the realization of 381 Community Hospitals.

Item B and Item C: Structural and Structural Technological Cost

Construction cost (structural and technological): The implementation cost of a Community Hospital is given by the sum of the cost for technological installations (structural cost) and the cost for technologies. With specific reference to the first cost item, it has been considered an endowment of 20 beds per community hospital and a surface area per bed of 57 square metres. In order to calculate the surface area per bed, a structure consisting of the following areas was hypothesised: entrance hall, visitors' waiting area, rooms with bathrooms for 2 to 4 beds, living/dining area, outpatient department, staff workroom, staff changing room, clean and dirty stores, recovery and corpse observation room, rehabilitation room, connectives, toilets, equipment and other general services. For the economic valorisation of the investment, the reference cost per square metre of the above-mentioned resolution of the Corte dei Conti was considered, increased by 4.5% to take into account any adjustment of the costs of goods and services to changes in inflation and VAT. Consequently, the final cost considered is 2.300€/smq of which 15% is allocated for technologies. (Accordo Stato-Regioni del 28 febbraio 2008 - art. 10 sulle modalità e procedure per l'attivazione degli investimenti in programmi sanitari attraverso gli Accordi di Programma, di cui all'articolo 5 bis del D.Lgs. n. 502/1992)

| Unit cost of realization of a Community Hospital (CH) | |
|--|---|
| No. beds per CH | 20 beds |
| Surface area per beds | 57 sqm |
| Surface area per CH | 1.140 sqm |
| Reference cost per sqm | 2.300€ |
| Total cost per per CH | 2.622.000€ (of which 15% for technologies, i.e. 342.000€) |

Considering the need to activate 381 Community Hospitals, in order to make 7,620 additional beds operational on the territory compared to the current 1,205, the total investment amounts to € 998,982,000.

| Implementation of measure 1.3 Development of intermediate care | | | |
|---|-------------|------------------|-------------------|
| Item Cost | Unit | Unit cost | Total cost |
| Implementation | 381 | 2.280.000 € | 868.680.000 € |
| Technologies | 381 | 342.000 € | 130.302.000 € |
| Total Intervention | | 2.622.000 € | 998.982.000 € |
| Art. 6 RRF | | | 1.018.000 € |
| Total | | | 1.000.000.000 € |

The Community Hospitals will become fully operational as of 2027, therefore the estimate of the annual personnel costs for each Community Hospital, amounting to € 628,000, was calculated considering the hiring of a certain number of professional figures. From 2027 the costs for the staff of the Community Hospital will be borne by the National Health Fund. Regarding operating costs and their sustainability, more details are available in Appendix 1.

11. Loan request justification (if applicable)

Appendix 1_UPDATED

Personnel cost and sustainability plan aimed at financing the activities "Strengthening health care and the territorial health network" relating to M6C1

Personnel cost

Investment 1.1: "Community Health House to improve territorial health assistance"

The Community Health Houses are physical health structures, promoters of an integrated and multidisciplinary model of intervention, as well as privileged locations for planning interventions of social and health integration. The headquarters of the Community House must be visible and easily accessible to the community of reference because it is the place where the citizen can find an adequate response to various health or social-health needs.

In these facilities, in order to be able to provide all basic health services, General Practitioner (Medici di Medicina Generale) and Free Choice Paediatricians (Pediatri di Libera Scelta) work in teams, in collaboration with family or community nurses, outpatient specialists and other health professionals such as speech therapists, physiotherapists, dieticians, rehabilitation technicians and others. Social workers may also be present in order to coordinate with the municipal social services. The professional figures who will work in the Community Houses are professionals who today already work in the territorial care in private practices, such as general practitioners and freely-chosen paediatricians, or in public practices, such as outpatient specialists, or within the different services of the district, such as nurses. The key figure in the Community House will be the family nurse, who, thanks to his or her specialist knowledge and skills in the area of primary care and public health, becomes the professional responsible for nursing processes in the family and community. The figure of the family or community nurse, already introduced by Law Decree no. 34/2020, art. 1 c. 5, finds the most appropriate setting to carry out its function in the establishment of Community Houses. These professional figures will be implemented when the Community Houses become fully operational.

Assuming a standard reference catchment area of between 15,000 and 25,000 inhabitants for each Community Health House, based on the estimated activity flows and indications from national and international evidence (National Collective Agreement for General Medicine and Paediatrics of Free Choice 2018; Law November 8, 2012 n.189; Decree Law No. 34/2020; Report OECD Health at a Glance 2019), it is expected to employ the professional figures as in the table 1 below. It should be noted that the estimate of personnel costs relates to the 1,288 Community Health House which are expected to be built.

Table 1. Personnel cost in the Community Health House

| Personnel cost of Community Health House | | | | | |
|--|-------------------------------|--------------------|------------------------|---------------------|--|
| Personnel description | Personnel number per facility | Unit cost increase | Total personnel number | Additional Cost | Financing source |
| Administrative | 5 | - € | 6.440 | - € | No additional burden on National Health Service because of resulting from a staff reorganisation in the area of primary care |
| General Practitioner | 10 | - € | 12.880 | - € | |
| Community Nurse | 6 | - € | 7.728 | - € | |
| | 2 | 40.000 € | 2.363 | 94.500.000 € | D.L. n. 34/2020 art. 1 c.5 |
| Total | | | | 94.500.000 € | |

Investment 1.2: “Home as the first place of care and telemedicine”

The objective of the whole sub-measure is to radically improve the management of patients with chronic conditions especially those are over 65 years old promoting a multilateral approach.

The reinforcement measure described will also be accompanied by measures such as:

- create in each ASL – Local Health Authority (125) a data interconnection system that allows clinical data (also deriving from medical devices, such as, for example, implantable devices, i.e. pacemakers) to be available in real time on the cloud. This action will support the implementation of innovative clinical management models to assist patients within their home, providing both healthcare professionals and patients/caregivers the tools to enhance telemedicine, digitalization as well as artificial intelligence and machine learning tools in the comprehensive context of primary care and within Local Health Authorities;
- creating 602 Territorial Coordination Centres (“Centrali Operative Territoriali”) (1 for every 100,000 inhabitants) with the function of coordinating and linking the various territorial, social-health and hospital health services, as well as the emergency-urgency network, in order to ensure continuity, accessibility and integration of care. The Territorial Coordination Centres will be equipped with the technological means to ensure the remote control of the devices provided to the patients, will support the exchange of information between the health professionals involved in the care, will constitute a reference point for caregivers, both for training in self-care and for its implementation, and will act as a reference point in the event of further care needs of the patient. In order to carry out their informative and educational mission for healthcare professionals, patients and caregivers, Territorial Coordination Centres will be supported by the advanced version of “Portal of Transparency”, an informative platform developed by Agenas after consolidation and evaluation phases. The principal objectives of this platform are to allow citizens with easy access to social and healthcare services, by providing updated information on treatments and health facilities, and consequently guide them to an aware choice of health treatments and services. Moreover, a health intelligence system will be set up, also with the use of artificial intelligence, capable of providing guidance to healthcare personnel and citizens, including the management of medical emergencies. In order to ensure a regular updating of the information flow from the whole Country a regional support teams will be implemented. Providing the territorial healthcare assistance so Territorial Coordination Centres with artificial intelligence and machine learning tools and connecting them with platform that will support the implementation of telemedicine and teleconsultation will decrease the number of homecare accesses of healthcare professionals needed per patients without reducing the quality of care.

Assuming a standard reference catchment area of 1 Territorial Coordination Centres for every 100,000 inhabitants, based on the estimation of activity flows and indications from regional experiences (Regione Veneto, DGR 2271/2013), it is expected to employ the professional figures as in the table 2 below. It should be noted that the estimate of personnel costs relates to the 602 Territorial Coordination Centres which are expected to be built.

Table 2. Personnel costs for Territorial Coordination Centres

| Personnel costs for Territorial Coordination Centres | | | | | |
|--|-------------------------------|--------------------|------------------------|----------------------|-----------------------------|
| Personnel description | Personnel number per facility | Unit cost increase | Total personnel number | Additional cost | Financing source |
| Community nurse | 5 | 40.000 € | 3.010 | 120.400.000 € | D.L. n. 34/2020 art. 1 c. 5 |
| Coordinator | 1 | 50.000 € | 602 | 30.100.000 € | |
| Total | | | | 150.500.000 € | |

The objective of the sub-measure 1.2.1 “Homecare as first point of assistance” is to increase the level of home care in Italy to the level provided by the most virtuous European countries, taking care of 10% of the population over 65 years old (estimated to 1,509,814 people in 2026). In order to reach the aforementioned objective, it will be necessary to increase the number of people treated in home care by 807.970 people over 65.

In particular, the experiences of the Emilia Romagna, Veneto and Tuscany Regions have been taken as a reference for the estimation of costs and for the estimation of the number of assisted persons to take charge of the different levels of assistance intensity. The experience of these three Italian Regions show that the population assisted in home care is divided in the four levels of intensity of care according to the following percentages, that result from the mean value of both: 60% in basic home care, 20% in first-level home care, 10% in second-level home care, 4% in third-level home care and 6% in home palliative care.

In view of the above breakdown of services and the need to take charge of 807,970 persons over 65 years of age per year, the average cost has been calculated in the manner indicated below, assuming it equal to access tariffs defined by DGR no. 1661/2018 of the Emilia Romagna Region and the National Collective Agreement of General Medicine and Free Choice Pediatricians (discipline of relations with General Practitioners pursuant to Article 8 of Legislative Decree no. 502 of 1992 and subsequent amendments and additions - 29 March 2018).

- It is planned to take charge, in the last year, 484,782 people in basic home care with 1 access per month (5,817,385 accesses/year) at an average cost of € 18 per access;
- It is planned to take charge, in the last year, 161,594 people in first-level home care with 3 accesses per month (5,817,386 accesses/year) of which 16% of general practitioners at a cost of € 18.9 each and 84% from other operators at a cost of € 37.50 per access;

- It is planned to take charge, in the last year, 80,797 people in second-level home care with 7 accesses per month (6,786,949 accesses/year) of which 13% of general practitioners at € 18.9 per access and 87% of other operators at an average cost of € 56.25 per access;
- It is planned to take charge, in the last year, 32,319 people in third-level home care with 12 accesses per month (4,653,908 accesses/year) of which 11% of general practitioners at € 18.9 per access and 89% of other operators at the average cost of 75 € per access;
- It is planned to take charge, in the last year, 48,478 people in home palliative care with 15 accesses per month (8,726,077 accesses/year) of which 10% of general practitioners at € 18.9 per access and 90% of other operators at an average cost of € 75.

Table 3. Costs of homecare

| Cost to achieve the goal of treating 10% of the population over 65 in home care in 2026 | | |
|--|--|------------------------------------|
| Home care Levels of assistance intensity | Additional number of assisted persons | Cost of additional accesses |
| Basic | 484.782 | 104.712.925 € |
| First level | 161.594 | 204.343.403 € |
| Second level | 80.797 | 353.655.358 € |
| Third level | 32.319 | 325.504.494 € |
| Home palliative care | 48.478 | 611.763.186 € |
| | Total | 1.599.979.366 € |

Investment 1.3 “Strengthening of Intermediate healthcare and its facilities (“Community hospital”)

Community Hospitals are healthcare facilities for patients who, following an episode of minor acuity or the relapse of chronic pathologies, require low-intensity and short-term clinical interventions that can potentially be provided at home, but who are admitted to these facilities due to the lack of suitability of the home itself (structural and/or family).

The aforementioned facilities are equipped with 20 beds up to a maximum of 40 beds, as provided for by the State-Regions Agreement of 20/02/2020 (Glossary of acts n. 17/CSR).

In order to implement the provisions of the aforementioned Agreement of 20/02/2020, the following will be activated when fully operational Community Hospitals (CMOs) provided by 20 beds per 50,000 inhabitants in a uniform manner throughout the Country.

These facilities have a crucial function between patients, home and hospitalization. This intervention shall take place in the context of the general improvement of the primary care system in order to personalize local assistance, avoiding, if possible, the hospitalization, especially for the most vulnerable individuals.

This temporary hospitalization is intended to reduce hospitalization for people with acute or chronic diseases, as it would be dedicated to people who need continuous nursing and medical assistance. Patients may come from home or other residential facilities, from the emergency room or discharged from acute care hospitals.

Furthermore, this will foster the pertinence of hospital services by providing an alternative to improper access to the emergency room, especially for those who need health surveillance, but with already defined diagnosis. Finally, this will facilitate discharge by providing the family and local services with the time necessary to adapt the home environments to the needs that may have emerged, reducing the impact on the patients and their family and the income capacity of families.

Assuming a standard reference catchment area of 20 beds per 50,000 inhabitants, for each Community Hospital, based on national legislation and indications from regional evidence (State-Regions Agreement of 20/02/2020; Veneto Region DGR 2718/2012), it is expected to employ the professional figures as in the table 4 below. It should be noted that the estimate of personnel costs relates to the 381 Community Hospital which are expected to be built.

Table 4. Personnel costs for Community Hospital

| Personnel costs for Community Hospital | | | | | |
|--|-------------------------------|--------------------|------------------------|----------------------|---|
| Personnel description | Personnel number per facility | Unit cost increase | Total personnel number | Additional cost | Financing source |
| Medical doctor | 4,5 hours/die per 6 days | 88.000 € | 534.924 hours/year | 33.528.000 € | The necessary resources will be found as detailed in the Sustainability Plan. |
| Nurse | 9 | 40.000 € | 3.429 | 137.160.000 € | |
| Social and health worker | 6 | 30.000 € | 2.286 | 68.580.000 € | |
| Total | | | | 239.268.000 € | |

The table 5 summarises the costs for the three measures described with the related sources of funding that are expected to be used from 2027. More details on the source are given in "Sustainability Plan".

Tabella Modificata sulla denominazione investimento 1.2

| Investment | Cost/Year | Expected coverage/Year | Financing source |
|---|-----------------|------------------------|-----------------------------|
| Investment 1.1: "Community Health House to improve territorial health assistance" | 94.500.000 € | 94.500.000 € | D.L. n. 34/2020 art. 1 c. 5 |
| Investment 1.2: "Home as the first place of care and telemedicine" - Homecare | 1.599.979.366 € | 265.028.624 € | D.L. n. 34/2020 art. 1 c. 4 |
| | | 235.000.000 € | D.L. n. 34/2020 art. 1 c. 5 |
| | | 1.099.950.742 € | Sustainability Plan |
| Investment 1.2: "Home as the first place of care and telemedicine" - Territorial Coordination Centres | 150.500.000 € | 150.500.000 € | D.L. n. 34/2020 art. 1 c. 5 |
| Investment 1.3: "Strengthening of Intermediate healthcare and its facilities ("Community hospital")" | 239.268.000 € | 239.268.000 € | Sustainability Plan |

Personal availability forecast - General Practitioners (GPs)

| | |
|---|--------|
| Number of GPs 01/01/2020 | 42.009 |
| GPs trained from 2018 to 2023 and available in 2027 | 11.308 |
| Estimated retirements of GPs from 2020 to 2026 | 18.000 |
| GPs needs - optimal ratio (1 GP per 1.500 inh. >14 years old) | 34.609 |
| Number of GPs in 2027 | 35.317 |

On the basis of the data collected by SISAC - Interregional structure of contracted healthcare, in Italy as of 01/01/2020 there are 42,009 General Practitioners (GPs).

Considering the need to guarantee 1 GP for every person aged over 14 years, 34,609 doctors have been foreseen on the basis of the ceiling foreseen by the National Collective Agreement in force (1 GP for every 1,500 inhabitant > 14 years of age). The population under 14 years of age has been excluded from the calculation of the requirement, since it is served by a dedicated specialist figure (Paediatrician of Choice).

In order to satisfy the estimated need in 2027, equal to 35,317 GPs, the number of GPs in activity in that year was considered on the basis of the estimated retirements, as well as the additional availability deriving from the planned training plans.

The estimate of retirements was calculated on the basis of the data processed by the Italian Federation of GPs (FIMMG) on the trend of retirements expected from 2018 to 2028 equal to about 33,392 units, considering in this analysis an average of about 3,000 retirements per year (from 2020 to 2026).

With regard to post-graduate training for GPs, the number of scholarships planned for the different three-year periods from 2018-2021 to 2023-2026 was taken into account, for a total of 8,608 scholarships. To this figure was also added the availability of additional GPs resulting from investment 2.3 of M6C2, which provides for an increase of 2,700 in the period 2021-2023, for a total of 11,308 scholarships.

Finally, is not expected that there will be a lack of GPs in 2027 and following years.

Personal availability forecast – Nurses

| | |
|---|---|
| Number of Nurses 01/01/2020 | 332.292 (5,6 nurses per 1,000 inhabitants) |
| Nurses trained from 2018 to 2023 and available in 2027 | 96.078 |
| Estimated retirements of Nurses from 2020 to 2026 | 26.018 |
| Nurses needs - optimal ratio (OCSE mean value is 8,8 nurses per 1,000 inhabitants) | 524.845 |
| Number of Nurses in 2027 | 402.352 (6,7 nurses per 1,000 inhabitants) |

On the basis of the data collected by Ministry of Economy and Finance in Italy relatively to year 2019 as of 01/01/2020 there are 332.292 nurses that work within the National Health Sector and within other private facilities. Those nurses work largely within hospitals facilities.

Considering the need to reach the OCSE benchmark mean value equal to 8,8 nurses per 1,000 inhabitants, have been foreseen a national need of 524,845.

In order to satisfy the estimated need in 2027, equal to 402,352, the number of Nurses in activity in that year was considered on the basis of the estimated retirements, as well as the additional availability deriving from the planned training plans.

The estimate of retirements was calculated on the basis of nurse currently aged over 60 years old (7,83% of the total nurses). Considering that the retirement age is 67 years old, it is estimated that 26.018 nurses will retire in 2026.

With regard to graduate training for Nurses, the number of scholarships planned for the academic year 2020/2021 is 16,013, this number results consistent in the last 3 years. Considering this data, the total nurses will be trained in 2026 is estimated amount to 96,078.

The following table shows the number of nurses necessary to make operational the facilities as envisioned by 1.1, 1.2 and 1.3 Investments of Component 1 Mission 6.

| | N. of Nurses |
|---|---------------------|
| Community Health House (n° 1288) | 10,091 |
| Territorial Coordination Centre (n° 602) | 3,612 |
| Community Hospital (n° 381) | 3,429 |
| Total | 17,132 |

Although the total number of nurses in 2027 does not reach the need estimated by the OECD average (8.8 nurses per 1,000 population), the estimated additional number of nurses, equal to 70,060 over the current one, allows to cover the progressive activation of the interventions funded through the Recovery Plan.

Sustainability Plan

Considering the funding provided for the Investment Measure "Enhancement of health care and the territorial health network" integrated into the Recovery Plan funds and the total estimated costs associated with it, the table 6 summaries, by year, the emerging costs, the expected financial coverage and the estimated needs, understood as the balance to be financed to meet the expected uncovered costs.

Table 6. Estimated costs vs Financial coverage/needs

| | | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|--|--|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| ESTIMATED COST | Cost | 823.231.762 € | 1.005.889.632 € | 1.242.151.408 € | 1.528.890.954 € | 1.844.979.366 € | 2.084.247.366 € |
| | <i>referred</i> | | | | | | |
| | Sub-measure 1.1 Community Health House | 94.500.000 € | 94.500.000 € | 94.500.000 € | 94.500.000 € | 94.500.000 € | 94.500.000 € |
| | Sub-measure 1.2 Personnel for Homecare | 578.231.762 € | 760.889.632 € | 997.151.408 € | 1.283.890.954 € | 1.599.979.366 € | 1.599.979.366 € |
| | Sub-measure 1.2 Personnel for Territorial Coordination Centres | 150.500.000 € | 150.500.000 € | 150.500.000 € | 150.500.000 € | 150.500.000 € | 150.500.000 € |
| Sub-measure 1.3 Personnel for Community Hospital | - | - | - | - | - | 239.268.000 € | |
| FINANCING SOURCE | Financed | 823.231.762 € | 1.005.889.632 € | 1.242.151.408 € | 1.528.890.954 € | 1.844.979.366 € | 745.028.624 € |
| | <i>referred</i> | | | | | | |
| | Recovery Fund | 78.203.138 € | 260.861.007 € | 497.122.784 € | 783.862.329 € | 1.099.950.742 € | - € |
| | National Health Fund c. 4 art. 1 D.L. n. 34/2020 | 265.028.624 € | 265.028.624 € | 265.028.624 € | 265.028.624 € | 265.028.624 € | 265.028.624 € |
| National Health Fund c. 5 art. 1 D.L. n. 34/2020 | 480.000.000 € | 480.000.000 € | 480.000.000 € | 480.000.000 € | 480.000.000 € | 480.000.000 € | |
| BALANCE TO BE FINANCED | Requirement | - € | - € | - € | - € | - € | 1.339.218.742 € |

With specific reference to the year 2027 compared to the estimated emerging costs of € 2,084,247,366 and a total financed amount of € 745,028,624 a total requirement of €1,339,218,742 is estimated. In fact, the estimated costs are covered exclusively by the financing quota of paragraphs 4 and 5 of Article 1 of DL 34/2020.

To identify an adequate coverage of the above-mentioned needs, four measures have been hypothesized, which alone will contribute to the total financing of the needs foreseen for the year 2027.

The table 7 summaries the sustainability plan, which is described in more detail below.

Table 7. Summary of the sustainability plan

| | | | |
|--|--|---|---------------------------|
| Measures to finance needs - Year 2027 - | Balance to be financed (Euro) - Year 2027 | | 1.339.218.741,97 € |
| | 1 | Increase in the National Health Fund - FSN (15% of the 1% estimated increase) | 180.000.000,00 € |
| | 2 | Reduction of hospitalizations at high risk of inappropriateness for chronic diseases | 134.379.918,00 € |
| | 3 | Reduction of inappropriate access to the emergency department for white and green codes | 719.294.197,29 € |
| | 4 | Reduction of pharmaceutical expenditure related to three classes of high-consumption drugs and with the risk of inappropriateness | 329.000.000,00 € |
| | Total of Sustainability Plan (Euro) - Year 2027 | | 1.362.674.115,29 € |
| Surplus (Euro) - Year 2027 | | 23.455.373,32 € | |

Below are the details of the different items that will contribute to the financing of the needs foreseen for the implementation of Measures 1.1 - 1.2 - 1.3 indicated in the Plan.

The presumed surplus will be used to cover the possible non-achievement of the measures foreseen in the above-mentioned sustainability plan.

1. Increase in the National Health Fund (15% of the 1% estimated increase)

Considering the overall financing needs and the historical expenditure relating to the National Health Fund (FSN, Fondo Sanitario Nazionale) (for the year 2021, 121,370.1 million euros are expected), an increase in the standard health requirement and a correlated increase in the fund itself is estimated by about 1% per year. Considering these estimates and allocating 15% of the aforementioned increase to the maintenance of territorial services throughout the Country, the estimated increase is approximately **180,000,000** euros for the year 2027.

2. Reduction of hospitalizations at high risk of inappropriateness for chronic pathologies

The enhancement of the territorial healthcare services supply with the creation of a widespread network of healthcare facilities throughout the national territory that can provide continuous and integrated care to the population, specifically to the more fragile subjects-, as demonstrated in the literature (Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q.* 2005; 83 (3): 457-502), will be associated with a reduction in hospitalizations defined as “at high risk of inappropriateness”: diabetes, chronic obstructive pulmonary disease and hypertension. Patients suffering from such chronic conditions recur to territorial assistance as the most appropriate care setting for the treatment of their pathological condition that should not result in hospitalization.

Considering the data from the 2019 SDO flow (administrative flow relating to hospital care - SDO is the hospital discharge record), 90% of the non-urgent planned hospitalizations, 90% of the planned hospitalizations with pre-hospitalization and 40% of the urgent hospitalizations for the three clinical conditions mentioned above (diabetes, chronic obstructive pulmonary disease and hypertension) were extracted and considered for the purposes of our analysis. Each hospitalization was valued using the average daily hospitalization rate estimated in the OECD 2020 report “Realising the Potential of Primary Health Care” equal to € 417. The total number of days of hospital stay for the three types of hospitalization is instead equal to 322,254. Therefore, the valuation of the reduction of these hospitalization classes is equal to € **134,379,918**.

3. Reduction of inappropriate access to the emergency department for white and green codes

Currently, it is estimated that out of the 21 million accesses to the emergency department throughout the national territory, about 16 million are accesses with white and green codes (data of 2019 from the administrative flow of services provided in the context of emergency healthcare - EMUR). The enhancing of the territorial network, in particular the widespread distribution of the Community Houses throughout the national territory, able to ensure basic health care 24 hours a day to the population, will provide the real alternative to emergency departments for all those conditions classified as non-urgent (white and green codes). (Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Q.* 2005; 83 (3): 457-502; I quaderni di monitor n.11 – 24/7 healthcare and reduction of inappropriate access to the emergency department: evidence and guidelines. AGENAS 2013).

The estimate of the reduction in emergency department access was carried out considering the data from EMUR 2019 flow; specifically, the number of accesses with white and green code that did not result in a hospitalization were extracted - overall 87.4% of all accesses with white code (2.735.519) and green code (11.234.872). 90% of accesses with white code (2,461,967) and 60% of accesses with green code (6.740.923) were considered avoidable. The estimate of the reduction in costs due to inappropriate access to the emergency room with white code was calculated by valuing each inappropriate access with the ministerial nomenclator rate of the first specialist visit equal to € 20.66. While, the estimate of the reduction in costs resulting from improper access to the emergency department with the green code was calculated by valuing each inappropriate access with the rate published in the DCA U00442/2015 of the Lazio region equal to € 99.16. The total reduction in inappropriate access to the emergency department is therefore equal to € **719,294,197**.

4. Reduction of pharmaceutical expenditure related to three classes of high-consumption medicines and with risk of inappropriateness

One of the major items of expenditure of the Italian NHS is attributable to pharmaceutical expenditure. In 2019, a total pharmaceutical expenditure of €30.8 billion was calculated, of which 76.4% paid by the NHS. Despite the numerous evidences in the literature that underline the importance of rationalizing the prescription of some classes of drugs, prescriptions with a high risk of inappropriateness are still numerous in Italy (The use of drugs in Italy. National report year for the year 2019. Italian National Medicines Agency - AIFA).

The interventions planned for enhancing territorial assistance, aiming at taking charge of the citizen and promoting home as a first place of care and assistance, will result in an integrated and continuous taking charge of the patient and therefore also in a rationalization of pharmaceutical prescriptions, in particular of those classes of drugs characterized by high consumption and risk of inappropriateness, such as antibiotics, anti-ulcer and cardiovascular.

Based on AIFA data, published in the Report “The use of drugs in Italy. National report for the year 2019” and relating to pharmaceutical expenditure in Italy, the costs relating to the reduction of pharmaceutical expenditure for the three classes mentioned above (antibiotics, anti-ulcer and cardiovascular) have been estimated. This estimate was made by determining the median of the pharmaceutical expenditure between the Italian Regions and calculating the difference between the consumption of the Regions with values greater than the median and the median itself, for a total of € **329,000,000**.

The resources recovered as described in points 1-4 listed above, and equal to 1,362,674,115 euros, will be used for the costs of strengthening home care starting from 2027. Thus, making the intervention described in sub-measures 1.1, 1.2 and 1.3 sustainable over time. To the sources of funding described above, the funds must be added that are allocated for health workforce in the Law Decree No. 34/2020, art. 1, paragraph 4 and paragraph 5, which allocates, starting from the year 2021, a total of **745,028,624** euros. Of which € **265,028,624** (Article 1, Paragraph 4) to ensure increased monitoring and assistance activities related to the epidemiological emergency and to strengthen integrated home care services for patients in home isolation or quarantined, as well as for people with chronic diseases, disabled, with mental disorders, with pathological addictions, who are not self-sufficient, needing palliative care, pain therapy, and in general for situations of fragility protected under Chapter IV of the decree of the President of the Council of Ministers of 12 January 2017 "Definition and update of the essential levels of assistance, referred to in Article 1, paragraph 7, of Legislative Decree no. 502 of 30 December 1992". To this end, in compliance with the regional autonomy in the organization of home services, the Italian Regions are authorized to increase personnel expenditure within the limits indicated in paragraph 10, as well as a total of € **480,000,000** (Article 1, Paragraph 5) to strengthen nursing services, also with the introduction of the family or community nurse, to enhance the territorial care of subjects affected by COVID-19, also by supporting the Special Units for Care Continuity and the services offered by primary care. The companies and entities of the NHS, notwithstanding Article 7 of Legislative Decree 30 March 2001, no. 165, may, in relation to regional organizational models, use forms of self-employment, including coordinated and continuous collaboration, with effect from 15 May 2020 and until 31 December 2020. Also hiring nurses who are not under a dependent employment relationship with public and private accredited health and social health centres, in a number not exceeding eight nursing units per 50 000 inhabitants. For the assistance activities carried out, nurses are paid a gross remuneration of 30 euros per hour, including the burdens, for a maximum weekly number of 35 hours. For the same purposes, starting from 1 January 2021, companies and entities of the NHS may recruit nurses in a number not exceeding 8 units per 50,000 inhabitants, through permanent hires and in any case within the limits referred to in paragraph 10.

Personnel hired pursuant to Law Decree No. 34/2020, and therefore financed through this source, will be employed in the Community House, in the Integrated Home Assistance, as well as in the Territorial Coordination Centre, contributing to the investment measure "Strengthening territorial health care and health network".

Annex II: M/Ts of component 1 Mission 6

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the regulation.

| Timeline | CID (M&Ts covering several measures) | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|---|---|---|--------------------|
| Q2 2022 | <p>Reform 1: Proximity networks, facilities and telemedicine for territorial health care and National network of health, environment and climate</p> <p>Milestone: Entry into force of the secondary legislation (Ministerial Decree) envisaging the reform of the organisation of healthcare.</p> <p>The reform includes:</p> <p>Definition of a new organizational model of Territorial healthcare assistance network, through the definition of a regulatory which identifies structural, technological and organizational standards across Regions;</p> | | <p>Publication on the OJ</p> <p>Intermediate step</p> <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach</p> <p>Approval of the Guidelines containing the digital model for the implementation of Home Care</p> | |
| Q2 2022 | <p>Investment 1.1: Community Health House to improve territorial health assistance</p> <p>Milestone: Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community health houses</p> <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach</p> <p>Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Home Care</p> <p>Investment 1.3: Strengthening of Intermediate Healthcare and its facilities (Community Hospital)</p> <p>Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for Community hospitals</p> | | | |

| | | | | |
|----------------|---|--|--|--|
| <p>Q4 2023</p> | <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach Milestone: Assign programs/projects on telemedicine as a tool to support the management of patients to Regions</p> <p><i>The Ministry of Health also through its permanent government agencies and in collaboration with the Ministry for Technological Innovation and the Digital Transition will be responsible for the overall management and oversight of the project.</i></p> <p><i>The initiative will be implemented through a national contest aimed at allocating funding to projects proposed by the Italian Regions, where:</i></p> <ul style="list-style-type: none"> - <i>The Italian Ministry of Health will define upfront priorities for the telemedicine projects financing process in accordance with the National Healthcare Strategies;</i> - <i>The Italian Regions will participate to the contest, by proposing their projects;</i> - <i>The Italian Ministry of Health will allocate the funding as co-financing of the proposals received (for more details on how funding is allocated please see below)</i> - <i>The Italian Regions will be in charge of implementing the projects awarded with funding.</i> <p><i>The scope of projects admissible for financing will be open to all applications/solutions/use cases across all steps of the health journey (consultation, examination, report consultation, patient monitoring, etc.) and clinical domains (e.g., cardiac, orthopaedic, etc.).</i></p> <p><i>However, two pre-conditions to funding will be enforced.</i></p> <p><i>First, projects shall exhibit a data-driven approach, foreseeing a native integration of telemedicine solutions with the national Electronic Health Record: data collected through telemedicine projects will be created as digitally native and, where compatible, will automatically populate the Electronic Health Record, which is to become the main platform where</i></p> | | | |
|----------------|---|--|--|--|

| | | | |
|--|--|--|--|
| <p><i>telemedicine users can obtain patients' healthcare data, consistent with Mission 6 Component 2 Investment 1.3.</i></p> <p><i>Second, submitted project proposals shall include clear quantitative KPIs (including targets that will allow to track impact in the first 12 to 24 months) related to key outcomes for the healthcare system, such as:</i></p> <ul style="list-style-type: none"> - <i>Simplification of access to the health system (e.g. consultations);</i> - <i>Enhancement prevention across medical disciplines;</i> - <i>Monitoring improvement (more frequent) for post-acute and chronic diseases;</i> - <i>Improvement of healthcare patients' care quality (e.g. lower hospitalization rates for chronic patients, lower waiting times);</i> - <i>Also, and where applicable, they shall include forecasts of economic savings for the health system.</i> <p><i>The disbursement of financing instalments shall be conditioned to the fulfilment of these impact monitoring KPIs.</i></p> <p><i>Also, the awarding of funding will privilege those projects/initiatives that:</i></p> <ul style="list-style-type: none"> - <i>Leverage existing (successful) experiences (ongoing projects, pilots, etc.), to accelerate time to impact;</i> - <i>Aim to build scalable "telemedicine platforms", encompassing multiple applications/use cases and integrating them with an approach based on: open architecture and open interfaces (for easy integration of additional applications), standard off-the-shelf software, limited system integration requirement/effort to expand the scope to other applications/solutions;</i> - <i>Ensure open/seamless integration with the Territorial Coordination Centers, to empower the Home care strategy (as described in this Component 1 of Mission 6: data collected through telemedicine projects, where compatible, will converge to a data platform used by Territorial Coordination Centers);</i> | | | |
|--|--|--|--|

| | | | | |
|---------|--|--|--|--|
| | <p>- <i>Cover multiple Regions in the implementation scope, to favour standardization and with a particular eye reducing geographical health delivery gaps.</i></p> <p><i>Evaluation and monitoring of telemedicine projects should be carried out by international standards, and, where possible through Randomized Control Trials (RCTs) in order to improve telemedicine and research on digital health in lockstep.</i></p> | | | |
| Q4 2025 | <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach Target: at least 200,000 number of people assisted by exploiting telemedicine tools</p> | | | |
| Q2 2024 | <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach Target: At least 600 Coordination Centres fully operational</p> | | <p>Please provide details on territorial distribution See Annex I</p> | |
| Q2 2026 | <p>Investment 1.2: Homecare as first point of assistance for citizens. using a multilateral approach Target: At least 800,000 additional people over 65 treated in home care</p> | | <p>Please provide details on territorial distribution See annex II</p> | <p>Please clarify the baseline see annex II</p> |
| Q2 2026 | <p>Investment 1.1: Community Health House to improve territorial health assistance Target: At least 1,250 Community Health Houses renovated and technologically equipped.</p> <p>Investment 1.3: Strengthening of Intermediate Healthcare and its facilities (Community Hospital) Target: At least 380 Community Hospitals renovated and technologically equipped</p> | | <p>Please provide details on territorial distribution See annex III</p> | |

| Mission | Component | Id |
|----------------|------------------|-----------|
| M6 | C1 | Inv1.1 |
| M6 | C1 | Inv1.2 |
| M6 | C1 | Inv1.3 |

Name

Community Health House to improve territorial health assistance

Homecare as first point of assistance for citizens

Strengthening of Intermediate healthcare and its facilities (Community hospital)

DNSH assessment

| | |
|---|---|
| Objective | 8 - Health |
| Cluster | 1 - Priority networks, facilities and interventions for territorial resilience assistance |
| Related Measure (Subtype or Investment) | 1.3. Investments in first order assistance for citizens |
| Responsibility for reporting and implementation | ERF, ERDF InvestEU |
| Date | 24/01/2024 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|---|--|--|--------|--|
| | Does the measure have an an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantial DNSH assessment. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. The environmental and societal care tools made available are Resource High Energy Efficiency. Additionally, the intervention can be considered as an activity making the adaptation of final services to prevent or minimize the following adverse environmental impacts distribution: | Is the measure expected to lead to significant GHG emissions? | NO | The activity related to the construction works of the network of the 1st intervention has led, with a coefficient of climate change of 0%. The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. The implementation of a new organizational model (Electronic Coordination Center) will reduce use of paper managed according to the "Green Paper Initiative". |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and indirect effects of the measure across the life cycle, given its nature, and as such is considered consistent with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. No environmental impacts have been caused by water quality deterioration. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and indirect effects of the measure across the life cycle, given its nature, and as such is considered consistent with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. No environmental impacts have been caused by water quality deterioration. | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant pollution in the direct or indirect use of the natural resources at any stage of the cycle which is not considered by previous measures, or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Taxonomy)? | NO | The waste generated from the use of intermedicines and connected care tools made available is collected and managed by a licensed operator and treated according to the waste hierarchy. The waste produced by the use of intermedicines and connected care tools made available, fall within the scope of application of ERDF waste, as it applies the extended responsibility of the producer. By collaborating through collaborators, all ensure proper recovery of the device. In the case of purchase of CE materials, enter the request for registration of the supplier in the register of Primary Health Care materials suppliers in order to guarantee the correct management of any waste produced at the end of the cycle or at the beginning in the case of equipment (energy efficiency). |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantial DNSH assessment. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitat and species, including those of priority? (art. 17 of the Taxonomy)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and indirect effects of the measure across the life cycle, given its nature, and as such is considered consistent with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. | Is the measure expected to lead to a significant increase in the emissions of greenhouse gas, air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and indirect effects of the measure across the life cycle, given its nature, and as such is considered consistent with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitat and species, including those of priority? (art. 17 of the Taxonomy)? | | |

M6 - State Aid Assessment

Concerning this Mission, in light of the following elements the application of State aid rules can be excluded and therefore there is no need to notify the measure to the Commission for approval prior to its implementation.

Indeed, the players involved in the investments of this Component do not perform economic activities within the meaning of Article 107(1) TFEU.

The major aim of the Mission is to improve both the quality and efficiency of the Italian National Health Service (NHS) service delivery, namely by means of an enhanced digitalization. The relevant beneficiaries are thus public sector operators falling within the scope of the NHS.

In this respect, it is well established that healthcare providers within a national healthcare system pursuing a social objective, underpinned by the principle of solidarity, and which operate under State supervision are considered to carry out non-economic activities. As recalled even by the “Guiding template: Digitalisation of public administration, including healthcare”, public funding granted to digitalise such healthcare providers falls outside the scope of State aid rules, provided the administrations procuring those goods and services only use them in the exercise of the mentioned non-economic activities.

Also, the Commission Notice on the notion of State aid as referred to in Article 107(1) TFEU confirms that in Member States – as it is the case for Italy – public hospitals are an integral part of the NHS and are almost entirely based on the principle of solidarity. Such hospitals or Community Health House and Community Hospital are directly funded from social security contributions and other State resources and provide their services free of charge on the basis of universal coverage. The Union Courts have confirmed that, where such a structure exists, the relevant organisations do not act as undertakings. Moreover, even activities that in themselves could be of an economic nature, are carried out merely for the purpose of providing another non-economic service, are not of an economic nature. An organisation that purchases goods — even in large quantities — for the purpose of offering a non-economic service does not act as an undertaking simply because it is a purchaser in a given market.

In addition, this Component does not properly involve public resources within the meaning of Article 107(1) TFEU since the relevant players are intra-State entities and no transfer of public resources to undertakings or waiver of public revenues in their favour is foreseen.

With reference to Component 2, at the current stage of development, one cannot exclude that for some specific interventions (i.e. mainly research-related activities) other stakeholders will also be involved, including research centers and universities. Also, concerning such bodies, it is highly disputable that they perform economic activities within the meaning of Article 107(1) TFEU since education organised within the national educational system funded and supervised by the State can be considered as a non-economic activity and the Commission considers (see Notice on the notion of State aid) that knowledge transfer activities (licensing, creation of spin-off, or other forms of management of knowledge created by the research organisation or infrastructure) are non-economic where they are conducted either by the research organisation or research infrastructure (including their departments or subsidiaries) or jointly with, or on behalf of other such entities, and all income from those activities is reinvested in the primary activities of the research organisations or infrastructures concerned. In any case, such a possible collaboration will take the form of PPP arrangements and will entail therefore, even considering the presence of an undertaking among the involved players, no advantage under Article 107(1) TFEU. When a transaction is carried out under the same terms and by public bodies and private operators as occurs in public private partnerships, it can

normally be inferred that such a transaction is in line with market conditions (see Notice on the notion of State aid).

| Regione/PA | Population | Coordination Centre (1 per 100.000) | Local Health Authority |
|-----------------------|-------------------|--|------------------------|
| Piemonte | 4.341.375 | 43 | 12 |
| Valle d'Aosta | 125.501 | 1 | 1 |
| Lombardia | 10.103.969 | 101 | 27 |
| PA Bolzano | 532.080 | 5 | 1 |
| PA Trento | 542.739 | 5 | 1 |
| Veneto | 4.907.704 | 49 | 9 |
| Friuli Venezia Giulia | 1.211.357 | 12 | 3 |
| Liguria | 1.543.127 | 15 | 5 |
| Emilia Romagna | 4.467.118 | 45 | 8 |
| Toscana | 3.722.729 | 37 | 3 |
| Umbria | 880.285 | 9 | 2 |
| Marche | 1.518.400 | 15 | 1 |
| Lazio | 5.865.544 | 59 | 10 |
| Abruzzo | 1.305.770 | 13 | 4 |
| Molise | 302.265 | 3 | 1 |
| Campania | 5.785.861 | 58 | 7 |
| Puglia | 4.008.296 | 40 | 6 |
| Basilicata | 556.934 | 6 | 2 |
| Calabria | 1.924.701 | 19 | 5 |
| Sicilia | 4.968.410 | 50 | 9 |
| Sardegna | 1.630.474 | 16 | 8 |
| ITALIA | 60.244.639 | 602 | 125 |

| Regione/PA | People over-65 (estimated in 2026) | People over 65 treated in homecare (baseline 2019) | People over 65 treated in homecare (estimated in 2026) |
|-----------------------|---------------------------------------|--|--|
| Piemonte | 1.178.017 | 61.667 | 117.802 |
| Valle d'Aosta | 32.411 | 227 | 3.241 |
| Lombardia | 2.500.583 | 108.959 | 250.058 |
| PA Bolzano | 118.886 | 365 | 11.889 |
| PA Trento | 135.992 | 7.291 | 13.599 |
| Veneto | 1.248.410 | 100.143 | 124.841 |
| Friuli Venezia Giulia | 336.475 | 17.782 | 33.648 |
| Liguria | 450.620 | 15.838 | 45.062 |
| Emilia Romagna | 1.152.610 | 98.894 | 115.261 |
| Toscana | 1.006.612 | 79.172 | 100.661 |
| Umbria | 240.264 | 9.752 | 24.026 |
| Marche | 406.224 | 14.974 | 40.622 |
| Lazio | 1.417.441 | 31.731 | 141.744 |
| Abruzzo | 340.187 | 15.166 | 34.019 |
| Molise | 80.996 | 5.430 | 8.100 |
| Campania | 1.242.729 | 29.244 | 124.273 |
| Puglia | 987.095 | 23.297 | 98.710 |
| Basilicata | 142.151 | 6.666 | 14.215 |
| Calabria | 467.417 | 8.338 | 46.742 |
| Sicilia | 1.169.575 | 51.246 | 116.958 |
| Sardegna | 443.446 | 15.662 | 44.345 |
| ITALIA | 15.098.112 | 701.844 | 1.509.814 |

| Regione/PA | Population | Health Community House- distribution |
|-----------------------|-------------------|---|
| Piemonte | 4.341.375 | 93 |
| Valle d'Aosta | 125.501 | 3 |
| Lombardia | 10.103.969 | 216 |
| PA Bolzano | 532.080 | 11 |
| PA Trento | 542.739 | 12 |
| Veneto | 4.907.704 | 105 |
| Friuli Venezia Giulia | 1.211.357 | 26 |
| Liguria | 1.543.127 | 33 |
| Emilia Romagna | 4.467.118 | 95 |
| Toscana | 3.722.729 | 80 |
| Umbria | 880.285 | 19 |
| Marche | 1.518.400 | 32 |
| Lazio | 5.865.544 | 125 |
| Abruzzo | 1.305.770 | 28 |
| Molise | 302.265 | 6 |
| Campania | 5.785.861 | 124 |
| Puglia | 4.008.296 | 86 |
| Basilicata | 556.934 | 12 |
| Calabria | 1.924.701 | 41 |
| Sicilia | 4.968.410 | 106 |
| Sardegna | 1.630.474 | 35 |
| ITALIA | 60.244.639 | 1.288 |

| Regione/PA | Popolazione (01/01/2020) | P.I. OdC da realizzare con fondo recovery | OdC da realizzare con fondo recovery |
|-----------------------|-------------------------------------|--|---|
| Piemonte | 4.341.375 | 549 | 27 |
| Valle d'Aosta | 125.501 | 16 | 1 |
| Lombardia | 10.103.969 | 1.278 | 64 |
| PA Bolzano | 532.080 | 67 | 3 |
| PA Trento | 542.739 | 69 | 3 |
| Veneto | 4.907.704 | 621 | 31 |
| Friuli Venezia Giulia | 1.211.357 | 153 | 8 |
| Liguria | 1.543.127 | 195 | 10 |
| Emilia Romagna | 4.467.118 | 565 | 28 |
| Toscana | 3.722.729 | 471 | 24 |
| Umbria | 880.285 | 111 | 6 |
| Marche | 1.518.400 | 192 | 10 |
| Lazio | 5.865.544 | 742 | 37 |
| Abruzzo | 1.305.770 | 165 | 8 |
| Molise | 302.265 | 38 | 2 |
| Campania | 5.785.861 | 732 | 37 |
| Puglia | 4.008.296 | 507 | 25 |
| Basilicata | 556.934 | 70 | 4 |
| Calabria | 1.924.701 | 243 | 12 |
| Sicilia | 4.968.410 | 628 | 31 |
| Sardegna | 1.630.474 | 206 | 10 |
| ITALIA | 60.244.639 | 7.620 | 381 |

PART 2: DESCRIPTION OF REFORMS AND INVESTMENTS

A. COMPONENT 2: Innovation, research and digitalisation of national healthcare service

1. Description of the component

Summary box - Innovation, research and digitalisation of national healthcare service

Policy area/domain: Health - (i) promote the economic, social and territorial cohesion of the Union; (ii) strengthen economic and social resilience; (iii) mitigate the social and economic impact of the crisis; (iv) support the digital transition.

Objective: The component aims at ensuring the necessary enabling and transversal conditions for greater resilience of the national healthcare service through: (i) replacement of obsolete healthcare technologies in hospitals; (ii) the development of a significant structural improvement in the safety of hospital buildings; (iii) the improvement of the health information systems and digital tools; (iv) the promotion and strengthening of the scientific research sector; (v) the enhancement of human resources.

Reforms and/or investment:

Reforms The focus of the reform is on the reorganization of the network of Scientific Hospitalization and Care Institutes (IRCCS) in order to improve both the quality and excellence of the Italian NHS service delivery. This reform concerns an update of the national regulations by introducing the necessary rules to review the legal regime of the IRCCS and the research policies related to the Ministry of Health; to support research and strengthen the responsiveness of the Italian NHS to health emergencies, the epidemiological transition and the health needs related to the demographic framework, as well as guaranteeing clear paths that regulate the relations between the national healthcare service and the University, in order to guarantee a greater integration in compliance with the competences of the Italian Ministry of University and Research, the Italian Ministry of Health, the Italian Regions and Bodies of the NHS.

The component, in order to guarantee health not only as the mere absence of disease, but as a state of bio-psycho-social well-being of the person, as indicated by the WHO, aims to implement a reform measure that updates/defines the regulatory framework in the context of:

- organisation of the Scientific Institutes for Hospitalization and Care (IRCCS) and other research policies pertaining to the Ministry of Health, through the updating of Legislative Decree no. 288/2003 "Reorganisation of the discipline of the Scientific Institutes for Hospitalization and Care, pursuant to article 42, paragraph 1, of Law no. 3 of 16 January 2003" and subsequent implementation measures.

Investments concern the development, strengthening and modernization of the technological and physical infrastructure of the national healthcare service and the Research sector. All the investments are linked to the reform mentioned above. In particular, the component is orientated towards the development of a public healthcare that values the investments in the health ecosystem, not only in terms of human, digital, structural, technical and technological resources but also aimed at improving the biomedical and healthcare research sector. In particular, the component aims at ensuring the presence of the necessary enabling factors to make the Italian NHS network more resilient across the board through:

- the promotion and innovation of the existing technological and digital assets currently in use in hospitals, in order to respond to the population healthcare needs more effectively;
- the development of a significant structural improvement of the safety of the hospitals, making them compliant with the state-of-the-art anti-seismic regulations globally;
- the development and deployment of a homogeneous Electronic Health Record (EHR) through a

major transformational effort of technological and information systems both at national and regional level, due to give an unique access point at citizens and patients to the healthcare services, a single source of information that details the entire medical history to healthcare professionals of a patient and a large amount of clinical information to the healthcare administrations to perform deep health analytics with clinical data and improve healthcare delivery;

- the strengthening the New Health Information System (“NSIS”) as the reference and unique tool to monitor the application of the Essential Levels of Assistance (“LEA”), i.e. the services guaranteed by the Italian NHS, on the national territory in terms of quality, efficiency and appropriateness of the Italian NHS collecting, analysing clinical, administrative and costs data, as well as the strengthening of the healthcare information flows and digital tools across all the local levels of the NHS, in order to reinforce the capabilities of the administrations to produce timely, standardized and high quality data;
- the development of human capital, through the modernisation of the knowledge tools and platforms of content, as well as the development of professional skills.

Estimated cost overall: **8,625,540.00** EUR

The following table summarizes the investments included in the Component 2 of the “Health” Mission. The main elements will be described more in detail in the following paragraphs.

| Measure (Reform/Investment) | Sub-measure | Cost |
|---|---|-----------------------|
| Reform measure: reorganization of the network of Scientific Hospitalization and Care Institutes (IRCCS) | | 0 € |
| Investment 1. Technological and digital update | 1.1 Digital update of hospitals’ technological equipment | 4,052.41 €/Mln |
| | 1.2 Towards a safe and sustainable hospital | 1,638.85 €/Mln |
| | 1.3 Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation | 1,672.54 €/Mln |
| Investment 2. Training, scientific research and technological transfer | 2.1 Strengthening and enhancement of the NHS biomedical research | 524,14 €/Mln |
| | 2.2 Development of technical- professional, digital and managerial skills of professional in healthcare system | 737,60 €/Mln |
| TOTAL | | 8,625.54 €/Mln |

2. Main challenges and objectives

a) Main challenges

The component “Innovation, research and digitalization of the national healthcare” stems out from the need to intervene in the process of transformation and renewal of the Italian National Health Service (NHS), promoting the creation of a modern and digitally-advanced offer, able to improve the quality of care and the response to the health needs of citizens.

The Covid-19 emergency has highlighted some structural weakness of the Italian NHS, and significant deficiencies in the supply of adequate medical and health devices, the availability of staff, the provision of infrastructure and of technological and digital equipment have also arisen.

The Italian Government focused its effort on overcoming the short-term Covid-19 emergency and by ensuring a prompt and effective response from the NHS able to meet the needs of the evolving society and serve the population’s needs most effectively. To this aim, the national strategies and agenda are aligned with the priorities set by the EU in terms of digitalisation - in particular concerning the services provided by the public administration and the specific needs of the healthcare system - which require particular attention in making sure that an adequate level of services is delivered to patients through efficient means. Leveraging the innovation and digitalisation of the healthcare system - in particular in response to the challenges of the ageing population - and investing in enhancing the training and availability of health workers and medical infrastructure is indeed of primary importance.^{1:2}

On the other hand, the Italian research sector needs reforms together with additional funding in order to ensure more coordination and up-to-date improvement of the healthcare service offering. Italian biomedical research is particularly affected compared to other international practices.

Research is essential to improve patient care, in addition to the development and evaluation of organisational-management methods to increase the efficiency of the NHS. The lessons learned during the Covid-19 emergency show that a new and suitable way to meet evolving needs and contingencies must be identified to establish long-lasting, transparent and mutually profitable relations between the public and the private sector. All this falls within the scope of a sector that has to be considered “strategic” and where the leadership of the central administration is essential. The main challenge in this area concerns the ability to define a new planning policy approach by sector to combine public interventions in relation to healthcare with the needs and potential of the supply chain as a whole, as well as support the private initiatives in a logic of sustainable and lasting partnerships. It is now essential for the Country to shape national research and innovation programs, including the development of guidelines to direct the growth of the national ecosystem underpinned by, unitary and integrated medium-long term vision.

The modernisation and digitisation process is one of the most relevant challenges for the National Health Service, hence the continuous update of the clinical and assistance skills of health and social care workers is key, balancing the need for highly specialized skills with the need for a high level of integration between

¹ OECD (2019) State of Health in the EU - Italy Country Health Profile 2019. European Commission (2019) Joint Report on Health Care and Long-Term Care Systems & Fiscal Sustainability, Institutional Paper 105, June 2019 ISSN 2443-8014 (online); see also: Country Document - 2019 update for Italy.

² European Commission Recommendation for a Council recommendation on the 2020 National Reform Programme of Italy COM(2020) 512 final.

operators in the general system of health services. In particular, in line with the need to upgrade and modernise the primary as well as the secondary care, it will be essential to focus on training of key figures such as the general practitioner and the top hospital roles of the health authorities (general directors, chief medical officers, administrative director, districts director, head of departments, as well as the board of auditors and the supervisory body), in order to acquire the necessary managerial skills and competencies to face current and future health challenges in an integrated, sustainable, innovative, flexible and result-oriented perspective.

In addition to the development of technical-managerial skills, the scope of the training, will also be aimed at equipping healthcare professionals with knowledge and tools to ensure maximum safety for the patient along the clinical care path. In fact, as shown by a recent study published by the ECDC - European Center for Disease Prevention and Control - it emerges that Italy ranks among the last Countries in Europe for prevalence of healthcare-related infections (Ica).

For this reason, specific training interventions are provided to train health personnel in order to improve the management of hospital infections, reducing the high number of cases that occurs annually. The challenges of the component also include the objective of modernising hospitals from a structural point of view, in order to ensure the highest standards of anti-seismic safety. The intervention is particularly important, also in light of Italy being one of the Countries with the greatest seismic risk due to its particular geographical position. The consequences of an earthquake also depend on the characteristics of resistance of buildings to the actions of a seismic shock. The more vulnerable a building is (by type, inadequate design, poor quality of materials and construction methods, poor maintenance), the greater the consequences. Interventions are therefore planned to make hospitals increasingly safe places and in line with the most recent anti-seismic standards.

Within the context mentioned above, the component contributes to respond to the following challenges:

- overcoming issues related to the limited resources allocated to research in the health sector and digital health;
- developing a stronger link between research centers and businesses, in an open innovation perspective;
- making hospitals safer and compliant with the current anti-seismic safety standards;
- overcoming the critical issues related to the limited and uneven dissemination across regions of the Electronic Health Record (EHR);
- resolving the issue related to of equipment ageing / low use of health technologies in hospitals;
- overcoming the limited spread of telemedicine tools and activities;
- aligning training plans consistently with the health sector needs.

1. Technological and digital update

- WHAT: (i) Digital update of the hospital technology park, both in terms of high-tech equipment (CT, Resonances, etc.) to replace the obsolete ones, as well as interventions aimed at the digitalization of hospitals (both at the level of clinical assistance processes - operating theaters, diagnostics, etc. - and at the level of technological infrastructure and IT assets). (ii) Development of a significant improvement in the safety of hospital structures and alignment with the state-of-the-art anti-seismic standards. (iii) Strengthening, update and expansion of the Electronic Health Record and strengthening of the technological infrastructure and tools for data collection, processing, analysis and simulation, to support the development of advanced analysis tools of complex phenomena and scenario prediction.

- **WHY:** The national context relating to the digitalization of healthcare, as a transversal and central element to support the development of healthcare not only in hospitals but also in the local health units (“ASL”), shows indeed critical numbers. As of today, only 1.2% of public health expenditure is allocated for digital 4.0 technologies. In absolute terms, spending on digital health in Italy settles at €22 per capita - compared to €70 in Denmark, the country best in class in Europe - and it has a growth rate of only 7% (in 2019); the DESI Index (Digital economy and society index) places Italy at the 25th place in Europe in 2020³. Italy needs interventions aimed at technological enhancement and innovation. It is vital to invest more in technological and digital tools, streamlining processes and activities, but also intervening on the relationship between healthcare workers and patients and on the use of available data. ICT technologies and the availability of Big Data analysis tools allow to collect, trace and process an enormous amount of data relating to the entire health ecosystem, paving the way to targeted health policies, thanks to complex analysis tools, simulation and prediction. ICT technologies also allow the personalization of care and increase patient engagement. This is why it is essential to promote the digitalization and interoperability of health data and the enhancement of health information systems to support both clinical activities and the governance of the health system. The diffusion of the EHR across the Country is a key step to address this challenge. Having digital solutions capable of integrating care and assistance processes (outpatient and community medicine), as well as supporting proximity and communication with patients, becomes a fundamental competitive factor for the health sector in the post-emergency phase, in particular to be able to support the process of strengthening and homogenising local services throughout the national territory. Moreover, it is a priority to address the need of updating the technological equipment used in hospitals, in terms of the provision of large health equipment dedicated to diagnosis and treatment, and in terms of assets, tools and digital technologies to support the collection and analysis of information and data throughout the hospital care process. The technological equipment is indeed old and inefficient compared to other countries⁴. The actions addressing these challenges shall take into account the differences across the territory and aim at reaching homogeneous levels of technological supplies across the Country. At governance level, the management of the ongoing crisis has outlined the need to have the capabilities to process large amounts of health and non-health data in real time. In this sense, it is of strategic importance for the Italian Ministry of Health, to strengthen the development of information flows and related technological infrastructure in order to support the development of forecasting models for healthcare monitoring and planning. This will not only allow to strengthen and make governance increasingly effective but also to have powerful calculation tools capable of identifying and anticipating phenomena that could “threaten” the sustainability of the NHS in the medium-long term or could lead to a health crisis. Italy also needs interventions aimed at developing structural improvements. Among public buildings, hospitals play a strategic role in the event of a disaster, as they have a fundamental rescue function for the population, ensuring the effective continuation of the first emergency medical interventions launched in the field. Hospitals, which are among the most exposed and sensitive sites as they accommodate thousands of people with very different reactive abilities, are therefore required not only to withstand the impact force of the earthquake without excessive damage, but also to continue to offer the required levels of health care services.

³ <https://ec.europa.eu/digital-single-market/en/scoreboard/italy>

⁴ In France, Denmark and Sweden, between 60 and 70% of the equipment is up to 5 years of age, while in Italy the most recent machineries (considering those up to 5 years of age, i.e. the most performing and hi-tech ones), are increasingly fewer.

- **RECOMMENDATION:** The component is developed in accordance with the Council Recommendations of 9 July 2019 (2019 / C 301/12) on the 2019 National Reform Program of Italy and, in particular, with recommendation no. 3 concerning investments in the quality of infrastructures, also in order to bridge regional disparities and improve the efficiency of Public Administration by investing specifically in the acceleration of digitalization processes. In line with point no. 1 of the Council Recommendations of 20 May 2020 (COM (2020) 512 final) on Italy's 2020 National Reform Program, which foresees – in 2020 and 2021 – the adoption of measures aimed at “... strengthening the resilience and capacity of the health system with regard to health care workers, essential medical products and infrastructures ...”, the component also focuses on infrastructure investments in the hospital sector in order to provide an adequate response to the critical issues identified in the Country Report related to Italy 2020 of 26 February 2020 (SWD (2020) 511 final).

2. Training, scientific research and technological transfer

- **WHAT:** (1) Enhancement and strengthening of the NHS biomedical research to make the sector more competitive at the international level, together with strengthening the NHS response capacities to health emergencies and epidemiological transition and healthcare needs linked to the demographic framework;
- **RECOMMENDATION:** the update and strengthening of research and development within the NHS is a strategic priority which can allow the Italian NHS to provide an adequate response to the needs of citizens and ensure a point of reference for the industrial system for health innovation. In particular, the strengthening of the biomedical research system in Italy - through the strengthening of the response capacity of the centers of excellence in the sector of rare diseases - can foster the economic development of the Country by improving its competitive capacity based on the interaction between research and companies able to guarantee continuous and effective technology transfers.

3. Technical digital and managerial upskilling of NHS professionals

- **WHAT:** Ensuring a structured and sustainable training activity for healthcare professionals in order to face current and future challenges. Strengthen the training activity through the involvement of general practitioners (GPs), increasing the scholarships for the specific training course in general medicine and the enhancement of technical and managerial skills for the key staff positions of the NHS bodies and its macro-organizational structures.
- **WHY:** Scientific progress and technological innovation require that healthcare professionals are constantly updated and trained, according to Legislative Decree 502/1992, which established the obligation of continuous training for health professionals⁵. Furthermore, the pandemic crisis has also highlighted the difficulty of hospitals to recruit adequately trained staff, especially in terms of digital and innovative issues.
- **RECOMMENDATION:** Point 16 of the Recommendation of the European Council of 20 May 2020 recommends to remove any obstacles to training, hiring and retention of health professionals and -

⁵ such training should be “aimed at adapting professional knowledge throughout the entire professional life and improving skills and the clinical, technical and managerial skills of health workers, with the aim of guaranteeing the effectiveness, adequacy, safety and efficiency of the assistance provided by the National Health Service”

together with this - to improve the coordination and governance of the NHS institutions, in order to foster coordination and collaborations.

b) Objectives

The goal is to increase the effectiveness and efficiency of the healthcare system, taking into account challenges such as the ageing of the population and the limited investment in health infrastructure made in the past, which hinder the quality and efficiency of the Italian healthcare system. To reach this broader objective, this component aims at enhancing the innovation and digitalization in hospitals and supports the research and training of health professionals. The digitalization of healthcare systems is a key part of the European Commission's strategy to empower citizens and build a healthier society. Data is now recognised as a key enabler for the digital transformation in healthcare. In this context, the European Commission (EC) set the priorities to digitally transform the healthcare system into a Digital Single Market and puts EU citizens at the centre of it. This also stresses the fact that citizens need to be able to access and share their data anywhere in the EU, as well as the importance of the promotion of research, disease prevention, personalised healthcare, and the accessibility of digital tools for person-centred care. In particular, the EC Communication on Digital Transformation of Health and Care in the Digital Single Market (COM(2018) 233 final) identifies three priorities:

- Citizens' secure access to their health data, also across borders - enabling citizens to access their health data across the EU.
- Personalised medicine through a shared European data infrastructure - allowing researchers and other professionals to pool resources (data, expertise, computing processing and storage capacities) across the EU.
- Citizen empowerment with digital tools for user feedback and person-centred care - using digital tools to empower people to look after their health, stimulate prevention and enable feedback and interaction between users and healthcare providers.

In line with these priorities, the promotion of EHR based on a common European exchange format is also one of the objectives recently set by the EC in the strategy "Shaping Europe's Digital Future" (February 2020). In fact, the adoption of EHR could also generate efficiencies, contributing to the accomplishment of fiscal sustainability goals for health and long-term care systems.

Therefore, the specific objectives of this Component - to be achieved by 2026 – are the following:

- Ensure the supply of updated health equipment technologies, replacing the existing ones, and promote the digitalization of hospitals in order to guarantee a prompt and adequate response to any epidemic or pandemic events. According to this, it is foreseen to purchase 3,133 new medical devices and improve the digitalisation of 280 1st level and 2nd level DEA hospitals ("Dipartimenti di Emergenza Accettazione").
- Align the hospital to the current anti-seismic standards, through interventions distributed proportionally among the Regions.
- Empower the existing EHR to make it homogeneous, consistent, and interoperable across the national territory and fully accessible to the Italian Regional and National Health Authorities within the limits prescribed by the law, ensuring a secure accessibility of health data.
- Strengthen the Ministry of Health's IT infrastructure used for the collection, processing, validation and analysis of health data, also in a One Health approach, supporting advanced innovation in the management of health data through AI, Big Data and Machine Learning, also due to realize a

enhancement intervention of NSIS to complete and speed up the information assets necessary for monitoring the LEA and to introduce advanced forecasting, simulation and business intelligence tools and high level skills within the Italian Ministry of Health, in order to support the definition of planning, monitoring and prevention policies.

- Implementing of new health information flows, in order to complete the monitor of “LEA” with primary care data, and to empower quality and timing of clinical and administrative of existing data.
- Develop, through the funding of research programs/projects focusing on specific pathologies of high biomedical complexity, high impact diseases, targeted therapies capable of providing concrete answers to the health needs of citizens affected by rare diseases and rare tumours, as well as improving the response capacity of the centers of excellence in Italy.
- Ensure a structured and sustainable continuous training programme for healthcare professionals to face current and future challenges, promote the development of adequate managerial skills for personnel with responsibility for coordination and governance of the NHS entities and dedicate moments of specific training for healthcare professionals in terms of safety of care pathways, in order to reduce cases of hospital infections among patients.

This component is in line with the national health strategies. Indeed, the set of investments falls within the national strategic context in the healthcare sector and within the budgetary policy objectives for 2021-2023 which take into account the National Recovery and Resilience Plan in line with European programming. These investments are part of the national strategic health plan which is going to be defined by the Italian Ministry of Health, in collaboration with other public administrations. Finally, the component is coherent with the national plan for energy and climate and its updates as well as with the contents of the European Commission “White Paper on artificial intelligence - a European approach to excellence and trust” (19/02/2020) and Italian Strategic Plan for AI (“Strategia nazionale per l’intelligenza artificiale”, 2020) recently published by Ministry of Economic Development highlighting great opportunities and use cases for AI in the healthcare sector. This component - which is characterized by an interdisciplinary value - has also the objective of guiding the policies set to achieve the objectives included in the European Green Deal, as an outcome of proximity assistance or digital access to health data by citizens and its usage for diagnosis and assistance.

In particular, the digitization initiatives included by this component are part of the general framework of modernization of the PA-citizen relations envisaged by the Italian Digital Agenda (AGID), which embeds the guidelines of the European Digital Agenda for Europe - DAE - 2010) and sets - among its main objectives - the establishment of the EHR intended as a single digital document of the patient’s socio-health data. Similarly, the priorities for the interventions related to digitalization in healthcare were outlined in the Digital Growth Strategy 2014-2020 (March 3, 2015) and then reaffirmed in the Pact for Digital health referred to in the 2016 State Regions Agreement, identifying in the EHR the tool through which citizens can trace and consult the entire history of their health care life, sharing it with health professionals to ensure a more effective and efficient service.

The component also includes an important intervention to enhance scientific research as an integral part of the activities of the Italian NHS as it is a fundamental item to ensure an effective, efficient and high quality healthcare to all citizens, responding to the real needs of assistance and care across the Country. The tools of this policy can be found in the National Health Research Program (PNRS) (pursuant to Article 12 bis, paragraph 3, Legislative Decree 229/1999) which defines, on a three year basis, the corresponding research strategies and the allocation of resources, ensuring synergies between public and private research, as well as between national research and European and extra-European research, aggregating and enhancing in a single

vision efforts and resources that are already present in the NHS and in the academic and scientific world, avoiding duplication and overlapping of activities. The lack of digital skills in different areas (for which Italy - among all the European countries - shows more gaps), is one of the main issues limiting the social and economic development of the Country and its recovery from the current period of crisis. This shows why primary importance should be given to the issue of digital skills, and why it represents another important objective of the component in line with the needs of the Country. Indeed, the “Digital Republic” initiative was included in the Italian 2025 Strategy of the Italian Minister for Technological Innovation and Digitisation, presented on 17 December 2019, based on the overarching consideration that the digital transformation of the Country cannot ignore the contextual growth and diffusion of digital culture.

Concerning the overall economic feasibility of the component, it should be specified that investments-related costs estimated for the purpose of this document only refer to the quota for which the funding through RRF is requested. These lines of action are part of the wider national health planning and could receive additional financial support by both the national budget and other European programs (e.g. React EU). For instance, personnel costs and other non-quantified expenditures will be included in the definition of the structural national health budget.

3. Description of the reforms and investments of the component

1) Reform project

Reform 1.: Revise and update the current legal framework of the Scientific Institutes for Hospitalisation and Care (IRCCS) and research policies of the Ministry of Health to strengthen the link between research, innovation and healthcare.

Challenges and Objectives: The reform aims to reorganize the network of IRCCS to improve NHS quality and excellence.

In particular, it reorganizes the network of IRCCS to improve NHS excellence, improving the relationship between Health and Research, revisiting the legal regime of the IRCCS and the research policies pertaining to the Italian Ministry of Health.

Implementation: this reform will be implemented through the following key activities:

1. Revise and update the current legal framework of the IRCCS and the research policies of the Italian Ministry of Health to strengthen the link between research, innovation and healthcare. The aim of this action is to make research and the excellence of the NHS available to the entire care network in order to improve the system's ability to respond to health emergencies, epidemiological transition and health needs linked to the demographic change underway and in line with scientific and technological progress.

It is a question of updating Legislative Decree no. 288/2003 "Reorganisation of the discipline of the Scientific Institutes for Hospitalisation and Care, pursuant to article 42, paragraph 1, of Law no. 3 of 16 January 2003" and subsequent implementing measures, in order to strengthen their activity as structures of excellence within the NHS. In particular, the above-mentioned update will further characterize the legal structure of public and private IRCCSs, also updating the criteria for recognition of IRCCS status, and identifying the procedures for revocation, which are currently not provided for.

In particular, it is envisaged to improve the governance of the public IRCCSs by enhancing the strategic management and better defining the powers and areas of competence, as well as to

comprehensively define the rules on the status of the Scientific Director of the public IRCCSs and of research staff. Lastly, a specific sub-measure envisages differentiating IRCCSs on the basis of their activity (single-specialist or generalist), also envisaging the creation of an integrated network of IRCCSs and facilitating the exchange of expertise between the IRCCSs themselves and the other structures of the Italian NHS. This activity will take the form of the approval of a measure amending the current Legislative Decree no. 288/2003 and will constitute a further Milestone of the overall Reform.

The aforementioned Legislative Decree, in particular, will be adopted by the Council of Ministers following the ordinary legislative process imposed by the current legislative framework.

The IRCCSs are subjected to a competitive system of resources allocation, based on parameters related to scientific activity on impacted journals and on the ability to attract resources of national and international competitive grants, to develop clinical trials in a multi-center collaboration and to develop products and solutions in the field of technology transfer. The evaluation of scientific productivity is based on bibliometric parameters that allow to assess the impact on the scientific world by examining the citations in publications by other authors of the work produced by IRCCS without considering self-citations (i.e. self-citations excluded); since these are diversified topics, the use of the weighted citation indicator (i.e. Field Weight Citation) allows to provide a meaningful indication.

The average of this value achieved by IRCCSs (2,47) is already significantly higher than the Italian national average of 1.22, the European average of 27 (without the UK) of 0.62 and the US average of 0.72. The quality of research production is also shown by the analysis of the percentage weight of publications produced that are included in the top 10 percentile, where IRCCS have an average of 28% of the works falling into this category, compared to a national average of 15.6, European average of 5.7 and USA average of 6.8. Even the participation in competitive funds indicates that IRCCSs already play a role of excellence, making it significant. In fact, if we analyse the participation in Horizon H2020 over the period 2014-2020, it turns out that over 30% of proposals fell into the first two areas of evaluation, with an average success rate of about 2 percentage points higher than the national average.

This situation can be further improved by raising the bar in presence of adequate resources aimed at acquiring human capital (researchers), instrumental/organizational resources and by strengthening the corporate governance that must be increasingly and effectively oriented towards research, through the empowerment of the General Director together with the Scientific Director and their accountability on the results achieved. More generally, the proposals to modify the legislative decree no. 288 of 2003 aim at developing the potential of IRCCSs as this, together with the research programs contained in the PNRR and the development of the Ecosystem of Health, will lead to an increase in the quality of health research from a translational perspective.

| Milestone/Target | Description | Value | Timeline |
|------------------|---|-------|----------|
| Milestone | <p>Entry into force of the legislative decree envisaging the reorganisation of the discipline of Scientific institutes for hospitalisation and care (IRCCS)</p> <p>The reform includes:</p> <p>Measures to: i) strengthen the link between research, innovation and healthcare; ii) improve the governance of the public IRCCSs by enhancing the strategic management and better defining the powers and areas of competence;</p> | | Q4 2022 |

1) INVESTMENT PROJECT

INVESTMENT 1: Technological and digital update

| Measure (Reform/Investment) | Sub-measure | Cost |
|--|---|----------------|
| Investment 1. Technological and digital update | 1.1 Digital update of hospitals' technological equipment | 4,052.41 €/Mln |
| | 1.2 Towards a safe and sustainable hospital | 1,638.85 €/Mln |
| | 1.3 Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation | 1,672.54 €/Mln |

Investment 1.1: Digital update of hospitals' technological equipment.

Challenges: Italy needs interventions aimed at enhancing and innovating the technological and digital assets currently in use in hospitals, in order to better respond to the population health needs and improve each entity governance capacity through a digital and interoperable care path focused on the exchange of data and information. In addition, it is important that health professionals and patients trust digital health technologies, and that no one is excluded, especially given the growing role that technology will play in the future of healthcare.

Data published by the Ministry of Health show significant obsolescence and gap in the digital infrastructure and equipment availability to ensure that the health services are effectively provided nationwide. The types of large sanitary equipment that are over than 10 years old are the following:

- about 24% of CT (computed tomography) scans;
- about 27% of NMRs (nuclear magnetic resonance);
- about 31% of angiographers;
- about 74% of mammograms;
- about 50% of pulmonary ventilators.

In France, Denmark and Sweden, between 60% and 70% of the equipment is up to 5 years old, while in Italy the most recent equipment (considering those up to 5 years old, i.e. the most performing and hi-tech ones), is increasingly less. As underlined by the Ministry of Health, obsolescence compromises quality of performance, efficiency of use, avoid potential digital use and interaction, and has a negative effect on healthcare service sustainability, which has to face high maintenance costs and increased inefficiencies (e.g. waiting time). The obsolescence of technological equipment brings the Italian NHS to a challenge, which engages the Government in the constant search for a thin balance between guaranteeing high quality

healthcare based on innovation and the need to rationalize spending, while respecting the basic principle of fairness by guaranteeing equal patient access to treatment innovation over the whole territory.

Objectives: The improvement of the digitalization of healthcare facilities contributes to enhancing staff productivity, facilitating hospital operations, improving the process quality, ensuring patient safety and high-quality service delivery, by integrating cutting-edge technologies such as medical devices, smart information systems, facility control and automatic conveyor systems, location-based services, sensors and digital communication tools into health processes. The digital update will make it possible to replace healthcare equipment with the most technologically advanced versions, bringing benefits also at the level of clinical assistance processes - operating theatres, diagnostics, etc. As a next step, leaders across the health system will need to agree how innovation is funded, decide which technologies are most effective, and establish a robust IT infrastructure able to provide safe, secure and equitable access to both the technology and the data generated. Technological evolution will also equip companies and professionals with advanced analysis tools, able to collect data in real time, transform it into information and interpret it in order to carry out simulations. The investment aims at purchasing and testing 3,133 pieces of equipment to replace obsolete and out of order technologies (over 5 years old) and improve the digitalisation of 280 1st level and 2nd level DEA hospitals, as described below.

Medical Equipment. Through the information flow dedicated to the large equipment available at the Italian Ministry of Health, it has been possible to perform a first screening of the number and the level of obsolescence of the hospital equipment. In addition, the Ministry of Health carried out an evaluation by which the overall requirement of new large sanitary equipment has been identified in 3,133 units to purchase in substitution of obsolete or out-of-use technologies (over 5 years old). In particular, the number and typologies of equipment to substitute are: 340 CT with 128 slices, 190 NMR at 1.5 T, 81 Linear Accelerators, 937 Fixed X-ray Systems, 193 Angiography, 82 Gamma cameras, 53 Gamma cameras / CT scans, 34 PET TAC, 295 Mammography, 928 Ultrasound).

Digitalization. Through the adoption of innovative and technologically advanced solutions and the upgrade of the digital assets of public health facilities, it will be possible to improve the efficiency of care levels and adapt structures and organisational models to the best-in-class international safety standards, also through the implementation of digitalisation processes of care pathways. In particular, this target will be achieved through the informatization of the processes of 1st level DEA and 2nd level DEA hospitals nationwide (surgical unit, LISS - Laboratory Information System - pharmacy services, first aid, system of acceptance-release-transfer, prescription and administration of medicines, diagnostic, wards, repository and order entry, etc.).

For estimation purposes, a premise must be made in terms of configuration of the hospital system of the Italian NHS. The organisation of hospitals in Italy, in fact, is regulated by Ministerial Decree 70/2015 and is based upon hierarchical levels of complexity of the hospital structures that provide services in continuous and day-cycle hospitalisation for acute cases, through a network model organised on context specificities. Hospitals have three levels of increasing complexity:

- basic hospital unit, with a catchment area between 80,000 and 150,000 inhabitants, which are structures with an Emergency Room with the presence of a limited number of specialties with a wide territorial diffusion: Internal Medicine, General Surgery, Orthopedics, Anaesthesia and support services in active guard network and / or in a 24-hour (h.24) ready availability regime of Radiology, Laboratory, Blood Bank. They must also be equipped with “Intensive Short Observation” beds;
- level I hospitals, with a catchment area between 150,000 and 300,000 inhabitants, which are

structures with a 1st level DEA, equipped with the following specialties: Internal Medicine, General Surgery, Anaesthesia and Intensive Care, Orthopedics and Traumatology, Obstetrics and Gynecology (if required by number of births / year), Pediatrics, Cardiology with Cardiological Intensive Care Unit (UTIC), Neurology, Psychiatry, Oncology, Ophthalmology, Otorhinolaryngology, Urology, with an active and / or on-call medical service or in network for pathologies that foresee it. The Radiology Services, at least with Computed Axial Tomography (CT) and Ultrasound, Laboratory and Immunotransfusion Service must be present or available on the network h. 24. For complex pathologies, (such as trauma, cardiovascular ones, stroke), forms of consultation, image transfer and agreed protocols for patient transfer to level II Centers must be provided. The level I hospital must also be equipped with beds for “Short Intensive Observation” and beds for Sub-intensive Therapy (including multidisciplinary ones);

- level II hospitals, with a catchment area between 600,000 and 1,200,000 inhabitants, are structures equipped with 2nd level DEA. These aids are institutionally referable to hospitals, university hospitals, some IRCCS and large-scale facilities of the ASL.

The evaluation of the digitalisation of hospitals, therefore, is based on the hypothesis of digitizing the 1st level DEA hospitals which are characterised by a high level of diffusion, a medium-high level of complexity and a homogeneous distribution on the national territory, as well as the 2nd level DEA hospitals that are characterized by a high level of complexity.

The assessment of the current digitizing level, preliminary to the implementation of the intervention, will allow to fine-tune this evaluation, according to the real needs of each Region. Indeed, the Ministry of Health carried out an evaluation of 236 1st level DEA and 95 2nd level DEA hospitals which need investments in digitalization for a total amount of € 1,712,615,351. However, due to the amount available for this measure equal to € 1.450.115.351, financed by RRF, the digitization needs concern 280 1st level and 2nd level DEA hospitals. The regions will be able to identify the priority interventions to be financed, until the budget cap is reached. Once the ongoing preliminary assessment will be completed, the target of n. 280 will be reviewed and quantified more accurately, identifying the priority interventions of the Regions.

The Italian Ministry of Health has also identified a standard need for technical staff to be hired by the Italian Regions and Local Health Units, to strengthen the governance of the tender procedures. This need is quantified in 5 staff units for each Region and each Local health Unit for a total cost of € 79,300,000 (by using a unit cost of € 130,000). If the Regions will consider to add supplementary staffing as a necessary measure, they will be able to reduce the share of digitization interventions to draw on the resources assigned under the RRF.

For each sub-measure, according with the Investment 1.3 related to EHR (MLS 1a e MLS 1b), the clinical documents generated by the new equipment and software must be aligned with digital standards adopted, whose requirements will be specified within the tender documentation.

The investment also includes the 1.413 €/Mln which relates to an existing project that has already been initiated by the Italian Ministry of Health, for the structural strengthening of the NHS in hospitals, through a specific reorganization plan aimed at adequately addressing pandemic emergencies. The hospital reorganization plan intends to increase the activity in the intensive care and semi-intensive care system. The provision of at least 3,500 intensive care beds will be made structural (corresponding to an increase of about 70% in the number of beds pre-existing the pandemic) and an increase of 4,225 beds in the semi-intensive area will have to be planned, with relative equipment plant engineering suitable to support ventilation aid

equipment. Furthermore, the separation of the paths must be consolidated, making it structural and the restructuring of the Emergency Department ensured with the identification of dedicated areas of stay for patients with Covid-19 symptoms so potentially contagious, awaiting diagnosis. Finally, this plan aims at increasing the number of vehicles (i.e. ambulances) to support the secondary transfers for Covid-19 patients.

Implementation: The Italian Ministry of Health will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned.

The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁶. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other. This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources. From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory. The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential

⁶ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity. In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Target population: Italian Regions, ASL and hospitals, which through digital and technologically advanced tools will be able to better govern the healthcare supply chain with benefits in terms of efficiency and effectiveness, and citizens, who will benefit from a prompt and high quality response to healthcare needs.

Stakeholder involvement: Italian Ministry of Health of Italy, Italian Regions, ASL, hospitals and suppliers.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks: This investment measure presents, among others, the following constraints:

- **administrative:** definition of the procedure and purchasing processes, delays or problems linked to new equipment procurement processes, numerosness of public administrations and authorities involved, involvement of software houses for the digitalization of the DEA, insufficient staffing levels in terms of number of employees and skills within the regional administrations;
- **organizational:** alignment of professional skills related to new digital technologies and innovations, inhomogeneity across regional healthcare systems in terms of competences and procedures underpinning the purchasing processes and asset management, different levels of technological infrastructure between the hospitals, unsuitability of the technological infrastructure of the hospitals to support the new equipment;
- **financial:** difficulties to manage the variety of the sources of funding that are destined to different organizations and administrations.

In order to manage the risks mentioned above, the investment will be accompanied by:

- a central coordination in the planning, delivery and control of the funding aimed at supporting the implementation of the investment. This intervention, together with the identification of new instruments of participatory programming, will allow to overcome the financial constraints;

- simplified tools to facilitate the timing of the decisions, as well as the unification of the different phases of the decision making and investigation process;
- interventions aimed at strengthening the technical regional offices to regulate the procurement process and make the asset management more efficient.

Total Amount: 4,052.41€/Mln. For details, please refer to Paragraph 10.

Milestones and targets Investment 1.1: for details please refer to paragraph 9 and 10

| Milestone/Target | Description | Value | Timeline |
|------------------|--|-------|----------|
| Milestone | Structural strengthening of the NHS in hospitals, through a specific reorganization plan aimed at adequately addressing pandemic emergencies - Intensive care units (ICUs) and sub-intensive care beds. | | Q42021 |
| Milestone | Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementino Authority and the participation of regional Administrations together with the other entities concerned for listing all the suitable sites identified for hospitals' technological equipment, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. | | Q2 2022 |
| Target 1 | At least 3,100 Large sanitary equipment purchased and deployed to replace obsolete ones | 3,100 | Q4 2024 |
| Milestone 2 | Publication of tendering procedures (Consip framework agreement) and conclusion of contracts with service providers and digitisation of Hospital (hospital classed as DEA I and II level) | | Q4 2022 |
| Target 2 | 280 Digitized hospitals (DEA - Emergency and Admission Departments - Level I and Level II) | 280 | Q4 2025 |
| Target 3 | At least 7,700 additional beds in ICUs) and sub-intensive care Details on type and territorial distribution provided | 7,700 | Q2 2026 |

Investment 1.2: Towards a safe and sustainable hospital.

Challenges: The entry into force of the Ordinance of the President of the Council of Ministers no. 3274 of 20 March 2003, “*First elements regarding general criteria for the seismic classification of the national territory and technical regulations for construction in seismic areas*” has revolutionised the pre-existing regulatory framework. In fact, the whole national territory is classified for seismic purposes and, according to this, structures must be designed and built in compliance with standards. The new requirement introduced by Ordinance n.3274/2003, is the obligation to carry out seismic vulnerability checks for buildings of strategic interest, therefore including health facilities and strategic works. Among public buildings, hospitals play a strategic role in the event of a disaster, as they have a fundamental rescue function for the population, ensuring the effective continuation of the first emergency medical interventions launched in the field. The hospital, one of the most exposed and sensitive sites as it accommodates thousands of people with very different reactive abilities, is therefore required not only to withstand the impact force of the earthquake without excessive damage, but also to continue to offer sufficient levels of healthcare. This means that particular attention must be paid not only to load-bearing elements, but also to non-structural and plant

elements, as well as to the distribution of functions and flows, to secure the environmental units and the equipment necessary for the management of maxi emergencies.

In light of said the above, the main challenge consists in completing interventions to adapt hospital structures to the current anti-seismic regulations.

Objectives: The project goal is to outline a path for structural improvement in the field of hospital facilities safety, which plays a crucial role in emergency situations. More specifically, the aim is to align them to the anti-seismic regulations. To this end, the Italian Ministry of Health identified in 2020 an overall need for 116 interventions. The regions will be asked to provide a detailed schedule for the distribution of the interventions over the period 2022-2026. This investment also includes a quota of 1,000 €/Mln, which is already assigned to existing projects aimed at renovating and modernising the physical and technological framework of the public health real estate.

What is reported in intervention 1.1 in relation to the strengthening of the technical staff, also applies to this measure.

Implementation: The Italian Ministry of Health will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned.

The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁷. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions..

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other. This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational

⁷ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

programs funded from national and European resources. From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory. The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity. In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Target population: Regions, health facilities and healthcare workers who will be able to carry out their duties in a safer way, improving the timeliness and quality of interventions; the patients, who will be able to benefit from safer health facilities.

Stakeholder involvement: Italian Ministry of Health of Italy, Italian Regions, ASL.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks: This investment measure presents, among others, the following constraints:

- **administrative:** definition of the tender procedure, number of organizations and administrations involved;
- **organizational:** need to coordinate the local administrations to avoid the non adherence to the procedural steps included in the investment, management of works for the safety of healthcare workers and patients, risk of overlapping rules when these are not homogeneous, inadequate staffing levels in terms of number of employees and competences within the regional administrations;
- **financial:** difficulties in the governance of the various sources of funding destined to different authorities and administrations.

In order to manage the risks mentioned above, the investment will be accompanied by:

- a central coordination in the planning, delivery and control of the funding aimed at supporting the implementation of the investment. This intervention, together with the identification of new instruments of participatory programming, will allow to overcome the financial constraints;
- interventions aimed at strengthening the technical regional offices to regulate the purchasing process and make the phases of management and monitoring of the interventions more efficient;
- simplified tools to facilitate the timing of the decisions, as well as the unification of the different phases of the decision making and investigation process;
- interventions aimed at ensuring the renovation works are carried out to the maximum level of safety for the healthcare workers and patients.

Total Amount: 1,638.85 €/Mln. For details, please refer to Paragraph 10.

Milestones and targets Investment 1.2: for details please refer to paragraph 9 and 10

| Milestone/Target | Description | Value | Timeline |
|------------------|---|-------|----------|
| Target 1 | At least 109 anti-seismic interventions completed | 109 | Q2 2026 |

Investment 1.3: Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation.

Challenges: Healthcare systems across the entire European Union are being impacted by a major technological evolution which is redefining how health and social services are provided to citizens and residents. COVID-19 pandemic has further highlighted the importance of a real-time understanding of the health situation across the entire Country. Preventive medicine and timely response to healthcare needs of the population can only become a reality when data and information seamlessly flow across the entire system in a standardized and homogeneous format.

Since 2017, the EHR is considered a flywheel to increase the digitization of the country. In 2017 is been introduced the Strategic Model for Informatics in the Italian Public Administration with the Decree of the President of the Council of Ministers that has adopted the THREE-YEAR PLAN FOR Informatics IN the PUBLIC ADMINISTRATION 2017-2020. The Model is updated annually through new editions of the THREE-YEAR PLAN. Within the 2017-2019 Plan, for the health sector, the Electronic Health Record (EHR) has been identified as a strategic objective, as regards the creation of regional electronic health record systems, interoperable with the national infrastructure. While the EHR is now active for approximately 45 million citizens, its usage and diffusion among health professionals and citizens is highly heterogeneous at regional level. Data collected by Agency for Digital Italy (AgID) provide a clear picture of such disparity: citizens' usage of the EHR is over 50% for only 4 regions; just three regions display a satisfactory level of use by doctors. The recent Three-Year Plan 2020-20228 has indicated the strengthening of the EHR to be

⁸ <https://docs.italia.it/italia/piano-triennale-ict/pianotriennale-ict-doc/it/2020-2022/index.html>

carried out by increasing the level of feeding and digitization of health documents by the local health facilities. This objective of the last Plan has been supported by recent national laws which have allowed the simplification of the EHR feeding process for the citizens. The Plan indicates the lines of action to promote the digital transformation of the public sector and of the country, including specific actions, according the eGovernment Action Plan 2016-2020 to enforce the following:

Improve the Digital skills of the public administrations and of the Country: the National strategy for digital skills has been defined, in the contest of the European Commission's "Digital Skills and Jobs Coalition" program. In adding, health professionals are involved in mandatory continuous training and one of the strategic objective is e-Health, as indicated in Investment 2.3, and to overcome the low uptake by doctors for the wider diffusion of the EHR in their national contract has been foreseen, as mandatory, the use of EHR in patient management.

Improve the digital inclusion through the simplification for the access to the public services by the users and indicates a decisive acceleration in the simplification of the overall user experience and an improvement in the inclusiveness of the services, so that they can be used from any device, without any previous competence on the part of citizens, in full compliance with the rules regarding accessibility and the General Regulations on data protection. For EHR this condition is enforced by the prevision of high level standard and by the enforcement of the central repository, plus the prevision to include in EHR services for facilitate the relationship between health facilities and local Authorities (reservation, payment, etc.)

Ensure Interoperability and crossborder by design. For managing interoperability in the eHealth domain the investment will be developed according the Connecting Europe Facility Programme and the Refined eHealth European Interoperability Framework.

All the conditions for making the EHR empowerment's investment concretely feasible are therefore already defined and fully adherent with the RECOMMENDATIONS COMMISSION RECOMMENDATION (EU) 2019/243 of 6 February 2019 on a European Electronic Health Record exchange format

In addition, the Italian NHS benefits from an additional source of data, the New Health Information System (NSIS), that is the reference and unique tool for the measures of quality, efficiency and appropriateness of the NHS which, through the availability of complete and timely data, must allow the Italian Regions and the Italian Ministry of Health to monitor the application of the LEA i.e. the services guaranteed by the NHS, on the national territory. The use of NSIS data, as a tool for comparing the LEA of the health facilities, requires certain, timely and homogeneous data, uniform measurement methods not related to the different organizations. NSIS, in order to guarantee a unified vision of the Italian NHS, is based on open technical solutions, on shared rules by the subjects who autonomously have and collect the health information. Technical specifications, nomenclatures, codes and technical data collection rules harmonized at the national level are available and each region transmits, according to a determined periodicity, the data of the care sets.

However, further investments are needed to improve the NSIS and make it a powerful tool to obtain real-time data and, over time, use its information to build predictive tools to improve the health delivery nationwide. In fact, the construction process of the NSIS began in 2002 and in almost 20 years it has created one of the most complex health databases in the world, reaching an important level of coverage (about 85% of NHS healthcare services in terms of cost). Since it is now necessary to complete some of the care sets (about 15% of NHS healthcare services in terms of cost) and to introduce advanced technological solutions in order to reengineer and standardize the processes by which the information, generated at the local level, are timely structured and completed with the necessary data to feed in the NSIS, are easily verifiable at the

regional level and arrive promptly at the central level. For this reason, it is the intention of the Italian Ministry of Health to work on an enhancement intervention to complete the information assets that are necessary for the monitoring of the LEA, as well as to introduce advanced technological solutions in order to reengineer and standardize the process by which the information, generated at the local level, is timely structured and completed with the necessary data to feed in the NSIS, is easily verifiable at the regional level and arrives promptly at the central level.

Moreover, the Italian Ministry of Health has competence in matters of human and animal health and the role of coordinator for the health surveillance of food safety. Most of the epidemics and pandemics that have and continue to threaten the world are of animal origin. The current technologic and digital evolution offers opportunities to modernize and accelerate the implementation of the One Health approach by strengthening capacity building, leveraging the use of data and developing analytic tools to enforce the knowledge of the phenomena. The enforcement of the infrastructure of the Italian Ministry of Health is another main challenge to improve systems for Data collections according to the One Health approach, which includes the NSIS data flows and other national data flows defined according to specific laws and regulations.

Objectives: This investment aims at radically improving the technological infrastructure that underpins care delivery, healthcare analytics and predictive capacity of the Italian NHS. In particular, this investment has two separate yet complementary objectives following detailed in two different projects:

1.3.1 Electronic Health Record (EHR)

- Empower the existing EHR's infrastructure and usage. This will be achieved by making it a fully digital-native data environment, thus homogeneous, consistent, and portable across the national territory. The EHR will provide both healthcare professionals and citizens with a "one stop shop" of health services and clinical information. It will perform three core functions: first it will empower healthcare professionals by allowing them to count on the same source of clinical information detailing the entire medical history of a patient; second, it will become the access point of citizens and patients to the fundamental services provided by the National and Regional healthcare systems; third, healthcare administrations will be empowered to use the clinical data to perform health analytics and improve healthcare delivery. Accordingly, this initiative will result in harmonized data and services quality for all stakeholders, foster usage for providers, doctors and users alike, and unlock the opportunity for the NHS to capitalize on standardized clinical data for research and prevention. The EHR, in fact, fosters the governance of regional and national health services based on "real world" clinical data. The use and dissemination of the EHR is therefore the cornerstone of health's digital transformation. Furthermore, it enables the interoperability of health data at European level, thus ensuring the success of the broader eHealth network project which Italy is participating in.

1.3.2 Ministry of health technological infrastructure and data analysis & predictive model to guarantee the Italian Essential Levels of Assistance ("LEA") and health surveillance and vigilance

- Strengthen the infrastructure and the technological and analytics instruments of the Ministry of Health to monitor the Essential Levels of Assistance (i.e. the services guaranteed by the NHS nationwide) and plan healthcare assistance and services in line with population needs and evolution on demographic, innovation and epidemiology trends. This key and primary objective of the Italian Ministry of health is accomplished through the achievement of the following and integrating 5 sub-

objectives: (i) strengthening of the infrastructure of the Italian Ministry of Health, integrating EHR clinical data with NSIS clinical, administrative and costs data and with the other information and data related to health in One-Health approach (animals, food, ..) to monitor the "LEA" and ensure health surveillance and vigilance activities; (ii) enhancement of the collection, processing and generation of NSIS data by local level, reengineering and standardizing the data generation regional and local process, in order to improve and speed the NSIS tool for the measurement of quality, efficiency and appropriateness of the NHS; (iii) development of advanced analysis tools to assess complex phenomena and scenario prediction to realize a predictive modelling due to improvement the central capacity to plan healthcare service and detect emerging diseases; (iv) creation of a national platform where supply and demand of telemedicine services from the accredited providers can meet.

1.3.1 Electronic Health Record

Implementation: The development and deployment of a homogeneous EHR calls for a major transformational effort of technological and information systems both at national and regional level. In particular, the initiative insists on a set of interrelated initiatives, both at the technical and legislative level:

- Reliable digital infrastructure guaranteeing highest standards of security to store sensitive clinical data, in line with the digital infrastructure strategy as outlined in Mission 1 Component 1 and leveraging upon existing structures, provided they are able to meet the standards required.
- Standardized data models and contents elaborated centrally to ensure homogeneous experience and full interoperability and portability across the Italian Regions.
- Technological capabilities and equipment to generate digitally native data according to standardized formats as well as full capabilities to collect and store data within the infrastructure mentioned above.
- The definition and implementation of a set of services to be included in the EHR that will also further increase the data collection capabilities of EHR.
- User-friendly interface and experience to greatly simplify the user experience and thus foster actual utilization by health professionals and citizens alike.

The project will follow two waves of implementation: (i) central design and development of the EHR to guarantee homogeneity, interoperability and portability across the national territory; (ii) local adoption by providing Regions and Local Healthcare Authorities with specialized expertise and financial resources to generate digital documents populating EHR, integrate their services with EHR, and develop user-friendly interfaces.

This first wave will define and empower the creation of a best-in-class EHR in terms of infrastructure, interoperability, services offered and layout. This will set a standard platform that all Italian Region incentivised to adopt: a best-in-class national EHR will be developed centrally and set national standards; Italian Regions may always improve on the best-in-class EHR, but never fall below it, following the principle of "*sussidiarietà*" already present in the Italian system. In this way, this measure aims at fostering positive and collaborative competition between the centre and Regions to keep improving and fostering adoption of the EHR. The second wave of implementation is necessary to ensure that, after standards have been set, all healthcare providers, Regions and National health Authorities are duly incentivized to create and populate the EHR.

The first wave of implementation will include the following steps:

- Full adoption of all health documents, in line with art. 11 Law decree No. 34/2020, to be included in the EHR in order to quicken the process and avoid that each document requires a single legal provision to be adopted. Documents are to be digitally native from inception and consistent with recent FHIR standards.
- Creation and implementation of a central repository, interoperability, and services platform, according to the Fast Healthcare Interoperability Resources standard, leveraging the already existing experiences in this area (such as INI), always ensuring storage, safety and interoperability standards, laid out in Mission 1 Component 1, are met. The repository shall be a dedicated data lake, providing the following functionalities: basic data storage, authentication and access provisions, incoming data manipulation/engineering, data quality, and reporting – in the fashion and form adherent to stakeholders’ needs. It will be fed through data, metadata, and documents provided by health providers; providers, Italian Regions and Italian Ministry of Health will be the GDPR data controllers of EHR according the respective responsibilities; the Repository will be responsible for data processing and treatment (*responsabile del trattamento*), according to GDPR, while data ownership will belong to health providers. The National Repository will:
 - Grant authentication mechanisms, and secure, profiled access to clinical data to Regional and Local Health Authorities, professionals, and patients for an efficient delivery of care in accordance with current privacy laws.
 - Grant authentication mechanisms, and secure, profiled access to anonymized data for research and policy purposes, to ensure analytics and improve healthcare services delivery
- Design of a standardized interface based on thorough assessment of users’ needs (citizens, healthcare professionals populating data, doctors analysing health reports) for a simple and consistent user experience, leveraging the already existing experiences as long as they meet the standards as defined in Mission 1 Component 1.
- Definition of services that the EHR will have to provide (e.g. online check-up bookings), in order to maintain and strengthen care delivery standards through the national territory.

The second wave of implementation is necessary to ensure that, after standards have been set, all healthcare providers, Regions and National health Authorities are duly incentivized to create and populate the EHR. In particular, the plan encompasses:

- The integration/feeding of documents into the EHR will start from digitally-native documents, following the positive example of electronic prescriptions (“*ricetta elettronica*”). Ad hoc migration / translation of current or old paper-based documents will be included in the perimeter of the intervention in accordance with priority documents defined centrally for which specific incentives for Regions are provided below. Yet, in order to incentivize the migration to a fully digitally-native healthcare system, paper-based records will be grandfathered after 2024 by law, after which all documents will have to be produced digitally according to standards defined.
- Financial support for healthcare providers to update their equipment and ensure healthcare data, metadata and documentation will be generated as digitally native. These measures (and cost estimates) are already included in Mission 6 Component 1.

- Financial support for healthcare providers willing to adopt the national platform, interoperability and UI/UX standards set in Wave 1. In particular, financial incentives will be designed to foster *adoption* and *meaningful use* of the electronic health record: providers, through Regional Health Authorities, will be able to claim resources whenever they can show an increased usage of the EHR's main functionalities, but will no longer receive such incentives if usage stops increasing. Providers will be given enough time to reorganize their own processes in order to benefit from the financial incentives before they kick in.
- Competence support (human capital) for healthcare providers and Regional Health Authorities to implement infrastructural and data changes in order to adopt the national Electronic Health Record. To this end, the Digital Transformation Office will carve out a number of Tech professionals who, jointly with the Italian Ministry of Health will be responsible for ensuring technical support and monitoring of the EHR's adoption by Regions. These measures (and cost estimates) are already included in Mission 1 Component 1 Reform 2.

Specifically, The Italian Regions will have to report on a quarterly basis in order to be provided with necessary support and be granted financial resources to execute the investment. Other normative actions will be explored to ensure compliance with centrally-defined standards over time (e.g. incentive scheme providing for reimbursement of medical care costs).

The Italian Ministry of Health, the Ministry Economy and Finance, and the Ministry for Technological Innovation and the Digital Transformation will be jointly responsible for the overall management and oversight of the project. For actions and interventions that require the involvement of individual regional entities, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned. The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund⁹. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions.

⁹ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

Target population: Central and Regional Healthcare Government who will be able to take advantage of a complete set of clinical data; physicians and healthcare professionals for the empowerment of the accuracy of the assistance; citizens, who will be able to access information related to their care cycle in an innovative, secure and transparent way.

Stakeholder involvement: Italian Ministry of Health and the supervised entities, other Italian Ministries, Italian Regions, ASL, providers of white economy, healthcare professionals, citizens, researchers.

Timeline: from Q2 2021 to Q2 2026. For details, please refer to Paragraph 9 and Paragraph 10.

Total Amount and cost estimate: €810,4 Mn including (1) €200 Mn for the realization of the central repository, digital documents, services and user-friendly interfaces (2) €610,4 Mn for regional adoption and use of the EHR through the adoption of 18 new types of digital documents, for a total number of 1,7 new digital documents per year within the EHR that must be active by Q4 2025. Such funds will be granted to Regions whenever they (a) guarantee uniform and replicable information systems and services throughout the national territory in compliance with central repository standards (b) show constant increase of the EHR core functionalities' usage by care providers ensuring the continuous update of the data. The Regions will be assigned an overall budget amount to achieve their goals in terms of technological infrastructure, digitalization, organization and professional development that they will be able to tailor depending on their specific requirements and progress status of the implementation process of the EHR. In particular, (2a) €299,6 Mn for digital infrastructures' empowerment of the NHS local facilities, (2b) €311,4 Mn for specialist support and training to enforce the digital upskilling of healthcare professionals within the mandatory continuing education (ECM – Educazione Continua in medicina) at regional and local level.

In addition, €570 Mn are already budgeted for the use of the Fund for Investment Financing e infrastructural development - EHR - and in particular for the realization of the Health Insurance card system; design of the infrastructure for the interoperability of the EHR; management of the EHR as part of the interventions for the digitalization of the public sector authorities.

1.3.2 Ministry of health technological infrastructure and data analysis & predictive model to guarantee the Italian Essential Levels of Assistance (“LEA”) and health surveillance and vigilance

The implementation of this project will develop through four different actions, which will run in parallel:

i) Enforcement of the infrastructure of the Italian Ministry of Health

The enforcement of the infrastructure of the Ministry of Health is finalized to improve systems for Data collections according to the One Health approach, which includes the NSIS data flows, the national EHR data and other national data flows defined according to specific laws and regulations. The objectives are:

- improving systems for coordinated stratified surveillance of zoonotic pathogens and cross-sectoral data integration to conduct dynamic risk monitoring, linked to early detection, joint investigation and response;
- establishing early warning systems for early detection of signals for disease emergence or re-emergence (e.g. unusual cases of an illness in human populations, increased purchase of antibiotics

or other medicines in the human and animal population, abnormal mortality and morbidity in livestock and/or wildlife populations, etc.);

- developing systems to monitor the risks and track the different drivers to monitoring the increase or decrease of phenomena in geographic areas by leveraging digital technologies to allow for real-time monitoring of risks or the ability the stratified surveillance forward policy and decision-making;
- implementing the foresight approach as an additional early warning mechanism;
- promoting socio-economic studies based on data from other sources to identify and assess the practices that influence disease (re)emergence and spill over risks and identify the interventions of risk mitigation;
- strengthening the capacities to detect, diagnose, monitor, and report disease events in animals and humans and to take joint corrective action.

Furthermore, this investment aims to create a national platform for the management of health registers and surveillance systems. The data available in the infrastructure of the Italian Ministry of Health will take to the development of public health platforms that, also combining with large datasets from other national data sources, enhance the instruments of the survey and early warning, will enable the development of predictive modelling and the capacity to detect emerging diseases.

ii) enhancement of the collection, processing and generation of NSIS data by local level

At regional and local level, this action provides for the implementation of new health information flows, in order to complete the monitor of “LEA” with primary care data and the integration and to empower quality and timing of clinical and administrative of existing data, through the following activities:

- Financial support to the regional level that aims at completing the digitalization of the national pool of information, through the implementation of the following 4 new health information flows at regional level, in the primary care field: territorial rehabilitation, primary care services, community hospitals and consulting rooms. The design and implementation of the 4 new information flows, at individual level, related to the local healthcare network and in those information areas still lacking of a systemic national detections, will take place in collaboration with the Regions and include the adjustment and/or the improvement of the territorial information systems. This intervention also includes actions related to the adjustment of both the regional infrastructure of the collection of new information flows and the infrastructure of the local health units in terms of the data generation. In order to improve the promptness and reliability of data, interventions at regional level aimed at reinforcing and improving the capabilities of the local health units in generating and sending the information to the center must be budgeted.
- Financial support at the regional level aimed at strengthening the processes of collecting, processing and generating data at the local level, to improve the quality and timeliness of the data that are sent from the local level to the central one. The Italian Ministry of Health has launched an activity together with all the Italian Regions (“Gap Analysis”), through which it has already defined an assessment of the current status of information flows and of the needs in terms of strengthening, updating and timeliness of information. The support is provided through process review activities and support for the standardization of the transcoding procedures of regional flows into national standards.
- Financial support at regional level for the definition of guidelines and Software Development Kits (SDKs) shared with technical teams of PAs in scope for starting development of APIs integration.

iii) development advanced analysis tools of complex phenomena and scenario prediction

The goal of the action is to evolve the methodological process that has already started, also through the design and construction of a powerful and complex simulation tool to predict the NHS medium and long-term scenarios. The key assets of this tool will allow to reinforce the data governance capabilities through the reading and collection of structured data (NSIS flows) as well as non-structured data flows (EHR), support the development of high performing computational tools to build new healthcare planning and prevention scenario, simulate the impact in economical, healthcare needs and lifestyle as well as improve machine learning and artificial intelligence tools in order to elaborate and simulate different programmatic scenarios. A best-in-class healthcare governance must also rely on a model that values health prevention. For this reason, the scope of the action includes the creation of a national Health Prevention Hub, that represents a central reference model that is valid both at central and regional level, in order to support the coordinated management of the policies of prevention and promotion of a healthy lifestyle. The goal of the action is to build an integrated structure, that could be of support for the NHS and dedicated to the creation, evaluation and implementation of norms, guidelines and prevention policies, and that could also reinforce the promotional and monitoring activities led by the Italian Ministry of Health. The data developed at hub level will support the strengthening of the pool of information of the prediction model in the field of prevention and lifestyle aspects. To accomplish this goal, the action funded:

- financial support at central level for the model conceptualization, development of the algorithm and project governance;
- financial support at central level for the design and construction of advanced analytics and simulation tools for the prediction of scenarios;
- financial support at central level for the realization of the National Health Prevention Hub.

iv) Telemedicine national platform

The recent pandemic has stressed the importance and emphasised even more the need for digital tools and telemedicine solution, that must be certified and approved by the Italian Ministry of Health in order to ensure patients can access these services safely.

On the back of the agreement signed by the “Conferenza Stato-Regioni” on December 2020, within the document named “National guidelines for the delivery of telemedicine services”, the healthcare services delivered through this platform are identified as a key part of the NHS offering, and thereby are included in the LEA. For this reason, it is fundamental to create a national platform where demand and supply of telemedicine services from accredited providers can meet.

Moreover, this platform must be accessible to both patients and local health units and should be linked to both existing and developing regional platforms to improve the clinical competence in territories characterized by lower assistance. The intervention provides for the creation of a national centralized platform with common rules (xESB), that represents a repository of regional telemedicine systems, where demand and supply of telemedicine services from accredited providers can meet. Moreover, this platform must be accessible to both patients and local health units and should be linked to both existing and developing regional platforms. This project also has the goal to promote the role of the citizens and patients, making them an active part of the process. This intervention is exclusively about the creation of a digital national platform focused on the supply of telemedicine services and not on their management and delivery (i.e. local operational centers).

This intervention will develop through the following phases: (i) development of preliminary operational plans; (ii) selection of procurement processes; (iii) completion of the tender for xESB platform; (iv) development of the xESB platform; (v) evaluation of existing and developing regional platforms; (vi) enrolment of service providers; (vii) platform launch.

The Italian Ministry of Health will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned.

The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund¹⁰. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions..

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other. This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources. From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory. The Institutional Development Contract establish for each intervention or

¹⁰ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity. In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Target population: Central and Regional and Local Healthcare Authorities who will be able to take advantage of a complete set of clinical, administrative and costs data and information useful for the governance of activities in terms of planning and monitoring; citizens, who will be able to be aware of the quantity and quality of the provided NHS services in an innovative, secure and transparent way.

Stakeholder involvement: Italian Ministry of Health and the supervised entities, other Italian Ministries, Italian Regions, ASL, providers of white economy, healthcare professionals, citizens, researchers.

Timeline: from Q2 2021 to Q2 2026. For details, please refer to Paragraph 9 and Paragraph 10.

Total Amount: 292.6 €/Mln

Cost estimate: 292.6 €/Mln including (1) 92.7 €/Mln for strengthen the infrastructure and the technological and analytics instruments of the Italian Ministry of Health, including: (i) 89.2 €/Mln for the strengthening and maintenance of the central infrastructure; (ii) 3.5 €/Mln for the setup of Opendata portal; (2) 103.3 €/Mln reengineering the New Health Information System (NSIS) at local level, including: (i) 30.3 €/Mln for the completion of information assets (application services) - Implementation of 4 new national information flows at regional level; (ii) 61.7 €/Mln for strengthening of data collection, elaboration and production at local level; (iii) 11.3 €/Mln Software Development ToolKit (SDK) development to facilitate interoperability and semantics / ontology between NHS entities (NSIS); (3) 77 €/Mln for the development of advanced analysis tools to assess complex phenomena and scenario prediction to realize a predictive modelling due to improvement the central capacity to plan healthcare service and detect emerging diseases. This estimate includes: (i) 22.3 €/Mln for the model conceptualization, development of the algorithm and project governance; (ii) 28.3 €/Mln for design and building of the tool; (iii) 26.4 €/Mln for the realization of the

National Health Prevention Hub; (4) **19.6 €/Mln** for the creation of a national platform for Telemedicine where supply and demand of telemedicine services from the accredited providers can meet.

Assumptions/ risks: This investment measure presents, among others, the following constraints:

- **administrative:** definition of the procedure and purchasing processes, numerousness of public administrations and authorities involved, involvement of software houses for the digitalization of the ASL, insufficient staffing levels in terms of number of employees and skills within the regional administrations;
- **organizational:** alignment of professional skills related to new digital technologies and innovations, inhomogeneity across regional healthcare systems in terms of competences and procedures underpinning the purchasing processes and asset management, different levels of digitalization between Health providers;
- **financial:** difficulties to manage the variety of the sources of funding to different administrations.

In order to manage the risks mentioned above, the investment will be accompanied by:

- a central coordination in the planning, delivery and control of the funding aimed at supporting the implementation of the investment. This intervention, together with the identification of new instruments of participatory programming, will allow to overcome the financial constraints;
- simplified tools to facilitate the timing of the decisions, as well as the unification of the different phases of the decision making and investigation process;
- as a method of financing, an international tender procedure or another form of incentive / reimbursement will be defined that will allow the resources to be disbursed to the Regions upon reaching the intervention targets.

| Project | Milestone/Target | Description | Value | Timeline |
|--|------------------|--|-------|----------|
| 1.3.1 - Electronic Health Record (EHR) | Target 1 | At least 85% of general practitioners feeding on a regular basis the Electronic Health Record. | 85% | Q4 2025 |
| | Milestone 1 | Completion of the Health Insurance card system and design of the infrastructure for the interoperability of the electronic health record | | Q2 2026 |
| | Target 2 | All the Regions adopting and using the EHR | | Q2 2026 |

INVESTMENT 2: Training, scientific research and technological transfer

| Measure (Reform/Investment) | Sub-measure | Cost |
|-----------------------------|--|-------------|
| | 2.1 Strengthening and enhancement of the NHS biomedical research | 524.1 €/Mln |

| | | |
|--|--|-------------|
| Investment 2. Training, scientific research and technological transfer | 2.2 Development of technical- professional, digital and managerial skills of professional in healthcare system | 737,6 €/Mln |
|--|--|-------------|

Investment 2.1: Strengthening and enhancement of the NHS biomedical research.

Challenges: The biomedical research system in Italy must be strengthened, also in order to facilitate competition with other institutions internationally. In general, low investments have a negative impact on the Country’s competitiveness, considering that economic development is based on the interaction between research and businesses. The life sciences sector is one of the most dynamic in Italy, but without an investment policy in research and innovation a gradual decline is inevitable in the future. In fact, today we record:

- low biomedical and health research funds¹¹;
- a lack of risk capital and specific skills to support technology transfer processes.

Adaptation and strengthening of research and development capacity within the NHS is envisaged to allow the NHS itself to provide adequate responses to the needs of citizens and ensure a point of reference for the industrial system for health innovation. The research networks of the IRCCS can play an important role in the cohesion of the Italian socio-economic ecosystem. Indeed, they represent an essential critical mass for clinical trials and research in rare diseases; they are places of election for the Health Technology Assessment (HTA) policies of the NHS; thanks to digital technologies, they provide second opinions and remote assistance services, limiting health mobility and promoting the social inclusion of people with disabilities. In general, this will strengthen the NHS. The project will develop in coherence and collaboration with the research ecosystem programs proposed by the Italian Ministry of University and Research (MUR) and technology transfer programs proposed by the Italian Ministry of Economic Development (MISE), also through joint initiatives with the Italian Ministry of Health.

Objectives: The project is aimed at carrying out two types of interventions:

- Financing of PoC (Proof of Concept) projects, for a total of 100 million €, which will help to reduce the gap between research results and industrial application, support the development of technologies with a low degree of technological maturity, as well as fostering the transfer of technology towards the industry. In particular, this line of action aims to:
 - build / improve a prototype and prepare for commercialisation;
 - verify the commercial feasibility or carry out scale-up tests;
 - show risks mitigation for a potential investor / industry or licensee, if a patent exists;
 - address and overcome a specific gap identified by the industry and which hinders its attractiveness for investors;

¹¹ According to Eurostat, in 2017, Sweden (3.4% of GDP), Austria (3.16%), Denmark (3.05%) and Germany (3.02%) ranks among the top places for spending on research and development. The countries that spend less are Romania (0.5%), Latvia (0.51%), Malta (0.54%) and Cyprus (0.56%). Italy is thirteenth, with 1.35%, below the EU average.

The detailed investment program will be the result of discussions and contributions from relevant stakeholders in the sector.

- Funding of research programs / projects in the field of rare diseases and rare cancers. These pathologies, of high biomedical complexity and often multi-organ expression, require the mix of high clinical competence and advanced diagnostic and research activities and require technologies of excellence and the coordination of collaborative networks at national and European level. In order to strengthen the responsiveness of the centers of excellence in Italy, a research program with dedicated funding for a total of 100 million € is expected to be launched in order to develop targeted therapies capable of providing concrete answers to the health needs of citizens suffering from rare diseases.
- Granting of funding for research projects on high impact disease on health through a public tender procedure.

Implementation: The Italian Ministry of Health will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned.

The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund¹². All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions..

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other. This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in

¹² Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources. From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory. The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity. In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;
- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Target population: Italian Regions, University, Businesses and IRCCS, Research Centers

Stakeholder involvement: Italian Ministry of Health and other Italian Ministries, IRCCS, universities and research centers and businesses.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks: (i) Compliance with the timing of the tender procedures and the identification of beneficiaries. (ii) Compliance with the timing of evaluating the proposals and defining the rankings of the beneficiaries.

In order to manage the risks mentioned above, the investment will be accompanied by:

- Preparation of an accurate gantt chart of the activities for each of the phases, and identification of the key milestones to ensure a thorough monitoring of the timing of the various procedures, with the institution of a “red flag” in the event of a failure in reaching the relevant progress stage.

- Institution of an internal task force ex ante, that will remodel the programme as a condition for the progress of the activities and will support the management over the next steps of the project.
- Definition within the tender documents of accurate rules and timelines for the different phases of the procedure and evaluation. Scrolling ranking.

Total Amount: 524.1 €/Mln. For details, please refer to Paragraph 10.

Milestones and targets Investment 2.1: for details please refer to paragraph 9 and 10

| Milestone/Target | Description | Value | Timeline |
|------------------|--|-------|----------|
| Target 1 | At least 420 projects funded on i) rare cancers and diseases; ii) high impact diseases on health.. | 420 | Q4 2025 |

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in the healthcare system.

Challenges: Scientific progress and technological innovation require health professionals to be regularly updated and trained. According to Legislative decree 502/1992, which established the requirement of continuous education for health professionals, this training should be “aimed at adapting professional knowledge throughout the entire professional life and improving skills and the clinical, technical and managerial skills of health workers, with the aim of guaranteeing the effectiveness, appropriateness, safety and efficiency of the assistance provided by the National Health Service”. In addition, the pandemic crisis has also highlighted the difficulty of hospitals to recruit adequately trained staff, especially with reference to digital and innovative issues.

Objectives: This investment aims to increase scholarships for the specific course in general medicine, guaranteeing the completion of 3 three-year training cycles; launch a training plan on safety in terms of hospital infections for all NHS medical and non-medical management profiles, nursing and technical staff; activate a training path for personnel with top roles within NHS Bodies in order to allow them to acquire the necessary managerial skills and abilities to face current and future health challenges in an integrated, sustainable, innovative, flexible and result-oriented perspective. This will be achieved by setting a minimum standard of management skills at national level that both the top and middle management of every NHS authority in Italy must possess, in order to qualify for and be confirmed in the role. In parallel, a collaboration between the Italian Ministry of Health and the Italian Ministry of Universities and Research (MUR) will be setup to include both foundation and post-graduate training courses focused on the development of the necessary digital skills.

In order to guarantee, for new medical graduates, a training program able to allow the effectively exercise of the profession and reduce the gap between the number of recent graduates in medicine and surgery and the number of specialist training contracts financed by NHS, this investment also provides the financing of specialized medical training contracts which will allow the financing of an additional 4,200 training contracts for a complete cycle of studies (5 years).

Implementation: The Italian Ministry of Health will be responsible of the Component as a whole. In relation to the Investments, Regions, directly or through their ASL, will be responsible for the execution and management of them; coordinated and negotiated governance tools will be applied, such as the Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the

responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned.

The negotiated governance tool, such as the Institutional Development Contract, will provide about listing all the suitable sites identified for the Investments, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result. In case of breach by some Region the Ministry of Health will proceed to the commissioner “ad acta”. With regards to the technology park of the facilities, i.e. all the tools, licences and interconnections, preference will be given to aggregate procurement methods. This approach will be able to save time and simplify procedures - including authorization procedures - where accompanied by the activation of service conferences (“conferenze di servizi”). The Italian Ministry of Health, as the Responsible Administration, will activate resources and procedures to monitor the progress of the investment, as well as the collection of data related to the development of the Project in accordance with the laws and regulations in force. Besides, the Italian Regions have to necessary achieve the defined annual targets and meet the required annual milestones in order to access to the annual “reward” fee of the National Health Fund¹³. All this will be defined between the Italian Government and the Italian Regions with a specific State-Regions Agree and the procedure will be monitored by the institutional tables Government-Regions..

The Institutional Development Contract is the tool ordinarily identified by current national legislation (combined provisions of art. 1 and art. 6 of Legislative Decree no. 88 of May 31, 2011, and art. 7 of Legislative Decree no. 91 of June 20, 2017, by Law no. 123 of August 3, 2017) to accelerate the implementation of strategic projects, functionally connected to each other. This tool is specifically aimed at supporting territorial cohesion, development and economic growth of the country and accelerate the implementation of interventions of considerable complexity. The Institutional Development Contract is particularly useful in those projects having the nature of major projects or investments articulated in individual interventions functionally connected to each other, which require an integrated approach and the use of European investment structural funds and national funds also included in plans and operational programs funded from national and European resources. From a functional point of view, the instrument is of a negotiated nature, implying the definition of a synallagma between the Contractors, which could be essentially public parties such as the Regions but also allowing the intervention of Private Operators in the logic of the Public Private Partnership. The Institutional Development Contract consents to establish a unitary leadership and responsibility where the realization of a substantial number of interventions is expected with the participation of several implementing administrations and with a widespread distribution throughout the national territory. The Institutional Development Contract establish for each intervention or category of interventions, the time schedule, the responsibilities of the contractors, the evaluation and monitoring criteria and the sanctions for any non-compliance. It also defines the conditions of potential partial defunding of interventions or the allocation of the relevant resources to another level of government, in compliance with the principle of subsidiarity. In order to reinforce the tool for guaranteeing the resilience and sustainability of interventions programmed for authorization purposes and to compress times, the Institutional Development Contract could include and provide for:

- the activation of Programme Agreements (“Accordi di Programma”) aimed at the necessary urbanistic variations as well as simplified Conferences of Services (“Conferenza dei Servizi”) and procedures in derogation ex art. 14, paragraphs 1 and 3 of Presidential Decree 380/2001;

¹³ Law No. 191/2009 art. 2, paragraph 68 and Law Decree No. 95/2012, art. 15, paragraph 24.

- the centralization, if possible on a regional basis, of tools such as the Framework Agreement (“Accordo Quadro”) to activate a package procurement at least for the activities of design, management, validation and other technical services that the individual implementing administrations will be able to draw on directly without going through further tender procedures;
- a specific line of just-in-time monitoring aimed at activating mechanisms for timely intervention by the Responsible Administration at various levels and through the Contract management bodies and avoiding defunding or replacement interventions;
- a specific Technical Assistance to provide a consultancy service about technical-administrative assistance and assessment of economic-financial aspects to the Regions/Autonomous Provinces and/or health authorities, hospitals and other administrations involved in the projects in order to ensure the achievement of the defined objectives meeting the deadlines.

Target population: Healthcare workers.

Stakeholder involvement: Ministry of Health and other Ministries, universities.

Timeline: For details, please refer to Paragraph 9 and Paragraph 10.

Assumptions/ risks: The measure has the following risks:

- insufficient training capacity of regional and national providers to reach the target number of participants to hospital infection training courses and management training courses;
- insufficient number of participants to reach the target number of attendees to training course on hospital infections and health management.

To mitigate the listed above risks, the reform measure will be accompanied by a coordination plan to involve national and regional providers.

In addition, training courses on hospital infections as well as management training courses will be compulsory for relevant healthcare professionals.

Total Amount: 737,6 €/Mln. For details, please refer to Paragraph 10.

Milestones and targets Investment 2.2: for details please refer to paragraph 9 and 10

| Milestone/Target | Description | Value | Timeline |
|------------------|--|-------|----------|
| Target 1 | 1,800 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles | 1,800 | Q2 2023 |
| Target 2 | 2,700 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles | 2,700 | Q2 2024 |
| Target 3 | Completion of training for 4,200 key persons in the National Health Service in managerial and digital skills | 4,500 | Q2 2026 |

Preliminary assessment of state aid issues:

Concerning this Component, in light of the following elements the application of State aid rules can be excluded and therefore there is no need to notify the measure to the Commission for approval prior to its implementation.

Indeed, the players involved in the investments of this Component do not perform economic activities within the meaning of Article 107(1) TFEU.

The major aim of the Mission is to improve both the quality and efficiency of the Italian National Health Service (NHS) service delivery, namely by means of an enhanced digitalization. The relevant beneficiaries are thus public sector operators falling within the scope of the NHS.

In this respect, it is well established that healthcare providers within a national healthcare system pursuing a social objective, underpinned by the principle of solidarity, and which operate under State supervision are considered to carry out non-economic activities. As recalled even by the “Guiding template: Digitalisation of public administration, including healthcare”, public funding granted to digitalise such healthcare providers falls outside the scope of State aid rules, provided the administrations procuring those goods and services only use them in the exercise of the mentioned non-economic activities.

Also, the Commission Notice on the notion of State aid as referred to in Article 107(1) TFEU confirms that in Member States – as it is the case for Italy – public hospitals are an integral part of the NHS and are almost entirely based on the principle of solidarity. Such hospitals are directly funded from social security contributions and other State resources and provide their services free of charge on the basis of universal coverage. The Union Courts have confirmed that, where such a structure exists, the relevant organisations do not act as undertakings. Moreover, even activities that in themselves could be of an economic nature, are carried out merely for the purpose of providing another non-economic service, are not of an economic nature. An organisation that purchases goods — even in large quantities — for the purpose of offering a non-economic service does not act as an undertaking simply because it is a purchaser in a given market.

In addition, this Component does not properly involve public resources within the meaning of Article 107(1) TFEU since the relevant players are intra-State entities and no transfer of public resources to undertakings or waiver of public revenues in their favour is foreseen.

At the current stage of development of the Component, one cannot exclude that for some specific interventions (i.e. mainly research-related activities within the scope of M6C2 sub-component 2) other stakeholders will also be involved, including research centers and universities. Also, concerning such bodies, it is highly disputable that they perform economic activities within the meaning of Article 107(1) TFEU since education organised within the national educational system funded and supervised by the State can be considered as a non-economic activity and the Commission considers (see Notice on the notion of State aid) that knowledge transfer activities (licensing, creation of spin-off, or other forms of management of knowledge created by the research organisation or infrastructure) are non-economic where they are conducted either by the research organisation or research infrastructure (including their departments or subsidiaries) or jointly with, or on behalf of other such entities, and all income from those activities is reinvested in the primary activities of the research organisations or infrastructures concerned.

In any case, such a possible collaboration will take the form of PPP arrangements and will entail therefore, even considering the presence of an undertaking among the involved players, no advantage under Article 107(1) TFEU. When a transaction is carried out under the same terms and by public bodies and private

operators as occurs in public private partnerships, it can normally be inferred that such a transaction is in line with market conditions (see Notice on the notion of State aid).

4. Open strategic autonomy and security issues

5. Cross-border and multi-country projects

Not Applicable

6. Green dimension of the component

The component generally contributes to the development of the green dimension with the:

Investment 1.1: Digital update of hospitals' technological equipment

According to the Integrated National Plan for Energy and Climate, and to Regulation (UE) 2018/1999, the aim of the investment is to improve the technological efficiency focusing on all kinds of innovation and improvement of the production process. Facilities and properties renovation will meet innovative requirements in terms of energy efficiency and low environmental impact.

Investment 1.2: Towards a safe and sustainable hospital

This investment is in line with the field of intervention 038 as it foresees to carry out structural interventions in hospital facilities in compliance with the anti-seismic regulations.

Investment 1.3: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation.

In line with the European Green Deal, the investment will finance the green transition, in terms of energy and resources, with particular attention to environmental sustainability, efficiency, as well as technological innovation with a view to economic resilience. The spread of the EHR will allow the reduction of paper printing health documents by favouring access to health data in a completely digital way according to European standards.

7. Digital dimension of the component

The component contributes to the development of the digital dimension by:

- strengthening digital capabilities and using advanced technologies in hospitals, in line with the Integrated National Plan for Energy and Climate;
- a deep technological evolution of the communication and data transmission systems from the territorial units to the hospital or territorial structures of competence with a positive impact on the quality and promptness of the health services provided;

- strengthening the digitalisation of assistance by promoting the widespread dissemination of connected assistance devices, especially for professionals and disadvantaged individuals in the field of telemedicine;
- redefinition of operating methodologies within the NHS through the use of digital technologies, ensuring remote monitoring and assistance and integrating research activities with assistance activities;
- development of the IRCCS networks based on virtual functional links between homogeneous centers of reference for genomic analysis and, in general, for all genomics sciences.

Investment 1.1: Digital update of hospitals’ technological equipment.

The investment contributes to the creation of an infrastructure for the collection of data useful to be analysed through artificial intelligence and machine learning processes. In this sense, it contributes to the strengthening of digital investments in the country, making the information infrastructure interconnectable and easily accessible.

Investment 1.3: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation.

The presence of data in the EHR will also make it possible to create an “ecosystem of digital services” which contributes to the dematerialisation and physical disintermediation of several processes (exemption request, etc.).

Impact on green and digital transition.

8. Do no significant harm

See Annex on DNSH

9. Milestones, targets and timeline

Reform 1: Revise and update the current legal framework of the Scientific Institutes for Hospitalisation and Care (IRCCS) and research policies of the Ministry of Health to strengthen the link between research, innovation and healthcare.

- *MLS 1*: Entry into force of the legislative decree envisaging the reorganisation of the discipline of Scientific institutes for hospitalisation and care (IRCCS)

The reform includes:

- Measures to: i) strengthen the link between research, innovation and healthcare; ii) improve the governance of the public IRCCSs by enhancing the strategic management and better defining the powers and areas of competence; *Timeline for completion*: Q4 2022.

Investment 1.1: Digital update of hospitals’ technological equipment.

- *MLS1*: Structural strengthening of the NHS in hospitals, through a specific reorganization plan aimed at adequately addressing pandemic emergencies - Intensive care units (ICUs) and sub-intensive care beds.

- Timeline for completion: Q2 2022.
- *MLS2:* Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementing Authority and the participation of regional Administrations together with the other entities concerned for listing all the suitable sites identified for hospitals' technological equipment, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result.
- Timeline for completion: Q2 2022.
- Target 1 At least 3,100 Large sanitary equipment purchased and deployed to replace obsolete ones
- Timeline for completion: Q4 2024.
- MLS 2: Publication of tendering procedures (Consip framework agreement) and conclusion of contracts with service providers and digitisation of Hospital (hospital classed as DEA I and II level).
- Timeline for completion: Q4 2022.
- Target 2: 280 Digitized hospitals (DEA - Emergency and Admission Departments - Level I and Level II)
- Timeline for completion: Q4 2025.
- Target 3: At least 7,700 additional beds in ICUs and sub-intensive care
- Timeline for completion: Q2 2026.

Investment 1.2: Towards a safe and sustainable hospital.

- Target 1: At least 109 anti-seismic interventions completed
- Timeline for completion: Q2 2026. (The regions will be asked to provide a detailed schedule for the distribution of the interventions over the period 2022-2026).

Investment 1.3: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation.

Investment 1.3.1: Electronic Health Record (EHR)

- Target 1: At least 85% of general practitioners feeding on a regular basis the Electronic Health Record
- Timeline for completion: Q4 2025.
- MLS 3: Completion of the Health Insurance card system and design of the infrastructure for the interoperability of the electronic health record
- Timeline for completion: Q2 2026.

- Target 2: All the Regions adopting and using EHR
- Timeline for completion: Q2 2026.

Investment 2.1: Strengthening and enhancement of the NHS biomedical research

- Target 1: At least 420 projects funded on i) rare cancers and diseases; ii) high impact diseases on health..
- Timeline for completion: Q4 2025

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system

- Target 1: 1,800 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles
- Timeline for completion: Q2 2023.
- Target 2: 2,700 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles
- Timeline for completion: Q2 2024.
- Target 3: Completion of training for 4,200 key persons in the National Health Service in managerial and digital skills.
- Timeline for completion: Q2 2026.

10. Financing and costs

This section of the document provides an overview of the relevant data sources and costing methodologies to support the investments included in the component. Please see the details below:

Investment 1.1: Digital update of hospitals’ technological equipment

| Cost item | Unit cost (Euro) | Nr | Total |
|--------------------------|------------------|-------|-----------------|
| LARGE SANITARY EQUIPMENT | - | 3,133 | 1,189,146,935 € |
| CT scans | 530,000 € | 340 | 180,200,000 € |

| | | | |
|--|-------------|------------|------------------------|
| MRI | 914,000 € | 190 | 173,660,000 € |
| LINEAR ACCELERATOR | 2,000,000 € | 81 | 162,000,000 € |
| FIXED X-RAY SYSTEM | 247,700 € | 937 | 232,079,213 € |
| ANGIOGRAPH | 608,000 € | 193 | 117,344,000 € |
| GAMMA CAMERA | 525,000 € | 82 | 43,050,000 € |
| GAMMA CAMERA/CT | 793,000 € | 53 | 42,029,000 € |
| PET CT | 2,403,400 € | 34 | 81,715,600 € |
| MAMMOGRAPHS | 274,500 € | 295 | 80,977,500 € |
| ECOTOMOGRAPHIC DEVICES | 82,000 € | 928 | 76,091,622 € |
| DEA 1st - DEA 2nd LEVEL HOSPITAL DIGITALIZATION | | 280 | 1,450,115,351 |
| STRUCTURAL STRENGTHENING OF THE NHS | | | 1,413,145,000 € |
| <i>Intensive care units (ICUs)</i> | | 3,500 | 606,340,000 € |
| <i>Sub-intensive care beds</i> | | 4,225 | 601,505,000 € |
| <i>First Aid renovation</i> | | 651 | 192,700,000 € |
| <i>Territorial support - New Ambulances</i> | | 84 | 12,600,000 € |
| TOTAL | | | 4,052,407,286 € |

- Target 1: At least 3,100 large sanitary equipment purchased and deployed to replace obsolete ones.
- Timeline for completion: Q4 2024.
- Methodology: The objective is to modernise the technological assets of the hospitals, with particular reference to large healthcare equipment. Following the analysis of the technological equipment currently present in the 1st and 2nd level EAD - Emergency and Acceptance Departments - and in the structures of the ED - Emergency Departments, specific replacement measures have been identified. The action foresees the following macro-phases that will mark out the timeframe of the intervention: Macro-phases of the interventions: 1) elaboration of a report on the specific needs of large equipment (within the first quarter), 2) design and planning of the renewal interventions, 3) tender procedures and conclusion of contracts with the service provider, 4) substitution of the large sanitary equipment (100% by 2024), 5) testing of the sanitary equipment. The estimated national need for large equipment to be acquired to replace obsolete or out-of-use technologies is 3,133, as the target of this intervention.

The technologies included in the national needs are detailed below:

- CT scans: It is estimated that about 170 replacement CT scanners are needed, with a unit cost of about 530,000 euros, considering latest-generation equipment with 128 slices;
- MRI: it is estimated that about 96 replacement devices are needed. The unit cost of a 1.5 T MRI is approximately 914,000 euros;

- LINEAR ACCELERATOR: the need for about 40 replacement devices is estimated, with a unit cost of about 2,000,000 euros;
- FIXED X-RAY SYSTEM: the need for about 468 replacement devices is estimated, with a unit cost of about 247,700 euros for latest generation digital devices;
- ANGIOGRAPH: the need for about 96 replacement devices is estimated, with a unit cost of about 608,000 euros;
- GAMMA CAMERA: the need for about 42 replacement devices is estimated, with a unit cost of about 525,000 euros;
- GAMMA CAMERA/CT scans: the need for about 26 replacement devices is estimated, with a unit cost of about 793,000 euros;
- PET CT: the need for about 18 replacement devices is estimated, with a unit cost of about 2,403,400 euros;
- MAMMOGRAPHS: the need for about 148 replacement devices is estimated, with a unit cost of about 274,500 euros for latest-generation digital devices with tomosynthesis;
- ECOTOMOGRAPHIC DEVICES: it is estimated that about 464 replacement pieces of equipment, at a unit cost of about 82,000 euros for latest-generation equipment.

According with the Investment 1.3 related to EHR (MLS 1a e MLS 1b), the clinical documents produced by the new equipment must be aligned with adopted digital standards, whose requirements will be specified into tender documentations.

The total amount of the intervention (1,189,146,935 euros) was distributed to 50% for the quarter 3 of year 2023 and 50% for the quarter 4 of year 2024.

- Data source: Detection of the national need for large technologies carried out by the Italian Ministry of Health in conjunction with all the Italian Regions. The estimate of the amounts indicated refers to the conventions and framework agreements stipulated by Consip in recent years and to the recent awarding of tender procedures carried out by regional bodies at centralized level.
- Amount: € 596,738,800.

- Methodology: The objective is to modernise the technological assets of the hospitals, with particular reference to large healthcare equipment. Following the analysis of the technological equipment currently present in the 1st and 2nd level EAD - Emergency and Acceptance Departments - and in the structures of the ED - Emergency Departments, specific replacement measures have been identified. The action foresees the following macro-phases that will mark out the timeframe of the intervention: Macro-phases of the interventions: 1) elaboration of a report on the specific needs of large equipment (within the first quarter), 2) design and planning of the renewal interventions, 3) tender procedures and conclusion of contracts with the service provider, 4) substitution of the large sanitary equipment (100% by 2024), 5) testing of the sanitary equipment. The estimated national need for large equipment to be acquired to replace obsolete or out-of-use technologies is 3,133, as the target of this intervention.

The technologies included in the national needs are detailed below:

- CT scans: It is estimated that about 170 replacement CT scanners are needed, with a unit cost of about 530,000 euros, considering latest-generation equipment with 128 slices;
- MRI: it is estimated that about 94 replacement devices are needed. The unit cost of a 1.5 T MRI is approximately 914,000 euros;
- LINEAR ACCELERATOR: the need for about 41 replacement devices is estimated, with a unit cost of about 2,000,000 euros;

- FIXED X-RAY SYSTEM: the need for about 469 replacement devices is estimated, with a unit cost of about 247,700 euros for latest generation digital devices;
- ANGIOGRAPH: the need for about 97 replacement devices is estimated, with a unit cost of about 608,000 euros;
- GAMMA CAMERA: the need for about 40 replacement devices is estimated, with a unit cost of about 525,000 euros;
- GAMMA CAMERA/CT scans: the need for about 27 replacement devices is estimated, with a unit cost of about 793,000 euros;
- PET CT: the need for about 16 replacement devices is estimated, with a unit cost of about 2,403,400 euros;
- MAMMOGRAPHS: the need for about 147 replacement devices is estimated, with a unit cost of about 274,500 euros for latest-generation digital devices with tomosynthesis;
- ECOTOMOGRAPHIC DEVICES: it is estimated that about 464 replacement pieces of equipment, at a unit cost of about 82,000 euros for latest-generation equipment.

According with the Investment 1.3 related to EHR (MLS 1a e MLS 1b), the clinical documents produced by the new equipment must be aligned with adopted digital standards, whose requirements will be specified into tender documentations.

The total amount of the intervention (1,189,146,935 euros) was distributed to 50% for the quarter 3 of year 2023 and 50% for the quarter 4 of year 2024.

- Data source: Detection of the national need for large technologies carried out by the Ministry of Health in conjunction with all the Regions. The estimate of the amounts indicated refers to the conventions and framework agreements stipulated by Consip in recent years and to the recent awarding of tender procedures carried out by regional bodies at centralized level.
- Amount: € 592,408,135.

Investment 1.1: Digital update of hospitals' technological equipment

- Target 2: 280 Digitized medical facilities (DEA - Emergency and Admission Departments - Level I and II).
- Timeline for completion: Q4 2025.
- Methodology: The result equals the sum of all the regional values, which in turn are a precise detection of the requirements of hospitals DEA I and II level based on their current level of digitalization.

The total number of hospitals target of the intervention (280) was distributed to 75% for the year 2024 and 25% for the year 2025.

The total amount of the intervention (1,450,115,351 euros) was distributed to 75% for the year 2024, 25% for the year 2025.

- Data source: Ministry of Health.
- Amount: € 1,450,115,351

- Target 3: At least 7,700 additional beds in (ICUs) and sub-intensive care .
- Timeline for completion: Q2 2026.
- Methodology: This milestone concerns an existing project that has already been initiated by the Ministry of Health. The hospital reorganization plan intends to increase the activity in the intensive care and semi-intensive care system. The provision of at least 3,500 intensive care beds will be made structural (corresponding to an increase of about 70% in the number of beds pre-existing the

pandemic). The total amount of this intervention is the result of the sum of Target 3a and 4a above. The detailed schedule of the remaining interventions is due to be finalised with the Regions. A realignment between the regional interventions and those identified in the Law Decree No. 34/2020 is ongoing.

- Data source: Ministry of Health.
 - Amount: € 321,483,240.
-
- Methodology: This milestone concerns an existing project that has already been initiated by the Ministry of Health. The hospital reorganization plan intends to increase the activity in the intensive care and semi-intensive care system. The intervention aims to increase 4,225 beds in the semi-intensive area will have to be planned, with relative equipment plant engineering suitable to support ventilation aid equipment. The total amount of this intervention is the result of the sum of Target 5a and 5b above. The detailed schedule of the remaining interventions is due to be finalised with the Regions. A realignment between the regional interventions and those identified in the Law decree No. 34/2020 is ongoing.
 - Data source: Ministry of Health.
 - Amount: € 886,371,760.
-
- Methodology: This milestone concerns an existing project that has already been initiated by the Ministry of Health. The hospital reorganization plan intends to increase the activity in the intensive care and semi-intensive care system. This plan aims at increasing the number of vehicles (i.e. ambulances) to support the secondary transfers for Covid-19 patients. The detailed schedule of the remaining interventions is due to be finalised with the Italian Regions. The misalignment is equal to the difference between the interventions budgeted in the Law Decree No. 34/2020 (beds, number of hospitals, ambulances) and the interventions of budgeted engineering works identified by the Italian Regions. A realignment between the regional interventions and those identified in the Law Decree No. 34/2020 is ongoing. The total amount of this intervention is the sum of the Targets 6a, 6b, 6c and 6d above.
 - Data source: Ministry of Health.
 - Amount: € 205,300,000.

Investment 1.2: Towards a safe and sustainable hospital

| Cost item | Unit cost (Euro) | Nr | Total |
|--|------------------|-----|-----------------|
| INTERVENTIONS IN COMPLIANCE WITH THE ANTI-SEISMIC REGULATIONS | | 116 | € 638,850,000 |
| RESOURCES PROGRAM AGREEMENTS ART. 20 FINANCIAL LAW 67/88 - HEALTHCARE BUILDING | | | € 1,000,000,000 |
| TOTALE | | | € 1.638,850,000 |

- Target 1: At least 109 anti-seismic interventions completed

- Timeline for completion: Q2 2026.
- Methodology (WIP): Detection of the need considering 116 seismic upgrading and improvement interventions of hospital facilities for a total amount of 638,848,000 euros. The amount was divided considering the number of projects to be activated per single region. The Italian Regions will be asked to provide a detailed schedule for the distribution of the interventions over the period 2022-2026.
The budgeted spend has been distributed over the course of the project as follows: 9% in year 2021, 24% in year 2022, 24% in year 2023, 22% in year 2024, 10% in year 2025, 11% in year 2026.
- Data source:
 - detection of the hospital construction need for seismic upgrading operations of hospitals conducted by the Ministry of Health with all the Regions;
 - resolution 09/03/2018 n4/2018/G of the Court of Auditors.
- Amount: € 638,848,000.

Investment 1.3: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation.

| Sub - Intervention | Cost item | Unit cost (Euro) | Nr | Total |
|---|--|------------------|----|------------------------|
| 1.3.1 - ELECTRONIC HEALTH RECORD (EHR) | CENTRAL REPOSITORY, DIGITAL DOCUMENTS, SERVICES AND USER-FRIENDLY INTERFACES | | | € 200.000.000 |
| | REGIONAL ADOPTION AND USE OF THE EHR. NUMBER OF TYPES OF DIGITAL DOCUMENT ADOPTED BY REGION | | | € 610,400,000 |
| | USE OF THE FUND FOR INVESTMENT FINANCING E INFRASTRUCTURAL DEVELOPMENT - ELECTRONIC HEALTH RECORD | | | € 569,584,180 |
| TOTAL 1.3.1 - ELECTRONIC HEALTH RECORD (EHR) | | | | € 1,380,385,273 |
| 1.3.2. - MINISTRY OF HEALTH TECHNOLOGICAL INFRASTRUCTURE AND DATA ANALYSIS & PREDICTIVE MODEL TO GUARANTEE THE ITALIAN ESSENTIAL LEVELS OF ASSISTANCE ("LEA") AND HEALTH SURVEILLANCE AND VIGILANCE | STRENGTHEN THE INFRASTRUCTURE AND THE TECHNOLOGICAL AND ANALYTICS INSTRUMENTS OF THE MINISTRY OF HEALTH | | | € 92,700,000 |
| | REENGINEERING THE NEW HEALTH INFORMATION SYSTEM (NSIS) AT LOCAL LEVEL | | | € 103,250,000 |
| | CONSTRUCTION OF A POWERFUL SIMULATION AND PREDICTION MODEL FOR MEDIUM AND LONG TERM SCENARIOS IN THE NHS | | | € 77,000,000 |
| | DEVELOPMENT OF A NATIONAL PLATFORM FOR TELEMEDICINE SERVICES DELIVERY | | | € 19,600,000 |

| | |
|---|-----------------|
| TOTAL 1.3.2 - 1.3.2. - MINISTRY OF HEALTH TECHNOLOGICAL INFRASTRUCTURE AND DATA ANALYSIS & PREDICTIVE MODEL TO GUARANTEE THE ITALIAN ESSENTIAL LEVELS OF ASSISTANCE (“LEA”) AND HEALTH SURVEILLANCE AND VIGILANCE | € 292,608,978 |
| TOTAL 1.3 | € 1,672,534,181 |

Investment 1.3.1: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Electronic Health Record (EHR)*

- **Methodology:** Creation and implementation of a central repository, interoperability, and services platform, according to the Fast Healthcare Interoperability Resources standard, leveraging the already existing experiences in this area (such as INI), always ensuring storage, safety and interoperability standards, laid out in Mission 1 Component 1, are met. The repository shall be a dedicated data lake, providing the following functionalities: basic data storage, authentication and access provisions, incoming data manipulation/engineering, data quality, and reporting – in the fashion and form adherent to stakeholders’ needs. It will be fed through data, metadata, and documents provided by health providers; providers, Italian Regions and Italian Ministry of Health will be the GDPR data controllers of EHR according the respective responsibilities; the Repository will be responsible for data processing and treatment (responsabile del trattamento), according to GDPR, while data ownership will belong to health providers.
The total amount of national strategic digital E-Health tender of € 220 mln has been reduced to € 200 mln, in view of the likely discount applied at the time of the tender award.
The total amount is distributed as follows: 5% in year 1; 50% in year 2; 45% in year 3.
- **Data source:** Preliminary documents for national strategic digital E-Health tender. ICT spending in the Italian Public Administration 2020 – AGID.
- **Amount:** € 200,000,000

Investment 1.3.1: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Electronic Health Record (EHR)*

- **Target 1:** At least 85% of of general practitioners feeding on a regular basis the Electronic Health Record
- **Timeline for completion:** Q4 2025.
- **Methodology:** Financial resources are allocated at local level to increase the number of types of digital documents digitized in the EHR. This will entail strengthening and further developing the EHR at a regional level to promote, according to European standards, document digitization, harmonization and data extraction, facilitate information sharing, and strengthening the IT systems security for consultation, enhance regional capacity for data collection, analysis and interoperability. The intervention also provides for specialist support and training to enforce the digital upskilling of healthcare professionals within the mandatory continuing education (ECM – Educazione Continua in medicina) at regional and local level in order to (i) guarantee uniform and replicable information

systems and services throughout the national territory; (ii) maintain and evolve the regional EHR and guarantee its continuous supply with digital data and documents, allowing the patients to access, consult and manage them; (iii) creation of a regional network for each region, to interconnect all health companies and socio-health entities: drafting of technical and functional specifications.

The Regions will be assigned an overall budget amount to achieve their goals in terms of technological infrastructure, digitalization, organization and professional development that they will be able to tailor depending on their specific requirements and progress status of the implementation process of the EHR. To estimate the cost of intervention the calculation is as follows:

- Strengthening of regional infrastructure and creation and adoption of 18 new types of digital documents: € 298,998,907;
- Specialist support and training: € 311,401,093;
- Data source: Estimates related to costs incurred for similar initiatives. Regional funding assigned by the Veneto Region – “DGR 1671/2012”, “DGR 2703/2014”, “DGR 1785/2016”.
- Amount: € 610,400,000

Investment 1.3.1: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Electronic Health Record (EHR)*

- Milestone 3: Use of the Fund for Investment Financing e infrastructural development - Electronic health record - Completion of Health Insurance card system, design of the infrastructure for the interoperability of the EHR
- Timeline for completion: Q2 2026.
- Methodology: Realization of the Health Insurance card system; design of the infrastructure for the interoperability of the electronic health record; management of the electronic health record as part of the interventions for the digitalization of the public sector authorities.
The budgeted costs are phased as follows: 9% in year 2020, 24% in year 2021, 17% in year 2022, 18% in year 2023, 14% in year 2024, 11% in year 2025, 9% in year 2026.
- Data source: DL n. 269 / 2003 art. 50; DL n. 78 / 2010 art. 11, comma 15; LB n. 232 / 2016 art. 1, comma 383; ANAGRAFE NAZIONALE DEGLI ASSISTITI; LB n. 205 / 2017 art. 1, sub art. 0, comma 1072 (riparto fondo investimenti 2018).
- Amount: € 569,584,180.

- Target 2 All the Regions adopting and using the EHR
- Timeline for completion: Q2 2026.

Investment 1.3.2: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Ministry of health technological infrastructure and data analysis & predictive model to guarantee the Italian Essential Levels of Assistance (“LEA”) and health surveillance and vigilance*

- Methodology: The area of intervention addresses those regional areas that are not yet covered by a national information system. Quantification elaborated by estimating a unified regional amount of 183,000 euros (multiplied by 21 regions) and a unit company amount of 25,000 euros (multiplied by 149 local healthcare authorities) and then multiplied by 4 information flows.

- Data source: Estimates derived from feasibility studies and specific budgets, as well as related to estimated costs incurred for similar regional initiatives - Convention CSI Piemonte - Piedmont Region.
- Amount: € 15,150,000.

Investment 1.3.2: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Ministry of health technological infrastructure and data analysis & predictive model to guarantee the Italian Essential Levels of Assistance (“LEA”) and health surveillance and vigilance*

- Methodology: The area of intervention addresses those regional areas that are not yet covered by a national information system. Quantification elaborated by estimating a unified regional amount of 183,000 euros (multiplied by 21 regions) and a unit company amount of 25,000 euros (multiplied by 149 local healthcare authorities) and then multiplied by 4 information flows.
- Data source: Estimates derived from feasibility studies and specific budgets, as well as related to estimated costs incurred for similar regional initiatives - Convention CSI Piemonte - Piedmont Region.
- Amount: € 15,150,000.

Investment 1.3.2: Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation - *Ministry of health technological infrastructure and data analysis & predictive model to guarantee the Italian Essential Levels of Assistance (“LEA”) and health surveillance and vigilance*

- Methodology: The breakdown of costs is the following:
 - DWH alimentation and analytics production: 9,759,683 euros;
 - pseudonymization system: 864,837 euros;
 - interoperability evolution: 7,809,503 euros;
 - registration platform: 11,187,582 euros;
 - Infrastructure and licensing: 22,953,239 euros;
 - PAAS platform for opendata: 1,255,925 euros;
 - identity management: 1,274,913 euros;
 - cybersecurity (SOC/CERT): 6,590,508 euros;
 - PMO and management consulting services: 16,222,175 euros;
 - service desk setup and application management: 7,099, 995 euros;
 - feasibility studies/preliminary operations planning: 1,186,988 euros;
 - national-local collaboration system: 3,026,929 euros.
 - opendata tools platform: 588,801 euros;
 - portal setup: 2,876,350 euros.
- Data source: invitation to tender issued by the different regions and Consip (VENETO REGION - COMPANY ZERO CIG 6962045D45, Consip - Tender Contact Center 2 CIG 6820549F13, Sardinia Region CIG 59875781AD, Lombardy Region - Tender Air Tender 2/2019/LI), Professional Services in man/days or fixed price purchased through Executive Contracts on Consip SpA Framework Agreements for the National Healthcare Information System (Lot 1 - CIG 762853630E and Lot 2 - CIG 762875147A), Hosting services and operations acquired by INAIL through collaboration agreement signed on 19 April 2018. Licenses acquired by MEPA tools. Framework Contract Lot 2

of the Tender SPC Cloud - Digital identity management services and application security (ID SIGEF 1403), publications relating to costs for ESF (A Cost Model for Personal Health Records (PHRs)) - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2656035/pdf/amia-0657-s2008.pdf>).

- Amount: € 92,700,000.

Investment 2.1: Strengthening and enhancement of the NHS biomedical research

| Cost item | Unit cost (Euro) | Nr | Total |
|---|------------------|-----|----------------------|
| NUMBER OF PROJECTS FINANCED WITH VOUCHERS FOR POC PROJECTS (PROOF OF CONCEPT) | 1,000,000 | 100 | 100,000,000 € |
| NUMBER OF PROJECTS FOR PROGRAMS / RESEARCH PROJECTS ON RARE CANCERS AND DISEASES | 1,000,000 | 100 | 100,000,000 € |
| NUMBER OF PROJECTS FOR PROGRAMS / RESEARCH PROJECTS ON HIGH IMPACT DISEASES ON HEALTH | 1,000,000 | 324 | 324,139,484 € |
| TOTAL | | | 524,139,484 € |

- Target 1: At least 420 projects funded on i) rare cancers and diseases; ii) high impact diseases on health. Timeline for completion: Q4 2025.
- Methodology: Assignment of one voucher for POC Projects through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for POC Projects - Ministry of Economic Development (MISE).
- Amount: € 50,000,000.

- Methodology: Assignment of one voucher for POC Projects through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for POC Projects - Ministry of Economic Development (MISE).
- Amount: € 50,000,000.

- Methodology: Granting of one funding through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for research projects - Ministry of Health.
- Amount: € 50,000,000.

- Methodology: Granting of one funding through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for research projects - Ministry of Health.
- Amount: € 50,000,000.

- Methodology: Granting of one funding through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for research projects on high impact diseases on health- Ministry of Health.
- Amount: € 162,069,742.
- Methodology: Granting of one funding through a two-year public tender procedure. The maximum amount of the individual projects that can be financed is € 1,000,000.
- Data source: Similar public tender procedure for research projects on high impact diseases on health- Ministry of Health.
- Amount: € 162,069,742.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in the healthcare system.

| Cost item | Unit cost (Euro) | Nr | Total |
|---|--|---------|----------------------|
| INCREASE SCHOLARSHIPS FOR SPECIFIC TRAINING IN GENERAL MEDICAL PRACTICE | 34,809 € | 2,700 | 93,984,300 € |
| EXTRAORDINARY TRAINING IN THE FIELD OF HOSPITAL INFECTIONS | 300 € | 293,386 | 88,015,700 € |
| TRAINING COURSE FOR THE KEY STAFF POSITIONS OF THE NHS BODIES | 4,000 € | 4,500 | 18,000,000 € |
| FINANCING OF N. 4,200 MEDICAL - SPECIALIST TRAINING CONTRACTS | 25.000 € for the first 2 years, and 26,000 € for the remaining 3 years | 4,200 | 537,600,000 € |
| TOTAL | | | 737,600,000 € |

- Methodology: The target value was calculated considering the current age distribution of general practitioners characterized by a strong prevalence of physicians born in the years 1950 - 1960, which is why a significant part of professionals is leaving the job due to retirement. Aiming to ensure adequate turnover of general practitioners, also taking into account the essential role that primary care plays in the Italian NHS, it has been hypothesized to fund 900 additional scholarships to access training courses in general medicine. Specifically, the intervention expenditure was calculated taking into account the unit amount of the scholarship as provided in the Ministerial Decree of 7 March 2006, amounting to € 11,603 / year for each of the three years of the course. With reference to the 2021-2026 period, we proceeded to the development of the projections aiming to finance not only the access to specific training in postgraduate general medicine degrees but also the completion of their study cycle for a three-year period (2021-2024, 2022 -2025, 2023-2026). In summary, it has

been estimated the overall cost of the entire training cycle (from the 1st to 3rd year of course) for the mentioned triennia.

- Data source: art. 17 of DM 7 marzo.2006 for the value of the scholarship MMG school.
- Amount: €31,328,100.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Target 1: 1,800 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles.
- Timeline for completion: Q2 2023.
- Methodology: The target value was calculated considering the current age distribution of general practitioners characterized by a strong prevalence of physicians born in the years 1950 - 1960, which is why a significant part of professionals is leaving the job due to retirement. Aiming to ensure adequate turnover of general practitioners, also taking into account the essential role that primary care plays in the Italian NHS, it has been hypothesized to fund 900 additional scholarships to access training courses in general medicine. Specifically, the intervention expenditure was calculated taking into account the unit amount of the scholarship as provided in the Ministerial Decree of 7 March 2006, amounting to € 11,603 / year for each of the three years of the course. With reference to the 2021-2026 period, we proceeded to the development of the projections aiming to finance not only the access to specific training in postgraduate general medicine degrees but also the completion of their study cycle for a three-year period (2021-2024, 2022 -2025, 2023-2026). In summary, it has been estimated the overall cost of the entire training cycle (from the 1st to 3rd year of course) for the mentioned triennia.
- Data source: art. 17 of DM 7 marzo.2006 for the value of the scholarship MMG school.
- Amount: €31,328,100.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Target 1c: 2,700 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles
- Timeline for completion: Q2 2024.
- Methodology: The target value was calculated considering the current age distribution of general practitioners characterized by a strong prevalence of physicians born in the years 1950 - 1960, which is why a significant part of professionals is leaving the job due to retirement. Aiming to ensure adequate turnover of general practitioners, also taking into account the essential role that primary care plays in the Italian NHS, it has been hypothesized to fund 900 additional scholarships to access training courses in general medicine. Specifically, the intervention expenditure was calculated taking into account the unit amount of the scholarship as provided in the Ministerial Decree of 7 March 2006, amounting to € 11,603 / year for each of the three years of the course. With reference to the 2021-2026 period, we proceeded to the development of the projections aiming to finance not only the access to specific training in postgraduate general medicine degrees but also the completion of their study cycle for a three-year period (2021-2024, 2022 -2025, 2023-2026). In summary, it has

been estimated the overall cost of the entire training cycle (from the 1st to 3rd year of course) for the mentioned triennia.

- Data source: art. 17 of DM 7 marzo.2006 for the value of the scholarship MMG school.
- Amount: €31,328,100.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Methodology: It is foreseen the payment of the training plan in the field of hospital infections addressed to healthcare professionals employed in the NHS hospital sector. Estimating that about 60% of the health of the NHS professionals are employed in hospitals, it is estimated a target population of about 293,000 professionals. The cost is set considering a value of 300 € as a unit cost of the training course to be dispensed. The delivery of the program is scheduled in a time span ranging from 2022 to 2024.
- Data source: Ministry of Health.
- Amount: € 45,000,000 (calculated with 150,000 participants in training courses).

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Methodology: It is foreseen the payment of the training plan in the field of hospital infections addressed to healthcare professionals employed in the NHS hospital sector. Estimating that about 60% of the health of the NHS professionals are employed in hospitals, it is estimated a target population of about 293,000 professionals. The cost is set considering a value of 300 € as a unit cost of the training course to be dispensed. The delivery of the program is scheduled in a time span ranging from 2022 to 2024.
- Data source: Ministry of Health.
- Amount: € 43,015,800 (calculated with 143,386 participants in training courses).

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Methodology: Estimate of potential participants in managerial courses based on the number of senior management roles per organization of the NHS (260 bodies in total) and on the number of macro-organizations (2739 Departments, Districts 575, 412 Hospitals). In total: 774 persons belonging to the key positions of the National Health Service Bodies and 3726 persons in charge of macro-organizational divisions, for a total of 4500 people. Hours of training provided per participant: 200 hours. the average cost per participant Estimate: 4,000 € (20 € per hour). Number of participants: 2,000.
- Data source: survey of the National health statistical system named HPSP.11 and Open Data of the Ministry of Health 2020 for data on participants; market estimates for the average cost per hour of training.
- Amount: € 8,000,000.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Target 3: Completion of training for 4,200 persons in the National Health Service in managerial and digital skills.
- Timeline for completion: Q2 2026.
- Methodology: Estimate of potential participants in managerial courses based on the number of senior management roles per organization of the NHS (260 bodies in total) and on the number of macro-organizations (2739 Departments, Districts 575, 412 Hospitals). In total: 774 persons belonging to the key positions of the National Health Service Bodies and 3.726 persons in charge of macro-organizational divisions, for a total of 4.500 people. Hours of training provided per participant: 200 hours. the average cost per participant estimate: 4,000 € (20 € per hour). Number of participants: 2,500.
- Data source: survey of the National health statistical system named HPSP.11 and Open Data of the Ministry of Health 2020 for data on participants; market estimates for the average cost per hour of training.
- Amount: €10,000,000.

Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in healthcare system.

- Methodology: In order to guarantee, for new medical graduates, a training program fit for allowing the effective exercise of the profession and reduce the gap between the number of recent graduates in medicine and surgery and the number of specialist training contracts financed by NHS, this investment also provides the financing of specialized medical training contracts which will allow the financing of an additional 4,200 training contracts for a complete cycle of studies (5 years). According to the Decree of the President of the Council of Ministers of 7th March 2007, the salary of a physician during specialist training is € 25,000.00 gross salary for the first two years of the course, and € 26,000.00 gross salary for the subsequent years of the course. By considering the new 4,200 contracts for a complete cycle of studies, the cost of these contracts is € 537,600,000, distributed over the years 2022-2026 as follows:
 - Year 2022: 4,200 contracts* € 25,000 = € 105,000,000.
 - Year 2023: 4.200 contracts* € 25,000= € 105,000,000.
 - Year 2024: 4.200 contracts* € 26,000= € 109,200,000.
 - Year 2025: 4.200 contracts* € 26,000= € 109,200,000.
 - Year 2026: 4.200 contracts* € 26,000= € 109,200,000.
- Data source: Decree of the President of the Council of Ministers of 7th March 2007.
- Amount: € 537,600,000.

In-depth studies are underway in relation to structural costs.

11. Loan request justification (if applicable)

Annex 1

Sustainability plan aimed at financing the activities "Innovation, research and digitalisation of national healthcare service" relating to M6C2.

Considering the funding provided for the Investment Measure "Innovation, research and digitalisation of national healthcare service " integrated into the Recovery Plan funds, it is estimated that the maintenance costs for the measures introduced after 2026 are equal to € **322,000,000** per year.

Table 1. Sustainability of the projects - impact on the national health fund (€/Mln)

| Measure | Sub-measure | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|------|------|------|-------|-------|-------|-------|
| Investment 1 – Digital and technological update | 1.1 Digital update of hospital's technological equipment | | | | 163.1 | 217.5 | 217.5 | 217.5 |
| | 1.3 Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation | | | | | 4.5 | 4.5 | 22.7 |
| TOTAL MAINTENANCE COST | | | | | 163.1 | 222.1 | 222.1 | 240.2 |
| Cost for technical staff | | | 79.3 | 79.3 | 79.3 | 79.3 | 79.3 | 79.3 |
| Cost for Digital Staff | | | | | | | | 2.5 |
| TOTAL PERSONNEL COST | | | 79.3 | 79.3 | 79.3 | 79.3 | 79.3 | 81.8 |
| TOTAL IMPACT ON NHS | | | 79.3 | 79.3 | 242,4 | 301,4 | 301,4 | 322,0 |

The value of the maintenance costs entered in the table was calculated as follows:

- **1.1 Digital update of hospital's technological equipment:** a share of maintenance costs equal to 15%¹⁴ of the total amount of the investment (€ 1,450,115,351) was considered.
- **1.3 Strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation:** a maintenance quota of 15% (€ 13,905,000) of the total cost of the central technological infrastructure (€ 92,700,000) has been considered. The 15% estimate is supported by the forecasts of rationalization of the ICT expenditure realized within the Mission 1; moreover, for telemedicine services, the value of ordinary and extraordinary maintenance (€ 4,536,687) already present in the estimate of the overall cost of the investment has been carried forward. Finally, maintenance costs were calculated at 15% (€ 4,251,310) of the overall value estimated for the development of the tool for the construction of a powerful simulation and prediction model for medium and long term scenarios in the NHS (€ 28,342,068).

The value of the personnel costs included in the table was calculated as follows:

- Cost for technical staff: The Ministry of Health has identified a standard need for technical staff to be hired by the Regions and Local Health Units, to strengthen the governance of the tender procedures. This has been estimated in 5 staff units for each Region and each Local Health Unit, for a total cost of € 79,300,000 (by using a unit cost of € 130,000).
- Cost for Digital Staff: considering the measures envisaged for the strengthening of technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at Central level, it has been estimated that from 2027 there will be 10 General Managers for a unit cost of € 150,000 and 20 Data Scientists for a unit cost of € 50,000, for a total of € 2,500,000.

In order to meet the aforementioned financing needs, the possible economic benefits deriving from the application of some investment measures envisaged by this component have been taken into consideration.

Table 1. Sustainability of the projects - impact of possible economic benefits

| Measure | Sub-measure | Year 2027 |
|---|--|------------------------|
| Investment 1 – Digital and technological update | 1.1 Digital update of hospital's technological equipment | € 1,230,648,205 |
| Investment 2 – Training, scientific research and technological transfer | 2.1 Strengthening and enhancement of the NHS biomedical research | € 131,034,871 |
| TOTAL | | € 1,361,683,076 |

The benefit resulting from the Digital and technological update is € 1,230,648,205.40. This benefit has been estimated starting from the main items of the Income Statement - Year 2019 on which the intervention

¹⁴ Section C.4 of the document entitled "Methods and procedures for the activation of investment programs in healthcare through program agreements, as per art. 5 bis of Legislative Decree no. 502 of December 30, 1992, as amended and framework program agreements art. 2, of Law no. 662/1996" approved by the "Conferenza Stato-Regioni" on February 28, 2008).

impacts in terms of efficiency gains. The methodology is based on a cluster of healthcare companies (62) home to DEA level I and II with a number of beds between 134 and 2.034. The cost items relating to the main factors of production were considered (purchase of healthcare and non-healthcare goods, personnel and maintenance). These cost items were discounted by a savings coefficient specifically linked to the relevant cost item. The positive impact deriving from the digitalization of hospital processes was considered through: (i) variability and waste reduction, elimination of common low-value procedures, AI-enabled fraud, waste, and abuse reductions; (ii) advanced analytics, AI, and automation in support functions; (iii) enhanced clinical productivity. The overall benefit was then calculated by resetting the benchmark of the value obtained on the basis of the selected cluster (62 hospitals DEA level I and II) to the target value of the sub-measure (280 hospitals DEA level I and II).

| Item cost – Income Statement | Income Statement value - Year 2019 | Savings Coefficient ¹⁵ | Estimate on the Income Statement of 62 DEA | | Projections on 280 DEA |
|---|------------------------------------|-----------------------------------|--|-----------------------|-------------------------|
| | | | Expenditure at the Savings Coefficient | Savings 62 DEA | Projected savings |
| | | | A | B | |
| B.1.A) Purchases of healthcare goods | 6.648.389.643,64 | 0,28% | 6.629.826.130,47 | 18.563.513,17 | 83.835.220,75 |
| B.1.B) Purchases of non-healthcare goods | 98.985.013,33 | 0,28% | 98.708.629,17 | 276.384,16 | 1.248.186,54 |
| B.2.A) Purchases of healthcare services | 7.450.634.196,29 | 0,28% | 7.429.830.670,41 | 20.803.525,88 | 93.951.407,19 |
| B.2.B) Purchases of non-healthcare services | 2.470.900.195,96 | 0,28% | 2.464.000.993,18 | 6.899.202,78 | 31.157.689,98 |
| B.3) Maintenance and restoration (ordinary outsourcing) | 822.543.962,90 | 1,70% | 808.794.457,13 | 13.749.505,77 | 62.094.542,19 |
| B.5) Healthcare personnel | 8.374.075.553,74 | 2,60% | 8.161.867.011,44 | 212.208.542,30 | 958.361.158,76 |
| Totale | 25.865.528.565,86 | | 25.593.027.891,81 | 272.500.674,05 | 1.230.648.205,40 |

The estimate of the expected benefits from the investment in training, scientific research and technological transfer was calculated considering a peer-reviewed study estimating the economic returns generated by public and charitable investment in UK medical research¹⁶. This study estimates that every £1 invested in medical research delivers a return equivalent to around 25p every year, forever. Applying this estimate, an economic return of € 240,384,871 is obtained for this investment.

The promotion and strengthening of scientific research in the healthcare sector not only aims at providing citizens with new diagnostic and therapeutic solutions, but also development opportunities for the Country's economic system. In fact, research and innovation (R&I) play a key role in boosting smart and sustainable growth as well as job creation. Through the production of new knowledge, research is essential for the

¹⁵ McKinsey on Healthcare - Best of 2019

¹⁶ “Medical Research: What’s it worth? A briefing on the economic benefits of musculoskeletal disease research in the UK” - Wellcome Trust, 01 January 2018.

development of new and innovative products, processes and services, which in turn make an increase in productivity, industrial competitiveness and, ultimately, prosperity possible.

Therefore, health is not only a value itself, but also an important factor in economic growth. Only a healthy population can achieve its full economic potential, hence initiatives in this area, particularly in research, should be considered an investment. Research and innovation are not simply about technology and new products, but also about how healthcare is organized and structured, how resources are used and how systems are financed. As such, innovation in healthcare has per se the potential to reduce healthcare costs and improve the quality of care delivered.

In order to restore a path to sustainable growth, the necessary measures to address the urgent problems created by the current pandemic crisis must be accompanied by actions to overcome the barriers that hold innovation back.¹⁷

¹⁷ Economic growth and productivity: Italy and the role of knowledge, Ignazio Visco, Governor of Bank of Italy, EuroScience Open Forum 2020, 4th September 2020.

Annex II: M/Ts of component 2 Mission 6

Disclaimer: The selection and specific wording of the M/T in the CID, further specification in the OA and associated deadlines are subject to further reflection and adjustment, in light of the final version of the component, and given the need to ensure consistency across components and to ensure full respect of the regulation.

| Timeline | CID (M&Ts covering several measures) | Further specifications included in the OA | Monitoring included in the OA | Additional comment |
|----------|--|---|--|--------------------|
| Q42021 | <p>Investment 1.1: Digital update of hospitals' technological equipment</p> <p>Milestone: Structural strengthening of the NHS in hospitals, through a specific reorganization plan aimed at adequately addressing pandemic emergencies - Intensive care units (ICUs) and sub-intensive care beds.</p> | | | |
| Q2 2022 | <p>Investment 1.1: Digital update of hospitals' technological equipment</p> <p>Milestone: Approval of an Institutional Development Contract (Contratto Istituzionale di Sviluppo), with the Italian Ministry of Health as the responsible and implementation Authority and the participation of regional Administrations together with the other entities concerned for listing all the suitable sites identified for hospitals' technological equipment, as well as the obligations that each Italian Region will assume to guarantee the achievement of the expected result.</p> | | | |
| Q4 2022 | <p>Reform 1: reform aims to reorganize the network of IRCCS to improve NHS quality and excellence</p> <p>Milestone: Entry into force of the legislative decree envisaging the reorganisation of the discipline of Scientific institutes for hospitalisation and care (IRCSS)</p> <p>The reform includes: Measures to: i) strengthen the link between research, innovation and healthcare; ii) improve the governance of the public IRCCSs by enhancing the strategic management and better defining the powers and areas of competence;</p> | | <p>Intermediate step</p> <p>Investment 1.1: Digital update of hospitals' technological equipment Publication of tendering procedures (Consip framework agreement) and conclusion of contracts with service providers and digitisation of Hospital (hospital classed as DEA I and II level)</p> | |

| | | | | |
|---------|--|--|--|--|
| Q2 2023 | <p>Investment 2.3: Development of technical-professional, digital and managerial skills of professionals in the healthcare system</p> <p>Target: 1800 additional scholarships activated for specific training in general medical practice, for the entire duration of a three-year training cycles</p> | | | |
| Q2 2024 | <p>Investment 2.3: Development of technical-professional, digital and managerial skills of professionals in the healthcare system</p> <p>Target: 2700 additional scholarships activated for specific training in general medical practice, ensuring the completion of three three-year training cycles</p> | | | |
| Q4 2024 | <p>Investment 1.1a: Digital update of hospitals' technological equipment</p> <p>Target: At least 3100 Large sanitary equipment purchased and deployed to replace obsolete ones</p> | | | |
| Q4 2025 | <p>Investment 2.1 Scientific research and technological transfer</p> <p>Target: At least 420 projects funded on i) rare cancers and diseases; ii) high impact diseases on health.</p> <p>Breakdown: 100 rare cancers and diseases 324 high impact diseases on health.</p> | | | |
| Q4 2025 | <p>Investment 1.1b: Digital update of hospitals' technological equipment</p> <p>Target: 280 Digitized hospitals (DEA - Emergency and Admission Departments - Level I and Level II)</p> | | | |
| Q4 2025 | <p>Investment 1.3</p> <p>Target: At least 85% of general practitioners feeding on a regular basis the Electronic Health Record</p> | | | |
| Q2 2026 | <p>Investment 1.1c: Digital update of hospitals' technological equipment</p> | <p>Investment 1.3: Strengthening of the technological infrastructure and of the tools</p> | | |

| | | | | |
|--|--|--|--|--|
| | <p>Target: At least 7700 additional beds in ICUs and sub-intensive care</p> <p>Investment 1.2: Towards a new safe and sustainable hospital</p> <p>Target: At least 109 anti-seismic interventions completed</p> <p>Investment 1.3: Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation</p> <p>Target: All the Regions adopting and using the EHR;</p> <p>Milestone: Completion of the Health Insurance card system and design of the infrastructure for the interoperability of the electronic health record;</p> <p>Investment 2.2: Development of technical-professional, digital and managerial skills of professionals in the healthcare system</p> <p>Target: Completion of training for 4,500 key persons in the National Health Service in managerial and digital skills.</p> | <p>for data collection, data processing, data analysis and simulation</p> <p>EHR should include the following 18 new types of digital documents:</p> <p>Hospital discharge letter; First aid report; Radiology report; Exemption document; Outpatient specialist report; Pathological anatomy report; Dematerialized prescription; Pharmaceutical and specialist dispensing; Notebook; Pharmaceutical dossier; Vaccinations; Reservations (specialists, hospitalization, etc.) consent or refusal to donate organs and tissues; health balances home care form; program and clinical-assistance record; diagnostic-therapeutic plans; prothetic assistance services provided to support telemonitoring activities.</p> | | |
|--|--|--|--|--|

| Mission | Componen Id | Name |
|----------------|--------------------|---|
| M6 | C2 | Inv1.1 Digital update of hospitals' technological equipment |
| M6 | C2 | Inv1.2 Towards a new safe and sustainable hospital |
| M6 | C2 | Inv1.3 Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level |
| M6 | C2 | Inv2.1 Strengthening and enhancement of the NHS biomedical research |
| M6 | C2 | Inv2.2 Development of technical-professional, digital and managerial skills of professionals in healthcare system |

DNSh assessment

| | |
|---|---|
| Mission | 4 - health |
| Cluster | 2 - Innovation, research and digitization of health care |
| Related Measures (Initiative or assessment) | Inv. 1.1 Digitalisation of hospital's technological equipment |
| Responsibility for reporting and implementation | Prof. Rita Romhild |
| Date | 16/09/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|---|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | The measure adopted to modernize the technology of waste incineration is expected to lead to a significant increase in GHG emissions, as the new equipment has superior environmental performance than the equipment in use. The replacement of hospital clinic and care processes will make use of devices managed according to the 2012 Best Practice Guidelines for the U.S. Code of Conduct on Data Centre Energy Efficiency (PUE) and the requirements of the equipment used in the equipment systems will meet the requirements of the |
| 2. Climate change adaptation | B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, scale and such is considered compliant with DNSh for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account the direct and indirect primary effects across the life cycle. The modernization of the technology park in hospital facilities and the implementation of digital clinical and care processes with the characteristics of the equipment used in the equipment systems will meet the requirements of the equipment used in the equipment systems will meet the requirements of the | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | C. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSh for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. No environmental degradation risks related to water quality preservation and water use are expected. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water (including surface water and groundwater), or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSh assessment. | | Is the measure expected to: (a) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste; or (b) lead to significant inefficiencies in the direct or indirect use of any natural resource at the stage of life cycle which are not mitigated by adequate measures; or (c) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Taxonomy)? | NO | The replacement of the current technology of waste incineration and the equipment used in the equipment systems will be carried out and managed by a licensed operator and managed according to the waste hierarchy according to the applicable legislation. The waste produced by the modernization of the technological park will be sent to the facility of application of the WEEE system, respecting the extended responsibility of the producer (supplier, who independently or through |
| 5. Pollution prevention and control to air, water or land | E. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature and such is considered compliant with DNSh for the relevant objective. | The expected impact of the activity supported by the measure on this environmental objective is negligible. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | F. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, scale and such is considered compliant with DNSh for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. | Is the measure expected to be: (a) significantly detrimental to the good condition and maintenance of ecosystems; or (b) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Module | 4 - health |
| Cluster | 2 - Innovation, research and digitisation of health care |
| Related Measure (before or investment) | 1.7 Towards a new safe and sustainable hospital |
| Responsibility for reporting and implementation | Prof. Rita Bernthal |
| Date | 14/01/2021 |

| | Step 1 | Step 2 | | Step 2 | |
|---|--|--|--|--------|--|
| Environmental objective | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | The measure consists of structural improvements in hospital safety and security. It does not significantly affect the mechanisms that lead to climate change. | Is the measure expected to lead to significant GHG emissions? | NO | The measures adopted to upgrade the structural improvement in hospital safety and security do not significantly increase GHG emissions, as the construction will ensure the highest energy efficiency. The new building will be nearly zero energy (NZEB). |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The use of COP will make it possible to reduce the environmental impact of gas construction, reconstruction and maintenance of buildings, considered from a life-cycle perspective. Interventions will be carried out gradually during the lifetime of existing buildings, and the choice of the economic operator (the adoption of ISO 14001 Management System or the Management and Action Scheme (MAS)) will be considered. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The environmental degradation risks related to water quality. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | D. No, the measure requires a substantive DNSH assessment. | The measure is not expected to lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (B) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (C) cause significant and long-term harm to the environment in respect to the circular economy (art. 27(4) of the Taxonomy)? | Is the measure expected to: (i) lead to a significant increase in the generation, incineration or disposal of waste, with the exception of the incineration of non-recyclable hazardous waste, or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not minimised by adequate measures; or (C) cause significant and long-term harm to the environment in respect to the circular economy (art. 27(4) of the Taxonomy)? | NO | The measure requires economic operators renovating buildings to ensure that at least 70 percent by weight of the construction and non-hazardous construction and demolition waste (including material in the initial state) from (2) is recycled in accordance with the waste hierarchy and the (2) Protocol for Construction and Demolition Waste Management. Appropriate areas will be provided to be designated for separate collection of waste generated by construction sites. |
| 5. Pollution prevention and control to air, water or land | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | NO | <ul style="list-style-type: none"> • The measure is not expected to result in a significant increase in emissions of pollutants to air, water, or soil because operators performing structural safety improvements in hospital facilities will not use building materials that do not contain hazardous substances (HCS). • Substances that are not of high concern as identified based on the REACH classification list. • Measures to reduce emissions during construction. • Measures to reduce emissions of dust and particulates during construction. |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The activity supported by the measure has no or insignificant foreseeable impact on the environmental objective. Living into account both the direct and indirect primary effects across the life cycle. The program affects existing buildings for which the location in biodiversity sensitive areas has not been identified (BIO) (art. 27(4) of the Taxonomy). | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of union interest? | | |

DNSH assessment

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| Mission | 4 - Health |
| Cluster | 2 - Innovation, research and digitization of health care |
| Related Measures (Reform or Investment) | 1.3. Strengthening of the technological infrastructure and of the tools for data collection, data processing, data analysis and simulation at central level |
| Responsibility for reporting and implementation | Dig. City Stockholm |
| Date | 16/05/2021 |

| Environmental objective | Step 1 | | Step 2 | | |
|---|--|---|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | D. No, the measure requires a substantive DNSH assessment. | | Is the measure expected to lead to significant GHG emissions? | NO | The measure taken to implement the electronic health record will not result in a significant increase in GHG emissions. As the measure involves aspects related to log data management, the activity will not involve managed according to the 2013 Best Practice Guidelines for the EU Code of Conduct on Data Centre Energy Efficiency (DEC). |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for this measure objective. | The development and deployment of the electronic health record will be facilitated by digitization processes that meet the required climate change criteria. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for this measure objective. | The measure does not result in an increase in water generation. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater, or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for this measure objective. | The measure does not result in an increase in waste generation. | Is the measure expected to: (i) result in significant increases in the generation, incineration or disposal of waste, with the exception of non-recyclable hazardous waste, or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at any stage of its life cycle which are not remedied by adequate measures, or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 17 of the Directive)? | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for this measure objective. | The Electronic Health Record implementation measure does not result in significant emissions of greenhouse gases, air pollutants or noise. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for this measure objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, including any direct, both the direct and indirect primary effects across the life cycle. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems, or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

DNSH assessment

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| Measure | 4 - Health |
| Cluster | 2 - Innovation, research and digitization of health care |
| Related Measures (Initiative or assessment) | 2.1. Strengthening and enhancement of the NHS biomedical research |
| Accountability for reporting and implementation | Prof. Rita Bernhall |
| Date | 16/05/2021 |

| Environmental objectives | Step 1 | | Step 2 | | |
|---|--|---|---|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure does not affect climate change, as it is intrinsically positive for the high-tech requirements and only the research projects. The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. Research and innovation processes are focused on sectors that do not | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | Thanks to funding and stronger biomedical research are able to respond to climate change related | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or goods? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. No risk of environmental degradation related to water quality protection and water stress within the meaning of the Water Framework Directive | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of rivers of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The measure will result in the efficient use of resources and an increase in investments that meets the requirements of the European Commission | Is the measure expected to be detrimental: (i) to the good status or the good environmental status of waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) to significant inefficiencies in the direct or indirect use of any natural resource at the range of its life cycle which are not remedied by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (art. 27 of the Directive) | | |
| 5. Pollution prevention and control to air, water or land | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the direct and indirect primary effects across the life cycle. | Is the measure expected to lead to a significant increase in the emissions of pollutants into air, water or land? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with DNSH for the relevant objective. | The protection to enhance and strengthen biomedical research do not | Is the measure expected to be significantly detrimental to the good condition and resilience of ecosystems, or to threatened or highly conservation status of habitats and species, including those of marine interest? | | |

DNSH assessment

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| Mission | 4 - Health |
| Cluster | 2 - Innovation, research and digitisation of health care |
| Related Measures (Platform or assessment) | 2.3. Development of technical-professional, digital and managerial skills of professionals in healthcare systems |
| Responsibility for reporting and implementation | Prof. Rita Borralh |
| Date | 16/03/2021 |

| | Step 1 | | Step 2 | | |
|---|--|--|--|--------|---|
| | Does the measure have no or an insignificant foreseeable impact on this objective or contribute to support this objective? | Justification if A, B or C has been selected | Questions | Yes/No | Substantive justification if NO has been selected |
| Environmental objectives | | | | | |
| 1. Climate change mitigation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the measure only (production, transport and installation) and the equipment, but does not result in significant greenhouse gas emissions. | Is the measure expected to lead to significant GHG emissions? | | |
| 2. Climate change adaptation | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the measure only (production, transport and installation) and the equipment, but does not result in significant greenhouse gas emissions. | Is the measure expected to lead to an increased adverse impact of the current climate and the expected future climate, on the measure itself or on people, nature or assets? | | |
| 3. The sustainable use and protection of water and marine resources | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the measure only (production, transport and installation) and the equipment, but does not result in significant greenhouse gas emissions. | Is the measure expected to be detrimental: (i) to the good status or the good ecological potential of bodies of water, including surface water and groundwater; or (ii) to the good environmental status of marine waters? | | |
| 4. The circular economy, including waste prevention and recycling | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure will not result in significant inefficiencies in resource or resource waste generation. | Is the measure expected to: (i) limit a significant resource (the greenhouse gas emissions) or waste, with the exception of the incineration of non-recyclable hazardous waste; or (ii) lead to significant inefficiencies in the direct or indirect use of any natural resource at the stage of its life cycle which are not remedied by adequate measures; or (iii) cause significant and long-term harm to the environment in respect to the circular economy (Art. 27 of the Directive)? | | |
| 5. Pollution prevention and control (air, water or land) | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The measure does not result in a significant increase in emissions of greenhouse gases, air pollutants, or noise. | Is the measure expected to lead to a significant increase in the emissions of greenhouse gas or, water or air? | | |
| 6. The protection and restoration of biodiversity and ecosystems | A. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. B. The measure has no or an insignificant foreseeable impact on the environmental objective related to the direct and primary indirect effects of the measure across its life cycle, given its nature, and as such is considered compliant with the DNSH criteria. | The activity supported by the measure has an insignificant foreseeable impact on the environmental objective, taking into account both the measure only (production, transport and installation) and the equipment, but does not result in significant greenhouse gas emissions. | Is the measure expected to be: (i) significantly detrimental to the good condition and resilience of ecosystems; or (ii) detrimental to the conservation status of habitats and species, including those of Union interest? | | |

M6 - State Aid Assessment

Concerning this Mission, in light of the following elements the application of State aid rules can be excluded and therefore there is no need to notify the measure to the Commission for approval prior to its implementation.

Indeed, the players involved in the investments of this Component do not perform economic activities within the meaning of Article 107(1) TFEU.

The major aim of the Mission is to improve both the quality and efficiency of the Italian National Health Service (NHS) service delivery, namely by means of an enhanced digitalization. The relevant beneficiaries are thus public sector operators falling within the scope of the NHS.

In this respect, it is well established that healthcare providers within a national healthcare system pursuing a social objective, underpinned by the principle of solidarity, and which operate under State supervision are considered to carry out non-economic activities. As recalled even by the “Guiding template: Digitalisation of public administration, including healthcare”, public funding granted to digitalise such healthcare providers falls outside the scope of State aid rules, provided the administrations procuring those goods and services only use them in the exercise of the mentioned non-economic activities.

Also, the Commission Notice on the notion of State aid as referred to in Article 107(1) TFEU confirms that in Member States – as it is the case for Italy – public hospitals are an integral part of the NHS and are almost entirely based on the principle of solidarity. Such hospitals or Community Health House and Community Hospital are directly funded from social security contributions and other State resources and provide their services free of charge on the basis of universal coverage. The Union Courts have confirmed that, where such a structure exists, the relevant organisations do not act as undertakings. Moreover, even activities that in themselves could be of an economic nature, are carried out merely for the purpose of providing another non-economic service, are not of an economic nature. An organisation that purchases goods — even in large quantities — for the purpose of offering a non-economic service does not act as an undertaking simply because it is a purchaser in a given market.

In addition, this Component does not properly involve public resources within the meaning of Article 107(1) TFEU since the relevant players are intra-State entities and no transfer of public resources to undertakings or waiver of public revenues in their favour is foreseen.

With reference to Component 2, at the current stage of development, one cannot exclude that for some specific interventions (i.e. mainly research-related activities) other stakeholders will also be involved, including research centers and universities. Also, concerning such bodies, it is highly disputable that they perform economic activities within the meaning of Article 107(1) TFEU since education organised within the national educational system funded and supervised by the State can be considered as a non-economic activity and the Commission considers (see Notice on the notion of State aid) that knowledge transfer activities (licensing, creation of spin-off, or other forms of management of knowledge created by the research organisation or infrastructure) are non-economic where they are conducted either by the research organisation or research infrastructure (including their departments or subsidiaries) or jointly with, or on behalf of other such entities, and all income from those activities is reinvested in the primary activities of the research organisations or infrastructures concerned. In any case, such a possible collaboration will take the form of PPP arrangements and will entail therefore, even considering the presence of an undertaking among the involved players, no advantage under Article 107(1) TFEU. When a transaction is carried out under the same terms and by public bodies and private operators as occurs in public private partnerships, it can

normally be inferred that such a transaction is in line with market conditions (see Notice on the notion of State aid).