



# 2021

## Economic and Financial Document

Annex

Ten years to transform Italy

Strategies for sustainable and resilient  
infrastructure, mobility and logistics

*Ensuring the well-being of people and the  
competitiveness of businesses while  
protecting the environment*



MINISTERO DELL'ECONOMIA E DELLE FINANZE



## **Annex**

### TITLE

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## PREAMBLE

The Infrastructure Annex to the Economic and Financial Document (*Documento di Economia e Finanza*, DEF) illustrates the Italian Government's policies on infrastructure and transport and provides the policy basis on which the Italian Ministry of Sustainable Infrastructures and Mobility (*Ministero delle Infrastrutture e della Mobilità Sostenibili*, MIMS) intends to make choices regarding Italy's infrastructure and mobility policies, also previewing a number of strategic decisions that will be examined in detail in the new General Transport and Logistics Plan (*Piano Generale dei Trasporti e della Logistica*, PGTL). Consistently with what has been done in previous years, the Annex provides the general framework for the planning of transport infrastructures and updates what was approved by the Italian Council of Ministers on 13 November 2015, which was submitted to an environmental and strategic assessment and, according to Art. 216, paragraph 2 of the Italian Code of Public Procurement (Italian Legislative Decree No. 50/2016), represents national planning until the approval of the PGTL.

Pending the drafting of the Multi-Year Planning Document - (*Documento Pluriennale di Pianificazione*, DPP), the document, also taking into account the Operational Plans for each thematic area, identifies the priority infrastructures for the Italy's development, including interventions with regard to the transport and logistics sector whose feasibility planning is deemed worthy of financing, to be implemented in accordance with the defined planning lines. In addition, this document includes all the elements necessary for the fulfilment of 'Enabling Condition 3.2 - Comprehensive transport planning at the appropriate level', which directly affects Italy's ability to benefit from the 2021-2027 European funds and will thus have to be guaranteed in its entirety for the entire 2021-2027 planning period.

The MIMS is also working to achieve an increasingly unified and integrated vision of the planning, financing and implementation of all the infrastructure networks of national interest and other public works within its jurisdiction. At the same time, collaboration with other Ministries that plan, finance and manage networks and works complementary to those of MIMS, such as those in the energy, environment, technology and other sectors, is underway and will be further intensified in the future, so as to allow Parliament to create an overall vision of the work required of Italy's infrastructure.

The document is structured in five sections and an Appendix. The first section sets out the policy lines and planning process followed in order to pursue a more sustainable and resilient infrastructure and mobility system for Italy. The second section contains a brief analysis of the effects of the COVID-19 health crisis on mobility, logistics and the economy, also with a view to identifying the main critical issues for Italy's infrastructure and mobility.

The third section provides a summary of European transport planning, as well as the multimodal mapping of existing transport infrastructure networks, which, together with the European TEN-T networks, constitute the backbone of national and international mobility. This section also describes the methodology adopted to identify the needs and priorities of national planning for infrastructures and mobility, in line with the priorities of the European Commission and the connectivity needs of local communities, with the aim of achieving economic, social and environmental sustainability, maintaining and ensuring safety and security, and developing integrated multimodality in passenger and freight transport. A further criterion followed in this document was the definition and implementation of the methodology for evaluating investments as set out in the '*Guidelines for the assessment of investments in public works*', also with a view to contributing to the achievement of the sustainable development goals of the UN 2030 Agenda and the European Green Deal, while respecting the principle of '*not significantly harming*' the environment. The third section ends with a summary of the resource framework derived from the implementation of the methodology described in terms of priority interventions and programmes for Italy's development, starting with those recently identified in the Italian National Recovery and Resilience Plan (*Piano Nazionale di Ripresa e Resilienza*, NRRP).

The fourth section describes the NRRP in terms of its contents, impacts on the economy and employment, and contribution to the achievement of the sustainable development goals defined in the UN 2030 Agenda.

The fifth section briefly summarises the main Plans in force in Italy that, for various reasons, have an impact on the transport sector and on MIMS policies in general, thereby showing the consistency of the various sector Plans with the general planning framework for sustainable infrastructure and mobility.

The Appendix to the text details the priority interventions and programmes for Italy's development.

## I. GOALS AND STRATEGIES FOR SUSTAINABLE INFRASTRUCTURE, MOBILITY AND LOGISTICS

### I.1 POLICY LINES<sup>1</sup>

The health emergency caused by COVID-19 has been significantly affecting the quality of life, work and social interaction, thereby causing an unprecedented economic and social crisis in the history of republican Italy. In 2020, Italy's GDP contracted by 8.9%, with an average annual loss in terms of employment of 456 thousand (-2%) and very significant social impacts, especially on women and young people.

The crisis has not only affected flows (GDP), but also the economic, natural, human and social capital, namely those elements that affect the well-being of a country and its sustainability and are passed on to future generations. Clearly, impacts have been significant on economic capital (witness the reduction in production capacity, as accelerated by the fall in investment and thus capital accumulation), but also on human and social capital. Although the most visible effects concern the health of national communities and the crisis of the economic system, the pandemic has also highlighted the fragility of our development model, the economic, social and environmental unsustainability of which was clear even before the outbreak of COVID-19.

It is thus necessary to make choices capable of reconciling the need to protect health with that of supporting work as well as economic and production sectors, but also to seize the opportunity to bring about radical transformations in the economic and social model. An innovative vision of development must be adopted which looks to the future to be built for Italy with a view to the '*transformational resilience*' of the socioeconomic system, in line with the approach that influenced the naming of the NRRP financed by *Next Generation EU*.

This change in vision is consistent with the paradigm shift proposed by the United Nations 2030 Agenda, as subscribed to by Italy in 2015, which describes the path to a **development model aimed at the well-being of individuals and society within planetary limits** through concrete, measurable targets to be achieved during this decade, not only in the economic sphere, but also in other key social and environmental areas (ecosystems, inequalities, social services).

In Italy too, awareness is growing of the need for a turnaround in the direction of sustainable development; said turnaround would certainly be strengthened by the new course of European Union policies and the European Commission's guidelines for creating a "*resilient, sustainable, fair Europe*". The actions to be financed by the various European countries under the NRRP are aimed at the following goals:

- contributing to the **environmental transition and the resilience and sustainability of socio-economic systems;**

<sup>1</sup> Excerpt revised from the "*MIMS Policy Guidelines*" of 16 March 2021.

- successfully pursuing the **digital transition**;
- encouraging and supporting **innovation processes**;
- increasing **competitiveness**;
- **reducing social and geographical inequalities**.

Italy's recovery and resilience crucially depend on the country's infrastructure and the efficiency of the network systems that support economic and social activities. Rapid and substantial investments in this field should thus not only have a significant positive effect on employment in the current economic situation, but also help to improve the competitiveness of the economy and the quality of life of people and the environment in which they live and work. Indeed, transforming infrastructures and the transport system in a sustainable way is not only beneficial for the current and future economic system, but is also indispensable for achieving the EU's **greenhouse gas reduction goals by 2030** and **decarbonisation by 2050**, as the transport and construction sectors account for more than half of climate-changing gas emissions, and their impact on soil quality and biodiversity is very significant.

Italy's infrastructures must be adapted to the needs of businesses and citizens, especially taking into account the serious social and geographical inequalities that afflict the country, where the gap between North and South, centres and suburbs, cities and inland and rural areas is unacceptable. On the other hand, extraordinary investments are needed to ensure **the efficiency of infrastructures and the safety of citizens**.

**Technological and material innovation** can enable a qualitative leap forward in the management of infrastructure networks and network systems, not least to accompany the ongoing transformation of the automotive industry and transport in general. The crisis caused by the pandemic has led and will continue to lead to profound changes in the way cities operate and in the behaviour of businesses and individuals, which must be accompanied and guided by a **redefinition of the local transport system**. A significant contribution to sustainable mobility will be provided by actions that, following the 'ASI' paradigm, help to Avoid substitutable journeys, encourage the Shift to more efficient modes of transport and Improve the efficiency and safety of transport systems.

These challenges will simultaneously be addressed in two ways. The first will focus on immediate needs: ensuring the safety and maintenance of existing infrastructures, preventing risks also through the use of innovative technologies; improving the efficiency of current transport systems in order to reduce the risks and negative impacts linked to health emergencies; ensuring the implementation of investments planned with the NRRP and other available national and European funds; carrying out important system and sector-related reforms.

The second will be aimed at directing future choices towards the creation of **more sustainable, resilient infrastructures** (first and foremost with respect to seismic risks and natural disasters) that are capable of reducing existing inequalities and responding to the needs of businesses and people, while respecting the Do No Significant Harm principle, which implies that all planned investments and reforms must not damage the environment, but preserve it for future generations.

In the light of these assumptions, the focus, both in the NRRP and in medium/long-term planning, has been on:

- **the development of integrated transport systems for sustainable long-distance and local mobility**, also with a view to reducing pollution in cities and moving towards decarbonisation. The following elements are fundamental in this regard:
  - **the development of high-speed passenger and freight transport**, especially in the South, and the simultaneous strengthening of regional transport, not least to guarantee a genuine right to mobility for the many commuters who use public transport to get to work every day;
  - **the ecological renewal of land and sea transport fleets**;
  - **the strengthening of intermodality and integrated logistics**, with a specific focus on the modernisation of ports, also with a view to ecological transition;
- **investments in subsidised social housing and quality housing**, as well as in public housing, in line with the objectives of achieving energy efficiency and increasing people's well-being, as set out in the Urban Agenda for Sustainable Development;
- **the strengthening and completion of primary water infrastructures**, not least to prevent the problems arising from the climate crisis and thus increase the adaptation and resilience of supply systems, thereby also reducing water losses.

The following measures will cut across the two lines of action:

- a commitment to **simplify the administrative procedures** governing the various stages involved in the definition, planning and implementation of infrastructures, with a view to speeding up the completion of construction sites without affecting the legality, competitiveness and transparency of the choices made vis-à-vis citizens and businesses;
- the **construction of an integrated, transparent IT system** covering all phases of infrastructure construction and monitoring and the operation of network systems, in order to prevent problems, assess the status of projects and encourage the involvement of civil society in decision-making and implementation processes.

## **I.2 MOVING TOWARDS THE PGTL WITH A VIEW TO SUSTAINABLE DEVELOPMENT**

A modern approach to the planning, programming and design of infrastructure and mobility cannot disregard the concept of *'Process Planning'*, i.e., the identification of the method whereby to feed the decision-making process for the selection of infrastructure and mobility services over time. In this context, it is crucial that infrastructure planning is not only an administrative process, but that it involves the mobilisation of technical expertise and all stakeholders and members of civil society, thereby leading to strategic decisions for Italy's development that ensure full mobility for citizens and goods throughout the country and making Italy a more accessible country for international markets as well.

This approach is grounded in the Italian Code of Public Procurement (Italian Legislative Decree No. 50 of 18 April 2016, as amended and supplemented), which has identified the PGTL and the DPP as the tools for planning and programming (Arts. 200-201) and designing (Art. 23) priority infrastructures and settlements for the country's development. Moreover, the same legislative decree introduced in

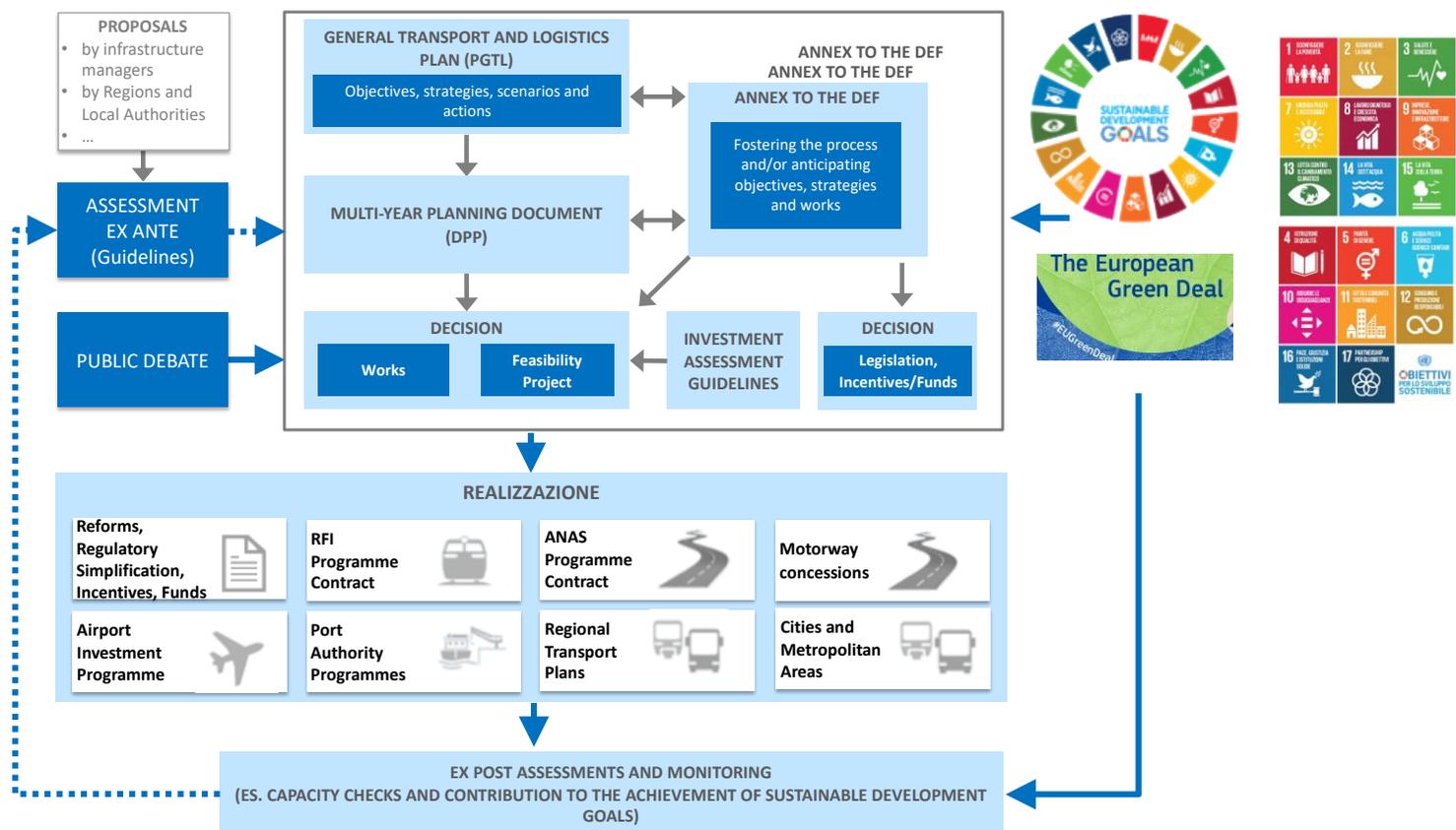
Italy public debate, which is compulsory for 'major works', as a planning tool to achieve the execution of shared works (Art. 22).

From this standpoint, the “*Guidelines for the assessment of investments in public works*” (Italian Legislative Decree 228/2011) drafted in 2017 serve as a methodological tool for introducing methods and techniques aimed at assessing and selecting public works. This tool is also preparatory to the identification of priorities and defines the methodology for the *ex-ante* assessment of infrastructure needs and individual works, as well as the criteria for selecting works to be financed (e.g., in terms of economic impact, project maturity, resources already invested and residual financial needs).

In line with what has been done in recent years, this approach to choosing and carrying out works (Figure I.2.1) builds upon the definition of international objectives and strategies (e.g., **the objectives of the UN 2030 Agenda, the European Green Deal**) that define the medium-long term vision towards which national transport and infrastructure policies should be directed. This vision outlines a unitary framework within which the new PGTL will have to be drawn up; the technical drafting process that has been launched is the first step in a planning process that, starting from a critical analysis of the current context and the main ongoing macroeconomic, social, territorial and environmental trends, will define sustainable objectives to be pursued and identify, through quantitative assessment tools, the strategies and related actions needed to achieve these objectives.

As is well known, transport infrastructures are not the end, but rather the means to ensure the right to mobility for people and goods. It is thus essential that **adequate quantitative assessment tools** are used in the planning process in order to predict the demand for mobility and estimate the level of infrastructure use, as well as the impact of changes in economic, social, territorial and environmental development in an integrated '*transport-territory*' planning vision. In this sense, the PGTL should be seen as an Integrated Plan that providing multi-sectoral indications and acting as a tool for interaction and integration among the various national planning areas. In line with European best practices, the prediction of transport demand and supply scenarios, together with capacity and sustainability checks, will make it possible to identify, at the various geographical scales of analysis, the system's critical points (in terms of infrastructures and services) requiring feasibility projects to be launched in order to identify the best possible solutions enabling the needs that have emerged to be met.

**FIGURE I.2.1: THE PROCESS FOR THE PLANNING, PROGRAMMING AND SUSTAINABLE DESIGN OF TRANSPORT INFRASTRUCTURES - 'PROCESS PLANNING'**



Source: MIMS's Technical Mission Structure (*Struttura tecnica di missione. STM*).

The next activity in the planning process is the drafting of the DPP, i.e., the programming and selection of works in compliance with spending constraints and in line with the defined objectives and strategies, including also the results of the assessment and selection procedure of works to be implemented and designed (feasibility project), as well as the priorities for intervention and the definition of criteria for *ex-post* assessments and monitoring of the interventions undertaken.

The selection and choice of works will take place through the implementation of the **“Guidelines for the assessment of investments in public works”** (Italian Legislative Decree 228/2011) drafted in 2017, which contribute to an effective, consistent, homogeneous assessment of the interventions to be included in the DPP and/or to be implemented, all through a multi-criteria approach. Moreover, the selection of priorities cannot disregard the assessment of their ability to **contribute to the achievement of the Sustainable Development Goals (SDGs)** of the UN 2030 Agenda, to **‘Do No Significant Harm’ (DNSH) to environmental objectives** as set out in the European regulation on taxonomy (EU 2020/852 of 18 June 2020), and, finally, to contribute to the European vision, as expressed in the Commission communication of 9 December 2020 (Sustainable and Smart Mobility Strategy - Putting European Transport on track for the future).

At the same time, by defining the Government's policies on infrastructure and transport on a year-by-year basis, the Infrastructure Annex to the Economic and Financial Document will serve as the planning document that will feed into the entire planning process according to a 'rolling' approach (updates/details in subsequent steps): *i*) anticipating certain decisions pending the drafting and approval of the PGTL and DPP (definition of objectives and strategies; feasibility projects regarding priority works for Italy; implementation and/or completion of priority infrastructures of national interest); *ii*) detailing certain choices/works identified in the PGTL and/or DPP; *iii*) implementing certain choices/works defined in the PGTL and/or DPP. Thus structured, the whole planning process will ensure quality projects that are functional in meeting mobility and accessibility needs, avoid over-design and can be realised within a reasonable timeframe and budget.

As it is structured, the planning decision-making process envisages the possibility of revising (through retroactions) previous choices (project review) according to, say, changed context conditions (e.g., mobility demand, reference infrastructure scenario, macroeconomic trends). The quality of the entire process is also ensured by the constant monitoring of each planning phase, also in order to verify the achievement of the objectives set at international and supranational level.

Starting from these considerations, the Infrastructure Annex to the 2021 DEF, in continuity with what has been produced in recent years and implementing investments and reforms introduced with the NRRP, aims at fostering a rational process for integrated planning of infrastructure and mobility based on reforms, connections (both material and immaterial), safety (maintenance and prevention), equity and sustainability (whether environmental, economic and social).

## II. THE EFFECTS OF THE COVID-19 HEALTH CRISIS

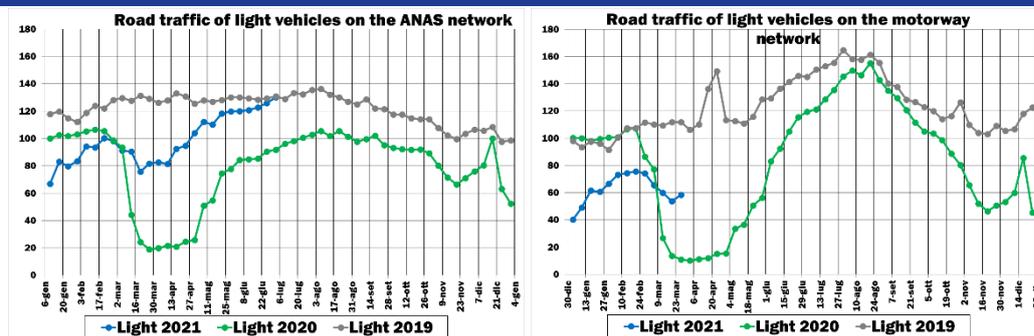
### II.1 ANALYSIS OF MOBILITY TRENDS DURING THE HEALTH EMERGENCY

With reference to the transport and logistics sector, the global spread of COVID-19 has led to a profound sense of criticality and uncertainty for our country, Europe and the entire world, which has radically altered future national and international production, economic and social scenarios, both in the short and long term. In order to better understand, predict and manage the consequences of this pandemic crisis on the transport sector, this section will summarise the evolution and trends in passenger and freight mobility during this emergency period, which must be taken into account in order to better plan, schedule and manage investments in infrastructures and sustainable mobility, starting with those identified in the NRRP (as described in Paragraph IV.1). In particular, the mobility demand trends on the national multimodal network for the year 2019, 2020 and part of 2021 are reported below.

Building upon the analysis carried out on the basis of data provided by Italian multimodal operators and MIMS Directorates-General, it was possible to identify the main impacts that the spread of COVID-19 and the consequent mobility regulation/limitation policies have had on travel demand (passengers and freight) and its modal split. In particular:

- **road traffic of light vehicles** on both the Anas and motorway networks underwent a significant reduction during the first lockdown period (March-April 2020), reaching over 80% (Figure II.1.2); this reduction was only partially reversed during the summer of 2020 (-20% on the Anas network and -10% on the motorway network compared to 2019). The second wave of the virus spread in the autumn of 2020 once again produced negative impacts on road mobility, albeit less marked than those of the first lockdown, with reductions of about 50% compared to 2019, also due to the fewer and different restrictions applied to national mobility (Italian Prime Ministerial Decree of 3 November 2020, known as '*red zones*'). Starting from December 2020, road traffic increased again, thereby reaching in February 2021 about 80% of that of the same period in 2019, only to fall again until mid-April due to the third wave of COVID-19. Starting from April 2021, there was a significant recovery in road traffic, also due to the first effects of the vaccination campaign; in June 2021, traffic on the Anas network was only 10% lower than in the same period of 2019;

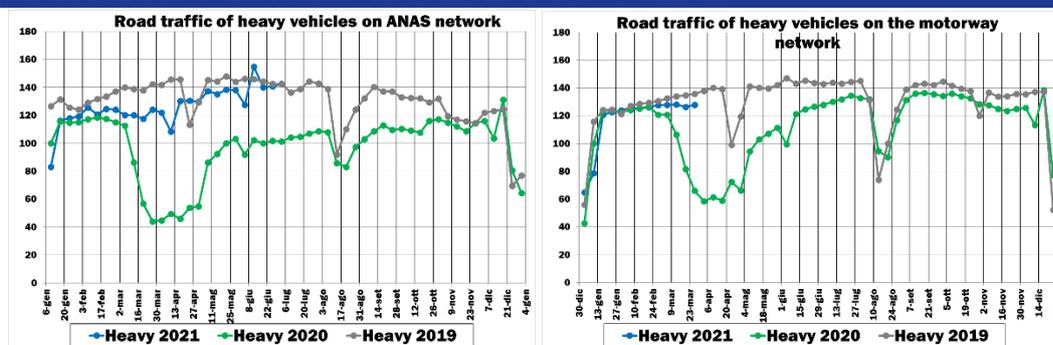
**FIGURE II.1.2: EFFECTS OF THE COVID-19 HEALTH EMERGENCY MEASURES ON LIGHT ROAD TRAFFIC ON THE ANAS AND MOTORWAY NETWORK - JANUARY 2019 TO JUNE 2021**



Source: Observatory on mobility trends during the COVID-19 health emergency - STM on Anas data (2019-21). Base 100 = average weekly value 6-12 January 2020.

- road traffic of heavy vehicles (goods) showed a slightly different trend from that observed for light vehicles, whereby it dropped by up to more than 70% in the March-April 2020 period, recovered most of what had been lost as early as July 2020 (-20% on the Anas network and minus 7% on the motorway network compared to 2019) and was very little affected by the increase in contagions in the autumn period and the corresponding restrictive mobility policies. There was an almost complete recovery in road traffic from November 2020; said recovery was also confirmed in the first half of 2021, with the exception of a slight drop of 15% in freight traffic on the Anas network in March;

**FIGURE II.1.3: EFFECTS OF THE COVID-19 HEALTH EMERGENCY MEASURES ON HEAVY ROAD TRAFFIC ON THE ANAS AND MOTORWAY NETWORK - JANUARY 2019 TO JUNE 2021**

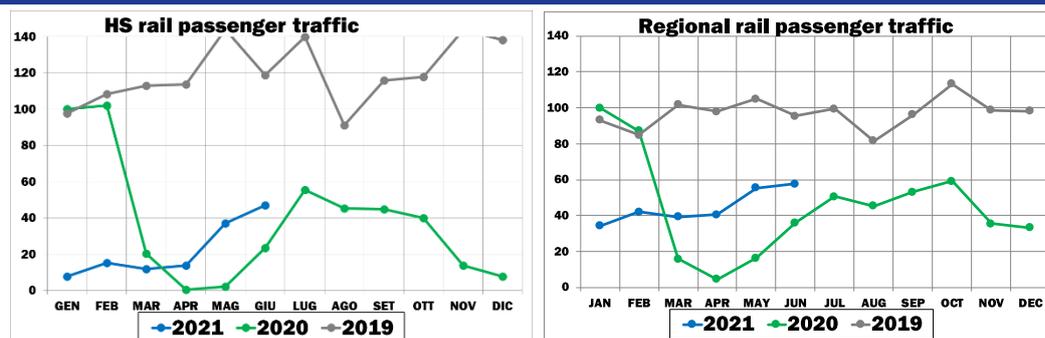


Source: Observatory on mobility trends during the COVID-19 health emergency - STM on Anas data (2019-21). Base 100 = average weekly value 6-12 January 2020.

- rail travel on high-speed (HS) services, and generally medium- and long-distance (e.g. IC/ICN) services, decreased by up to almost 100% in the March-April 2020 period, even as services were reduced by more than 95%. In contrast to road transport, this contraction was marginally reversed in the summer of 2020 (-60% compared to 2019), while a further significant contraction was observed during the second wave of COVID-19 (up to -95%). Only in the last few months has the flow returned to summer 2020 levels, which are still far from pre-COVID-19 traffic levels;

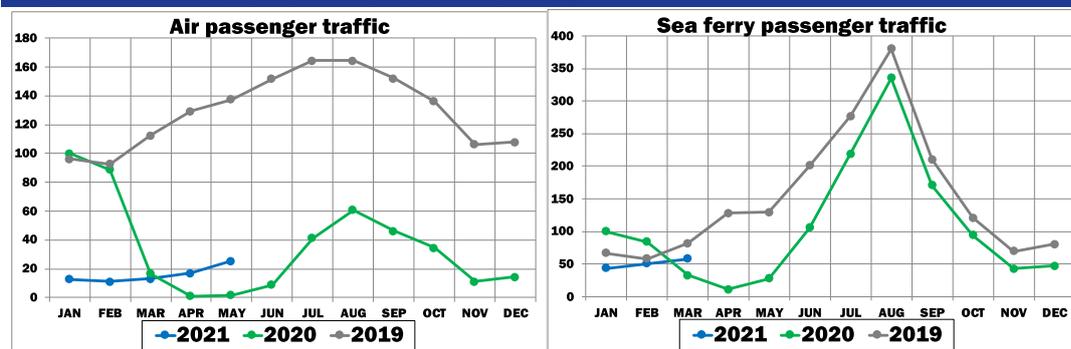
- **regional rail travel** has shown a significantly different trend since the end of the first lockdown from that of HS and medium/long-distance rail services; indeed, in September 2020, regional traffic was only 10% lower than in 2019; however, it fell significantly (-50% compared to 2019) during the second lockdown in autumn 2020, partly due to the reduction in study travel, which partly uses these regional rail services;

**FIGURE II.1.4: EFFECTS OF THE COVID-19 HEALTH EMERGENCY MEASURES ON HS AND REGIONAL RAIL PASSENGER TRAFFIC ON THE ANAS AND MOTORWAY NETWORK - JANUARY 2019 TO JUNE 2021**

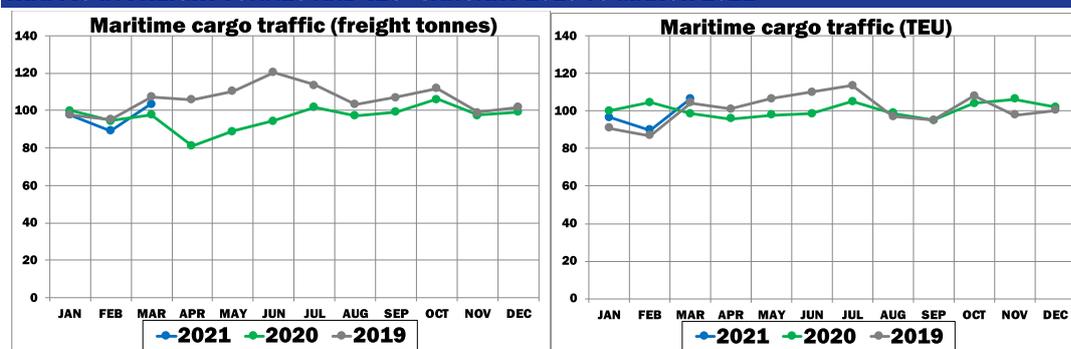


Source: Observatory on mobility trends during the COVID-19 health emergency - STM on Trenitalia and NTV data (2019-21). Base 100 = January 2020 value.

- **travel by air services** underwent a profound reduction in demand (and supply) starting in March 2020, with a low in the April-May period (-99% compared to 2019); it then began to grow timidly, still showing a significant over-60% reduction in August 2020 compared to 2019. Again, the second wave of the virus spread produced a further significant contraction in passenger traffic, up to 90% in November 2020, which has not yet been made up for in the first half of 2021;
- **travel by maritime services** experienced a slightly different reduction in passenger (freight) demand than that observed for land services, with losses of up to 90-100% (10-20%) in the April-May 2020 period; after that, it began to grow, showing a 10-20% (5-10%) reduction in passenger (freight) demand in the summer of 2020 compared to 2019. This gap remained largely constant (or even decreased) until the first half of 2021;
- the fact that rail travel has contracted more than road travel suggests that there may have been an unsustainable modal shift from collective to individual modes of transport (mainly due to a reluctance to modes of transport that do not fully guarantee social distancing), or that there may have been an additional or alternate reduction in the demand for mobility attributable mainly to LPT travel (due to the continuation of telecommuting, distance learning, a reduced need for mobility for the purposes of social interaction), which does not seem to have been reversed as at June 2021.

**FIGURE II.1.5: EFFECTS OF THE COVID-19 HEALTH EMERGENCY MEASURES ON AIR AND SEA FERRY PASSENGER TRAFFIC - JANUARY 2019 TO MARCH 2021**

Source: Observatory on mobility trends during the COVID-19 health emergency - STM on Assaeroporti (2019-21) and Port System Authority (2019-21) data. Base 100 = January 2020 value.

**FIGURE II.1.6: EFFECTS OF THE COVID-19 HEALTH EMERGENCY MEASURES ON MARITIME CARGO TRAFFIC IN FREIGHT TONNES AND TEU - JANUARY 2019 TO MARCH 2021**

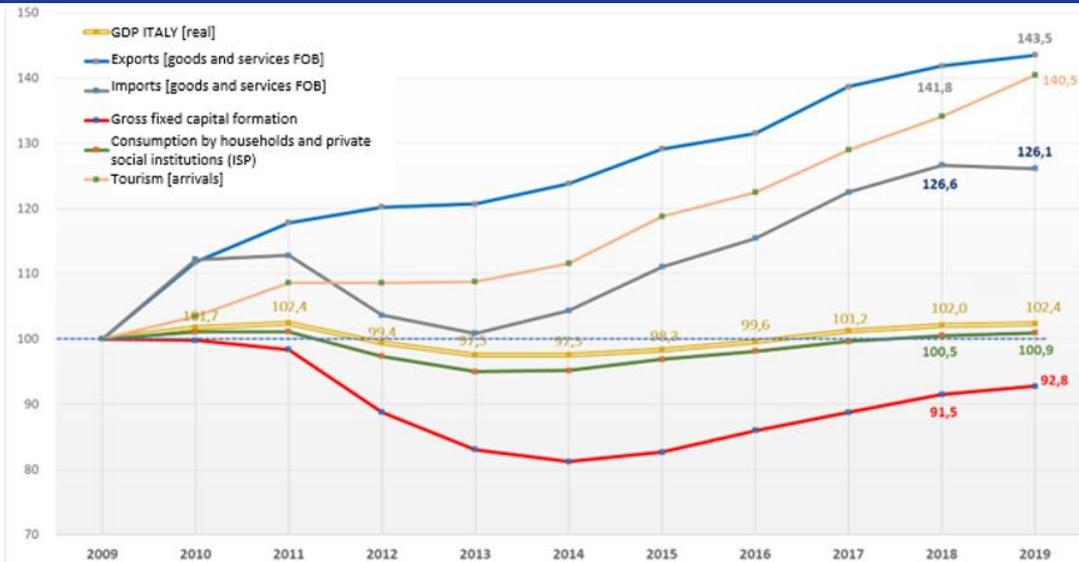
Source: Observatory on mobility trends during the COVID-19 health emergency - STM on Port System Authority data (2019-21). Base 100 = January 2020 value.

## II.2 CRITICALITIES AND OPPORTUNITIES FOR THE FREIGHT AND LOGISTICS SECTOR

The definition of the development direction and of the related needs of the national logistic system cannot disregard some preliminary considerations on the role played by the system itself and its impacts on the national economic and production system. The precise definition of both criticalities and new opportunities for the logistics and freight transport system requires a careful look at the evolution of the relationship between the logistics system and the production system and the specific impacts in terms of sustainability.

### 2009-2019 EVOLUTION AND DECOUPLING

After the 2009 financial crisis, the Italian economic system experienced considerable difficulty in aggregately restoring previous GDP, domestic consumption and investment levels. However, between 2009 and 2019, there was also a change in the country's economic structure, which saw a significant increase in the contribution of exports, as well as international tourism.

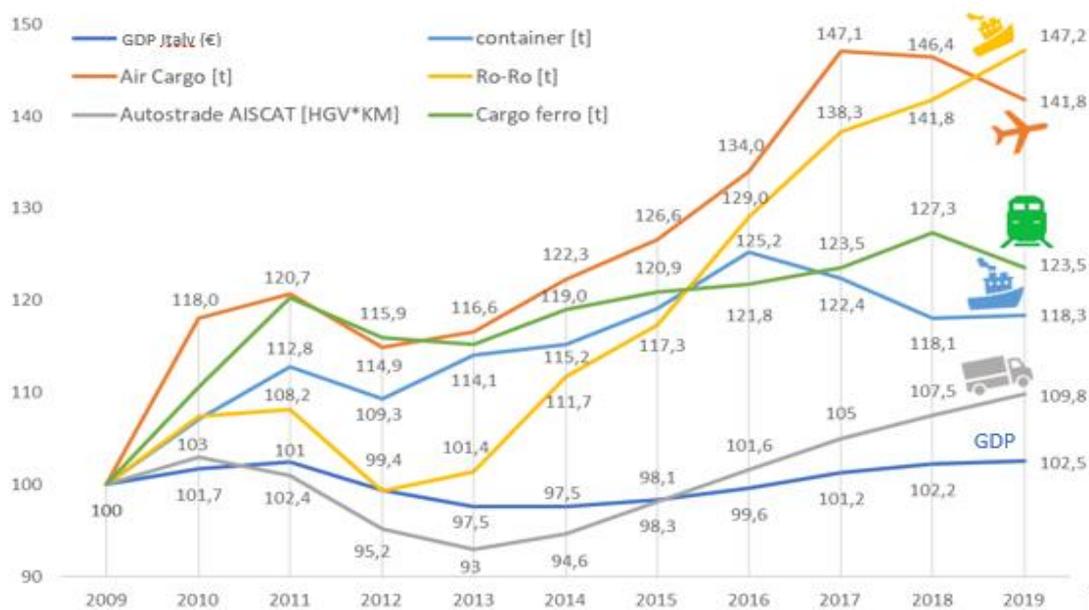
**FIGURE II.2.1: 2009-2019 MACROECONOMIC INDEX EVOLUTION (VALUES IN CONSTANT EUROS, CHAINED WITH 2015 AS THE REFERENCE YEAR AND INDEXED TO 2009=100)**

Source: RAM SpA.

The Italian logistics system played a fundamental role in supporting this development, as can be seen from traffic growth indicators, which in the reference period recorded significant growth that was always decidedly higher than that of the national GDP, thereby recording a marked decoupling.

Another marked trend in the 2009-2019 decade concerns the progressive consolidation of companies in the sector, which, compared to an overall market growth of 27%, dropped by about 22% in number<sup>2</sup>, thereby confirming a trend towards average dimensional growth also shared by other sectors that can certainly be considered far from over. On the other hand, in addition to the dimensional evolution, there has also been a significant evolution in the demand for logistics services, with a sharper growth (+37%) of the so-called Strategic Contract Logistics, i.e., complex and structured services that are often integrated into the client's business, as opposed to 'tactical' demand, such as that connected to the purchase of mere transport or portage services. This trend also seems likely to continue, if not to grow.

<sup>2</sup> Elaborations on data from the Contract Logistics Observatory of the Politecnico di Milano (2020)

**FIGURE II.2.2: 2009-19 GDP AND FREIGHT TRAFFIC TRENDS IN ITALY BY MODE OF TRANSPORT (INDEX VALUES 2009=100, GDP VAR. AT CONSTANT PRICES)**

Source: RAM SpA on ISTAT, ASSOPORTI, AISCAT data.

## IMPACTS OF COVID-19 ON LOGISTICS

With the spread of the pandemic in 2020, the sectors most impacted were precisely those that most influenced the evolution of the economic system over the last decade, with international tourism virtually wiped out for a long time and a net downsizing of international traffic. Nevertheless, the logistics and goods transport sector has rapidly established itself, also in the eye of the public, as a strategic sector not only for the development and growth of Italy, but also for the very survival of supply chains, as it is capable of strongly affecting the ability of the Italian economic and production system to withstand shocks, such as that caused by the pandemic. In other words, if a resilient logistics system is an indispensable prerequisite for the entire country and its economic, social and production system to be resilient, with COVID-19, the perception of this has increased, not only in the production and distribution sectors, but also in civil society. The reduction in contract logistics turnover with regard to the contraction phase of 2020 is estimated at around 9%, in line with the fall in GDP, which shows a favourable asymmetry with respect to the decoupling recorded in the previous phase.

It is also interesting to note that one of the least impacted modes is rail freight, which, at the end of 2020, recorded a decrease in terms of train-kilometres of just 3% compared to the previous year, while unconsolidated data for the January-May 2021 period shows even a 25% increase compared to the same period in 2020 and, above all, a 10% increase compared to the same period in 2019. Compared to pre-

COVID trends, there has been a sharp slowdown in M&A activity in the sector<sup>3</sup>, but, as mentioned above, there is considerable convergence among experts and operators in the sector in considering this phenomenon as mainly related to transient factors linked to the strong restrictions imposed during the first lockdown. Finally, it should be noted that the logistics real estate sector has not substantially suffered any setbacks, probably also thanks to the driving force behind the demand for new functional spaces for the management of flows linked to e-commerce, which, as is well known, ‘exploded’ during the pandemic.

## THE RELEVANCE OF LOGISTICS IN ECONOMIC, SOCIAL AND ENVIRONMENTAL TERMS

As mentioned above, another important element for defining the criticalities and opportunities of the sector emerges when considering the relevance of logistics in terms of sustainability. In particular, one cannot ignore the specific role played in this field by logistics and freight transport with respect to all three dimensions with which the concept of sustainability is usually defined, i.e., the economic, social and environmental dimensions. Indeed, in economic terms, this sector not only involves more than 89,000 companies in Italy and a turnover of EUR 85 billion<sup>4</sup>, but is also crucial in supporting the growth of the production system as a whole and its export capacity.

On the other hand, social relevance goes well beyond the very significant number of employees - namely 7% of the total -, both because the number of fatal accidents involving Transport and Warehousing employees (15%) is more than double the weight of the sector, and because, as mentioned, its performance does not only affect the development of exports, but also the very survival of Italy. Therefore, compared to other sectors, the logistics and freight transport sector is characterised by a considerable external impact on the sector itself, also in terms of safety. Consider, for example, that of the 3,310 fatalities involved in HGV collisions in the EU in 2018, over three quarters were private road users and over a quarter belonged to the so-called vulnerable categories (pedestrians, cyclists and motorcyclists)<sup>5</sup>

In environmental terms, too, the sector's impact is generally greater than its 'numerical' significance: 26% of carbon emissions from road transport are due to heavy commercial traffic, compared with 5% of the total road vehicle fleet<sup>6</sup>. In this context, the transport macro-sector as a whole saw its relative weight in terms of CO2 emissions gradually increase from 19% in 1990 to 24% in 2018<sup>7</sup>; this trend is likely to continue in the future. According to the best estimates, in the so-called 'current ambition scenario', i.e., the scenario in which the current global decarbonisation targets are to be met, the share of freight transport in total transport CO2 emissions will rise from 36% in 2015 to 50% in 2050<sup>8</sup>.

<sup>3</sup> Change in number of M&A transactions compared to the average of the last 5 years: -45% (based on Contract Logistics Observatory data, 2020)

<sup>4</sup> Source: Contract Logistics Observatory, 2020

<sup>5</sup> Source: European Transport Safety Council, 2020

<sup>6</sup> Source: Smart Freight C., 2019

<sup>7</sup> Elaborations on "Italian GHG Inventory 1990-2018" data, ISPRA 2020

<sup>8</sup> Source: ITF Transport Outlook, 2019

## ONGOING STRUCTURAL CHANGES

When defining the risks, but also the opportunities for the future positioning of the Italian logistics system, a number of relevant changes must be taken into account, which are likely to have a great impact on several elements of the national logistics system:

- **structural changes in demand;** the growth of e-commerce has accelerated considerably during the pandemic. However, this process has already been underway for some years and was already characterised by strong growth. Nevertheless, this change is not limited to the replacement of one sales channel by another, but implies an ongoing change in consumer behaviour, with major implications for the logistics sector and the use of urban and suburban spaces. In a nutshell, and for the sake of simplification, the main effect can be summarised as a decrease in demand for sales areas and an increase in demand for both logistics areas and related logistics activities;
- **structural changes in the labour market;** the speed with which digitisation, new business models and services are coming to the fore is just as rapidly impacting on the labour market, both in terms of new professional and operational figures in the sector (e.g., riders) and in terms of performance levels required. All this can lead to imbalances, especially insofar as the new cases risk not being adequately covered or reflected in existing rules and contracts;
- **technological structural changes;** vehicle automation and connectivity are progressing rapidly: Advanced Driver Assistance Systems (ADAS) are now commonplace, and the research on fully self-driving vehicles shows that their use on the road will be a reality in the next few years, with possible major impacts on mobility, the environment and competitiveness among companies and different modal services. What is certainly expected is a general increase in safety levels<sup>9</sup>. In addition to this, the development of digitisation, Big Data Analysis, Artificial Intelligence, and the ability of seamlessly connecting and linking vehicles, infrastructures, and users, paves the way not only for new services and business models, but also for the possibility of optimising flows and rationalising the use of vehicles and assets in general. Similarly, new technologies designed to tap into renewable energies and/or alternative fuels and/or the development of Zero or Low Emission vehicles offer continuous improvements and the possibility of pursuing environmental and economic sustainability by renewing vehicle fleets;
- **structural changes dictated by European policies;** important innovations are just around the corner in Europe, which on the one hand impose constraints, but on the other offer important opportunities for recovery and competitiveness to those who will be the first to be able to manage them by

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<sup>9</sup> According to a study by the University of Michigan Transportation Research Institute, 2015 - the adoption of several ADAS systems as part of an extensive trial led to a reduction in collisions ranging from 9 to 19% and a reduction in related costs of 12 to 20%; recent studies by the Caracciolo Foundation based on data from insurance black boxes on vehicles circulating in Italy have shown a steady increase in the safety of newer vehicles and, in the case of a specific ADAS (emergency braking), a 45% reduction in rear-end collisions and a 35% reduction in accidents in general. Even the first experimental data on self-driving vehicles published by Waymo and Tesla also seem to show a decrease in serious accidents.

exploiting their potential for innovation (revision of Ten-T networks, Next Generation EU, EU Reg. 1056/2020 on the digitisation of goods transport information, to be implemented by 2024). In this sense, the NRRP is the first fundamental step for the Italian logistics system to accelerate the progress already made towards overcoming certain historical criticalities and, at the same time, to make a decisive leap forward in exploiting the opportunities connected to the structural changes that are in any case underway.

## AN OVERVIEW OF THE ITALIAN LOGISTICS SYSTEM

In functional terms, the Italian logistics system is based on a backbone structure consisting of:

- **the port system**, which acts as the main interface between the national economic and production system and global markets, in addition to providing an important link between the Mediterranean and Italy through an important network of cabotage connections, particularly for the larger islands;
- **the freight railway system**, which, in line with the standards of the European Freight Train (*Treno Europeo Merci*, TEM) and by means of an adequate network of freight villages, railway stations and intermodal terminals, performs a connection function of primary importance for the Italian economic production system. Above all, it serves the connection with continental markets (on which most import-export traffic continues to gravitate) and the connection with ports, with the twofold aim of extending the catchment area and making the traffic converging there, which often merges with that in the urban centres of port cities, more sustainable. Last but not least, the freight railway system must efficiently serve national connections over medium and long distances, especially to and from the south, thereby helping to rebalance the modal split;
- **road transport**, which is able to serve the national production system in a capillary, safe, efficient manner, thanks to adequate road infrastructure and services, with a view to intermodality and co-modality;
- **a system of infrastructures and services dedicated to Air Cargo**, which can serve flows that are marginal in terms of volume but significant in terms of value, with particular regard to certain product niches for export to non-European markets;
- **a (limited) inland waterway system** supporting specific traffic and services and locally contributing to modal rebalancing and road safety.

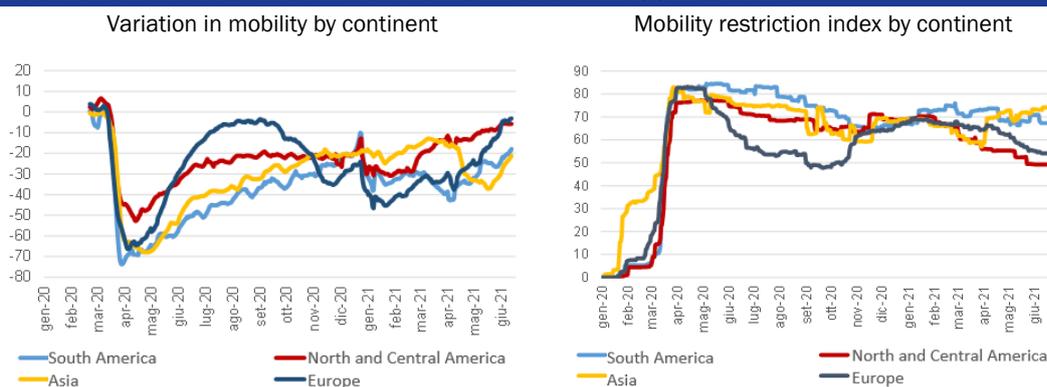
The full development of the national logistics system must be based on an overall vision encompassing and combining in a unitary and coordinated manner the abovementioned functional features of the system, with due regard for sustainability and within the framework of the ongoing structural changes. In this sense, as will be seen in Paragraph IV.1, the NRRP's focus on digitisation, green transition, ports, railway intermodality and road safety supports and encourages the achievement of this overall vision.

## II.3 MACROECONOMIC SCENARIOS AND DEF FORECASTS

The COVID-19 pandemic has taken a very high human, social and economic toll. According to the most recent WHO figures, since the first cases in China in December 2019, there have been around 200 million COVID-19 infections worldwide, with more than 4 million deaths<sup>10</sup>. The contraction in economic activity has been the sharpest since the Second World War. World GDP, according to IMF estimates, fell by 3.3%; international trade, partly as a result of restrictions on the mobility of goods and people, shrank by 8.9%.

Although the pandemic has affected the entire global economy, the effects have manifested themselves to different degrees in different geographical areas, thereby reflecting the severity of the pandemic at the local level and the measures adopted to counter it. In particular, although restrictions on mobility have been adopted by most countries, the intensity of these measures and their evolution over time have been heterogeneous (Figure II.3.1). Tax policies, although generally expansionary, have also been varied across countries, partly as a function of the different starting conditions of public finances.

**FIGURE II.3.1 : DATA ON MOBILITY AND RESTRICTION MEASURES TAKEN**



Mobility (left figure) is calculated as the percentage change in the number of visits to shops, restaurants, bars, shopping centres, museums, libraries, cinemas and theme parks, compared to the 3 January-6 February 2020 reference period. Changes in mobility have been calculated as a seven-day moving average to account for different mobility patterns between days of the week. The data for each continent consists of population-weighted averages of the individual country data and is taken from Google mobility reports. Mobility restrictions (right figure) are represented using the indicator proposed in T. Hale et al., A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker), *Nature Human Behavior*, 8 March 2021. Level 100 (0) identifies the maximum (minimum) degree of restrictiveness of containment policies.

In Italy, GDP has contracted by 8.9%. The effects of the pandemic have been reflected in levels of economic activity through various channels: foreign demand has made a negative contribution, both in terms of exports of goods and services and in terms of tourist inflows<sup>11</sup>. However, the largest contribution to the fall in GDP has come from domestic demand: household spending and investment has fallen by more than 10% and 9% respectively. Repeated containment measures, fears

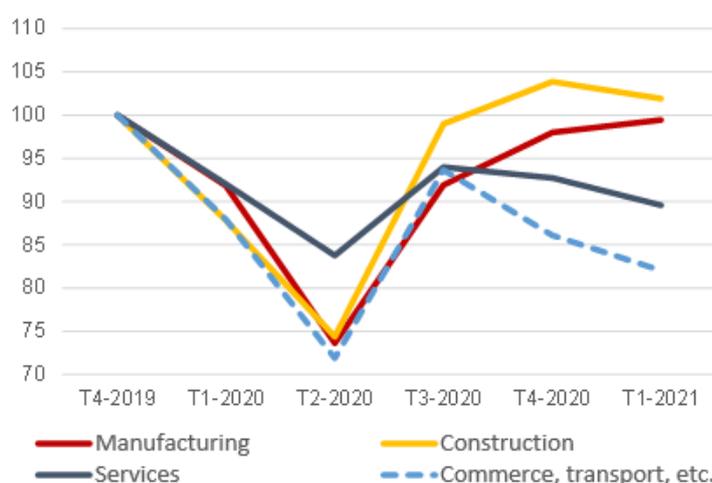
<sup>10</sup> WHO data as at July 2021.

<sup>11</sup> According to the Bank of Italy, the number of foreign tourists in Italy has fallen by 60%, with a significant contraction in the relevant receipts (from EUR 44 billion to EUR 17 billion).

of contagion and high uncertainty have had a negative impact on household consumption and business investment decisions.

The impact of the pandemic has been heterogeneous across economic activity sectors. Constraints on mobility have hit the service sector hardest, particularly tourism and transport (Figure II.3.2). In contrast, the initial decline in activity in construction and manufacturing has been followed by a more rapid recovery. In the latter two sectors in particular, added value has already returned to levels comparable to those recorded before the outbreak of the pandemic. The available qualitative indicators on business confidence and expectations show that, since March, the economic situation has improved and strengthened in the course of the spring.

**FIGURE II.3.2: ADDED VALUE BY SECTOR (2019-2021)**



The lines show the value added by branch of economic activity (chained values with 2015 as reference year), given a value of 100 in the fourth quarter of 2019 (the last quarter before the pandemic emergency). Source: Istat, national accounts

## THE IMPACT OF THE CRISIS ON BUSINESSES

The impact of the pandemic has also been heterogeneous among businesses and has affected not only their activity levels and operations but, potentially, their strategies and growth paths. In this context, the assessment of the effects of the pandemic on businesses in the sectors of activity that fall directly within the scope of the MIMS intervention (construction, transport, technical studies) appears useful for evaluating the resilience of these fundamental sectors of the Italian productive apparatus, the degree of disruption generated by the pandemic on their development paths and the demand for support and recovery policies.

The conditions and prospects of businesses based in Italy during the health and economic crisis caused by COVID-19 have been measured by official statistics both through the short-term indicators currently produced and through survey initiatives explicitly aimed at measuring the impact of the crisis and the reaction strategies implemented by businesses. In particular, the special survey “*State and prospects of businesses in the COVID-19 health emergency*” carried out by ISTAT between 23 October and 16 November 2020 with the aim of collecting assessments directly from businesses on the effects of the health emergency and the economic crisis on their

activities is worthy of note<sup>12</sup>. The wealth of information provided by the data collected makes it possible to take a closer look at the situation and prospects of the abovementioned sectors of activity, thereby highlighting their specific features and positioning in the context of the crisis<sup>13</sup>.

Businesses with at least three employees working in the construction, transport and technical studies sectors number 158,000 (15.5% of the total) and employ 1.8 million people (14.7%). 32% of employment in these sectors is concentrated among micro enterprises (with 3-9 employees), 28.7% in small enterprises, 16.1% in medium-sized enterprises and 23.2% in large enterprises. This is therefore a segment of great economic and employment importance, as well as of strategic importance, for Italy, with smaller businesses accounting for a higher proportion than the overall average.

A first point of interest is the assessment of the segments of companies that do not expect negative effects of the crisis on their business in the first six months of 2021. Compared to their 16% incidence in the average of the other sectors of activity, the enterprises in the sectors that fall within the MIMS sphere of activity show a significantly higher incidence (25.5% for construction, 23.1% for technical studies, 21.3% for transport), thereby **highlighting a greater extension of the segments of businesses whose productive scenario is not disrupted by the crisis** (Table II.3.1).

At the same time, in the three sectors considered, the incidence of businesses with serious operational risks in the short term appears to be lower than in the other sectors (26% compared to 33.5%), but their weight in employment (21%, corresponding to just under 400,000 employees) is identical to that observed for the other sectors. The incidence of businesses at risk is similar in the three sectors considered here, with a slightly higher level for the construction sector. There is also a high incidence of serious liquidity risks, which affect around 30% of the businesses in the three sectors, with a higher incidence in construction (33.4%).

Within the segment of businesses that consider their activity exposed to serious operational risks, a portion of them report the coexistence of significant crisis factors: decrease in turnover observed between June and October 2020 compared to the same period in 2019; an expected reduction in turnover in the December 2020-February 2021 period; an expected serious liquidity crisis in the first half of 2021. Overall, about 15% of businesses (152 thousand, with over 1.2 million employees) present a particularly severe form of this characterisation. As to businesses operating in the construction, transport and related activities sectors, the incidence of highly vulnerable businesses is lower (11%, 17 thousand businesses), but their employment weight is only slightly lower than the average, involving around 165 thousand employees. However, a high incidence of businesses with a highly critical outlook emerges in the maritime and air transport sectors.

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<sup>12</sup> The field of observation of the sample survey, which involved approximately 40,000 businesses, comprises all industrial and service businesses with at least three employees. These businesses account for just over one million units, corresponding to 24.0% of Italian businesses, but produce 84.4% of the national added value, employ 76.7% of the workforce (12.7 million) and 91.3% of the employees, making up a fundamental segment of our production system.

<sup>13</sup> The data presented is based on original elaborations carried out on individual survey data, acquired by the MIMS Statistics Office in the context of the opportunities offered by the Italian National Statistical System.

In terms of activity levels, more than half of all businesses in the three sectors surveyed reported a drop in turnover of more than 10% in December 2020-February 2021 compared to a year earlier, with the highest figures being recorded for transport (56.9%), followed by construction (54.2%) and technical studies (48.9%). These drops, although very significant, affect lower shares of businesses than those in the other sectors of the economy (62.3% on average). In the final months of 2020, the proportion of businesses with large decreases in turnover decreased for construction and transport, while it increased for technical studies.

**TABLE II.3.1: EFFECT OF THE COVID-19 CRISIS AND REACTION OF BUSINESSES BY SECTOR OF ECONOMIC ACTIVITY. BUSINESSES WITH AT LEAST 3 EMPLOYEES**

	Construction	Transport	Technical services	Other sectors
<b>Some of the effects and reactions in 2020 (% businesses)</b>				
Drop in turnover higher than 10% (June-October 2020)	54.22	56.99	48.99	62.3
Drop in turnover higher than 10% (December 2020-February 2021)	45	52.6	53.3	61.2
Loans backed by public guarantees requested in 2020	65.7	62	77.2	61.7
% of workers telecommuting in September-October 2020	4.3	14.2	32.5	13.7
% of workers telecommuting in November-December 2020	4.6	15	33.3	15
% of workers telecommuting in January-March 2021	4.3	14.2	32.5	13.7
<b>Some of the effects and reactions expected in the first six months of 2021 (% businesses)</b>				
No negative effect/increase in activity level	25.5	21.3	23.1	16
Serious operational and business sustainability risks	26.3	25.8	24.6	33.5
Serious liquidity risks	33.4	28.9	28.6	34.5
Existence of a number of severe crisis conditions	10.7	11.5	10.8	15.6
Substantial reduction of employees	8.1	9.1	3.9	10.5
Introduction of new products/processes	2.3	2.2	2.7	4.4
Search for new industrial and business models based on innovative technologies	3.4	2.7	6.2	3.6
Acceleration of digital transition	2.7	4	7.9	7.1
Reorganisation of processes and workspaces	6.9	7.6	8.9	14.4
Modification/expansion of sales channels/supply or delivery methods	3.9	4.4	3.9	13.7
Increase of existing relationships or creation of partnerships with national businesses	8.4	11.5	25.5	7

Source: elaborations on ISTAT data from the Survey on the State and Prospects of Businesses in the COVID-19 Health Emergency (November 2020)

## REACTION STRATEGIES

A first major aspect concerns the demand for loans backed by public guarantees, which has involved construction businesses, transport businesses and technical studies to a greater extent than other businesses, with a particularly high incidence (77.2%) for technical studies.

A peculiar aspect of the reaction to the crisis is the use of **telecommuting**. By dividing the September 2020-March 2021 period into three sub-periods, it is possible to assess the extent and evolution of the use of telecommuting during the crisis. This appears to be significantly different for the three sectors considered, and is clearly affected by deep structural differences among sectors. In the three phases considered, the use of telecommuting involved, on average, more than 4% of workers in construction, just under 15% in transport and around 30% in technical studies, with no particular changes between the autumn of 2020 and the early months of 2021.

A critical aspect can be seen in the **not insignificant proportion of businesses that expect substantial reductions in the number of employees**: this prospect involves a lower proportion of businesses in the three sectors as a whole than in the other sectors (10.5%), but it is equal to 9.1% for transport businesses and 8.1% for construction businesses, while it is much lower (3.9%) for technical studies, which show a greater focus on maintaining in-house skills.

In general, the data shows a **low prevalence of proactive, change-oriented behaviour**, which in the three sectors considered is on average less frequent than in the rest of the economic sectors. In this context, significant relative frequencies concern the increase in existing relationships or the creation of partnerships with other businesses, whether domestic or foreign, which involves more than a quarter of technical studies and 11.5% of transport businesses, as well as the reorganisation of work processes and spaces (on average, more than 7% of businesses in the three sectors).

Finally, with reference to **the measures that businesses consider to be very or fairly important** for the implementation of the business's strategic orientations up to June 2021, the deferment of tax obligations (Table II.3.2) is clearly predominant, as reported by more than two-thirds of businesses in the three sectors, especially those in the construction sector.

**TABLE II.3.2: DEGREE OF IMPORTANCE OF RECENT MEASURES FOR THE IMPLEMENTATION OF BUSINESS STRATEGIES IN THE FIRST HALF OF 2021. PERCENTAGE OF BUSINESSES THAT RATED THE MEASURE AS FAIRLY OR VERY IMPORTANT. BUSINESSES WITH AT LEAST 3 EMPLOYEES**

	Construction	Transport	Technical services	Other sectors
Deferment of tax obligations	69.8	66.8	57.1	67.5
Strengthening of refresher courses for the workforce	33.3	28.5	42.5	27
Strengthening of links with training institutions	32.7	26.9	33.1	25.5
Support for technological and digital transformation	13.1	23.7	36.2	23.6
Strengthening of the measures of the Transition 4.0 Plan	14.5	17.3	24.6	15.4
Three-year extension of the measures of the Transition 4.0 Plan	13.8	16.6	11.4	15.3
Access to knowledge, technologies, prototypes and services developed	10.7	10.8	18.1	13
Transfer of tax credits on investments	35.4	27.5	22.8	25
Strengthening access to credit (e.g. Guarantee Fund)	60.3	58.2	58.1	55.1
Strengthening of capitalisation	39	40.8	42.6	35.1
Strengthening of the presence of external consultancy structures	26.9	22.3	18	21.3

Source: elaborations on ISTAT data of the Survey on the State and Prospects of Businesses in the COVID-19 Health Emergency (November 2000)

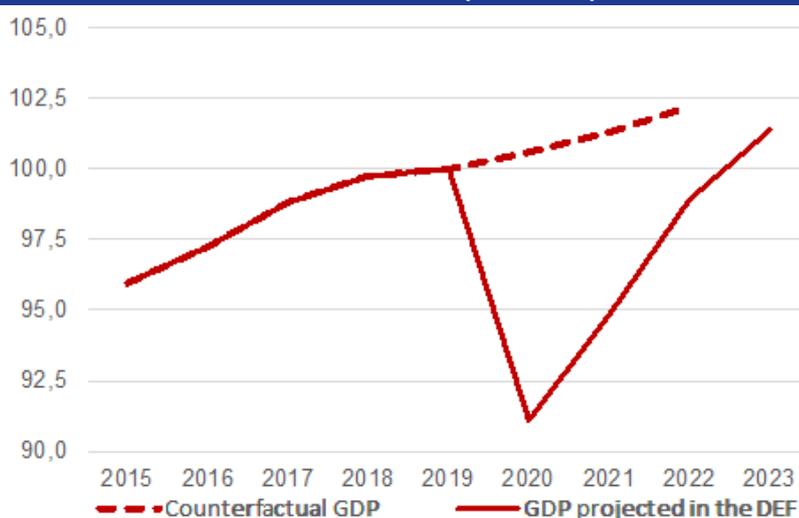
Next is the strengthening of access to credit, which is mentioned by about 6 out of 10 businesses, the strengthening of capitalisation (about 40%) and the transfer of tax credits on investments (about 30%).

This is followed by three themes linked to the quality of human capital and the skills used (strengthening of refresher courses for the workforce, links with training institutions, strengthening of the presence of external consultancy structures). Then, there are three aspects related to digital transition: support for technological and digital transformation, which involves more than a third of technical services businesses, the strengthening of the measures of the Transition 4.0 Plan and their three-year extension.

## FORECAST SCENARIOS

The available forecast scenarios point to a V-shaped recovery for the economy as a whole, with a strong rebound in GDP this and next year capable of relatively quickly absorbing the sharp contraction in output recorded in 2020 (Figure II.3.3). According to DEF estimates, GDP is expected to grow by 4.1% and at sustained rates also in the following years. If these forecast scenarios are confirmed, the level of economic activity in 2023 would be higher than in 2019 and close to what it would probably have been in the absence of the pandemic<sup>14</sup>. More recent data indicates even more favourable growth prospects, especially in the current year.

**FIGURE II.3.3: GDP TRENDS AND FORECASTS IN ITALY (2015-2023)**

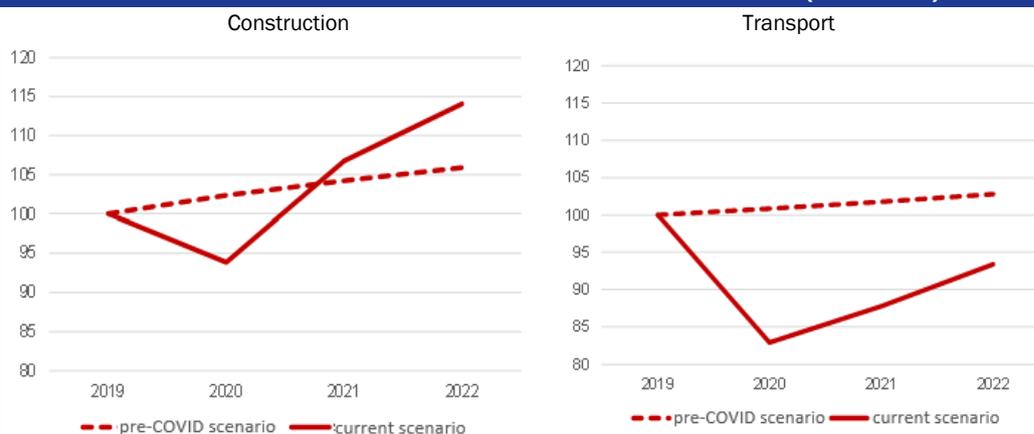


The figure shows the evolution of GDP by comparing the counterfactual scenario (the one that would have occurred if GDP had grown at the rates projected in the DEF before the pandemic) and the one actually achieved in 2020 and projected in the DEF for 2021-2023.

However, the forecast scenarios also show significant heterogeneity at sector level (Figure II.3.4). Comparing Prometeia's June 2021 forecasts on the evolution of deflated turnover in the two sectors, a strong rebound in activity levels emerges in the construction sector, which would reach historically high levels and be higher than those estimated in the counterfactual scenario that would likely have occurred in the absence of the pandemic<sup>15</sup>. As to transport, on the other hand, despite the recovery of activity levels in 2021 and 2022, turnovers would remain significantly lower both than in 2019 and (to a greater extent) than in the counterfactual scenario.

<sup>14</sup> The most recent estimates produced by Istat have revised forecasts for GDP growth upwards (4.7% and 4.4% in 2021 and 2022 respectively).

<sup>15</sup> The favourable economic situation of the construction sector is also confirmed by Confindustria estimates, which indicate an increase in added value of 9.3% in 2021 and 5.4% in 2022. Public demand is contributing to the positive expansion of the sector. According to ANCE, investments in construction are expected to increase by 8.6% in 2021, 7.7% being in the non-residential public sector component.

**FIGURE II.3.4: TURNOVER FORECASTS BY SECTOR OF ECONOMIC ACTIVITY (2019-2022)**

The figures show the evolution of deflated turnovers, with the 2019 figure being 100, according to Prometeia – Microsector Analysis, as at November 2019 (pre-COVID scenario) and June 2021 (current scenario).

Beyond cyclical dynamics, **the pandemic could have more structural effects.** First of all, thanks to the *Next Generation EU* (NGEU) programme, Italy and the other EU countries will be involved in significant investments for the strengthening of infrastructural capital, which will provide a strong demand stimulus for businesses in the construction sector in the short term and will influence the growth potential of the economy and the competitiveness of the regions in the medium and long term. At a more microeconomic level, there could be significant effects on the geographical relocation of businesses and the redefinition of production chains and outlet markets.

Secondly, the pandemic, as highlighted in Paragraph II.1, could lead to structural effects on the volumes, modal split and geography of the movement of goods and people. For instance, with regard to goods, the post-COVID-19 economy could be characterised by a reorganisation of global value chains. Some businesses may change their networks of suppliers and buyers in order to reduce the risk of supply disruptions. In other sectors, also in the light of geopolitical tensions and protectionist tendencies that have emerged in recent years, industrial policies could be pursued to redefine production chains in certain sectors considered as strategic. Finally, changes could concern not only the production process, but also the distribution of goods. The pandemic emergency has accelerated phenomena that were already underway, such as online shopping.

With reference to people, the most important structural change is that relating to telecommuting; although its use has grown strongly during the pandemic, it could remain significant even when the health emergency is over, both because of preferences in this direction on the demand side and because of a potential reorganisation of workplaces and working methods on the supply side. This phenomenon would concern professions whose activities can be carried out from remote and are mainly concentrated in services and in more densely populated areas. Therefore, a permanent use of telecommuting would produce a lower demand for mobility, with specific effects on local public transport. However, significant changes could also concern the geography of mobility. Indeed, preliminary evidence indicates a greater preference in housing demand for larger

housing solutions equipped with outdoor spaces and located in areas with lower population density.

On the basis of these considerations, in the next few years, the Italian planning of sustainable infrastructures and mobility will have to manage and in some cases avert these possible structural effects on mobility, the economy and businesses. The first example is certainly the NRRP recently approved by the European Commission and described in Chapter IV, which envisages investments and above all reforms aimed at relaunching Italy's welfare and economy according to a sustainable development approach.

### **III. EUROPEAN AND ITALIAN PLANNING FOR INFRASTRUCTURES AND THE MULTIMODAL TRANSPORT NETWORK**

#### **III.1 INTERNATIONAL SCENARIOS AND EUROPEAN TRANSPORT POLICY**

##### **THE EUROPEAN DIMENSION OF TRANSPORT INFRASTRUCTURE**

The European transport infrastructure policy is focused on long-term planning for the pursuit of a Single European Transport Area, within which ambitious targets for safety, decarbonisation, digitisation and sustainability are to be achieved. To this end, the European Commission has drawn up, in full agreement with the Member States, a strategy aimed at encouraging a modal shift towards more sustainable modes of transport (maritime transport and rail transport), including through the use of innovative technologies (ITS and C-ITS) for managing traffic flows, and is pursuing the reduction of infrastructure gaps among Member States, the improvement of interconnections between national networks and between modes as well as network interoperability levels, and the resolution of interference among urban, regional and medium/long-distance rail traffic flows.

The TEN-T policy is thus a key element in promoting the free movement of goods, services and citizens throughout the European Union, and strengthening economic, social and territorial cohesion among all Member States and their regions, as well as outside the EU. In this context, the Treaty on the Functioning of the European Union (TFEU) dedicates three articles (Articles 170-172) to this issue in Title XVI (entitled '*Trans-European Networks*'); in particular, Article 171, together with Article 172, constitutes the specific legal basis for the adoption of the TEN measures that underlie the adoption by the European Parliament and the Council of two Regulations, i.e., No. 1315 and No. 1316 of 11 December 2013, which aim at planning and developing trans-European transport networks articulated and developed on a '*dual-layer construction*', i.e., on an extended network that includes the infrastructures to be realised by 2050 (Comprehensive network) and a core network that includes all the strategic sections in Italy and aims at connecting the centre of Europe, whose realisation is expected by 2030.

The network is made up of a set of linear (rail, road and river) and punctual (urban nodes, ports, interports and airports) infrastructures that are considered '*relevant*' at a Community level. The definition of the unitary design of transport infrastructure networks and their implementation have found in the Core Network Corridors a further instrument for the coordinated implementation of the TEN-T network by focusing on the following aspects: modal integration, interoperability and coordinated development of cross-border infrastructures.

FIGURE III.1.1: TEN-T NETWORKS IN ITALY

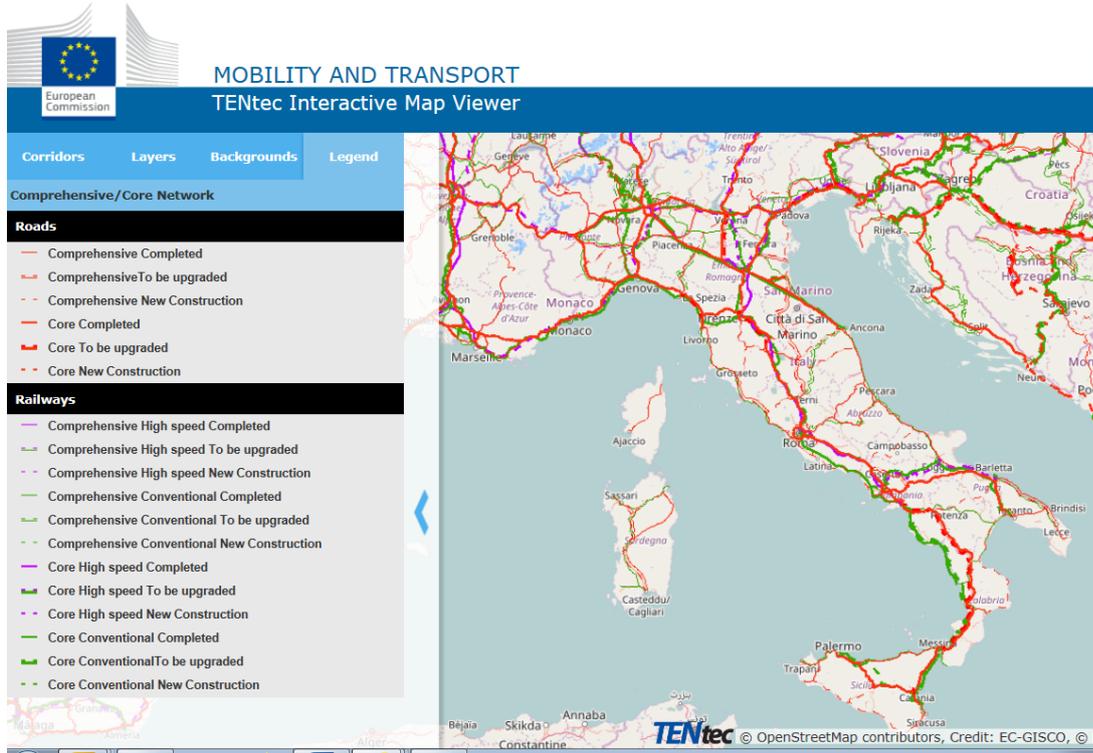
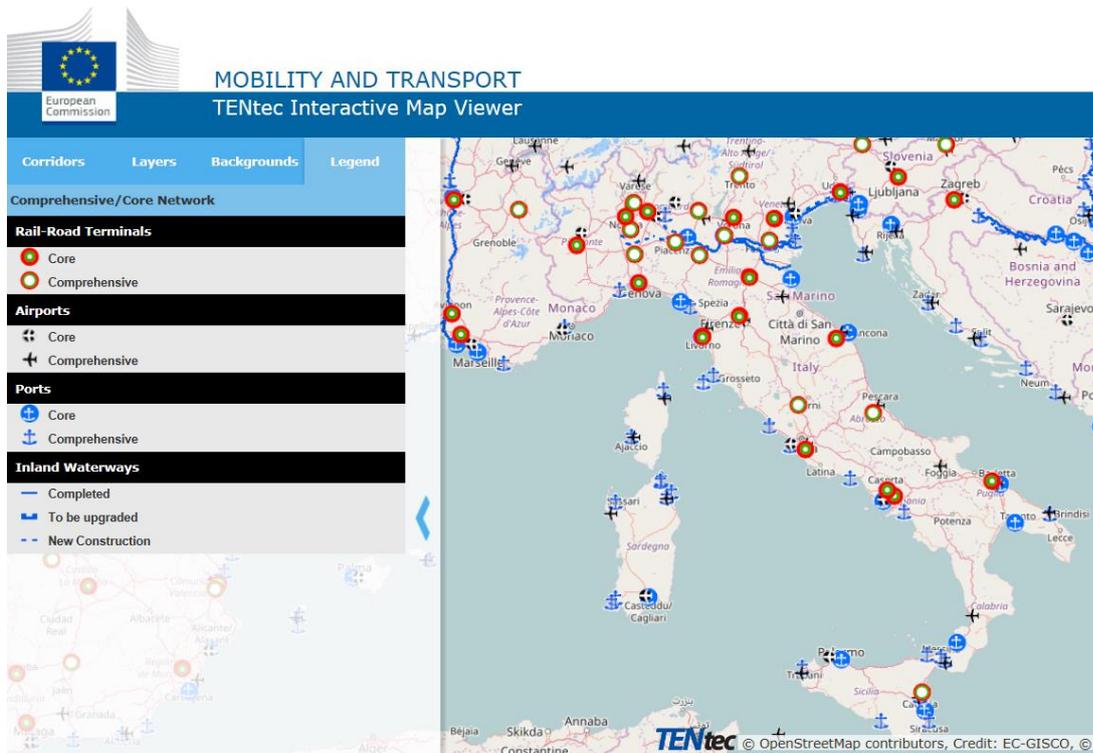


FIGURE III.1.2: ITALIAN TEN-T NETWORK NODES



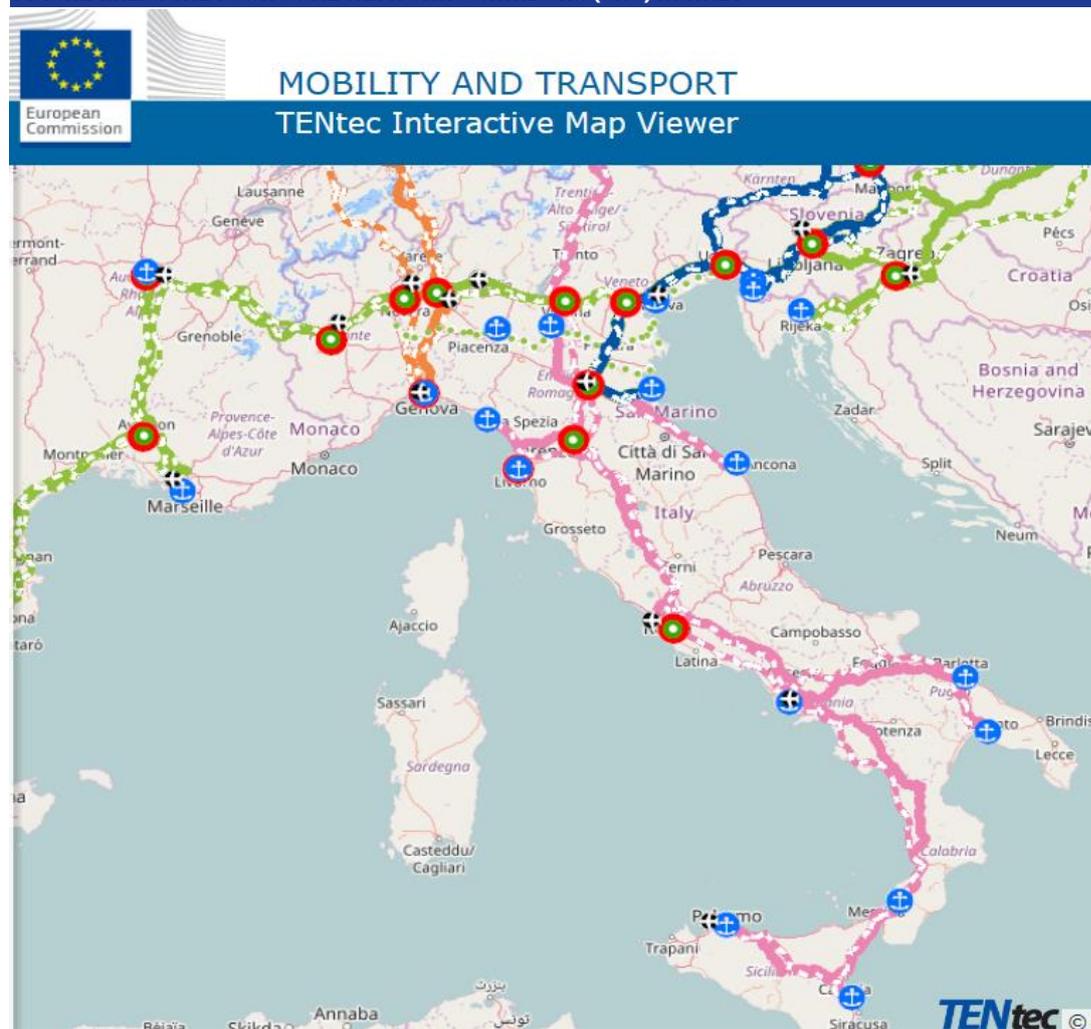
At a European level, the current priority is to ensure the continuity of the Corridors by building missing links where necessary, improving the degree of interoperability with cross-border networks and ensuring appropriate connections between different modes of transport, without forgetting the importance of resolving existing bottlenecks at the main urban nodes. Out of the nine Core Network Corridors (CNC) identified by the European Union, four cross the Italian territory from north to south and from east to west:

- **the Mediterranean Corridor** crosses the whole of northern Italy from west to east, linking the urban centres of Turin, Milan, Verona, Venice, Trieste, Bologna and Ravenna;
- **the Rhine-Alps Corridor** passes through the passes of Domodossola and Chiasso, overlaps with the Mediterranean one in the Core nodes of Milan and Novara and finally reaches the Core port of Genoa. The Core airports are Milan Malpensa, Milan Linate and Bergamo;
- **the Baltic-Adriatic Corridor** connects Austria (Tarvisio pass) and Slovenia to the North Adriatic Core ports of Trieste, Venice and Ravenna, passing through the urban nodes of Udine, Padua and Bologna;
- **the Scandinavian-Mediterranean Corridor** crosses the entire peninsula, starting from the Brenner Pass and thus connecting Trento to Verona, and Bologna, Florence, Livorno and Rome to the main urban centres of the south such as Naples, Bari, Catanzaro, Messina and Palermo.

In agreement with the interested States, the European Commission periodically carries out a consultation process for each Corridor aimed at the approval of a specific Work Plan containing the state of the art, the degree of achievement of the technical standards of the network, as required by the reference regulations, and all the relevant elements to ensure effective multimodality, thereby identifying the actions to be undertaken, the relevant timing and the necessary financial resources. The Work Plans thus guide the implementation of the Corridors until the set objectives are achieved, also through the analysis of the list of related projects, which is the main tool for monitoring progress in the development of the Corridors and at the same time planning their completion.

Italy is an active participant in this initiative, with just under 500 projects on the four corridors of the trans-European transport network affecting Italy, for an estimated infrastructure investment of around EUR 150.4 billion - to be spent mainly by 2030. The main national cross-border projects include the Brenner Base Tunnel, which lies along the Scandinavian-Mediterranean Corridor, and the new Turin-Lyon railway line, which lies along the axis of the Mediterranean Corridor.

FIGURE III.1.3: THE FOUR CORE NETWORK CORRIDORS (CNC) IN ITALY



### THE REVISION OF THE TEN-T NETWORK

Following the changes related to the exit of the United Kingdom from the European Union, the Council and the European Parliament agreed that the revision of the TEN-T guidelines should be brought forward to 2021 (instead of 2023), as envisaged in EU Regulation 1315/2013. By analogy with the previous definition that led to the current networks, a new configuration is expected to outline the inclusion/exclusion of sections/nodes, which will be the protagonists of a new ten-year planning phase. Italy has always expressed its willingness to incorporate the axes considered strategic within the national transport infrastructure system in the European network and Corridors in order to fill the existing gaps. The objective of ensuring full alignment between national and European planning based on the TEN-T network is part of this context.

Taking into account the connectivity and accessibility functions for all regions, the main transport axes and nodes, the territorial development objectives and the emerging needs of transport policy, it is clear that, when it comes to Italy's infrastructural development, it is necessary to think about a new structure that,

according to EU legislative predictions, should provide for the launch of an amending proposal in the autumn of 2021. In this scenario, the European Commission launched a public consultation in 2019 and another one this year, which will be followed by the usual impact assessments as well as bilateral negotiation meetings with individual Member States in preparation for the publication of the legislative proposal, which is expected to be indicatively adopted not before 2023.

In this regard, it should be recalled that, although Member States are in principle free to determine, in agreement with European authorities, the individual infrastructure projects potentially eligible for funding in the future, the inclusion of nodes and sections in the network involves and entails an obligation to adapt to the technical requirements identified in Community acts by 2030 for the Core network and 2050 for the Comprehensive network; these requirements will be integrated and strongly revised in the review process in the light of the new, increasingly ambitious targets that the Commission is planning to introduce in order to improve the quality of transport.

At this stage, the TEN-T network will be the only one to undergo updates and changes, since the route of the Corridors follows the provisions of a second European regulation (Regulation 1316/2013). Once the new network structure is in place, the European body will consequently start adjusting the Corridor alignments. Therefore, given that the national network, though inspired by and largely aligned with the route of the TEN-T core network, includes additional national strategic sections and nodes that are currently not incorporated into the European framework, proposals have been made with regard to six national priorities:

- the inclusion of the port of Civitavecchia in the Core network; from a socio-economic point of view, the port of Civitavecchia serves as the port of the city of Rome, and the characterisation of this node as a Core node of the TEN-T network would ensure the right support for an economic context that revolves around flows from/to the Metropolitan City of Rome;
- the inclusion of the missing section of the Adriatic backbone (Ancona-Foggia section), both road and rail, in the Core network, with the long-term objective of extending the Baltic-Adriatic Corridor along the Adriatic axis as far as the Bari node, where passenger and freight traffic volumes are constantly increasing, thereby completing the TEN-T core network with a real '*missing link*', both rail and road, in order to increase the competitiveness of Europe, and in particular that of the Adriatic-Ionian Region, also with a view to strengthening horizontal maritime links with the Balkan area;
- the inclusion of Catania airport in the Core network; the National Airport Plan includes Catania airport in the '*Eastern Sicily*' Traffic Basin and classifies it as a '*strategic airport*'. For this basin, a total annual passenger traffic of about 16 million is expected by 2030 in the maximum scenario where the component related to Catania airport is about 13 million passengers per year. Catania Fontanarossa airport has recorded a strong growth in passenger traffic, equal to 29% in the 2014/19 five-year period, and the traffic data for 2019 published by ENAC sees Catania Airport rank sixth in Italy;
- the introduction of a '*specialisation*' criterion for national railway lines: i.e., indicating the sections relevant for passenger and freight traffic that might not necessarily coincide, thereby requiring investments of a different order

and making it possible to take advantage of funding opportunities to complete high-speed network interventions; this line specialisation must also take into account the 2030 implementation obligations for the core railway network;

- the inclusion of the SS Jonica road section in the Comprehensive network; this is a missing link that would allow the road ring to be closed in the southernmost part of Calabria. The proposal is consistent with European objectives because it contributes to the improvement of Calabria's accessibility, which is fundamental for intra-regional, inter-regional and international connections, produces improvements in road safety and thus strengthens its role in social, economic and territorial cohesion;
- the inclusion of the Rome-Teramo horizontal road section in the Core network; this is a missing horizontal connection. The A24-A25 motorway is the road infrastructure linking the Tyrrhenian and Adriatic coastal routes. In addition, the progressive maturity of the road links and the intention to upgrade the existing rail infrastructure in order to promote a trans-Tyrrhenian Adriatic link to the benefit of Motorways of the Sea traffic should be considered in view of the potential for modal shift.

In addition, a series of technical and functional proposals have been submitted for all modes of transport, which are complementary to the abovementioned priorities. Finally, it should be noted that the European Commission has declared its intention to improve and intensify the network of European urban nodes, ensuring that it is interconnected with the various passenger and freight transport infrastructures, and thus envisages extending urban connectivity to nodes of not only national but also regional importance.

As far as sustainability objectives are concerned, with particular reference to the targets of the European Green Deal, attention will be paid to initiatives aimed at adopting alternative fuels for reducing greenhouse gas emissions in the various transport sectors, including cold-ironing solutions, and adopting future-oriented mobility systems such as digitisation, automation and intelligent mobility chains applied to the various transport sectors.

During this process, it will also be possible to promote the development of the Motorways of the Sea concept, as many States, especially those with an interest in maritime traffic, are convinced that there is a need to focus on the most efficient local multimodal maritime mobility routes, taking into account routes within the same country or between ports belonging to the global network.

### **THE NEW 2021-2027 CONNECTING EUROPE FACILITY (CEF)**

As regards the 2014-2020 CEF Programming, the portfolio of projects already approved by the European Commission and regulated by subsidy contracts in which Italian beneficiaries are present in various capacities is made up of 108 interventions, with a granted contribution of approximately EUR 1.7 billion and a total of expected investments exceeding EUR 4 billion, including subsidies for the cross-border sections of the Brenner Base Tunnel and the new Turin-Lyon line.

On 14 June 2021, the Council of the European Union adopted the EU's Connecting Europe Facility 2.0 (CEF 2.0) programme - worth EUR 33.7 billion - to finance the development of sustainable, high-performance infrastructures in the transport, digital and energy sectors. This second edition of the programme will run from 2021 to 2027. Indicatively, this favourable vote will be followed by a final adoption by the European Parliament by July 2021, with retroactive application from 1 January 2021. In the field of transport, the CEF 2.0 will promote interconnected, multimodal networks in order to develop and modernise rail, road, inland waterway and maritime infrastructures, as well as to ensure safe mobility. Priority will be given to the further development of the Trans-European Transport Networks (TEN-T), focusing on missing links and cross-border projects with EU added value.

The budgets for each sector are as follows: in the case of transport, EUR 25.81 billion (of which EUR 11.29 billion for the cohesion countries); in the case of energy, EUR 5.84 billion; in the case of digital technology, EUR 2.07 billion. A share of the transport budget of EUR 1.38 billion will be used to finance major railway projects in cohesion countries. In addition, the CEF 2.0 will provide funding for initiatives, in the case of improved military mobility within the EU, that are dual-use in meeting both civilian and military needs. Military mobility will have a dedicated allocation of EUR 1.69 billion within the transport budget.

The CEF 2.0 also emphasises the importance of synergies among the transport, energy and digital sectors as a way to make EU action more effective and minimise implementation costs. It will promote cross-sectoral work in areas such as connected and automated mobility and alternative fuels. The programme also aims at complementing climate action, taking into account the EU's long-term decarbonisation commitments such as the Paris Agreement.

### **THE 2014-2020 INFRASTRUCTURE AND NETWORKS PON (*Piano Operativo Nazionale, National Operational Plan*)**

The cohesion policy is the European Union's main investment policy aimed at supporting economic growth, job creation, business competitiveness, sustainable development and environmental protection. The EU regulatory framework that defines the intervention goals and financial instruments for the 2014-2020 programming cycle is set out in Council Regulation (EU) No. 1303/2013 of 17 December 2013, laying down common provisions on the European Structural and Investment Funds. Individual regulations contain specific provisions for each Fund. The European Regional Development Fund, in particular, is intended to help correct the main regional imbalances in the EU. Its aim is to help even out the disparities between the different levels of development of European regions and to reduce the backwardness of the least developed regions. The framework for the European Regional Development Fund (ERDF) is set out in Regulation 1301/2013. For the

purposes of cohesion policy, in addition to Community resources, resources generated by national co-financing from the Revolving Fund for the implementation of Community policies must be taken into account due to the principle of additionality.

The ERDF supports the development of transport and infrastructure through Thematic Objective 7, namely '*Promoting sustainable transport and improving network infrastructure*'. In the sector of infrastructure, EUR 2.45 billion worth of funds are allocated to investments in transport networks, of which EUR 1.4 billion to sustainable urban transport infrastructure. In the context of structural funds, the MIMS is directly involved in the management of EU resources earmarked for Italy's infrastructure development, in its capacity as Managing Authority of the 2014-2020 National Operational Programme for Infrastructure and Networks (2014-2020 I&R PON). The I&R PON pursues the priorities of the European Union in the field of transport infrastructure by contributing to the improvement of the mobility of people and goods and is aimed at ensuring the competitive development of the less developed areas and regions of Southern Italy and at strengthening economic, social and territorial cohesion.

The Operational Programme pursues the following objectives: the strengthening of the railway system and the improvement of the service in terms of quality and travel time; the improvement of the competitiveness of the port system and the interport system; the improvement of modal integration and multimodal connections, in order to achieve maximum regional mobility; the optimisation of air traffic through the strengthening of systems and checks. In addition, the PON finances interventions in infrastructures - railways, ports, '*last mile*' and Intelligent Transport Systems (ITS) - in the five least developed regions of southern Italy.

The total budget of the Programme is EUR 1,564,430,014.00, of which EUR 1,173,322,511.00 is co-financed by the European Regional Development Fund and EUR 391,107,503.00 by the National Revolving Fund. In July 2020, the programme was defunded by EUR 279.3 billion, which is part of the nationally coordinated actions aimed at contrasting and mitigating the health, economic and social effects of the pandemic, and at promoting economic and social recovery following the spread of COVID-19. In particular, among the urgent measures on health, labour and economic support, as well as social policies related to the COVID-19 epidemiological emergency, introduced by Italian Decree Law No. 34/2020, paragraph 6 of Article 242 provides that "*[...] the Italian Minister for the South and Territorial Cohesion shall define appropriate agreements with the Administrations in charge of the European structural funds programmes, also for the purpose of reviewing the resources allocated to the complementary operational programmes, and shall propose to the Interministerial Committee for Economic Planning, where necessary, the resolutions to be adopted for the final approval of the abovementioned resources*".

In this context, a Memorandum of Understanding was signed - as transmitted via DPCOE Doc. No. 2933 of 27 July. 2020 - between the Italian Minister for the South and Cohesion and the Ministers in charge of the National Operational Programmes for the reprogramming of the 2014-2020 Structural Funds Operational Programmes pursuant to Article 242 paragraph 6 of Italian Decree-Law No. 34/2020, containing the transfer projection of EUR 279.3 million from the '*Infrastructures and Networks*' PON to the '*Enterprise and Competitiveness*' PON under the Italian Ministry for Economic Development and related supplements. The Programme is

subdivided into three Axes, two of which are thematic, as illustrated below; the third refers to technical and specialised assistance and support to the Managing Authority, the Audit Authority and the Certifying Authority of the Programme:

- Axis I - Favouring the creation of a single European multimodal transport space with investments in TEN-T, through: the strengthening of the railway mode at national level and improvement of the service in terms of quality and travel time; the optimisation of air traffic. In particular, Axis I is designed to contribute to the improvement of connectivity within Southern Italy and to make a more efficient use of existing infrastructure.
- Axis II - Developing and improving environmentally sustainable (including low-noise), low-carbon transport systems, including inland waterways and maritime transport, ports, multimodal links and airport infrastructures, in order to favour sustainable regional and local mobility through the improvement of the competitiveness of the port and interport system, as well as regional mobility, modal integration and the improvement of multimodal links. The increase in port and inter-port capacity aims at decongesting and increasing traffic in the southern infrastructural nodes, while, more generally, the interventions envisaged within Axis II aim at making collective mobility more sustainable through efficient multimodal connections between logistic nodes as part of the unicum constituted by the Italian goods handling system.

With respect to the budget available as a result of the defunding that took place in 2020, the PON currently provides for the financing of 61 interventions within the two Axes, which contribute to saturating 100% of availability in terms of the budget available for them. The timeframe for the completion of the interventions, which has been set, in line with the 2014-2020 programming, at 31 December 2023, sees a good rate of absorption of expenditure, with around 40% of the expenses already certified to the European Commission, which have made it possible to reach the N+3 target set for the programme in each year, thereby not only avoiding the automatic decommitment of resources, but also making it possible to obtain a performance reserve of around EUR 42.5 million.

The PON also aims at promoting the implementation and deployment of intelligent transport systems (ITSs). ITSs play a crucial role in meeting the challenges of ever increasing demand for mobility; they are based on the interaction between IT and telecommunications and make it possible to transform transport into an integrated system in which traffic flows (both passenger- and goods-related) are distributed in a balanced way among the various modes, with a view to increasing efficiency, productivity and, above all, transport safety. In particular, the I&R PON focuses its action on financing interventions aimed at promoting the optimisation of air traffic - under Axis I - as well as the Single Window and Infomobility - under Axis II.

#### **THE 2014-2020 ACTION AND COHESION PROGRAMME**

A further tool capable of ensuring the competitive development of the less developed regions of Southern Italy is the 2014/2020 Action and Cohesion Programme (2014/2020 *Programma di Azione e Coesione*, PAC), which complements the 2014-2020 Infrastructure and Networks PON; it was approved by CIPE Resolution No. 58 of 1 December 2016 and targets the regions of Basilicata, Calabria, Campania, Apulia and Sicily. The Programme has a total financial endowment of EUR 670,448,485, to be allocated from the Revolving Fund under Italian Law 183/87. It contributes to the achievement of the Europe 2020 objectives through actions

and interventions related to the *'Improving access to, and the use and quality of, information and communication technologies'* and *'Promoting sustainable transport systems'* Objectives of the Partnership Agreement. In particular, the 2014/2020 PAC pursues the environmental sustainability of the port areas of the Regions concerned, the improvement of the accessibility of tourist areas, thereby favouring assets outside the major flows, and the improvement of the overall efficiency of integrated logistics through the use of high-tech solutions.

Following the publication of four Calls for Expressions of Interest for a total of about EUR 480 million promoted by the MIMS with the involvement of the Regions, May 2021 saw the selection - and admission to funding - of a considerable number of projects involving digital logistics, the recovery and enhancement of urban waterfronts, tourist accessibility and the environmental sustainability of the ports of the Southern Regions benefiting from the Programme. The implementation framework of the Programme is completed by the presence of a limited number of railway and port infrastructure projects that are implemented with the aim of completing previous interventions selected in the framework of previous programmes.

In addition to guaranteeing full strategic complementarity with the 2014-20 Infrastructure and Networks PON, the project interventions implemented under the 2014/2020 Action and Cohesion Programme also highlight a strong synergy with some specific areas that characterise the programming of interventions falling within the competence of the MIMS on the subject of the National Recovery and Resilience Plan (in particular, investments for the sustainable development of ports and logistics, interventions for the digitisation of roads for tourism purposes, the development of cycling and the renewal of rolling stock).

#### **THE 2014-2020 FSC 'INFRASTRUCTURE' OPERATIONAL PLAN**

The MIMS is also the holder of the 2014/2020 FSC 'Infrastructure' Operational Plan, which was approved by CIPE Resolution No. 54/2016 on the basis of the thematic areas and strategic objectives identified by CIPE Resolution No. 25/2016. Since its approval, the Plan has been affected by a continuous process of project integration and financial reprogramming, as recently completed by the results of the reprogramming initiated by Article 44 of the so-called *'Decreto Crescita'* (Growth Decree), which led to the composition of the MIMS Development and Cohesion Plan, with a total value of EUR 16.920 billion.

The Operational Plan includes approximately 1,600 interventions concerning multiple sectors (roads, railways, dams, school buildings, sustainable mobility, urban regeneration and tourist ports) and involving a wide range of beneficiaries, including major concessionaires (RFI, ANAS), regional administrations and local authorities, and public consortia and public-private partnerships, according to the following breakdown by Axis: road interventions (EUR 6.42 billion); railway interventions (EUR 4.22 billion); urban and metropolitan transport (EUR 1.93 billion); securing roads and dams (EUR 1.7 billion); other interventions (improving the safety of road, port and airport infrastructures, cycle tracks, urban regeneration) (EUR 0.9 billion); rolling stock and rail safety (EUR 1.75 billion).

**The new Turin-Lyon railway line**

The Turin-Lyon railway link is an integral part of the Mediterranean corridor, i.e., the main European east-west axis, and is a 270 km freight and passenger railway line; 70% of it is found in France and 30% in Italy. The cross-border section stretches 65 km between Susa/Bussoleno in Italy and Saint-Jean-de Maurienne in France, and 89% of it runs through tunnels. The public promoter in charge of building and then managing the cross-border section of the Turin-Lyon is Tunnel Euralpin Lyon Turin (TELT SAS), a company under French law in which the Italian State Railways and the French Ministry of the Economy hold a 50% stake.

In terms of construction activities, 30 km worth of tunnels were excavated (including 10 km in the south tube), and 113 km worth of boreholes were drilled. A total of 1,000 people are working on 7 construction sites between Italy and France, and EUR 3.5 billion has been committed. The main activities underway include:

- in Italy: works to transform the Chiomonte geognostic tunnel into an access route to the base tunnel and the new San Didero car park. In addition, work has begun on making the area available for the establishment of the site for sorting and exploiting excavated materials in Salbertrand;
- in France: the construction of the temporary intermodal hub in Saint-Jean-de-Maurienne (France) (where the international station will be built), and the construction of 4 ventilation shafts in Avrieux.

In May 2021, the Programme Contract between MIMS, the Italian State Railways and TELT was signed, which governs the obligations of the parties and plans the infrastructure requirements and financial needs of the work. The cost of the final works of the cross-border section, as certified by a third party, is EUR 8,609.7 million in constant 2012 euros. The value in current euros is estimated at EUR 9,630.25 million euros, of which EUR 5,574.21 million is attributable to Italy, plus costs for accompanying measures of EUR 57.26 million, for a total of EUR 5,631.47 million. As regards Italy's contribution to the final work on the cross-border section, total authorised resources amount to EUR 2,892.62 million (including Community resources allocated to Italy amounting to EUR 327.86 million).

**The Brenner Base Tunnel and its access routes**

The Brenner Base Tunnel project is one of the most significant projects not only in the Italian, but also in the European infrastructure planning, as it is located along the Scandinavian-Mediterranean Corridor, which is a key economic link between Northern and Southern Europe; the section between Munich and Verona is its central and neuralgic section. The Brenner Base Tunnel company - Brenner Basistunnel (BBT SE) is the 'Promoter' entrusted by Italy and Austria with the design and construction of the tunnel.

The project envisages the construction of a twin-tube cross-border railway tunnel between Italy and Austria, with a length of approximately 55 km, of which 23 km on Italian territory and 32 km on Austrian territory, which, together with the relevant existing connections, will reach a total length of 64 km. In terms of construction activities, approximately 140 km of tunnels have been excavated (including train transit tunnels, exploratory tunnels and other logistics tunnels), out of the total 230 km planned.

Under the current 2014-2020 Connecting Europe Facility (CEF) EU funding programme, 2015 saw the European Commission allocate a total of EUR 1,181.49 million to the cross-border section (as currently defined), of which EUR 878.64 million for works and EUR 302.85 million for studies, against total costs of EUR 2,802.3 million; in 2020, it allocated a further EUR 28 million for studies, against costs of EUR 56 million. The allocated amounts are equally divided between Italy and Austria: therefore, the total share of the European contributions attributable to Italy for the Brenner base tunnel under the current 2014-2020 'Connecting Europe Facility' (CEF) programme amounts to EUR 604.745 million, of which EUR 590.745 million were allocated in 2015 and EUR 14 million in 2020. Together with the base tunnel

project, interventions are also planned on the northern (Austria and Germany) and southern (Italy) access lines, the construction costs of which are borne by the individual states.

With regard to the southern access lines, the highest priority project is lot 1, namely 'Fortezza-Ponte Gardena', which extends for about 25 km and will make it possible to overcome the criticalities linked to the winding and sloping nature of the route, thereby creating the conditions for a high-performance corridor for freight traffic. According to the 2018-2019 update of the Programme Contract-I (*Contratto di Programma-I*, CdP-I), the total cost of the Brenner Access section, Lot 1 Fortezza-Ponte Gardena (quadruplication of the Fortezza-Ponte Gardena section) amounts to a fully financed EUR 1,521.60 million. The approval process for the variants to the final project is currently in progress.

### **III.2 THE 2030 AGENDA AND SUSTAINABLE DEVELOPMENT GOALS (SDGS): A EUROPEAN COMPARISON IN THE FIELD OF INFRASTRUCTURES AND MOBILITY**

Infrastructures are essential to enable the mobility of people, the movement of goods, the provision of water and energy, the quality of housing and the living environment, the transmission of information and communication between geographically distant entities. They are, therefore, the backbone for the economic and social development of an area, since they influence its productivity, facilitate trade with other areas and markets, and improve economic and social inclusion. In this perspective, the infrastructure system is a pivotal element for the promotion of a more inclusive, resilient, sustainable development model, and indeed, it assumes key importance within the UN 2030 Agenda, especially in view of the direct and indirect impacts it has on the multiple dimensions identified by the 17 Sustainable Development Goals (SDGs).

In addition to offering an integrated strategic framework in which the economic, social and environmental dimensions contribute synergistically to defining a model of sustainable development, the 2030 Agenda itself makes it possible, through a system of targets and indicators, to highlight the positioning of each country or geographical context with respect to the ambitions described by the SDGs.

In this section, some of these indicators are analysed in order to produce a comparative analysis at the European level, thereby highlighting Italy's position and, where possible, identifying the local and regional differences that characterise Italy's infrastructure resources. Starting from the main indicators present at the European level within those identified for monitoring the SDGs, a dashboard has been drawn up which shows the relative positioning of each country (green identifies inclusion in the group of best performers, while red identifies inclusion in the group of countries lagging furthest behind) and the trend of the indicator over the last three years.

On the whole, Italy shows weaknesses compared to the rest of Europe, particularly in the transport and water infrastructures sectors and in the urban and housing context.

**FIGURE III.2.1: DASHBOARD OF INDICATORS FOR INFRASTRUCTURE AND MOBILITY AT EUROPEAN LEVEL**

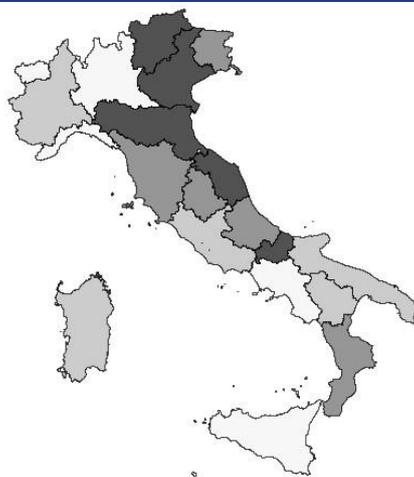
SDG	Indicator	Be	Bg	Cz	Dk	De	Ee	ie	El	Es	Fr	Hr	It	Cy	Lv	Lt	Lu	Hu	Mt	Nl	At	Pl	Pt	Ro	Sl	Sk	Fi	Se
11	Population living in buildings with structural problems (%pop)	↑	↑	↑	↔	↑	↔	↔	↑	↓	↓	↑	↑	↓	↑	↑	↑	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↔
3	People killed in road accidents per 100 inhabitants	↓	↑	↓	↓	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↓	↔	↓	↓	↑	↑	↑	↑	↑
6	Drinking water abstraction per capita		↑	↓	↔				↔			↔	↑	↔	↓	↓		↓	↔			↓			↓	↓		
9	Electrified railways (%tot)		↔	↔	↑		↑	↑	↑	↑	↑	↔	↔		↔	↔	↔	↑		↔	↔	↓	↑	↔	↔	↔	↔	↔
	Railway network length (km per capita)		↑	↔	↑	↓	↔	↑	↑	↓	↓	↑	↑		↑	↑	↓	↓		↑	↔	↑	↔	↔	↓	↔	↔	↓
	Railway network length (km per km2 of surface area)		↔	↔	↓	↔	↔	↓	↓	↑	↑	↔	↔		↔	↔	↔	↑		↓	↓	↔	↔	↔	↔	↔	↔	↔
	Railway network length (km/GDP)		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		↓	↓	↓	↓		↑	↓	↓	↓	↓	↓	↓	↓	↓
	Modal split in freight trains and buses (%tot)	↓	↑	↓	↔	↓	↓	↓	↑	↓	↓	↑	↓	↔	↔	↑	↑	↓	↔	↓	↓	↔	↓	↓	↔	↓	↓	↑
	Volumes of goods handled in ports (tonnes per capita)	↑	↔		↓	↓	↑	↓	↑	↔	↔	↑	↑		↑	↑			↔		↑	↓	↑	↓	↓	↑	↓	↓
	Modal split in passenger trains and buses (%tot)	↑	↓	↔	↓	↑	↓	↑	↓	↓	↔	↑	↔	↑	↓	↓	↑	↓	↔	↑	↑	↓	↔	↓	↔	↑	↓	↑
	Volumes of goods handled in ports (tonnes per capita)	↓	↑	↑	↓	↓	↓	↓	↑	↓	↔	↑	↓	↑	↔	↑	↑	↑	↓	↓	↔	↑	↓	↑	↑	↑	↓	↓
	Urban population exposed to air pollution (%pop)	↑	↑	↑	↓	↑	↑	↓	↓	↑	↑	↑	↑	↑	↑	↓	↑	↑		↑	↑	↑	↑	↑	↑	↑	↓	↓
13	GHC emissions per capita - Transport	↔	↓	↓	↔	↑	↑	↔	↓	↓	↑	↓	↓	↔	↓	↓	↓	↓	↓	↑	↓	↓	↓	↓	↑	↓	↓	↑
	Weight of the transport sector on total GHC emissions (%)	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↔

Note: The dashboard includes a set of indicators that define a number of sustainability dimensions within a country's infrastructure and mobility with respect to the distribution of the other EU27 countries. The colour of the cells represents the country's position in the distribution of all available values of the indicator in the EU27 countries (latest available data: 2018 for (i) drinking water abstraction and (ii) modal shift in passenger transport; 2019 for all other indicators). Red: 1<sup>st</sup> quartile of distribution; orange: 2<sup>nd</sup> quartile; light green: 3<sup>rd</sup> quartile; dark green: 4<sup>th</sup> quartile (class of top performers). The up arrow indicates positive growth of the indicator over the last three years, the down arrow does negative growth, while the double horizontal arrow indicates substantial stability. Both the positioning in the distribution and the assignment of the trend arrows took into account the polarity of the indicator (positive or negative) with respect to the conditions of relative improvement/worsening, thereby standardising the results. Therefore, the upward (downward) arrow always indicates an improvement (worsening) with respect to the desired target (e.g.: for the indicator % of urban population exposed to air pollution, which has an inverse polarity, an upward arrow indicates a reduction in the population exposed to pollution).

Source: Elaborations on Eurostat data.

With reference to road infrastructure, a particularly interesting indicator (included among those officially indicated within the SDGs framework) is that of fatal accidents in relation to the population, which may reflect both poorer road quality and greater congestion (and, therefore, less supply than demand). In 2019, i.e., the last year available, 3,173 people died (about 53 per million inhabitants); said value has been progressively decreasing over the years (-23% compared to 2010). When compared with other European countries, the indicator of fatal road accidents per capita is in the second quartile of the distribution, far removed from the group of more virtuous countries, which record a rate of less than about 37 per million inhabitants. Moreover, the mortality rate is heterogeneous at the regional level, with higher values in the North East and along the Adriatic ridge (Figure III.2.2).

**FIGURE III.2.2: FATALITIES IN ROAD ACCIDENTS**



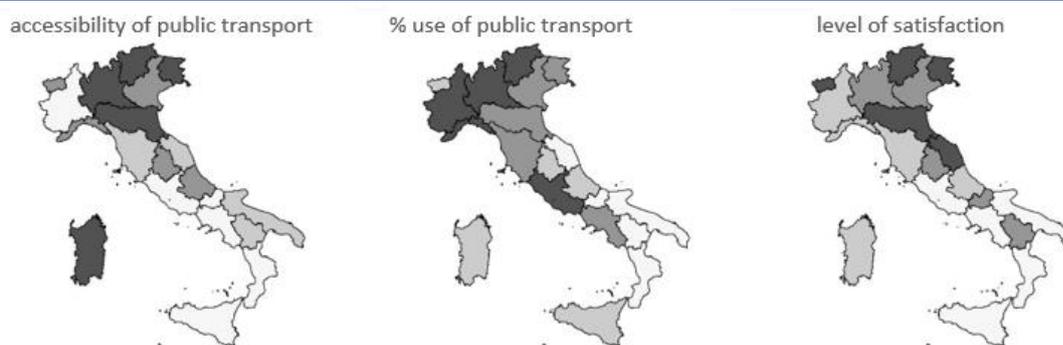
Fatalities in road accidents as a proportion of the population; a higher value of the indicator is graphically represented with darker colours.  
Source: Istat.

With reference to the use of public means of transport, the international indicator measuring the weight of rail and bus in the use of means of transport by passengers would seem to show a relatively favourable situation for Italy compared to other EU countries<sup>16</sup>. However, data from ISTAT continues to show a high level of dissatisfaction in the use of public transport: in 2019, 33.5% of Italian households said they had difficulty connecting to public transport in the area where they live, with relatively higher shares in the southern regions (40.3% on average; 55% in Campania).

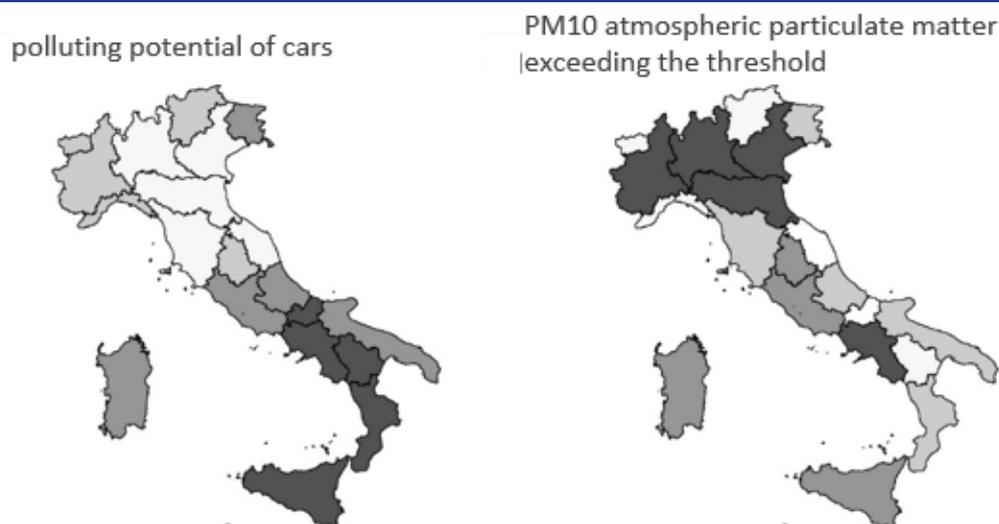
The percentage of people who regularly use private transport to reach their place of work remains high (74.2%; 77.4 in the North-East), and the share of students who only use public transport to reach their place of study is still low (28.5% on average; 21.1% in Sicily compared to 41.7% in the Province of Trento).

<sup>16</sup> The evidence is relatively less favourable when looking at data from a survey conducted by the European Commission in 2019 on a sample of around 80 cities in the European Union. According to this survey, the percentage of people who said they used local public transport (bus, tram or underground) to get around was 16%, which is lower than both the average for European countries and the main countries in the region (France, Germany and Spain).

Cities play an important role in achieving Sustainable Development Goals (SDGs), and air pollution is one of the relevant elements that qualify the sustainability of urban settlements, especially with reference to the quality of life and well-being of people. Levels of particulate air pollution in Italy remain high and above the EU-27 average. The phenomenon is especially relevant in the cities of the Po Valley, where activity and mobility levels are also higher.

**FIGURE III.2.3: URBAN MOBILITY**

A higher value of the indicator is graphically represented with darker colours.  
Source: Istat.

**FIGURE III.2.4: MOBILITY AND URBAN POLLUTION**

A higher value of the indicator is graphically represented with darker colours. The indicator on the number of days on which the threshold for PM10 atmospheric particulate matter is exceeded is available at the level of provincial capitals and not for each of them; the regional figure has been constructed as a simple average of the capitals that belong to the region and for which the value is available. No data is available for Marche and Molise.  
Source: Istat.

The European comparison on housing conditions reveals a number of delays in Italy. 14% of the Italian population lives in dwellings with structural or damp problems, compared to an average of 12.7% in the EU-27 (France 11.5, Germany 12%). From 2017 to 2019, the share of people living in overcrowded dwellings increased (28.3% compared to a European average of 17.1%) above the 2016 level. Territorial disparities are wide depending on the selected indicators and the

reference areas (metropolitan cities, small and medium-sized cities, inland areas). At the regional level, dwellings in poor condition are relatively more widespread in the Centre-South, particularly in Campania, Calabria and Sardinia.

#### FIGURE III.2.5: INDICATORS ON HOUSING CONDITIONS



A higher value of the indicator is graphically represented with darker colours.  
Source: Istat.

With reference to the use of water resources, Italy ranks among the countries with the highest per capita volumes of water withdrawn from surface or groundwater bodies (about 152 cubic metres per inhabitant per year in 2018), despite the decline recorded in the last three years. In the European ranking, Italy is second after Greece (about 157 cubic metres), while most of the rest of the countries are in a range of public supply volumes varying between 45 and 90 cubic metres per capita. As highlighted by ISTAT<sup>17</sup>, the heterogeneity of water abstraction depends on many factors, including demand (both for private and productive use), climate and quality of supply infrastructure. The latter category includes the different water abstraction methods and, above all, the level of efficiency of the network as a function of recorded losses.

In this context, the Italian water infrastructure is subject to strong ageing and deterioration, with marked geographical differences (Figure III.2.6). According to the latest available data, 42% of the water injected in the water network is lost; this percentage exceeds 50% in some regions of the Centre (Umbria and Lazio) and of the South (Abruzzo, Sicily and Sardinia).

<sup>17</sup> Source: Istat (2021), "Istat's Statistics on Water - years 2018-2020", 22 March.

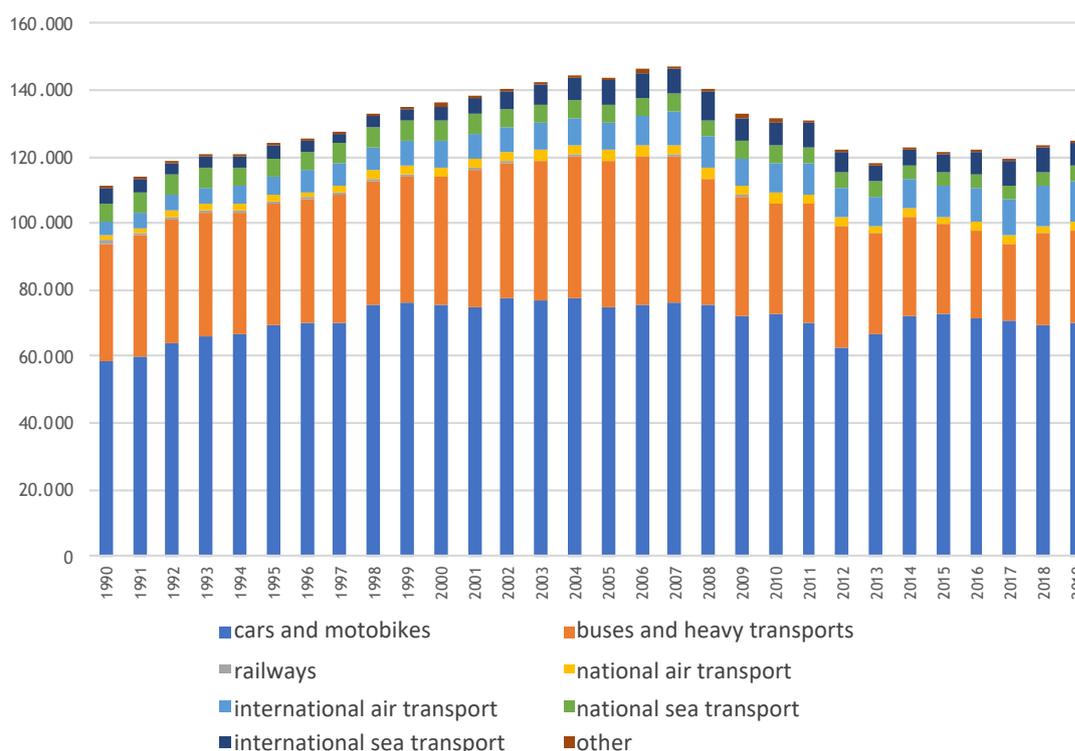
**FIGURE III.2.6: INDICATORS ON THE QUALITY OF WATER INFRASTRUCTURE AND SERVICES**

A higher value of the indicator is graphically represented with darker colours.  
Source: Istat.

Higher-than-average leakage rates can be associated with a variety of factors, including the quality of installations and pipelines, faulty meters and unauthorised/unlawful withdrawals from the network. Nearly 9% of households also report irregularities in the supply of water to their homes; again, there is significant regional variation, and the phenomenon is more pronounced in the South (almost twice the national average). These factors can also fuel distrust and mistrust towards the water system and steer consumers towards other types of behaviour and choices. For example, 28% of households (40% in the South) do not trust drinking the water that comes out of the tap.

Finally, the last area analysed is climate change, and in particular the contribution to mitigation made by the transport sector in terms of reducing greenhouse gas (GHG) emissions. In 2019, transport was responsible for about 26% of total emissions in Italy (same as the EU27 average), with a weight that has been growing in recent years in the face of an overall reduction in emissions at country level (-26.9% in 2019 compared to 1990 values, against an EU27 average of -28.9%) and growth in the transport sector (3.2% in the sector excluding international air and maritime transport and 12.2% considering these two segments as well). Within transport, private transport (cars and motorbikes) accounts for about 56% of the sector's emissions<sup>18</sup> (with a relative weight that increased by 3.4 percentage points from 1990 to 2019), while 22% is attributable to buses and heavy transport (-9.6 percentage points drop in relative weight). Railways contribute marginally (0.1%), with a relative weight that has also declined by about 0.5 percentage points since 1990 (Figure III.2.7).

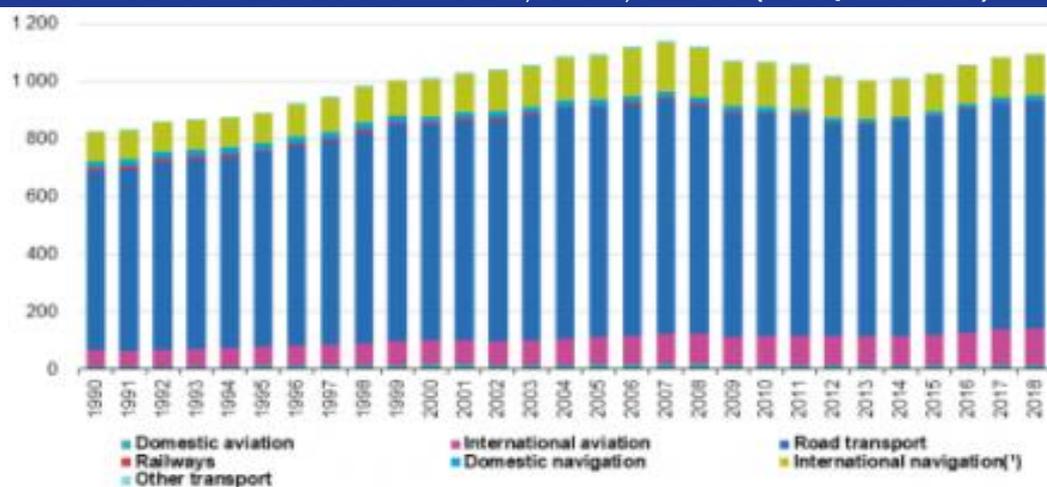
<sup>18</sup> Including the contribution of international air and sea transport.

**FIGURE III.2.7: GHG EMISSIONS FROM TRANSPORT, ITALY, 1990-2019 (CO2 EQ. MIL TONNES)**

Source: Elaborations on Eurostat data.

In the context of climate change mitigation actions, and in particular those related to achieving carbon neutrality, the most significant challenges are posed by absolute variations. As is well known, the goal of carbon neutrality requires a continuous improvement of emission indicators in every sector, including transport and logistics, where the shift towards lower emission technologies is expected to accelerate over the next few years. A recent report by the International Energy Agency (IEA)<sup>19</sup> has highlighted a series of milestones at sector level for the global achievement of 'net zero emissions'. In particular, the goal for the transport sector is to ensure that the share of electric vehicles in private and public transport is at least 60% by 2030 and 50% in heavy transport by 2035. Furthermore, by 2040, 50% of the fuel used in aviation must be low-emission.

<sup>19</sup> Source: IEA(2021), "Net Zero by 2050 A Roadmap for the Global Energy Sector", May.

**FIGURE III.2.8: GHG EMISSIONS FROM TRANSPORT, EUROPE, 1990-2018 (CO<sub>2</sub> EQ. MIL TONNES)**

(\*) Not included in the EU emissions totals relevant for the energy and climate packages  
 Source: EEA, republished by Eurostat (online data code: env\_air\_gge)

eurostat

Source: Elaborations on EEA data, republished from Eurostat.

### III.3 THE INTEGRATED NATIONAL TRANSPORT SYSTEM (SISTEMA NAZIONALE INTEGRATO DEI TRASPORTI, SNIT)

The SNIT is the integrated system of national and international infrastructures, both punctual and networked, which forms the backbone of Italy's passenger and freight transport system. Consistent with the infrastructure planning within the framework of the European TEN-T networks, the new infrastructure built since 2001, and the updates to the SNIT made in the Infrastructure Annexes to the DEF in recent years, an update was also made for the year 2021.

Starting from the SNIT 2001 proposed in the PGTL, the SNIT has been identified using specific criteria by mode of transport, as shown in the following table.

**TABLE III.3.1: CRITERIA FOR IDENTIFYING THE NEW SNIT (2017)**

INFRASTRUCTURE		1st-LEVEL SNIT	2nd-LEVEL SNIT
LINEAR	Railways	SNIT 2001 network (only long-distance routes currently in operation for passengers and/or freight) + TEN-T network (Core and Comprehensive) + additional last-mile accessibility axes to ports, airports	All other rail routes
	Roads and motorways	National core network, corresponding to the SNIT 2001 motorway network (only axes currently in operation) + TEN-T network (Core and Comprehensive) + additional accessibility axes to ports, airports, tourist poles and industrial districts.	All remaining state-owned roads
	Cycle tracks	Eurovelo network, consisting of 16 tracks with a total length of about 80,000 km. National network of cycle tracks proposed in the General Plan for Cycling Mobility	
URBAN	Metropolitan cities	14 metropolitan cities identified by Italian Law 56/2014	-
PUNCTUAL	Ports	16 Port System Authorities, which include the 58 Ports of national importance identified by Italian Legislative Decree 169/2016	
	Airports	16 strategic airports that are already nodes in the TEN-T Core network	The remaining 22 infrastructures of national importance identified in the National Airport Plan

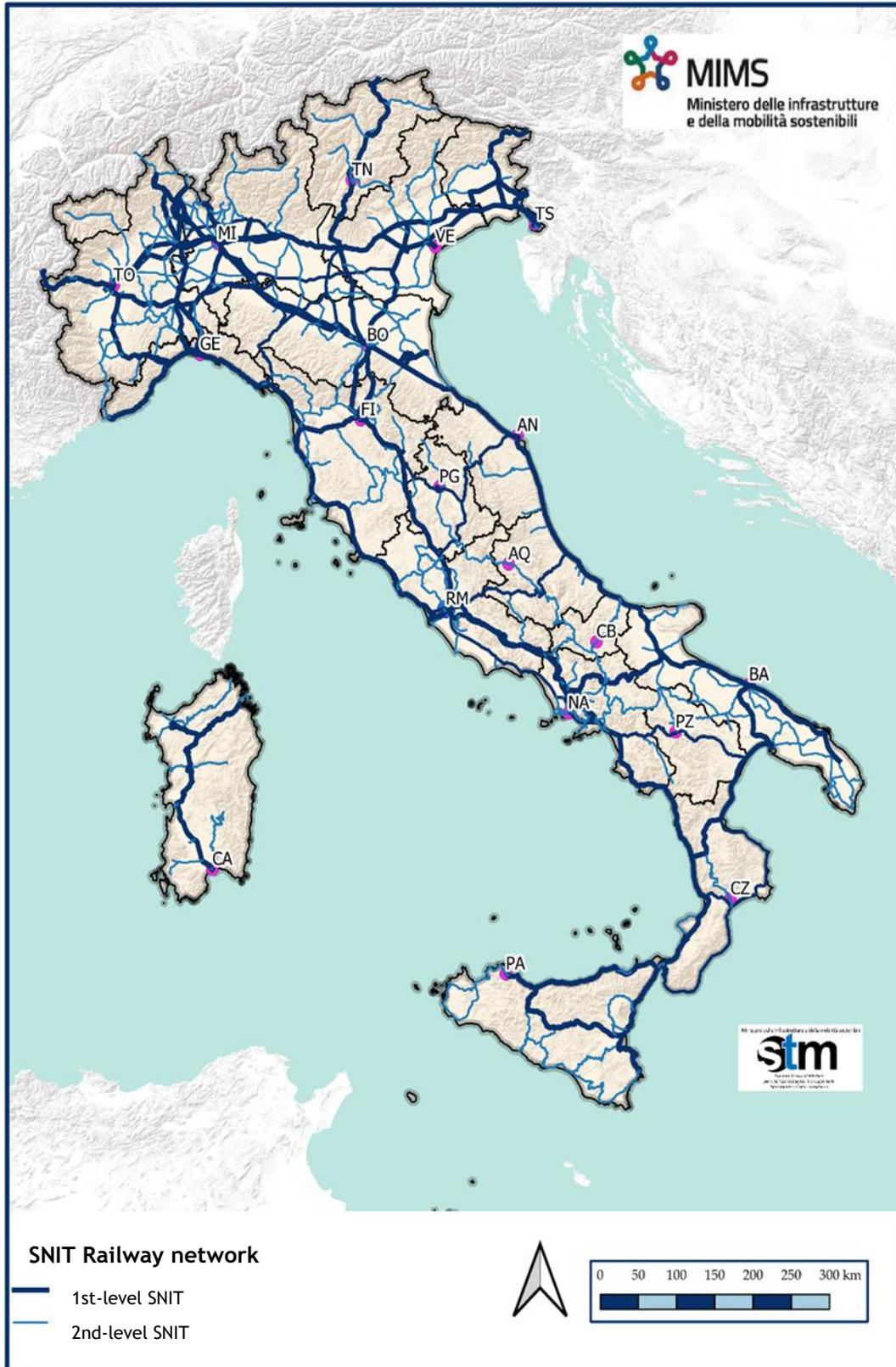
## RAILWAYS

In order to identify the 1st-level SNIT for the national and international railway network, the starting point is that defined in the General Transport and Logistics Plan (PGTL) of 2001, as subsequently updated in the Infrastructure Annex to the 2017 DEF. This reclassification (update), which was carried out taking into account:

- a) the evolution of long-distance traffic (passengers and freight),
- b) the functional articulation of the four TEN-T corridors that affect Italian territory,
- c) the need to connect to the country's main urban areas; and
- d) the connection objectives involving the ports and airports belonging to the very TEN-T network,

includes 48 functional lines (Figure III.3.1), covering about 8,800 km, or 44% of the entire network. All the remaining lines, including the granted lines (whether isolated or not), form the 2nd-level SNIT, which is mainly oriented to support regional traffic and/or the capillary distribution of the freight traffic.

FIGURE III.3.1: NATIONAL RAILWAY NETWORK - 1ST- AND 2ND-LEVEL SNIT



Source: STM of the MIMS.

**Towards a uniform regulation of the national railway network**

Over the last fifteen years, the growing need for safety and integration of regional and metropolitan railway services has led to a series of legislative and regulatory innovations, which today lay the foundations for a unified approach to the governance of the national railway network.

The first measure in this respect was Italian Legislative Decree No. 162 of 10 August 2007, which implements Directives 2004/49/EC and 2004/51/EC on the safety and development of the Community's railways.

A second step was taken with Italian Legislative Decree No. 112 of 15 July 2015, implementing Directive 2012/34/EU, aimed at establishing a single European railway area.

This measure was first concretely implemented by the Italian Ministerial Decree of 5 August 2016, which identifies the regional railway networks falling within its scope of application, and subsequently by Italian Decree-Law No. 68 of 16 October 2017 (converted by Italian Law No. 172 of 4 December 2017), which extends its application to isolated networks, as well as by Italian Decree-Law No. 50 of 24 April 2017 (converted with Italian Law No. 96 of 21 June 2017), which entrusts the Italian Ministry of Sustainable Infrastructures and Mobility, in agreement with the Italian Ministry for the Economy and Finance, with the identification of regional railway lines that are relevant to the national railway network and are thus eligible for state funding in the event of investments.

This identification, which was carried out on the basis of four transport criteria (mobility of passengers and goods, expansion of the connectivity of the railway network, integration with the region and metropolitan areas, strengthening of connections with ports and airports), was ratified by Italian Ministerial Decree No. 201 of 16 April 2018, which identifies the following 20 lines:

- Milan-Saronno
- Busto Arsizio-Malpensa airport
- Novara-Seregno
- Milan-Asso
- Saronno-Laveno
- Turin-Ceres
- Canavesana railway
- Suzzara-Ferrara
- Parma-Suzzara
- Bologna-Portomaggiore
- Reggio Emilia-Guastalla
- Reggio Emilia-Sassuol
- Casalecchio-Vignola
- Adria-Mestre
- Perugia-Terni
- Bari-Taranto
- Bari-Barletta
- Rome-Lido
- Rome-Civitacastellana-Viterbo
- Benevento-Cancello



Therefore, even national policies oriented towards large-scale measures such as the European Green Deal must be equipped with measures to encourage the gradual adoption of good practices capable of extending the use of these services and overcoming the major imbalances that exist between different parts of Italy.

This means supporting the gradual development of a network of multimodal, integrated public transport services that can offer suitable alternatives to car use, not only for urban mobility in the strict sense of the term, but also for access to city centres and the main interchange hubs, such as airports.

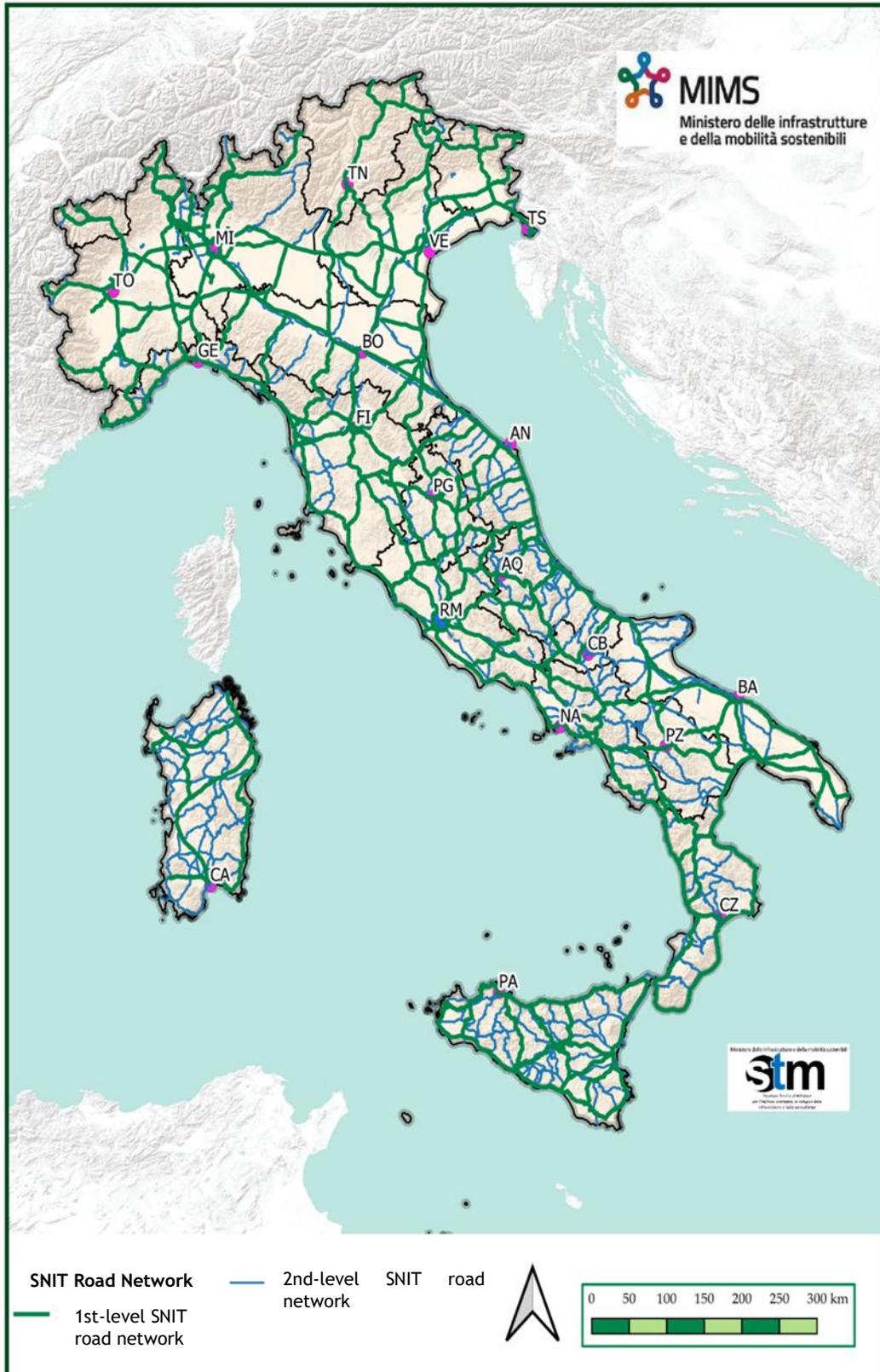
## **ROADS AND MOTORWAYS**

The national and international road and motorway network is based on the definition of the SNIT in the 2001 PGTL, i.e., a road network of about 30,600 km (national road and motorway network) including 13 Alpine passes. The sub-network that the 2001 PGTL itself identifies as the 1<sup>st</sup>-level SNIT road network, which extends for about 15,300 km, has been considered. This sub-network has been integrated with the European TEN-T 'Core' and 'Comprehensive' routes that were not included in the first-level SNIT of 2001, as well as updated with further relevant road axes built over the last 15 years.

In particular, the update concerns both the upgrading of some routes and the completion of strategic links in the road network system. The reclassification to 1<sup>st</sup>-level of some routes and the inclusion of some existing roads not considered in 2001 is the result of the analyses carried out on the network also in the light of critical civil protection events occurred in the last few years. The completion of the 1<sup>st</sup>-level network also concerns the system of transversal roads that, in some geographical areas, were insufficient to guarantee the correct interconnection of the network within the 2001 SNIT.

In addition to the SNIT, the Italian road network includes the networks of regional and provincial roads, which together constitute an irreplaceable support for multimodal access to the SNIT.

**FIGURE III.3.3: 1<sup>ST</sup>-LEVEL SNIT ROAD NETWORK**



Source: STM of the MIMS.

## CYCLEWAYS

Cycling infrastructure plays an important role in the development of sustainable mobility. There are two priorities in particular for the development of cycling policies on which infrastructure investments are being redesigned and redefined, according to the General Plan for Cycling Mobility. The first one concerns cycle connections between regions through national and international routes, where the increase of cycling flows is linked to positive effects in terms of landscape conservation, tourism development and accessibility improvement. The second one concerns urban areas, where the creation of a network of safe routes connecting neighbourhoods and intermodal nodes (*Biciplan*, to be framed within the framework of the SUMP, Sustainable Urban Mobility Plans) is proving to achieve significant shares of modal diversion.

### THE NATIONAL CYCLEWAY PROJECT AND THE EUROPEAN NETWORK

At the European level, the 'Eurovelo' project, which is promoted by the ECF - European Cyclists' Federation, aims at developing a transnational network of cycleways, which has been included in the European TEN-T (Trans-European Transport Network) since 2012, thereby opening up the possibility of accessing the resources that the European Commission makes available for the completion of this strategic network.

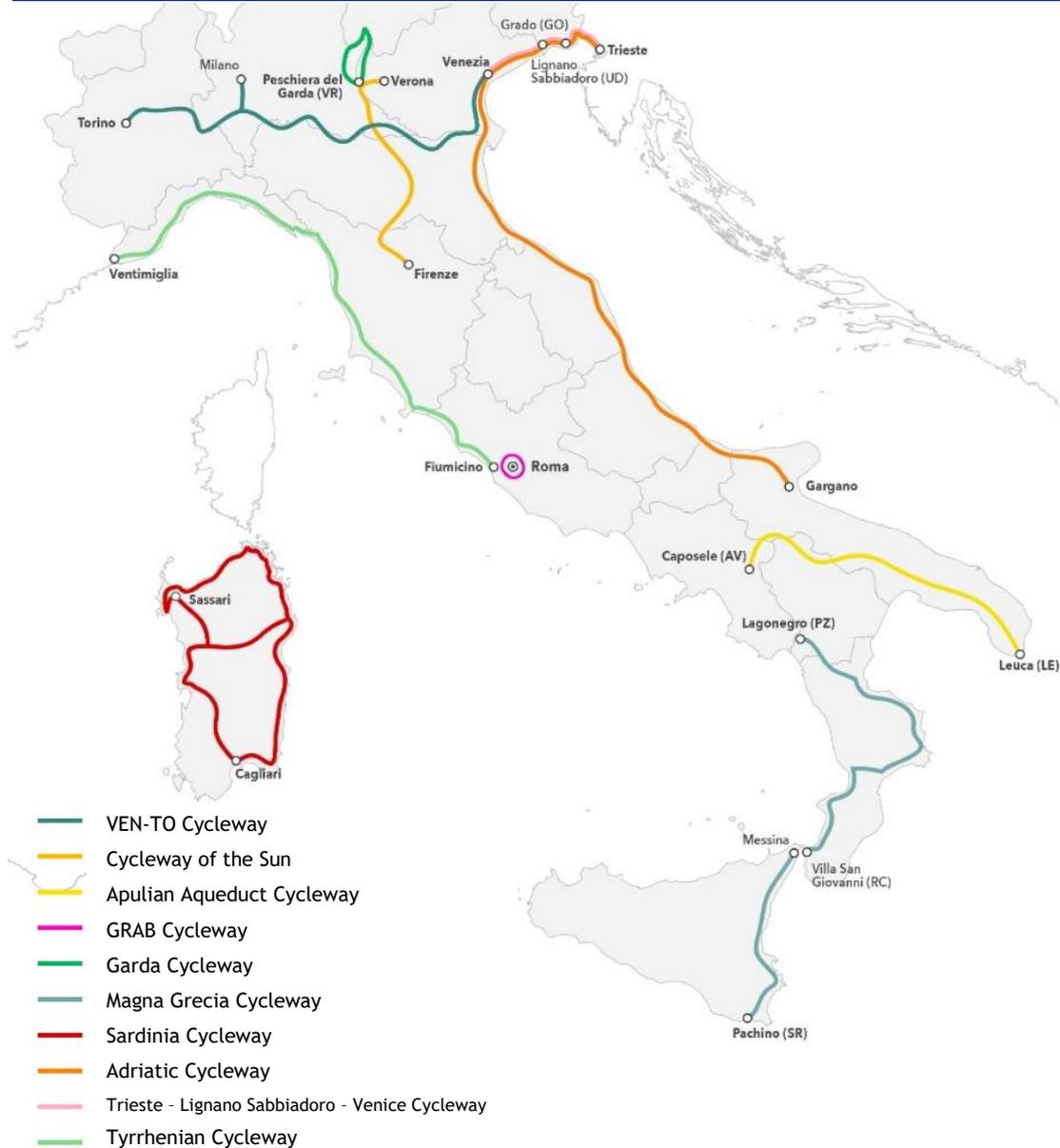
The Eurovelo network (Figure III.3.4) consists of 16 routes, each with an extension of more than 1,000 km, for a total extension of about 80,000 km. At present, some routes are still in the planning stage or under development, but the goal is to complete the network by 2030. Italy is crossed by 3 routes: the 'Mediterranean Route' (route No. 8), which covers 7,500 km and crosses 10 countries, thereby connecting Cadiz to Cyprus and Izmir, the 3,250-km 'Via Romea - Francigena' (route No. 5), which crosses 7 countries and connects London to Brindisi, and the 'Sun Route' (route No. 7), which covers 7,050 km and crosses 9 countries, thereby connecting North Cape to Malta.

Two fundamental steps have been taken for the development of cycling and the network of national cycleways: the identification in 2017 of the 10 cycleways belonging to the national system of tourist cycleways (*Sistema nazionale delle ciclovie turistiche*, SNTC - Figure III.3.5) and the approval of Italian Law No. 2 of 11 January 2018 on the development of cycling mobility, which redefines the national system (SNCT) as the National Bicycle Network (*Rete Ciclabile Nazionale Bicalitalia*, RCN) by considering it to be an integration in Italy of the Eurovelo network, providing for its development with a view to covering the national territory and entrusting the task of implementing it to the MIMS, also through the development of the National Cycling Mobility Plan, which is currently being drafted and will also provide for a physical-functional integration between the Eurovelo network and that of national relevance.

**FIGURE III.3.4: THE EUROVELO NETWORK**



Source: EuroVelo.

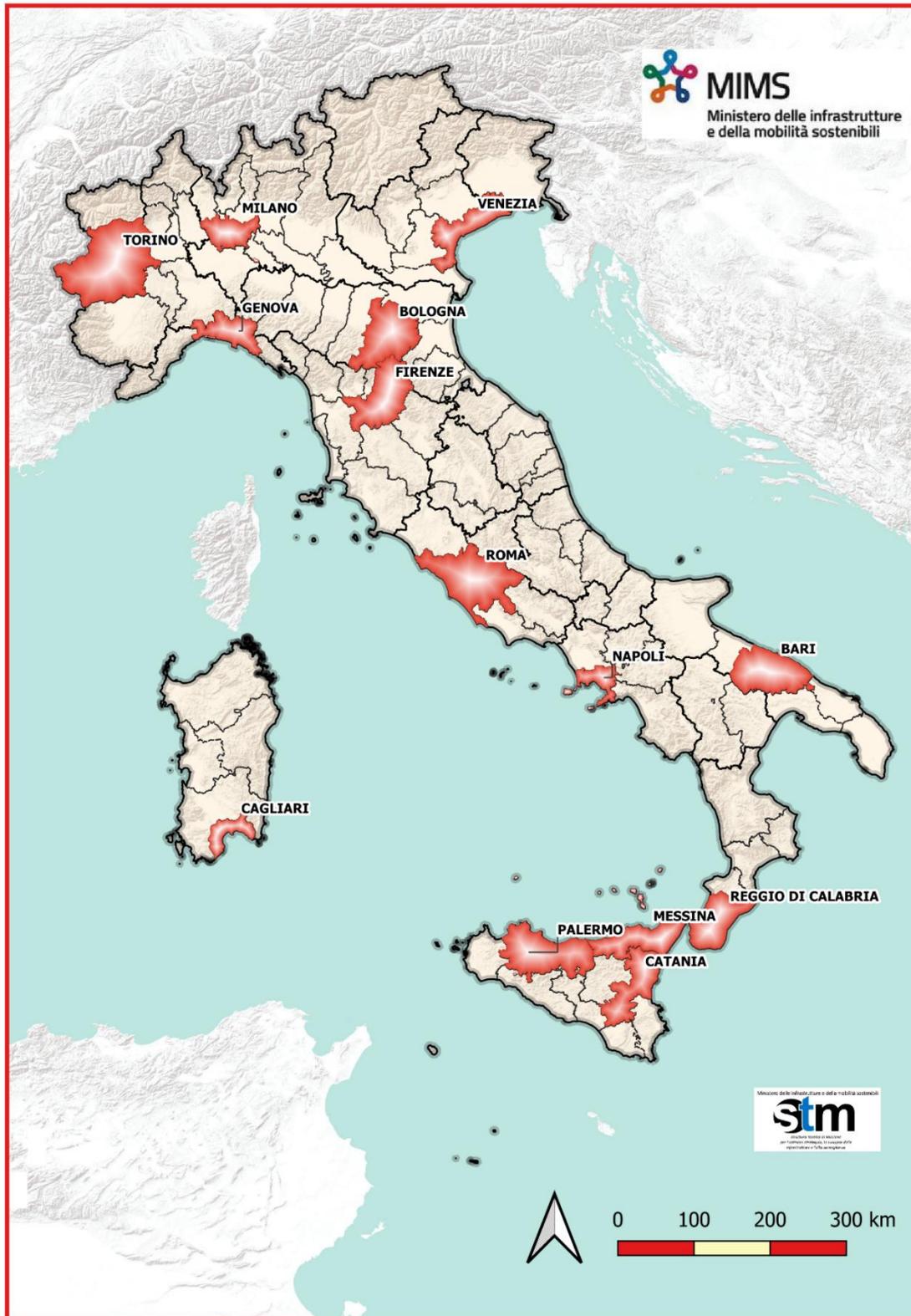
**FIGURE III.3.5: 2020 BICITALIA NATIONAL CYCLE NETWORK**

Source: MIMS.

**RAPID MASS TRANSPORT SYSTEMS**

Italian Law 56/2014 defined the 14 Metropolitan Cities as 2<sup>nd</sup>-level elective institutions, whose metropolitan mayor coincides with the mayor of the capital city; moreover, their area coincides with that of the former provinces, and their functions are mainly planning and programming with regard to economic development, mobility and urbanism.

FIGURE III.3.6: METROPOLITAN CITIES AS DEFINED BY ITALIAN LAW 56/2014



Source: elaboration of the MIMS's STM.

The functions assigned to metropolitan cities include strategic territorial planning and mobility and road planning, to be developed in a coherent manner. In this sense, the EU Directive on the preparation of Sustainable Urban Mobility Plans (SUMP) provides the essential framework within which to develop actions to strengthen the rapid mass transport system, namely the integrated system of metropolitan railways, tramways, lines and possible Bus Rapid Transit (BRT) corridors capable of ensuring the rapid movement of large flows of passengers.

Infrastructural interventions related to these systems are thus classifiable as nationally significant priority interventions. Under the new rules defined by the Ministry, in order for the interventions to be included in the programme of works to be financed with public contributions, a preliminary verification of consistency with the strategic framework outlined in the SUMP is required, as well as the overcoming of the evaluation procedures, as defined by the "evaluation guidelines for public works" (Italian Legislative Decree No. 300 of June 2017).

## PORTS

Consistent with the provisions of Italian Legislative Decree No. 169 of 4 August 2016, entitled "Reorganisation, rationalisation and simplification of the regulations concerning the Port Authorities referred to in Italian Law No. 84 of 28 January 1994, in implementation of Article 8, paragraph 1, letter f) of Italian Law No. 124 of 7 August 2015" and Italian Legislative Decree No. 232 of 13 December 2017 (the so-called 'Correttivo porti'), which amended Italian Law No. 84 of 28 January 1994, and in compliance with the update of the new SNIT that took place in 2017, the 16 Port System Authorities, which in turn include ports of significant international and national economic value, constitute the 1<sup>st</sup>-level nodes of the port sector SNIT.

The national port system does not end with the 1<sup>st</sup>-level SNIT and the 58 nationally and internationally significant ports that make up its backbone, but also includes category I seaports as per Art. 4 of new Italian Law 84/1994 (i.e., ports and specific port areas for military defence and state security purposes) as well as 217 other minor ports of call mainly dedicated to pleasure boating, fishing activities and the transport of local passengers and tourists.

The locations of the AdSPs listed in the following table and identified in the SNIT as 1<sup>st</sup>-level ports correspond to the core port nodes of the Trans-European Transport Network (TEN-T), pursuant to Regulation (EU) No. 1315/2013, with the sole exception of the Port of Civitavecchia - Port System Authority of the Central-Northern Tyrrhenian Sea, for which the nature of a core port is currently being recognised at European level, and the new AdSP (*Autorità di Sistema Portuale*, Port System Authority) of the Strait of Messina, which is based at the comprehensive port of Messina. Consequently, a good part of the other ports included in the AdSPs are ports classified as (Comprehensive) nodes of the global network on the basis of the European articulation. However, the almost complete correspondence between European (TEN-T) and national (SNIT) port planning leaves open the question of the aggregative character and 'cluster' nature that the new 16 AdSPs legally possess. In fact, the ports included in the AdSP, irrespective of the 'Core' or 'Comprehensive' nature of the individual node of European derivation, are a single legal and judicial entity, with a univocal governance, administrative, financial, operational, budgetary and even traffic data structure. The ports within the same AdSP should constitute a single 'Core' node according to European TEN-T planning.

**TABLE III.3.2: LIST OF 1<sup>ST</sup>-LEVEL SNIT ADSPS**

<b>1. AdSP of the Western Ligurian Sea</b>	Ports of Genoa, Savona and Vado Ligure
<b>2. AdSP of the Eastern Ligurian Sea</b>	Ports of La Spezia and Marina di Carrara
<b>3. AdSP of the Northern Tyrrhenian Sea</b>	Ports of Livorno, Piombino, Portoferraio, Rio Marina, Cavo and Capraia
<b>4. AdSP of the Northern-Central Tyrrhenian Sea</b>	Ports of Civitavecchia, Fiumicino and Gaeta
<b>5. AdSP of the Central Tyrrhenian Sea</b>	Ports of Naples, Salerno and Castellamare di Stabia
<b>6. AdSP of the Southern Tyrrhenian and Ionian Seas</b>	Ports of Gioia Tauro, Crotona (old and new port), Corigliano Calabro, Taureana di Palmi and Vibo Valentia
<b>7. AdSP of the Ionian Sea</b>	Port of Taranto
<b>8. AdSP of the Strait</b>	Ports of Messina, Milazzo, Tremestieri, Villa San Giovanni and Reggio Calabria
<b>9. AdSP of the Sardinian Sea</b>	Ports of Cagliari, Foxi-Sarroch, Olbia, Porto Torres, Golfo Aranci, Oristano, Portoscuso-Portovesme and Santa Teresa di Gallura (commercial quay only)
<b>10. AdSP of the Western Sicilian Sea</b>	Ports of Palermo, Termini Imerese, Porto Empedocle and Trapani
<b>11. AdSP of the Eastern Sicilian Sea</b>	Ports of Augusta and Catania
<b>12. AdSP of the Southern Adriatic Sea</b>	Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli
<b>13. AdSP of the Central Adriatic Sea</b>	Ports of Ancona, Falconara, Pescara, Pesaro, San Benedetto del Tronto (tourist dock not included) and Ortona
<b>14. AdSP of the Northern-Central Adriatic Sea</b>	Port of Ravenna
<b>15. AdSP of the Northern Adriatic Sea</b>	Ports of Venice and Chioggia
<b>16. AdSP of the Eastern Adriatic Sea</b>	Ports of Trieste and Monfalcone

**FIGURE III.3.7: 1ST-LEVEL SNIT ADSPS**

Source: RAM S.p.A. elaboration.

## AIRPORTS

The new guidelines of the TEN-T network and the criteria included in the National Airport Plan were integrated at the airport level starting from the 2001 SNIT, especially in relation to the geographical coverage of the airport system, even independently of the 'Core' network. As a result, the airports of Pisa, Florence, Bari, Lamezia Terme and Catania, which belong to the 'Comprehensive' network, were considered to be of national importance and thus classified as 1<sup>st</sup>-level, while the airports of Cuneo, Parma, Rimini, Perugia, Salerno, Taranto and Crotona, although not included in the TEN-T network, were classified as 2<sup>nd</sup>-level. Ultimately, the SNIT contains 38 airport facilities, 16 of which belong to the 1<sup>st</sup>-level network.

**TABLE III.3.3: DEFINITION OF THE 1ST- AND 2ND-LEVEL SNIT AIRPORT NETWORK**

SNIT LEVEL	AIRPORTS
1st-level (16 airports)	Rome Fiumicino, Milan Malpensa, Bergamo Orio al serio, Milan Linate, Venice, Catania, Bologna, Naples, Palermo, Pisa, Bari, Turin, Cagliari, Lamezia Terme, Florence, Genoa
2nd-level (22 airports)	Rome Ciampino, Verona, Treviso, Olbia, Brindisi, Trapani, Alghero, Trieste, Pescara, Reggio Calabria, Ancona, Crotona, Lampedusa, Perugia, Parma, Cuneo, Brescia, Salerno, Comiso, Pantelleria, Rimini, Taranto

**FIGURE III.3.8 : SNIT AIRPORTS. 1ST- AND 2ND-LEVEL FACILITIES**



Source: elaboration of the MIMS's STM.

### III.4 THE METHODOLOGY FOR IDENTIFYING NEEDS AND PRIORITIES

With reference to the selection of interventions and programmes of interventions, pending the drafting of the PGTL and the DPP, the approach applied for the identification of needs is consistent with the provisions of: i) the MIMS's "*Guidelines for the assessment of investments in public works*"; ii) the European regulation underpinning the NRRP (EU 2020/0104 of 10 February 2021) establishing the Recovery and Resilience Facility. In particular, as regards the transitional phase, the '*Guidelines*' foresee that the selection and identification of priorities should be done through a **double-level ex-ante evaluation**:

1. a **first level** aimed at identifying '*mature interventions*', most of which were already included in the Annexes to the DEF in previous years;
2. a **second level**, the aim of which is to establish an '*order of priority*' among the interventions, both those to be financed for implementation - or completion - and those to be financed for feasibility planning.

The first-level evaluation was based on the comparison of several indicators concerning:

- **the maturity of the project**, i.e., the possibility of contracting out the works in a short time, to be assessed according to: the level of design (final, executive or with the awarding procedure underway); the presence of an environmental impact assessment (EIA); the state of progress of the requests for authorisations and/or expropriations;
- **the updating of the analyses** (traffic studies, demand analysis, analysis of the three-year property maintenance schedules, cost-benefit assessments) included in the project proposals;
- **the percentage of completion**, for works in progress only;
- **the share of financing acquired or that can be acquired** with certainty (regardless of its source).

It should be pointed out that, in line with what has been done in recent years and in addition to the technical-quantitative analyses produced (e.g., traffic studies, demand analyses, cost-benefit evaluations) for individual project proposals (works/interventions), the **analyses of the needs** for priority transport infrastructures and services for the country have been conducted from a **systemic perspective**. In said perspective, additional dimensions were also considered, including:

- consistency with the objectives and strategies (Chapter I) within which the individual works are embedded and their contribution **in generating benefits for the national infrastructure and transport system** (e.g., demand analysis, social impacts and economic assessments);
- **new needs resulting** from structural changes in mobility, consumption and production behaviour generated by the **COVID-19 pandemic**;
- **usefulness to contribute to the achievement of the Sustainable Development Goals (SDGs)** of the UN 2030 Agenda and to the general and sectoral policies and strategies of the European Union (e.g., European Commission Communication of 9 December 2020 - Sustainable and Smart Mobility Strategy - Putting European Transport on track for the future).

The second level of assessment aimed at prioritising interventions and intervention programmes consistent with the criteria defined at the first level considers, inter alia, the following dimensions:

- the ability to contribute to the ecological and digital transition;
- delivering more sustainable, more resilient infrastructure;
- the ability to generate significant impacts on the economic and social system, including by helping to reduce social and territorial disparities;
- ensuring the maintenance and safety of existing infrastructure assets, preventing risks also through the use of innovative technologies;
- interventions in the logistics and goods transport sector, in order to make it more resilient and competitive;
- programmes and actions for sustainable urban development also to increase the resilience of connections between cities and inland areas.

Moreover, with reference to the NRRP investments, the European regulation establishing the recovery and resilience mechanism (EU 2020/0104 of 10 February 2021) provides for a rigorous verification of the potential impacts of the interventions on the environmental goals (the '*do no harm the environment*' principle) as defined in Regulation (EU) 2020/852 (the '*Taxonomy Regulation*' for sustainable investments)

Specifically, the six environmental goals are:

1. **climate change mitigation** (an activity is considered to be significantly damaging if it leads to significant greenhouse gas emissions);
2. **climate change adaptation** (significant damage occurs if the negative impact of the current and projected future climate on people, nature or property is increased);
3. **sustainable use and protection of water and marine resources** (significant damage refers to impairment of the good ecological status or potential of water bodies, including surface water and groundwater, or the good environmental status of marine waters);
4. **circular economy, including waste prevention and recycling** (significant damage occurs if the activity leads to significant inefficiencies in the use of materials or in the direct or indirect use of natural sources, or if it significantly increases waste production, incineration or disposal, or if the long-term disposal of waste is likely to cause significant, long-term environmental harm);
5. **pollution prevention and control** (significant damage occurs if the activity leads to a significant increase in emissions of pollutants into the air, water or soil);
6. **protection and restoration of biodiversity and ecosystems** (if the activity is significantly damaging to the good condition and resilience of ecosystems or to the conservation status of habitats and species, including those of Union interest).

Finally, in the water sector, also with reference to the prospect of the evolution of the National Plan of interventions in the sector, the preparation of Guidelines for the evaluation of the interventions to be financed becomes of particular importance. These guidelines are currently being drafted by the MIMS

Technical Mission Structure in order to define clear transparent procedures for accessing the National Plan of Interventions in the water sector in the future.

The main objective of the Guidelines will be to support the process of conceptual and design maturation of proposals of greater scale and impact that the Basin District Authorities intend to submit for inclusion in the National Plan of interventions in the water sector. They will be addressed in the first instance to the District Authorities, which, in turn, will be able to ensure that the initiatives of the individual proponents are accompanied by a report drafted in accordance with the contents of the Guidelines. The objective is to overcome the difference in evaluation criteria that currently exists between the two sections of the National Plan. The Guidelines shall therefore be oriented to provide operational tools to help the District Authorities in the planning of an integrated system of infrastructures able to pursue the progressive balancing of supply and demand of water resources, ensuring the maximum efficiency, effectiveness and cost-effectiveness of the interventions.

### **III.5 PLANNED INVESTMENTS: AN OVERVIEW**

The following is a summary of the planned priority infrastructure investments for Italy, while reference should be made to the Appendix for a detailed description of the individual investments, which are broken down into interventions and intervention programmes, including those for which the need to start drafting a feasibility project has emerged.

Both the summary tables in this paragraph and the detailed tables in the Appendix report the updated economic value of the priority infrastructure investments, the financing available at the current time and the residual need for resources; interventions in the non-advanced project review phase, for which the economic value could be reduced, or those in feasibility planning, which are still at an immature design level, are not included in the calculation (although they are represented in the relevant detailed tables in the Appendix).

Table III.5.1 refers to the transport infrastructures useful for the completion, safety and technological upgrading of the 1<sup>st</sup>-level SNIT (Paragraph III.3). In particular, against a total economic value of more than EUR 242 billion in investments, the residual need for resources amounts to approximately EUR 64 billion. **This deficit represents 26% of the total cost and is seven percentage points lower than the deficit reported in the Annex to last year's DEF, while the total economic value of investments is 23% higher than in 2020 (EUR 242.6 billion compared to EUR 196.7 billion).**

The intervention programmes include extraordinary maintenance and, in general, the enhancement of existing infrastructures, which is a strategic priority (with a total economic value of around EUR 55 billion, taking into account the various programmes for the maintenance and enhancement of existing infrastructures listed in the appendix for each mode of transport).

**TABLE III.5.1: PRIORITY INVESTMENTS IN MOBILITY INFRASTRUCTURE**

Mode of transport	Cost (EUR bil)	Allocated resources (EUR bil)	Residual requirement (EUR bil)
<i>Roads and motorways</i>	75.8	54.2	21.6
<i>Railways (with urban nodes)</i>	132.1*	92.9	39.2*
<i>Rapid mass transport in metropolitan cities</i>	22.0	20.4	1.6**
<i>Ports</i>	9.6	8.3	1.3
<i>Airports</i>	3.1	3.1	0.0
<b>TOTAL</b>	<b>242.6</b>	<b>178.9</b>	<b>63.7</b>

\* With respect to the overall residual requirement needed to complete the priority interventions and programmes, when it comes to the latter (in particular: the intervention programmes for safety enhancement, technological upgrading and environmental impact mitigation), only the priority residual requirement has been considered, i.e., estimated up to the next five years (medium term), consistently with the other priority investment programmes in the table, but differently from what is reported in the RFI Programme Contract (long-term estimate, for an overall residual requirement for railway investments of EUR 55.3 billion).

\*\* The residual requirement reported for rapid mass transport development measures takes into account only projects for which the allocation of resources has already been made by means of specific Ministerial Decrees. Requests received under Notice No. 2 and resources to be made available under the NRRP have not yet been taken into account. In addition, it is estimated that further requests for funding will be received in the coming months, particularly in relation to the development of underground railways in major urban areas and other RMT systems in medium-sized cities, which will entail additional resource requirements of at least EUR 8 billion (Focus in the Appendix).

The allocated resources, including financing from *Next Generation EU* (NGEU) and the Complementary Fund, do not take into account financing that, though guaranteed, has not yet been allocated to individual projects; for instance, witness the resources financed by the 2021 and 2022 Italian Budget Laws, which will feed into the updates of the programme contracts with ANAS (EUR 2.5 billion increase) and RFI (EUR 7.5 billion increase), which have not yet been approved.

Table III.5.2 concerns water infrastructures. With respect to an overall requirement of investments necessary to bring the state of the water infrastructures into line with the best international standards, with an economic value estimated at about EUR 12 billion (on the basis of the surveys carried out through the District Authorities and the relevant Management Bodies), investments for about EUR 590 million have been allocated through the **National Plan of Interventions in the Water Sector** (against an overall available financing of EUR 1.58 billion). In addition, with CIPE Resolutions No. 54 of 2016 and No. 28 of 2018, EUR 473 million of the FSC has been allocated for the implementation of the Operational Plan for Dams. Finally, EUR 187 million provided by the Operational Programme for Water Resources under the 94/99 Community Support Framework are still available. Overall, the resources available and already allocated for priority interventions and programmes in the water sector falling within the competence of the MIMS amount to EUR 1,250 million.

**TABLE III.5.2: INVESTMENTS IN WATER INFRASTRUCTURE**

	Cost (EUR bil)	Allocated resources (EUR bil)	Residual requirement (EUR bil)
National Plan of Interventions in the Water Sector		590	
Operational Plan for Dams		473	
Operational Programme for Water Resources as per Community Support Framework 94/99		187	
<b>TOTAL</b>	<b>12,000</b>	<b>1,250</b>	<b>10,750*</b>

\*With respect to this residual requirement, EUR 710 million are available from the National Plan of interventions in the water sector, plus EUR 1,800 million from the NRRP - Next Gen. EU, plus EUR 313 million from REACT-EU, though not yet allocated and currently being programmed.

Table III.5.3 relates to sustainable building infrastructures and shows the main programmes financed and in the process of being allocated, for a total of about EUR 5 billion.

**TABLE III.5.3: SUSTAINABLE BUILDING PROGRAMMES**

Programme	Allocated resources (EUR bil)
Housing Quality Innovation Programme: NRRP-NGEU	2,800
Housing Quality Innovation Programme; Surplus from the 2021 Italian Budget Law	380
Ex IACP Housing Recovery Programme: Italian Law No. 80 of 2014	815
Programme of prison building interventions with allocated resources	658
Energy efficiency in justice towns: NRRP-FNC	346
<b>TOTAL</b>	<b>4,999</b>

The financing channels, which have guaranteed and continue to guarantee the economic resources, and thus the sustainability of the policy framework contained in this document, are as follows:

- the Next Generation EU fund, which financed the interventions contained in the NRRP approved by the European Commission;
- the national fund that financed the National Plan for Complementary Investments of the NRRP (Italian Decree-Law No. 59 of 6 May 2021);
- budget variance (Article 4 of Italian Decree-Law No. 59 of 6 May 2021);
- funding from Budget Laws and other national regulations and, in particular, the resources of the *'Fund for financing investments and the*

*infrastructural development of the Country'* (hereinafter '*Investment Fund*'), provided for by Article 1, paragraph 140, Italian Law 232/2016 and then refinanced by paragraph 1072 of the 2018 Italian Budget Law, with the '*Fund for relaunching investments by Central Government Administrations and the development of the Country*' established by Article 1, paragraph 95, of the Italian Budget Law for 2019, with the '*Fund for relaunching investments by Central Government Administrations and the development of the Country*' established by Article 1, Paragraph 14 of the 2020 Italian Budget Law and with the additional resources directly allocated to the relevant chapters of the 2021 Italian Budget Law; such funding is characterised by a very long planning period, similar to the time horizon of this document, and by a strong interaction with the objectives and strategies defined therein, with year-by-year remodulations also based on the actual spending capacity;

- availability resulting from project reviews;
- the 2014-2020 Development and Cohesion Fund (*Fondo per lo Sviluppo e la Coesione*, FSC), which has guaranteed financial coverage for the MIT Operational Plan approved by the CIPE with Resolution No. 54 of 1 December 2016 and its two Addenda (as approved by the CIPE respectively on 22 December 2017 with Resolution No. 98 and on 28 February 2018 with Resolution No. 12);
- the 2014-2020 CEF (Connecting Europe Facility) funds;
- the Structural Funds of the 2014 - 2020 PON;
- the 2014-2020 Action and Cohesion Programme, which is complementary to the PON;
- the contribution of private resources, for motorway and airport concessions;
- regional and local co-financing funds, also from European Funds.

On the other hand, with regard to the feasibility design of infrastructures and priority settlements for Italy's development, as well as the project review, resources are made available by the Design Fund, provided for in Article 202, paragraph 1, letter a) of Italian Legislative Decree 50/2016, with a first allocation of EUR 110 million for the years 2018-2019-2020, in order to improve the programming and reprogramming capacity of expenditure also for the design of infrastructures of pre-eminent national interest. The second allocation of resources for the next three-year period is currently underway.

## IV. NATIONAL RECOVERY AND RESILIENCE PLAN (NRRP): CONTENT AND EXPECTED IMPACT

### IV.1 CONTENT OF THE NRRP

In response to the pandemic crisis, in 2020 the European Commission launched the *Next Generation EU* (NGEU) programme, a very ambitious investment and reform package designed to repair the damage caused by the crisis and, at the same time, help strengthening the structural weaknesses of some Member States. The reforms and investments contained in the National Recovery and Resilience Plan (NRRP) of the individual Member States should **speed up the ecological and digital transition**, improve the **training of workers**, and achieve greater **gender, territorial and generational equity**.

The two main instruments of the NGEU are the Recovery and Resilience Facility (RRF) and the Recovery Assistance for Cohesion and the Territories of Europe (REACT EU) programme. In the NRRP submitted to the European Commission by Italy, the resources allocated to the MIMS amount to a total of **EUR 61.124 billion**, of which EUR 46.204 billion, broken down by funding source as follows:

- *Next Generation EU*: EUR 40.701 billion, of which an additional EUR 25.781 billion;
- *React EU*: an additional EUR 0.313 billion.

In addition to these two instruments, further national resources are necessary to integrate European ones, which are time-bound and therefore result somewhat limited since they can't be used for those interventions which, due to their intrinsic complexity, could not be concluded by June 2026 (the deadline set by the NGEU). These resources are the following:

- Complementary fund: additional EUR 9.760 billion;
- budget variance: additional EUR 10.350 billion.

In addition to these resources, there are also EUR 0.738 billion for interventions that the MIMS will carry out in collaboration with other Ministries and that are covered by the portion of the Supplementary Fund allocated to these other Administrations. All projects financed by the NGEU will have to be contracted by 2023, completed by June 2026, and be such that their effectiveness can be monitored and reported, generating, among other things, growth and employment.

The proposals included in the NRRP by the MIMS are based on the following pillars:

- the UN 2030 Agenda for Sustainable Development;
- the strategic guidelines of the European Union, starting with the Green Deal;
- the European Commission's Guidelines for the definition of the NRRP, which include: structural reforms and reforms for the implementation of the Plan; investments (objectives, targets, milestones); the 'do not

significant harm' principle, which excludes roads, airports and interports interventions, with the exception of 'digital and green' ones;

- national strategic planning: the latest Annex to the Economic and Financial Document (DEF) and the National Reform Programme (*Programma Nazionale di Riforma*), approved by the Italian Council of Ministers on 6 July 2020;
- sectoral planning;
- integration with existing national resources;
- consistency with RFI and ANAS planning agreements currently being updated;
- consistency with the resources financed by the 2021-2027 Development and Cohesion Fund (*Fondo di Sviluppo e Coesione 2021-2027*) and with those that will be financed under the 2021-27 European programming.

### **NRRP INVESTMENTS**

The total resources, both assigned directly to the MIMS and assigned to projects to be carried out in collaboration with other Ministries, which amount to EUR 61.862 billion (of which EUR 46.942 billion are additional) are divided as follows between the missions and the components of the NRRP:

- **Mission 1 Digitisation, Innovation, Competitiveness and Culture:** an additional EUR 0.375 billion:
  - Component M1C1 Digitisation, innovation and safety in the PA (an additional EUR 0.040 billion);
  - Component M1C3 Tourism and Culture 4.0 (an additional EUR 0.335 billion).
- **Mission 2 Green Revolution and Ecological Transition:** EUR 15.814 billion, of which EUR 12.464 billion are additional:
  - Component M2C2 Renewable energy, hydrogen and sustainable local mobility (EUR 10.255 billion, of which EUR 8.005 billion are additional);
  - Component M2C3 Energy efficiency and building renovation (additional EUR 2.346 billion);
  - Component M2C4 Protection and enhancement of the territory and of water resources (EUR 3.213 billion, of which EUR 2.113 billion are additional).
- **Mission 3 Infrastructure for Sustainable Mobility:** EUR 41.810 billion, of which EUR 30.710 billion are additional:
  - Component M3C1 High-speed railway network and safe roads (EUR 38.320 billion of which EUR 27.220 billion are additional);
  - Component M3C2 Intermodality and integrated logistics (an additional EUR 3.490 billion).
- **Mission 5 Inclusion and Cohesion:** EUR 3.863 billion of which EUR 3.393 billion are additional:
  - Component M5C2 Social infrastructures, families, communities and the third sector (EUR 2.933 billion of which EUR 2.463 billion are additional);

- Component M5C3 Special interventions for territorial cohesion (an additional EUR 0.930 billion).

The main projects and their assignments are listed below by mission:

- **Mission 1 Digitisation, Innovation, Competitiveness and Culture:** an additional EUR 0.375 billion:
  - Digitisation of public transports, *Mobility as a service* (an additional EUR 0.040 billion);
  - Tours through history and tourist railways (an additional EUR 0.335 billion).
- **Mission 2 Green Revolution and Ecological Transition:** EUR 15.814 billion, of which EUR 12.464 billion are additional:
  - Investments in the hydrogen sector (an additional EUR 0.350 billion);
  - Sustainable local transport, cycleways and modernisation of the railway network (EUR 9.905 billion, of which EUR 7.655 billion are additional);
  - Upgrading of public buildings (an additional EUR 2.346 billion);
  - Reservoirs and sustainable water management (EUR 3.213 billion, of which EUR 2.113 billion additional).
- **Mission 3 Infrastructure for Sustainable Mobility:** EUR 41.810 billion, of which EUR 30.710 billion additional:
  - Railway works to improve the country's mobility and ensure fast connections (EUR 36.870 billion, of which EUR 25.770 billion additional);
  - Safeguarding and digital monitoring of roads, viaducts and bridges (an additional EUR 1.450 billion);
  - Integrated Ports of Italy project (*Progetto integrato Porti d'Italia*) (an additional EUR 3.130 billion);
  - Digitisation of airports and logistics systems (an additional EUR 0.360 billion).
- **Mission 5 Inclusion and Cohesion:** EUR 3.863 billion, of which EUR 3.393 billion additional:
  - Urban regeneration and social housing (EUR 2.933 billion, of which EUR 2.463 billion additional);
  - National strategy for inland areas (additional EUR 0.930 billion).

Without examining the individual projects, it is possible to offer a comprehensive reading of the different missions, based on four points:

1. **Southern Italy is a priority for the Government: the NRRP provides that 49% of the funds (58% if the complementary fund and the budget variance are included) be allocated to projects benefiting this area.** Looking only at the additional resources (i.e. net of those already financed under the current legislation), the percentage allocated to Southern Italy rises to 63% for the NGEU alone, and to 69% if the complementary fund and the budget variance are also considered.

In particular:

- a. the high-speed rail network will reduce the time required to travel from the south to the capital and to the north of the country. It is planned to complete the high-speed/high-capacity Naples-Bari railway line and to build a first high-speed lot on the Salerno-Reggio Calabria; further lots

- will be built on the Catania-Messina-Palermo, Rome-Pescara and Taranto-Battipaglia lines. These interventions will be completed by 2030 with other national and European resources;
- b. in addition to the development of the high-speed rail network, rail services will be expanded at local level by strengthening regional railways in order to promote a shift from road to rail;
  - c. 50% of all resources for the renewal of public transport trains, buses and ships will be allocated to Southern Italy, and the same will be done with the resources to be allocated for the construction of new tramways, trolleybuses and other rapid mass transport systems, as well as cycleways;
  - d. southern ports will be further developed with particular attention to inland connections with ports, a fundamental element to achieve adequate competitiveness of the Italian port system. This is consistent with the implementation of the ‘iron cure’ identified by the National Strategic Plan for Ports and Logistics (*Piano Strategico Nazionale della Portualità e della Logistica*) for environmental sustainability. Within the Ports of Italy project (*Porti d’Italia*), there are specific funds for southern ports.
  - e. in addition to the M2C4 of the NRRP, and in particular to investment 4.2, there is the REACT-EU programming, which allocates additional resources to the cohesion policy, aimed at increasing the resilience of water supply and distribution infrastructures in the south of Italy, investing in the digitisation process of water networks and in measurement and control tools;
2. **urban areas are a priority in the NRRP**, also because it is there that the challenge of environmental, economic and social sustainability will be played out. Therefore:
- a. local public transport will be renewed and upgraded by replacing existing buses and metro trains with new, more efficient vehicles powered in innovative ways (electric, hydrogen, hybrid);
  - b. urban areas are a priority in the NRRP, not least because it is here that the challenge of environmental, economic and social sustainability will be played out. Consequently: new sustainable rapid mass transport lines such as tramways, trolleybuses and rapid transit buses will be built and, in some large urban areas, the existing metro network will be expanded;
  - c. interventions on public mobility will be carried out taking into account the strategic planning for sustainable mobility in urban areas, since funding will be granted mainly to areas already having a Sustainable Urban Mobility Plan (SUMP). Consequently, funding will also be provided for the urban cycleways envisaged by the *Biciplan*, an integral part of the SUMP;
  - d. new mobility services (Mobility as a Service - MaaS) will be promoted, with pilot projects in metropolitan areas and the construction of the necessary structures;
  - e. substantial technological investments are planned for the main urban nodes, which will allow an increase in service capacity while maintaining the same infrastructure, for the modernisation of stations and their integration into the urban context;

- f. cities will receive funding for Housing Quality Innovation Programmes (*Programmi innovativi per la qualità dell'abitare*, PINQUA) that will be selected at the end of the evaluation of the proposals submitted. The aim is, therefore: to redevelop, reorganise and increase the assets destined for social housing; to reorganise areas, spaces and public and private properties also through the regeneration of the urban and socio-economic fabric; to improve the accessibility and safety of urban areas and the provision of urban-local services and infrastructures; to renovate areas and spaces already built, increasing environmental quality and improving their resilience to climate change, also through interventions affecting urban densification. Facilitated social housing will also be promoted through the Fund of Funds (FIA2) and an investment for energy efficiency and seismic upgrading of public housing is planned.
3. **sustainability and resilience of infrastructures and network systems are at the centre of the NRRP strategy.** This requires an unprecedented investment in:
- a. innovative traction systems for passenger transport, such as hydrogen for trains (Puglia, Sicily, Sardinia and Calabria, Brenner corridor), and the replacement of diesel buses with buses powered by alternative sources, mainly electricity;
  - b. tourist cycleways of the national network crossing several regions, in order to develop sustainable tourism and urban cycleways;
  - c. energy efficiency in public housing in the 'Safe, green and social' programme for public housing (with Casaltalia), as well as in justice towns;
  - d. sustainable management of water resources, implementing the National Plan of Interventions in the Water Sector and improving the efficiency of the water distribution network, also with the aim of reducing water losses;
  - e. renewal of the rolling stock and purchase of new trains, replacing diesel locomotives, where they still exist, with electric or, in specific cases, hydrogen-powered ones; renewal of the shipping fleet; and renewal of rail freight infrastructures to promote the modal shift and the electrification of railway nodes and junctions;
  - f. implementation of the Cold Ironing National Plan for the electrification of quays and the Green Ports Plan for energy efficiency and waste management in ports;
  - g. infrastructure digitisation, through the technological monitoring of bridges and road viaducts on the national road network; digitisation of the airspace control system by ENAV; sustainable logistics through the creation of dialogue and artificial intelligence platforms; the Brenner Digital Green Corridor project for the reduction of CO2 emissions through the production of hydrogen from renewable energies; the ERTMS system, for the management, control and protection of rail traffic and its on-board signalling.

### **NRRP REFORMS AND THE SIMPLIFICATION PROCESS**

The NRRP is first and foremost a reform plan since investments, if they are to be implemented as scheduled and with the level of quality envisaged, must be

combined with a reform strategy aimed at improving regulatory and legal conditions and increasing equity, efficiency and competitiveness of the country. In particular, to ensure the implementation of planned infrastructure investments, a series of enabling reforms have been implemented and will be further implemented. These will remove a number of administrative, regulatory and procedural obstacles in order to simplify and streamline procedures.

In addition, sectoral reforms, i.e. changes in legislation relating to specific topics, are planned to make implementation procedures more efficient.

Among the reforms falling within the Ministry's remit are those relating to:

- the railway sector:
  - acceleration of the approval process for the five-year Programme Contract with RFI and subsequent annual updates;
  - speeding up of the authorisation process for railway projects;
- road safety:
  - implementation of the '*Guidelines for risk classification and management, safety assessment and monitoring of existing bridges*' for the entire national road network;
  - transfer of the ownership of road works from municipalities, provinces and regions to ANAS and to motorway concessionaires;
- the port system:
  - simplification of the procedures for the strategic planning process of the Port System Authorities (DPSS - System Strategic Planning Document - and Port Master Plans);
  - adoption of a new regulation on port concessions;
  - simplification of authorisation procedures for the electrification of quays (cold ironing);
- logistics and freight transport:
  - simplification of import/export operations through the effective implementation of the Single Control Desk (*Sportello Unico dei controlli*);
  - interoperability of the various Port Community Systems (tools for digitising passenger and freight movements) between each other and with the National Logistics Platform (*Piattaforma logistica nazionale*, PNL);
  - acceptance and implementation of the protocol on electronic CMR for the digitisation of the goods consignment note by Italy;
- local public transport:
  - simplification of project assessment in the sector of local public transport systems with fixed installations and in the sector of rapid mass transport;
- the water sector:
  - simplification of regulations and strengthening of governance for the implementation of investments in water supply infrastructures.

On 28 May 2021, the Italian Council of Ministers approved Decree-Law No. 77 '*Governance of the NRRP and initial measures to strengthen administrative structures and speed up and streamline procedures*' to help achieve the goals and objectives set out in the Plan, simplifying the authorisation procedures for works,

strengthening the role of public debate and, at the same time, protecting employment, particularly the employment of women and young people. Among the infrastructural interventions planned in the NRRP for the railway, water and port sectors, the Italian Decree-Law has identified a number of '*complex works of significant impact*' that will undergo an accelerated procedure, for which all opinions and authorisations will be acquired on the same project level (technical-economic feasibility project), with the establishment of a Special Committee that will have to determine any changes and additions to the project necessary to comply with any requests that may emerge regarding the opinions and authorisations.

Lastly, this process to simplify the approval procedure of individual projects of the NRRP is also consistent with the procedure to accelerate the construction of other works, most of which are considered to be a national priority, and which have been commissioned pursuant to Italian Decree-Law No. 76 of July 2020 (the so-called '*DL Semplificazioni*', Simplification Decree-Law), and with the Draft Bill, approved on 30 June 2021 by the Government and '*delegating to the Government matters of public contracts*', designed to rationalise, reorganise and simplify the regulations in force by adopting, within six months from the date of entry into force of the same law, one or more legislative decrees for adjustments.

## IV.2 IMPACT OF THE NRRP ON THE ECONOMY AND ON EMPLOYMENT

The impact of the expenditure envisaged by the NRRP for the interventions falling under the MIMS perimeter can be estimated through the use of input-output tables and other integrated databases created by ISTAT<sup>20</sup>. Figure IV.2.1 shows the levels of expenditure estimated using ISTAT data and estimates, amounting to just under EUR 60 billion, broken down by 'product' using the CPA classification for 98 products<sup>21</sup>. The largest single item of expenditure is construction products, just under EUR 31 billion, followed at some distance by products associated with research and development (EUR 5.1 billion) and motor vehicles (EUR 4.3 billion). Next in order are various products for which expenditure is between EUR 3.6 and 2.5 billion (Furniture, Computers, Transport means, Civil engineering, IT services, Equipment).

Based on the levels and breakdown by product of the expenditure foreseen by the NRRP for the activities pertaining to the MIMS, an estimate of the impact on added value and other relevant economic aggregates was made. Table IV.2.1 presents the sectoral order of the estimated changes in value added determined by the simulated shock. This results in a total of about EUR 38 billion of added value on the production system, equal to 2.4% of the reference level (1.8% due to direct effects, 0.6% to indirect ones). Approximately 38% of the total value added is

<sup>20</sup> The estimates reported here have been produced by Istat in collaboration with the MIMS. The data produced are obtained through the use of Input/Output tables (reference year 2018). This methodological approach considers only direct and indirect impacts while excluding induced ones. Moreover, the process is static and does not take into account dynamic and capital accumulation factors (e.g. technological progress and supply-demand dynamics). The estimates therefore do not factor in the medium- to long-term impact of infrastructure development on the economy's growth potential. This methodology, while producing more conservative estimates than those contained in the NRRP, allows for a more flexible representation of results over other dimensions of analysis.

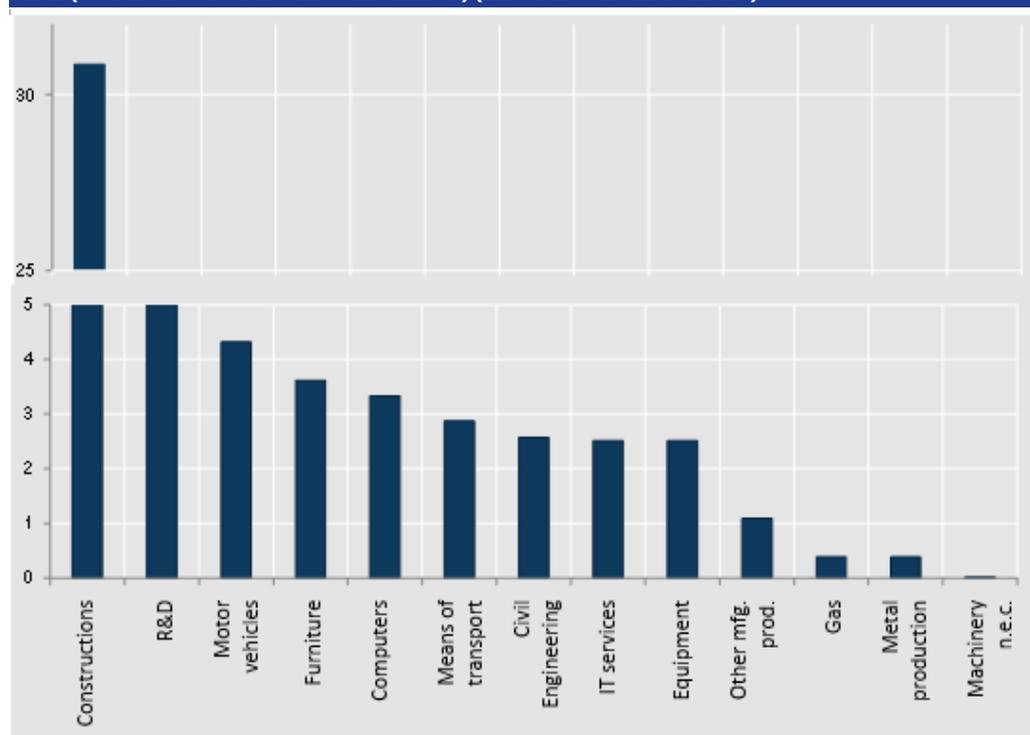
<sup>21</sup> The total value refers to the total investments under the direct and indirect responsibility of the MIMS (taking into account both European and national resources) net of those expenditure components that by their nature do not directly activate components of aggregate demand (e.g. expropriations).

concentrated in the construction sector ( EUR 14.1 billion, +21.1%), mainly in the civil engineering sector (EUR 6.3 billion, +81.5%). The impact on the building construction sector (EUR 3 billion, +19.8%) and on research and development (EUR 3.8 billion, +23.3%) is also significant in percentage terms. On the other hand, the level on industrial sectors is modest, even in those sectors directly affected by NRRP investments (electronics, electrical equipment, motor vehicles), mainly because of the substantial component of imports activated both directly and as intermediate costs of activated production.

Overall, the investment generates a labour input need of more than 600,000 labour units, about half of which are in the construction sector and more than 100,000 in other market services<sup>22</sup>.

In order to have a quantitative dimension of the economic activity generated by the expenditure, it is possible to calculate the so-called ‘rate of return’ which is given by the ratio between the added value generated and the volumes of expenditure activated. The aggregate rate of return (which can be interpreted as an expenditure multiplier) is 63% (EUR 0.663 million of added value generated for every million invested)<sup>23</sup>.

**FIGURE IV.2.1: DISTRIBUTION OF NRRP INVESTMENTS PERTAINING TO THE MIMS BY PRODUCT TYPE (98-PRODUCT CPA CLASSIFICATION) (BN € ABSOLUTE VALUES)**



Source: Elaboration of data and estimates from Istat (2021).

<sup>22</sup> The value of additional employment in terms of AWUs is only apparently inconsistent with the estimates presented in the NRRP, since it represents the impact (pro-rata) of the investments under the direct and indirect responsibility of the MIMS in a static framework without considering dynamic and capital accumulation effects.

<sup>23</sup> The estimated value of the rate of return appears to be comparable to that shown in the section assessing the economic impact of the NRRP with reference to the 'low scenario'. This scenario, in fact, despite the different model used, is the one that comes closest to the assumptions underlying the static approach of the Input/Output tables.

At sector level, the rate of return is calculated by isolating the total volume of value added determined by the direct and indirect effects of the expenditure made in the specific sector of economic activity.

The rate of return on investment in construction is around 77% (EUR 0.77 million of added value generated for every million invested), with an activated productivity of EUR 53.9 thousand per work unit, a relatively low level. The highest rate of return (88%) is for investments in Research and Development, which also show a high level of productivity of production (EUR 114 thousand per work unit)<sup>24</sup>.

Most investment (EUR 39.7 billion out of 59.6) is concentrated within Mission 3, where most of the activation effect is also registered (+1.6% out of a total of +2.4%).

The structural characteristics of the top ten most active sectors (Table IV.2.2) highlight a highly heterogeneous and rich perimeter of enterprises. The average size of the businesses varies from 13.7 employees per business in the civil engineering sector to 1.7 in legal and accounting activities. The share of employees on the total number of workers is linked to the average size of the sectors, going from 94.9% in the civil engineering sector to 35.6% in legal and accounting activities.

**TABLE IV.2.1: BREAKDOWN OF ACTIVATION BY SECTOR OF ECONOMIC ACTIVITY (EUR MLN AND PERCENTAGE CHANGES)**

Sector	Actual shock at purchase price	Starting value added (year 2018)	Activation analysis						Employment (total AWU)
			Total value added	Value added direct component	Value added indirect component	% changes in total value added	% changes in value added direct component	% changes in value added indirect component	
Agriculture	0	34,461	141	24	117	0.4	0.1	0.3	5,205
Mining	0	4,654	150	73	77	3.2	1.6	1.7	674
Low manufacturing	4,711	93,783	1,749	1,333	416	1.9	1.4	0.4	29,587
Medium-low manufacturing	382	69,004	2,060	1,204	856	3.0	1.7	1.2	28,704
Medium-high manufacturing	6,842	77,561	1,309	980	329	1.7	1.3	0.4	13,693
High manufacturing	6,206	25,579	1,036	951	85	4.1	3.7	0.3	10,321
Energy, water and waste	390	42,442	830	386	444	2.0	0.9	1.0	5,723
Construction	33,431	67,000	14,125	13,381	745	21.1	20.0	1.1	314,362
Commerce	0	188,661	1,506	720	786	0.8	0.4	0.4	23,067
Transport and logistics	0	86,940	1,313	450	863	1.5	0.5	1.0	17,633
Hotels and public establishments	0	63,080	395	198	197	0.6	0.3	0.3	9,498
Publishing, telecommunications	2,516	59,769	2,068	1,599	469	3.5	2.7	0.8	22,984
Financial, insurance	0	145,286	1,932	743	1,189	1.3	0.5	0.8	10,616
Other market services	5,102	158,930	8,359	6,213	2,146	5.3	3.9	1.4	107,800
Personal services	0	309,366	826	329	497	0.3	0.1	0.2	16,324
Imputed rents		145,192							0
Domestic services		18,059							0
<b>Total</b>	<b>59,580</b>	<b>1,589,766</b>	<b>37,800</b>	<b>28,583</b>	<b>9,217</b>	<b>2.4</b>	<b>1.8</b>	<b>0.6</b>	<b>616,192</b>

Source: Elaboration ON Istat data and estimates (2021).

The two sectors for which the impact on value added is estimated to be the highest in percentage terms (civil engineering, research and development) have in common a relatively high incidence of employees, average labour productivity levels higher than those of the other sectors, and a relatively low share of young people in the total number of employees. On the other hand, significant differences emerge with regard to the presence of part-time work, fixed-term work and female employees.

<sup>24</sup> The total value added determined by expenditure in the Construction and Research and Development sectors (including indirect effects on other sectors of economic activity) amounts to EUR 25,775 million and EUR 4,489 million respectively.

**TABLE IV.2.2: STRUCTURAL CHARACTERISTICS OF THE TOP 10 SECTORS OF ECONOMIC ACTIVITY ACTIVATED (ATECO DIVISIONS)**

Top 10 sectors activated	Businesses	Personnel	Employees	Turnover (1)	Value added (1)	Labour productivity (2)	Part-time (3)	Fixed term (3)	Women (3)	Young (3)
41 - Construction of buildings	114,931	296,345	200,451	56.8	11.2	37.8	9.7	17.9	9.5	10.0
42 - Civil engineering	6,631	91,019	86,380	23.2	5.8	63.5	5.8	16.7	8.7	8.9
43 - Specialised construction work	380,122	924,366	503,946	89.0	32.9	35.6	13.9	16.9	11.6	16.3
72 - Scientific research and development	10,308	31,395	22,980	4.7	2.1	66.8	12.5	8.9	41.0	12.2
62 - Software production, consultancy	51,928	299,360	251,824	45.1	21.2	70.7	11.7	4.7	31.1	15.8
63 - Activities of info. services and othes	38,047	12,874	92,039	11.3	5.6	46.0	38.7	7.1	68.1	13.1
69 - Legal and accounting activities	300,591	505,182	179,997	35.4	23.9	47.2	48.5	5.6	83.8	11.9
70 - Business management activities	66,004	170,740	116,221	29.2	10.9	63.7	18.2	12.2	49.7	18.1
31 - Manufacturing of furniture	17,819	132,103	108,305	22.8	6.2	47.0	12.6	8.2	26.9	11.0
32 - Other manufacturing industries	29,114	123,212	87,833	19.9	6.1	49.1	18.7	7.1	47.3	13.2
<b>Total industry and services</b>	<b>4,480,903</b>	<b>17,332,979</b>	<b>12,332,979</b>	<b>3316.1</b>	<b>806.1</b>	<b>46.5</b>	<b>29.3</b>	<b>17.8</b>	<b>40.6</b>	<b>16.5</b>

(1) EUR billion

(2) EUR thousands, average values of value added per worker

(3) incidence on total employees

Source: Elaboration on Istat data and estimates (2021).

The strong impact in some sectors leads to considerable potential pressure on supply, which appears to be especially high for the civil engineering sector, followed by research and development and building construction. In these cases the shock would lead to very high pressure on sectoral production capacity, with possible supply bottlenecks in the short term.

### IV.3 THE CONTRIBUTION OF THE NRRP TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

In order to better understand the contribution that the priority interventions and programmes for the country's development summarised in Paragraph III.5 and defined in the Appendix can make in terms of achieving the Sustainable Development Goals (SDGs) and reducing the gap with other European countries (and between Northern, Central and Southern Italy) described in Paragraph III.2, this section reports the main results of an impact analysis on the cross-sectoral dimensions that the medium-term investments envisaged in the NRRP pertaining to the MIMS could have in terms of SDGs indicators. In particular, Table IV.3.1 below shows an intervention-impact matrix where each action of the NRRP is associated with the UN objectives of the 2030 Agenda to which the intervention may directly or indirectly contribute in terms of sustainable development.

Starting from and consistent, where possible, with the SDGs indicators officially proposed in the 2030 Agenda framework and/or by Istat, the following Tables IV.3.2 to IV.3.12 summarise the indicators (with related measures) proposed by MIMS in this study to assess the impact of the NRRP on each Goal, Target and Global Indicator defined in the 2030 Agenda and assessed as having a relevant impact on these investments.

For example, regarding *Goal 9 'Industry, innovation and infrastructure', Target 9.1 'Develop good-quality, reliable, sustainable and resilient infrastructures [...] with fair and affordable access for all' and Global Indicator 9.1.2 'Passenger and freight volumes, by mode of transport'*, several numerical

indicators have been proposed in order to assess the contribution to the achievement of this Goal, including: km of linear rail infrastructures, number of stations, number of new vehicles, rail accessibility. Some of these indicators should be interpreted as direct measures of impact, others as proxy variables, i.e. indirect measures for achieving SDGs. For example, buying new vehicles or building new kilometres of railways is a direct measure to develop '*quality infrastructures [...]*' and increase '*passenger and freight volumes*' on the most sustainable modes of transport. On the other hand, the same indicators can be seen as indirect measures for the SDGs: for example, for Goal 3 '*Ensure health and well-being for all and all ages*' - Global indicator 3.6.1 '*Road traffic fatality rate*', new infrastructure and means of rail transport will lead to a modal shift from private cars to public transport and, consequently, a likely reduction in road accidents.

**TABLE IV.3.1: NRRP INVESTMENT IN INFRASTRUCTURES UNDER THE MIMS RESPONSIBILITY: CONTRIBUTION TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS (SDGs)**

MISSION & COMPONENT NRRP	NRRP DESIGNATION	1 PEOPLE WITH JOBS	2 CLEAN WATER AND SANITATION	3 HEALTHY PEOPLE	4 QUALITY EDUCATION	7 AFFORDABLE AND CLEAN ENERGY	8 INDUSTRIAL INNOVATION AND INFRASTRUCTURE	9 INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	8 DECENT WORK AND ECONOMIC GROWTH
M5 M5C3	NATIONAL STRATEGY FOR INLAND AREAS			X						X				
M2 M2C2	STRENGTHENING CYCLING MOBILITY			X						X			X	
M2 M2C2	RENEWAL OF LOCAL PUBLIC TRANSPORT BUSES	X							X				X	
	RENEWAL OF BUS FLEETS AND GREEN TRAINS	X							X				X	
M3 M3C1	HIGH-SPEED RAIL LINES IN THE NORTH CONNECTING WITH EUROPE			X			X	X	X				X	
	DIAGONAL LINKS			X			X	X	X				X	
	HIGH-SPEED RAIL LINKS TO THE SOUTH FOR PASSENGERS AND FREIGHT			X			X	X	X				X	
M3 M3C1	UPGRADING OF REGIONAL RAIL LINES						X	X					X	
	UPGRADING, ELECTRIFICATION AND INCREASE OF RAILWAY RESILIENCE IN THE SOUTH						X	X					X	
M2 M2C2	DEVELOPMENT OF RAPID MASS TRANSPORT	X		X				X	X				X	
M3 M3C1	RENEWAL OF FREIGHT ROLLING STOCK						X						X	
M2 M2C2	RENEWAL OF BUS FLEETS AND GREEN TRAINS	X					X	X					X	
M3 M3C1	DEVELOPMENT OF THE ERTMS SYSTEM						X							X
M2 M2C4	PRIMARY WATER INFRASTRUCTURES AND WATER DISTRIBUTION NETWORKS		X		X		X				X			
M3 M3C1	STRENGTHENING OF METROPOLITAN RAILWAY NODES						X		X					
	UPGRADING OF RAILWAY STATIONS IN THE SOUTH						X	X						
	ELECTRICATION OF INTERMODAL LINKS						X						X	
M3 M3C2	DIGITISATION OF THE LOGISTICS CHAIN						X							
M2 M2C2	RENEWAL OF VESSELS STRAIT OF MESSINA	X				X	X	X					X	X
	GREEN NAVIGATION					X							X	X
M3 M3C2	COLD IRONING					X							X	X
M3 M3C2	DIGITAL INNOVATION OF AIRPORT SYSTEMS						X							
M2 M2C3	INCREASED EFFICIENCY OF PUBLIC BUILDINGS							X					X	
M5 M5C2	URBAN REGENERATION AND SOCIAL HOUSING							X						
M1 M1C1	DIGITISATION OF PA						X							

Source: elaboration of the MIMS's STM.

**TABLE IV.3.2: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 1 - NO POVERTY**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
 END ALL FORMS OF POVERTY IN THE WORLD	1.4 - BY 2030, ENSURE THAT ALL MEN AND WOMEN, PARTICULARLY THE POOR AND VULNERABLE, HAVE EQUAL RIGHTS TO ECONOMIC RESOURCES, AS WELL AS ACCESS TO BASIC SERVICES, OWNERSHIP AND CONTROL OVER LAND AND OTHER FORMS OF PROPERTY, INHERITANCE, NATURAL RESOURCES, APPROPRIATE NEW TECHNOLOGIES AND FINANCIAL SERVICES, INCLUDING MICROFINANCE	1.4.1 - PERCENTAGE OF POPULATION/HOUSEHOLDS WITH ACCESS TO BASIC SERVICES	CONSTRUCTION/UPGRADING OF INFRASTRUCTURES AND PURCHASE/RENEWAL OF LPT VEHICLES METRO/TRAM/CABLEWAYS/RAILWAYS	KM LINEAR INFRASTRUCTURES VEHICLE FINANCING (EUR MLN)
			PURCHASE/RENEWAL OF LPT ROAD VEHICLES	NO. OF VEHICLES
			PURCHASE/RENEWAL OF LPT RAIL AND MARITIME VEHICLES	NO. OF VEHICLES

Source: elaboration of the MIMS's STM

**TABLE IV.3.3: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 2 - ZERO HUNGER**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
 END HUNGER, ACHIEVE FOOD SECURITY, IMPROVE NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE	2.3 - BY 2030, DOUBLE AGRICULTURAL PRODUCTIVITY AND INCOME OF SMALL-SCALE FOOD PRODUCERS, PARTICULARLY WOMEN, INDIGENOUS PEOPLES, FARM FAMILIES, SHEPHERDS AND FISHERS, INCLUDING THROUGH SECURE AND EQUAL ACCESS TO LAND, OTHER PRODUCTIVE RESOURCES AND ASSETS, KNOWLEDGE, FINANCIAL SERVICES, MARKETS AND OPPORTUNITIES FOR ADDED VALUE AND NON-AGRICULTURAL EMPLOYMENT	2.3.1 - VOLUME OF PRODUCTION PER WORK UNIT, BY SIZE CLASS OF AGRICULTURAL/FORESTRY/LIVE STOCK HOLDINGS	CONSTRUCTION OF PRIMARY WATER INFRASTRUCTURES AND WATER DISTRIBUTION NETWORKS	KM LINEAR INFRASTRUCTURES
		2.3.2 - AVERAGE INCOME OF SMALL AGRICULTURAL PRODUCERS, BY GENDER AND INDIGENOUS STATUS		
	2.4 - BY 2030, ENSURE SUSTAINABLE FOOD PRODUCTION SYSTEMS AND IMPLEMENT RESILIENT FARMING PRACTICES THAT INCREASE PRODUCTIVITY AND PRODUCTION, HELP PROTECT ECOSYSTEMS, INCREASE THE CAPACITY TO ADAPT TO CLIMATE CHANGE, EXTREME WEATHER, DROUGHTS, FLOODS AND OTHER DISASTERS, AND PROGRESSIVELY IMPROVE SOIL QUALITY	2.4.1 - SHARE OF AGRICULTURAL AREA DEVOTED TO SUSTAINABLE AND PRODUCTIVE AGRICULTURE		

Source: elaboration of the MIMS's STM

**TABLE IV.3.4: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 3 - GOOD HEALTH AND WELL-BEING**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR*	UNIT OF MEASUREMENT
 ENSURE HEALTH AND WELL-BEING FOR EVERYONE REGARDLESS OF THEIR AGE	3.6 - BY 2020, HALVE THE NUMBER OF DEATHS AND ROAD INJURIES WORLDWIDE	3.6.1 - DEATH RATE DUE TO ROAD ACCIDENTS	CONSTRUCTION OF RAILWAY INFRASTRUCTURES AND PURCHASE/RENEWAL OF URBAN/SUBURBAN VEHICLES	KM LINEAR INFRASTRUCTURES VEHICLE FINANCING (EUR MLN)
			CONSTRUCTION OF TOURIST AND URBAN CYCLEWAYS	KM LINEAR INFRASTRUCTURES
			ROAD-RAIL MODAL SHIFT FOR PASSENGERS AND FREIGHT	% MODAL SHIFT
			ROAD MAINTENANCE (INLAND AREAS)	KM LINEAR INFRASTRUCTURES

\* Proxy indicator for road accidents.

Source: elaboration of the MIMS's STM

**TABLE IV.3.5: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 6 - CLEAN WATER AND SANITATION**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
ENSURE THE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL	6.1 - BY 2030, ACHIEVE UNIVERSAL AND EQUAL ACCESS TO SAFE AND AFFORDABLE DRINKING WATER	6.1.1 - PERCENTAGE OF POPULATION WITH SAFELY MANAGED DRINKING WATER SERVICES	CONSTRUCTION OF PRIMARY WATER INFRASTRUCTURES AND DISTRIBUTION NETWORKS	KM LINEAR INFRASTRUCTURES
	6.4 - BY 2030, SUBSTANTIALLY INCREASE WATER EFFICIENCY IN ALL SECTORS AND ENSURE FRESH WATER ABSTRACTION AND SUPPLY TO ADDRESS WATER SHORTAGES AND SUBSTANTIALLY REDUCE THE NUMBER OF PEOPLE SUFFERING FROM WATER SHORTAGE	6.4.1 - CHANGE IN WATER USE EFFICIENCY		
		6.4.2 - WATER STRESS LEVEL: FRESH WATER ABSTRACTION IN PROPORTION TO AVAILABLE WATER RESOURCES		

Source: elaboration of the MIMS's STM

**TABLE IV.3.6: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 7 - AFFORDABLE AND CLEAN ENERGY**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY SYSTEMS FOR ALL	7.2 - BY 2030, SIGNIFICANTLY INCREASE THE SHARE OF RENEWABLE ENERGIES IN THE GLOBAL ENERGY MIX	7.2.1 - SHARE OF ENERGY FROM RENEWABLE SOURCES IN TOTAL FINAL ENERGY CONSUMPTION	CONSTRUCTION OF COLD IRONING INFRASTRUCTURES	ELECTRICAL POWER
			CONSTRUCTION OF LNG INFRASTRUCTURES AND GREEN NAVIGATION	RESERVOIR VOLUME NO. OF VEHICLES

Source: elaboration of the MIMS's STM

**TABLE IV.3.7: MIMS INDICATORS RELATING TO SUSTAINABLE DEVELOPMENT GOAL 9 - INDUSTRY, INNOVATION AND INFRASTRUCTURE**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
BUILD A RESILIENT INFRASTRUCTURE AND PROMOTE INNOVATION AND FAIR, RESPONSIBLE AND SUSTAINABLE INDUSTRIALISATION	9.1 - DEVELOP QUALITY, RELIABLE, SUSTAINABLE AND RESILIENT INFRASTRUCTURES, INCLUDING REGIONAL AND CROSS-BORDER INFRASTRUCTURES, TO SUPPORT ECONOMIC DEVELOPMENT AND HUMAN WELL-BEING, WITH A FOCUS ON EQUITABLE AND AFFORDABLE ACCESS FOR ALL	9.1.1 - PERCENTAGE OF RURAL POPULATION LIVING WITHIN A 2 KM RADIUS OF A ROAD WHICH CAN BE USED ALL YEAR ROUND  9.1.2 - PASSENGER AND FREIGHT VOLUMES, BY MODE OF TRANSPORT	IMPLEMENTATION OF AV+AVR RAILWAY INFRASTRUCTURES	KM LINEAR INFRASTRUCTURES
			UPGRADING OF REGIONAL RAILWAY LINES	
			ELECTRIFICATION OF RAILWAY LINES	
			LAST-MILE CONNECTIONS	
			TECHNOLOGICAL DEVELOPMENT OF RAILWAY INFRASTRUCTURES	NO. OF STATIONS
			STATION UPGRADING AND ACCESSIBILITY IMPROVEMENT	
			RENEWAL OF PASSENGER AND FREIGHT RAIL VEHICLES	NO. OF VEHICLES
			DIGITISATION OF LPT, LOGISTICS AND AIRPORT SYSTEMS	WORKS FINANCING (EUR MLN)
			IMPACT ON EQUITY IN TERMS OF CHANGE IN RAIL ACCESSIBILITY	RAIL ACCESSIBILITY
CONSTRUCTION OF PRIMARY WATER INFRASTRUCTURE AND DISTRIBUTION NETWORKS	KM LINEAR INFRASTRUCTURES			

Source: elaboration of the MIMS's STM

**TABLE IV.3.8: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 10 - REDUCED INEQUALITY**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
 REDUCE INEQUALITIES BETWEEN AND WITHIN COUNTRIES	10.2 - BY 2030, INCREASE AND PROMOTE THE SOCIAL, ECONOMIC AND POLITICAL INCLUSION OF ALL, REGARDLESS OF AGE, GENDER, DISABILITY, RACE, ETHNICITY, ORIGIN, RELIGION, WEALTH OR OTHER FACTORS	10.2.1 - PERCENTAGE OF PEOPLE LIVING ON LESS THAN 50% OF THE MEDIAN INCOME, BROKEN DOWN BY GENDER, AGE AND PEOPLE WITH DISABILITIES	CONSTRUCTION OF PUBLIC HOUSING INFRASTRUCTURES	WORKS FINANCING (EUR MLN)
			IMPACT ON EQUITY IN TERMS OF CHANGE IN RAIL ACCESSIBILITY	RAIL ACCESSIBILITY
			IMPLEMENTATION OF AV+AVR RAILWAY INFRASTRUCTURES	KM LINEAR INFRASTRUCTURES
			PURCHASE/RENEWAL OF LPT ROAD VEHICLES	NO. OF VEHICLES
			UPGRADING/ELECTRIFICATION OF RAILWAY LINES AND UPGRADING OF STATIONS IN THE SOUTH	KM LINEAR INFRASTRUCTURES NO. OF STATIONS
			STRENGTHENING REGIONAL RAIL LINES	KM LINEAR INFRASTRUCTURES
			CONSTRUCTION OF RAILWAY INFRASTRUCTURES AND PURCHASE/RENEWAL OF URBAN/SUBURBAN VEHICLES	KM LINEAR INFRASTRUCTURES VEHICLES FINANCING (EUR MLN)
			PURCHASE/RENEWAL OF LPT RAIL AND MARITIME VEHICLES	NO. OF VEHICLES

Source: elaboration of the MIMS's STM

**TABLE IV.3.9: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 11 - SUSTAINABLE CITIES AND COMMUNITIES**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
 MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE	11.2 - BY 2030, PROVIDE ACCESS TO SAFE, SUSTAINABLE AND AFFORDABLE TRANSPORT SYSTEMS FOR ALL, IMPROVE ROAD SAFETY, IN PARTICULAR BY INCREASING PUBLIC TRANSPORT, WITH PARTICULAR ATTENTION TO THE NEEDS OF THOSE IN VULNERABLE SITUATIONS, WOMEN, CHILDREN, PEOPLE WITH DISABILITIES AND THE ELDERLY	11.2.1 - PERCENTAGE OF POPULATION WITH EASY ACCESS TO PUBLIC TRANSPORT, BY GENDER, AGE AND PEOPLE WITH DISABILITIES	CONSTRUCTION OF RAILWAY INFRASTRUCTURES AND PURCHASE OF NEW VEHICLES IN URBAN AREAS	KM LINEAR INFRASTRUCTURES VEHICLES FINANCING (EUR MLN)
			CONSTRUCTION OF TOURIST AND URBAN CYCLEWAYS	KM LINEAR INFRASTRUCTURES
			ROAD-RAIL MODAL SHIFT FOR PASSENGERS AND FREIGHT	% MODAL SHIFT
			ROAD MAINTENANCE (INLAND AREAS)	KM LINEAR INFRASTRUCTURES

Source: elaboration of the MIMS's STM

**TABLE IV.3.10: MIMS INDICATORS RELATING TO SUSTAINABLE DEVELOPMENT GOAL 12 - RESPONSIBLE CONSUMPTION AND PRODUCTION**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR	UNIT OF MEASUREMENT
 GUARANTEE SUSTAINABLE MODELS OF PRODUCTION AND OF CONSUMPTION	12.2 - ACHIEVE SUSTAINABLE MANAGEMENT AND EFFICIENT USE OF NATURAL RESOURCES BY 2030	12.2.2 - CONSUMPTION OF DOMESTIC MATERIALS, CONSUMPTION OF DOMESTIC MATERIALS PER CAPITA AND CONSUMPTION OF DOMESTIC MATERIALS PER UNIT OF GDP	CONSTRUCTION OF PRIMARY WATER INFRASTRUCTURES AND WATER DISTRIBUTION NETWORKS	KM LINEAR INFRASTRUCTURES

Source: elaboration of the MIMS's STM

**TABLE IV.3.11: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 13 - CLIMATE ACTION**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR*	UNIT OF MEASUREMENT
TAKE IMMEDIATE ACTION TO COMBAT CLIMATE CHANGE AND ITS CONSEQUENCES 	13.2 - INTEGRATE MEASURES TO COMBAT CLIMATE CHANGE INTO NATIONAL POLICIES, STRATEGIES AND PLANS	13.2.2 - TOTAL GREENHOUSE GAS EMISSIONS PER YEAR	REDUCTION OF CLIMATE-CHANGING GASES DUE TO PNRR MEASURES IN THE TRANSPORT SECTOR	% ROAD-RAIL MODAL SHIFT
			REDUCTION OF GREENHOUSE GASES DUE TO THE RENEWAL OF LPT VEHICLES	NO. OF VEHICLES

\* Proxy indicator for air pollution by greenhouse gases.

Source: elaboration of the MIMS's STM

**TABLE IV.3.12: MIMS INDICATORS RELATED TO SUSTAINABLE DEVELOPMENT GOAL 14 - LIFE BELOW WATER**

GOAL	TARGET	GLOBAL INDICATOR	MIMS INDICATOR*	UNIT OF MEASUREMENT
PRESERVE AND USE IN A SUSTAINABLE WAY OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT 	14.1 - BY 2025, PREVENT AND SIGNIFICANTLY REDUCE MARINE POLLUTION, IN PARTICULAR FROM LAND-BASED ACTIVITIES, INCLUDING MARINE LITTER AND NUTRIENT POLLUTION OF WATERS	14.1.1 - (A) COASTAL EUTROPHICATION INDEX; AND (B) DENSITY OF FLOATING PLASTIC DEBRIS	CONSTRUCTION OF COLD IRONING, LNG AND GREEN NAVIGATION INFRASTRUCTURES	ELECTRIC POWER
				RESERVOIR VOLUME
	14.2 - BY 2020, MANAGE AND PROTECT MARINE AND COASTAL ECOSYSTEMS IN A SUSTAINABLE MANNER TO AVOID SIGNIFICANT ADVERSE IMPACTS, INCLUDING BY INCREASING THEIR RESILIENCE AND WORKING TOWARDS THEIR RESTORATION, IN ORDER TO ACHIEVE HEALTHY AND PRODUCTIVE OCEANS	14.2.1 - NUMBER OF COUNTRIES USING ECOSYSTEM APPROACHES TO MANAGE MARINE AREAS		NO. OF VEHICLES

\* Proxy indicator for marine pollution and ecosystem protection.

Source: elaboration of the MIMS's STM

Lastly, Table IV.3.13 and IV.3.14 show the quantitative result of the estimates (measures) of the different MIMS indicators associated with each SDGs in terms of new allocations, expected impacts and/or planned investments.

As mentioned above, compared with the rest of Europe, Italy reveals weaknesses particularly in the transport and water infrastructures sectors and in the urban and housing sectors. The investments envisaged in the NRRP, including those in the railway sector, are expected to produce a significant improvement in the quantity, quality and competitiveness of public transport infrastructures and services to the detriment of other modes of transport (especially private cars), by increasing the performance of the existing railway infrastructure and improving the availability of transport to the railway network. The spread between geographical areas of the country will also be reduced (Table V.3.15) through, for example, an increase in rail accessibility significantly greater in the south than in the centre and the north.

**TABLE IV.3.13: NRRP (NEXT GEN. EU) INFRASTRUCTURE INVESTMENTS: VALUE OF MIMS INDICATORS FOR ASSESSING THE CONTRIBUTION TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS (SDGS)**

NRRP DESIGNATION	MISSION & COMPONENT NRRP	PROJECT	MIMS INDICATOR VALUE
DEVELOPMENT OF CYCLING MOBILITY	M2 M2C2	PRIMARY NATIONAL CYCLEWAYS	1,235 km
		URBAN AND METROPOLITAN CYCLEWAYS	565 km
RENEWAL OF GREEN BUS FLEETS	M2 M2C2	RENEWAL OF ELECTRIC BUSES	3,000 bus
		RENEWAL OF ELECTRIC/HYDROGEN BUSES	
HIGH-SPEED RAIL LINES IN THE NORTH CONNECTING ITALY TO EUROPE DIAGONAL LINKS	M3 M3C1	HIGH-SPEED RAIL LINES IN THE NORTH CONNECTING ITALY TO EUROPE	180 km
		DIAGONAL LINKS	50 km
HIGH-SPEED RAIL LINKS TO THE SOUTH FOR PASSENGERS AND FREIGHT		HIGH-SPEED RAIL LINKS TO THE SOUTH FOR PASSENGERS AND FREIGHT	270 km
UPGRADING OF REGIONAL RAIL LINES	M3 M3C1	POTENZIAMENTO LINEE REGIONALI	700 km
UPGRADING, ELECTRIFICATION AND INCREASE OF RAILWAY RESILIENCE MAINLY IN THE SOUTH	M3 M3C1	UPGRADING OF LINES	2,400 mln €
		ELECTRIFICATION OF LINES	
DEVELOPMENT OF RAPID MASS TRANSPORT	M2 M2C2	METRO	11 km
		TRAMWAY	85 km
		BRT TROLLEYBUS	120 km
		FUNICULAR RAILWAY	15 km
RENEWAL OF GREEN TRAIN FLEETS	M2 M2C2	RENEWAL OF REGIONAL TRAINS	50 treni
		RENEWAL OF INTERCITY TRAINS FOR THE SOUTH	200 mln €
DEVELOPMENT OF THE EUROPEAN RAIL TRANSPORT MANAGEMENT SYSTEM - ERTMS	M3 M3C1	TECHNOLOGICAL DEVELOPMENT	3,400 km
INVESTMENTS IN PRIMARY WATER INFRASTRUCTURES FOR A SAFE WATER SUPPLY	M2 M2C4	PRIMARY WATER INFRASTRUCTURES	2,000 mln €
		WATER DISTRIBUTION NETWORKS (WITH ARERA)	900 mln €
REDUCTION OF LOSSES IN WATER DISTRIBUTION NETWORKS, AS WELL AS DIGITISATION AND MONITORING OF NETWORKS		OTHER WATER DISTRIBUTION NETWORKS (WITH ARERA AND THE COHESION MINISTRY) - REACT EU	313 mln € (*)
STRENGTHENING OF METROPOLITAN RAIL NODES AND KEY NATIONAL CONNECTIONS	M3 M3C1	NETWORK REINFORCEMENTS	1,900 km
UPGRADING OF RAILWAY STATIONS IN THE SOUTH	M3 M3C1	UPGRADING OF STATIONS IN THE SOUTH	55 stazioni
DIGITISATION OF THE LOGISTICS CHAIN	M3 M3C2	DIGITISATION OF LOGISTICS SYSTEMS (DEMATERIALIZATION OF PROCEDURES, REDUCTION OF PROCESS TIMES)	250 mln €
DIGITAL INNOVATION OF AIRPORT SYSTEMS	M3 M3C2	DIGITAL INNOVATION IN AIRPORT SYSTEMS	110 mln €
INCREASED EFFICIENCY IN PUBLIC BUILDINGS	M2 M2C3	UPGRADING OF JUSTICE TOWNS	346 mln €
URBAN REGENERATION AND SOCIAL HOUSING	M5 M5C2	HOUSING QUALITY INNOVATION PROGRAMME	2,800 mln €
DIGITISATION OF THE PA	M1 M1C1	DIGITISATION OF LPT (MOBILITY AS A SERVICE)	40 mln €
<b>TOTAL</b>		<b>1,800 km of cycleways 6,500 km of railways (national and regional) 231 km of rapid mass transport 3,000 buses 50 passenger trains 55 stations</b>	

\* resources connected to the REACT-EU package

Source: elaboration of the MIMS's STM

**TABLE IV.3.14: INVESTMENTS OF THE COMPLEMENTARY FUND (D.L. 59/2021) FOR INFRASTRUCTURES: VALUE OF MIMS INDICATORS FOR ASSESSING THE CONTRIBUTION TO ACHIEVING SUSTAINABLE DEVELOPMENT GOALS (SDGS)**

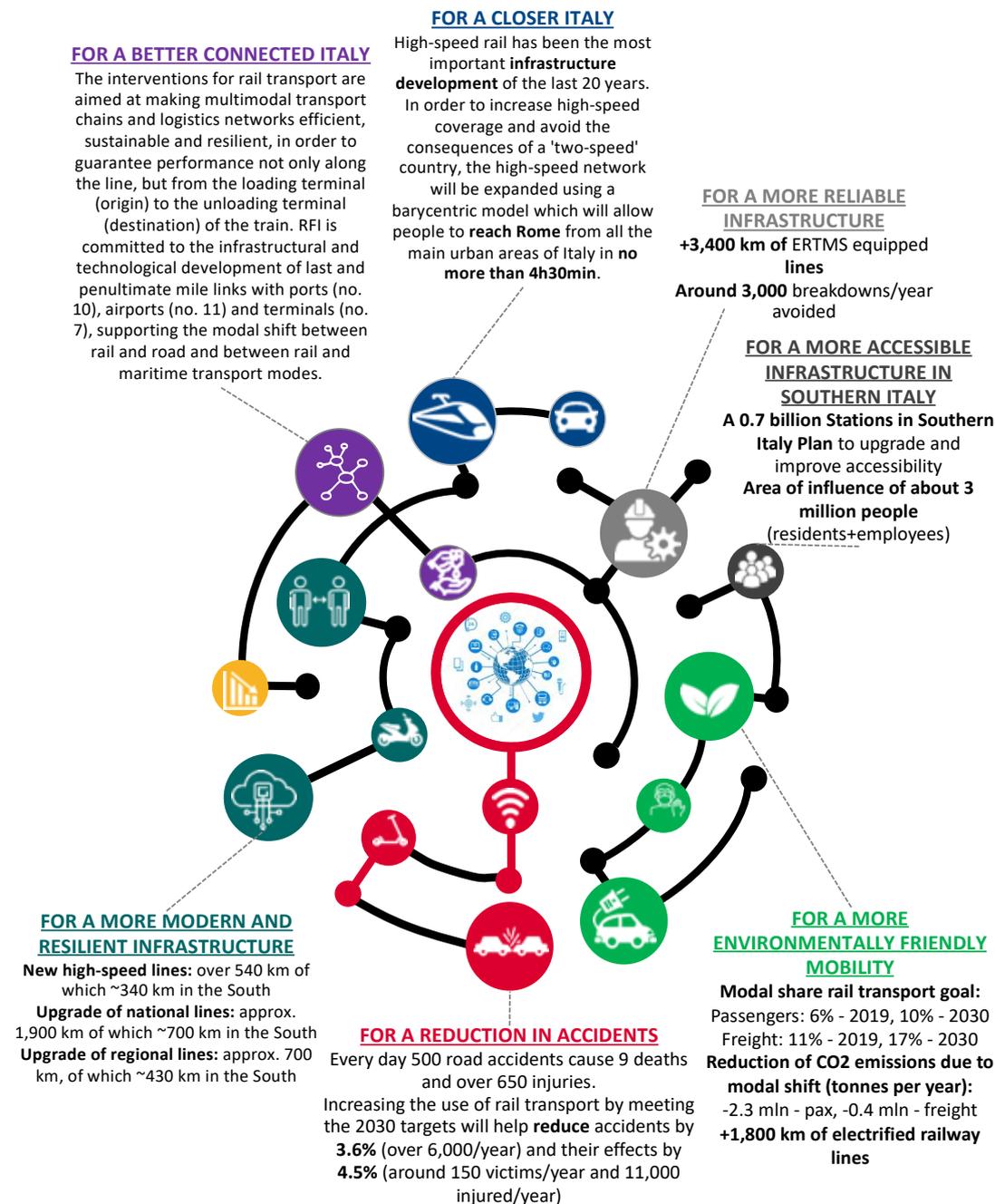
DESIGNATION	PROJECT	MIMS INDICATOR VALUE
NATIONAL STRATEGY FOR INLAND AREAS (ROADS)	SAFETY WORKS, INCLUDING DEEP RENOVATIONS AND CONSTRUCTION WORKS	2,000 km
RENEWAL OF LPT BUSES	RENEWAL OF CNG BUSES	1,500 bus
UPGRADING OF REGIONAL RAIL LINES	UPGRADING OF REGIONAL LINES	1,550 mln €
RENEWAL OF FREIGHT ROLLING STOCK	RENEWAL OF ROLLING STOCK UNITS (LOCOMOTIVES, WAGONS, INTERMODAL VEHICLES)	1,900 units
ELECTRIFICATION OF INTERMODAL LINKS	ELECTRIFICATION OF RAILWAY LINKS	20 km
RENEWAL OF VESSELS IN THE STRAIT OF MESSINA	RENEWAL OF NAVAL UNITS IN THE STRAIT	80 mln €
GREEN NAVIGATION	NAVAL FLEET	500 mln €
	LNG INFRASTRUCTURES	220 mln €
COLD IRONING	COLD IRONING	700 mln €
EFFICIENCY IN PUBLIC BUILDINGS	'SAFE, GREEN AND SOCIAL' PROGRAMME FOR PUBLIC HOUSING	2,000 mln €
<b>TOTAL</b>	<b>2,000 km of roads (maintenance) 20 km of railways (national and regional) 1,500 buses 1,900 freight rail units</b>	

Source: elaboration of the MIMS's STM

**TABLE IV.3.15: AVERAGE % CHANGE IN JOURNEY TIMES ON HIGH-SPEED (AV) RAIL NETWORK EXPECTED IN THE NRRP**

TERRITORIAL BREAKDOWN	% change in average travel time*
NORTHERN ITALY	- 22.0%
CENTRAL ITALY	- 4.5%
SOUTHERN ITALY and ISLANDS	- 24.4%

\* Weighted value for the population potentially affected.  
Source: elaboration of the MIMS's STM of RFI data (2021).

**FIGURE IV.3.1: EXPECTED BENEFITS PRODUCED BY RAIL INVESTMENTS ENVISAGED IN THE NRRP**

Source: RFI.

Again with reference to the railway interventions provided for in the NRRP, the impact of the investments was assessed in terms of territorial equity, i.e. the change in transport accessibility produced in different areas of the country. Specifically, the Gini coefficient was estimated as a measure of inequality in the distribution of rail transport accessibility. According to the index:

$$\text{Weighted average journey time} = (\sum_d T_{od} \cdot O_d) / (\sum_d O_d) \quad [\text{hours}]$$

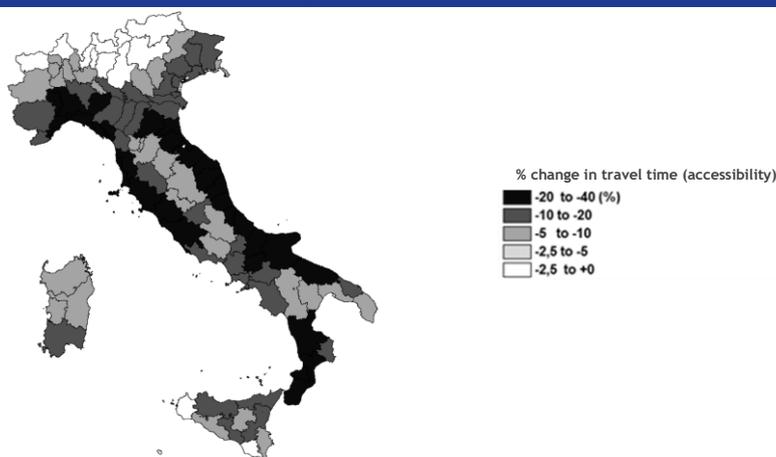
with:

- $T_{od}$  average travel time from the province of origin 'o' to the province of destination 'd' (by train with the fastest route/service);
- $O_d$  number of employees (opportunities) located in the province of destination 'd'.

In particular, the implementation of the planned rail programme (project scenario) would lead to a reduction (compared to 2021) in the weighted average rail travel time of approximately 17.2%. In order to better appreciate the impacts produced by the interventions envisaged in the NRRP on rail and road accessibility, a thematic map has also been proposed, as shown in figure IV.3.2 below, in order to evaluate the percentage variations produced for each Italian province in the NRRP scenario with respect to the reference scenario of 2021.

Finally, the degree of 'fairness' of the interventions planned in the NRRP concerning the rail transport sector was assessed in terms of their ability to bridge the gap in the country's transport accessibility (e.g. between North and South). Specifically, the Gini index was used to measure the inequality in the distribution of railway accessibility with reference to the density of population in the Italian provinces. By estimating the percentage change in the Gini index between the reference scenario (which for simplicity coincides with the current one) and the NRRP scenario, the reduction in inequalities was estimated at 38%.

**FIGURE IV.3.2: IMPACT OF NRRP INVESTMENTS IN TERMS OF TERRITORIAL EQUITY: THE PERCENTAGE CHANGE IN RAIL ACCESSIBILITY IN TERMS OF WEIGHTED AVERAGE TRAVEL TIME\***



\* Equity impacts relate to investments in the NRRP, those programmed with other funds or interventions currently underway on the national rail network.

Source: Estimates of the University of Campania 'Luigi Vanvitelli', Department of Engineering

Other planned interventions on the railway network include the electrification of more than 1,800 km of lines, which is more than 10 times the amount realised in the last 10 years in Italy (source: Eurostat). Around 700 km of new regional railway lines are also planned, of which more than 60% (around 430 km) in Southern Italy (source: RFI). There are also plans for the technological development of railway infrastructures, through the implementation of the ERTMS system, which is estimated to reduce the number of breakdowns by around 3,000 per year (source: RFI). Lastly, the redevelopment of numerous stations which could benefit some 3 million potential users is planned, not least to encourage a new balance between

rail transport and private road transport, thus helping to reduce pollution and road traffic.

Another significant impact in terms of SDGs will be the modal re-balance following the implementation of the interventions planned in the NRRP. In 2019, considering only land transport (road + rail) of passengers, the modal split was extremely unbalanced in favour of individual transport (82%) to the detriment of mass transport (rail transport 6% and other suburban transport 10%). By 2030 (Table IV.3.16), with the investments included in the NRRP becoming operational, it is estimated that the use of rail transport will increase by 66% at the expense of private transport, which will see a 6% reduction (source: RFI).

As regards freight transport, the 2019 data on traffic identified road transport and maritime transport as the main means of transport used to transport goods (together accounting for almost 84%), with rail transport used in only about 11% of cases. Applying a conservative shift of about 10% from road to rail by 2030<sup>25</sup>, an increase in rail freight transport of 54% and a simultaneous reduction in road transport of 13% has been estimated (source: RFI).

A modal shift in favour of rail transport will also have a positive impact on road accidents, which are estimated to fall by 3.6% in terms of number of accidents (more than 6,000 accidents/year) and by 4.5% in terms of effects produced (around 150 victims/year and 11,000 injured/year).

**TABLE IV.3.16: CURRENT MODAL SPLIT IN 2030 FOR PASSENGERS AND FREIGHT TRANSPORT**

Mode of transport		Modal share	Modal share	% change
		2019	2030	2030-2019
Passenger	Rail transport	6%	10%	+ 66%
	Suburban mass transport	10%	11%	+ 10%
	Urban mass transport	2%	2%	-
	Private road transport	82%	77%	- 6%
Freight	Rail transport	10,7%	16,5%	+ 54 %
	Maritime navigation	29,3%	30%	+ 2%
	Inland waterway navigation	0.0%	0.1%	-
	Air navigation	0.6%	0.6%	-
	Road transport (> 50km)	54.5%	47.7%	- 13 %
	Oil pipelines (> 50km)	4.8%	5.1%	+ 6%

Source: RFI elaboration (on 2018-2019 CNIT data with reference to 2019 modal share).

In urban/metropolitan areas, it is planned to build, among others, 11 km of underground network, which is 15% of what has been done in this sector in the last 10 years (source: Pendolaria, 2011 and 2021). As regards road local public transport, it is planned to replace the existing bus fleet with 3,200 new electric/hydrogen buses in urban areas and a further 2,000 natural gas-powered buses in suburban areas, with an overall impact on about 12% of the current fleet.

<sup>25</sup> The long-term goals call for a 50-50 split between road and rail transport by 2050, excluding ship and air transport and transport on routes of less than 300 km.

The modal shift from road to rail will also result in lower CO<sub>2</sub> emissions from road passenger and freight vehicles, estimated at around 2.4 and 0.4 million tonnes per year respectively. Together with the reduction in greenhouse gases due to the replacement of the urban bus fleet, this will result in a decrease in CO<sub>2</sub> emissions of around 3 million tonnes per year, a figure comparable to the amount of CO<sub>2</sub> emitted in Rome by the transport sector (around 3.7 million tonnes per year, source: Action Plan for Sustainable Energy, 2010) and equal to three times that emitted by the transport sector in the city of Milan (about 1.0 million tons/year, source: Air and Climate Plan, 2017) or equal to more than three times that emitted by the transport sector in Naples (about 0.9 million tons/year, source: Action Plan for Sustainable Energy, 2014).

**TABLE IV.3.17: REDUCTION OF GREENHOUSE GAS AIR POLLUTION DUE TO THE ROAD-RAIL MODAL SHIFT**

<b>2019-2030 CO<sub>2eq</sub> reduction from local emissions in the transport sector <sup>(1)</sup></b>	
Reduction in travel Light road vehicles	- 2.4 milion tonnes/year <sup>(2)</sup>
Reduction in travel Heavy road vehicles	- 0.4 milion tonnes/year <sup>(2)</sup>
Renewal of Urban Buses	- 0.1 milion tonnes/year <sup>(3)</sup>
<b>TOTAL</b>	<b>- 2.9 milion tonnes/year</b>

(1) reductions due to the modal shift in urban areas and to the electrification of railway lines are not considered.

Source: RFI elaboration (2) and elaboration of MIMS's STM (3)

## V. NATIONAL PLANS

The following is a description of the national planning instruments taken into account in defining the priority interventions and programmes for the country's development. First of all, the plans related to general strategies will be illustrated, such as the National Integrated Energy and Climate Plan (*Piano Nazionale Integrato per l'Energia e il Clima, PNIEC*), provided for by the European Regulation (EU) 2018/1999, and the 2030 Plan for Southern Italy, prepared by the Minister for Southern Italy and Territorial Cohesion will be outlined; then the main sectoral plans related to the thematic axes of investments programmed by the MIMS will be described.

### V.1 THE NATIONAL INTEGRATED ENERGY AND CLIMATE PLAN (PNIEC)<sup>26</sup>

The National Integrated Energy and Climate Plan (PNIEC), provided for by Regulation (EU) 2018/1999, is the programme document that defines the country's energy and environmental policy. The Italian Plan, presented in its final version in Brussels in December 2019 and published in January 2020 by the MISE (Italian Ministry of Economic Development), aims to meet the European objectives on energy and climate matters set out in the 2030 Framework<sup>27</sup>. The Plan is structured in five lines of action, to be developed in an integrated manner: from energy efficiency and energy security, through the development of the internal energy, research, innovation and competitiveness market. The Plan aims to contribute to a wide-ranging transformation of the economy, in which decarbonisation, the circular economy, energy efficiency and the rational and fair use of natural resources are all objectives and tools for an economy that is more respectful of people and the environment, within a framework of integration of national energy markets into the single market and with adequate attention to price accessibility and security of supply. The Plan's national objectives are:

- to accelerate the decarbonisation process, with 2030 as an intermediate step towards a profound decarbonisation of the energy sector to be achieved by 2050 and integrating the environment into other public policies;
- to put the citizen and businesses (especially small and medium-sized ones) first;

<sup>26</sup> Excerpt adapted from the 'National Integrated Energy and Climate Plan'; MISE, MIT (now renamed MIMS), MATTM, 2019.

<sup>27</sup> Excerpt adapted from 'The new energy and climate goals for 2030'; MISE, 2019. [online : <https://www.mise.gov.it/index.php/it/21-energia/emissioni-gas-effetto-serra/2040096-i-nuovi-obiettivi-energetico-climatici-al-2030>].

- to encourage the transformation of the energy system, particularly in the electricity sector, from a centralised to a distributed system based mainly on renewable sources;
- to adopt measures that improve the ability of these renewable sources to help provide security and, at the same time, to promote market structures, infrastructures and rules that, in turn, contribute to the integration of the renewable sources;
- to continue to ensure adequate supply of conventional sources, pursuing energy security and continuity of supply;
- to promote energy efficiency in all sectors as a means of protecting the environment, improving energy security and reducing energy expenditure for households and businesses;
- to promote the electrification of consumption, particularly in the civil and transport sectors, as a means of also improving air and environmental quality;
- to accompany the evolution of the energy system with research and innovation activities;
- to adopt measures and strategies that reduce the potential negative impacts of the energy transformation on other equally relevant objectives, such as air and water quality, reduction of soil consumption and landscape protection;
- to continue the process to integrate the national energy system into that of the European Union.

With reference to energy supply and production, Italy is accelerating the transition from traditional fuels to renewable sources, wanting to gradually stop using coal to produce electricity in favour of an electricity mix produced using an increasing amount of renewable sources, now accounting for around 35%, with the rest coming from natural gas. This trend will also have an impact on the transport and civil (residential and tertiary) sectors, combining measures to increase the efficiency and use of renewable sources and, in this respect, the intervention policies described in this annex bear witness to this acceleration process.

Alternative fuels are a key element in achieving the Plan's goals. In the medium to long term - the 2030 goal - the electrification of transport will make the biggest contribution. In fact, the PNIEC encourages electric mobility both for private and shared vehicles and for local public transport. In the medium to long term, the electrification of local public transport fleets will be most widespread and will become a key element for reducing pollution in urban centres.

In order to shift from fossil fuels to electricity, the plan envisages a series of regulatory instruments and economic and tax incentives for the renewal of the vehicle fleet (cars and buses) but also for infrastructures such as charging stations (public and private) and self-charging systems for mass rapid transport.

Among the main objectives of the 2020-2030 EU and Italian Plan for Energy and Climate is the use of renewable energy sources (RES) and their increased contribution to gross final energy consumption in the transport sector, which should be 10% in 2020 and 22% in 2030. Therefore, RES in the transport sector will play a dual role: both as a driving force for the development and growth of alternative-electric mobility, and as an enabling factor for reducing pollution and developing smart networks (cars as electric utilities).

In addition, the PINEC sets out intervention goals that are defined as horizontal, such as the promotion of research and development in areas that are part of the

alternative and electric mobility value chain, in particular, such as storage systems, batteries, static and dynamic charging infrastructures, and supporting ICT systems.

These goals and active policies are reflected in the MIMS objectives and strategies for alternative mobility in urban areas (in Local Public Transport), in maritime transport and in port development (green ports, cold ironing).

Lastly, energy efficiency measures in industrial production cycles, in transport and especially in public (central and local) and private property assets will make a decisive contribution to achieving the PNIEC goals.

The regulatory and economic instruments and measures that have already been in place for years and the innovations introduced by the NRRP with the increase in funding for the renovation of public buildings will make it possible to speed the process to achieve energy efficiency.

## **V.2 THE 2030 PLAN FOR SOUTHERN ITALY: DEVELOPMENT AND COHESION FOR ITALY<sup>28</sup>**

Presented in Gioia Tauro in February 2020 by the Italian Minister for Southern Italy and Territorial Cohesion, the 2030 Plan for Southern Italy (the current plan is being updated and redefined by the Government) aims to *'invest in Southern Italy today with a view to the Italy of tomorrow'*. In particular, this 10-year plan seeks to identify *'the resources to be activated and the missions to be pursued, the needs to be addressed and the opportunities to be seized, the first actions to be taken and the results to be achieved, the procedures to be improved and the processes to be monitored, the tools to be used and the actors to be involved'*.

The Plan is built around five main national 'missions' of cohesion:

1. a south for young people;
2. a connected and inclusive south;
3. a south for turning green;
4. a south open to the world in the Mediterranean;
5. a frontier of innovation south.

The missions must also be defined according to investment needs, consistent with the policy objectives indicated by the European Commission for the 2021-27 cohesion policies and consistent with the 17 Sustainable Development Goals of the UN 2030 Agenda. In addition, for each of the five missions, the Plan also provides both medium-term prospects in terms of expected results and the first actions activated or to be activated in 2020.

The first mission focuses on investment in human capital, investing in the entire education system in order to reduce inequalities and reactivate social mobility. In order to achieve these goals, schools are to once again become drivers of personal emancipation, places of social aggregation and custodians of citizenship: measures are envisaged to prioritise investment in school infrastructures in the South, also investing in the right to study and access to universities in the South, as well as contributing to the fight against school drop-outs.

<sup>28</sup> Extract adapted from the '2030 Plan for Southern Italy: Development and Cohesion for Italy' (*Piano Sud 2030: Sviluppo e Coesione per l'Italia*); Italian Minister for Southern Italy and Territorial Cohesion, 2020.

The second aims to guarantee schooling, health and mobility all over the country, with the following priorities:

- reducing the time gap between the different parts of the country, strengthening the railway network and speeding up services;
- improving mobility in southern Italy, with particular reference to Local Public Transport (LPT);
- supporting territorial logistic chains, with particular reference to intermodal transport of goods leaving and entering ports (the so-called '*last mile*' connection between ports and railway, logistics and intermodality networks);
- reducing internal gaps in the quality of services provided to citizens and enterprises through both ordinary and cohesion policies;
- enhancing the contribution of the third sector to promote social economy;
- involving institutional investors.

The third mission calls for an ecological transition with a strong territorial connotation. The Green Deal for Southern Italy is an opportunity to:

- carry out a major green infrastructure project for the territory (seismic and hydrogeological risk mitigation; containment of waste production; integrated water service; efficient and rational use of natural resources);
- invest in energy efficiency, support circular economy initiatives, redevelop abandoned industrial sites;
- support the agri-food chain to trigger innovation processes coherent with the Green Deal;
- combine productive activity with rigorous environmental standards (potential of the 'biotech' in the South).

The fourth mission aims to:

- speed up the transformation of companies in southern Italy into more mature enterprises that are increasingly involved in global value chains;
- increase Italy's interest in the Mediterranean and to regain a new European awareness of its importance, given that it is the preferred route for maritime trade;
- invest in the ports of Southern Italy and attract major foreign investment with SEZs.

The fifth mission is concerned with launching a specific policy for the production system oriented towards the technological 'frontier' and based on two priorities:

- supporting the spread of innovation ecosystems by promoting the establishment of start-ups and attracting new businesses;
- encouraging collaboration between businesses and the research system to foster technology transfer in public-private partnerships.

The transport and logistics sector therefore plays a fundamental role in the 2030 Plan for Southern Italy. In order to guarantee a 'connected and inclusive' Southern Italy, it is necessary to increase and modernise the infrastructures, both physical and social, in order to connect and socially include certain areas and citizens in need. In Southern Italy there is a clear need for an all-round investment in infrastructures to bridge the existing gaps, in particular to improve access and connection to the European TEN-T networks.

The first actions to be taken in terms of infrastructures and services in order to stop this isolation are:

- to promote the construction and completion of rail, road, water and building works, to carry out new works, programmed maintenance, modernisation, upgrading and safety measures for existing works and to improve internal mobility between the regions of Southern Italy; as well as to support new and existing logistics chains;
- to improve the secondary road network of Provinces and metropolitan cities in Southern Italy, by implementing procedures that help to meet real needs and to select implementation priorities.

In order to support internationalisation and adopt a Mediterranean strategy by investing in maritime logistics and strengthening Special Economic Zones, the Plan also provides for the following actions:

- the strengthening of Special Economic Zones (SEZs): to attract foreign direct investment, strengthen exports and improve the infrastructures of southern logistic hubs, through full operation of Special Economic Zones (SEZs);
- Export Plan for Southern Italy - Supporting the port system (*Piano Export Sud - Sostegno al sistema portuale*): to transform southern companies which are potential exporters into habitual exporters and to increase the share of exports from the south. According to sample surveys conducted by the Italian Institute for Foreign Trade (ICE) on the first year (2017-2018) of the Export Plan for Southern Italy II, 61% of participating companies recorded an increase in turnover, on average 12.6%;
- to increase the competitiveness and attractiveness of both commercial and tourist ports in Southern Italy;
- Defence for Southern Italy as a border and bridge in the Mediterranean: creation of employment opportunities and improvement of existing defence infrastructures to meet new operational needs, with a view to sustainable development.

### Infrastructure projects for the development of Special Economic Zones

The Special Economic Zones (SEZs), introduced in Italy by the so-called 'Mezzogiorno Decree' (*Decreto Mezzogiorno*) and established by decree of the President of the Italian Council of Ministers, are:

- SEZ Campania;
- SEZ Calabria;
- Interregional Ionian SEZ – Apulia-Basilicata;
- Interregional Adriatic SEZ – Apulia-Molise;
- SEZ Western Sicily;
- SEZ Eastern Sicily;
- SEZ Abruzzo;
- SEZ Sardinia.

For each of them there is a strategic plan aimed at strengthening logistics and transport as a first fundamental step to increase attractiveness for investors.

The Department for Cohesion Policy (*Dipartimento della Coesione*), with the support of the Ministry of Sustainable Infrastructures and Mobility, has carried out a survey of the infrastructural interventions needed 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, and including them in the National Recovery and Resilience Plan, Mission 5 - Component 3 - Special Projects; these are interventions for the re-modernisation and redevelopment of ports and inner harbours, including primary urbanisation works and basic infrastructures, intermodal connections and digital infrastructures, but also the redevelopment and consolidation of existing buildings to be used for innovative services for businesses and territories; a further area for development concerns the strengthening of last-mile rail and road links to ports and industrial areas within the territories of the SEZs.

Specifically, the National Recovery and Resilience Plan is funding EUR 630 million for interventions in the various SEZs (in the SEZ Abruzzo EUR 62.900 million for the industrial zones of Saletti and Manoppello and for the ports of Ortona and Vasto; in the SEZ Campania EUR 136 million for the industrial zones of Marcianise, Nola, Valle Ufita and Battipaglia and for the port of Salerno; in the Adriatic SEZ EUR 89.092 million for the industrial areas of Brindisi, Lecce and Termoli and for the port of Manfredonia; in the Ionian SEZ EUR 108.100 million for the industrial zones of Tito (PZ), Jesce and la Martella (MT) and Taranto and the port and inner harbour of Taranto; in the SEZ Calabria, EUR 111,700 million for the railway stations of Sibari, S Pietro a Maida, Nocera Terinese and Rosarno, for the industrial area of Gioia Tauro and for the ports of Gioia Tauro, Reggio Calabria and Villa San Giovanni; in the SEZ Eastern Sicily, EUR 52,208 million for the freight village of Catania and for the ports of Augusta, Riporto, S. Agata di Militello and Gela; in the SEZ Western Sicily, EUR 60 million for the port and industrial area of Termini Imerese and Trapani; in the SEZ Sardinia, EUR 10 million for the completion of the road network of the port of Cagliari).

The strategic infrastructure of SEZs, also with regard to intermodality and the last mile, is one of the priorities that, according to the outline of the Partnership Agreement, may be pursued by the 2021-2027 European regional programmes in respect of the policy objective No. 3 (a more connected Europe), as well as one of the thematic areas on which to focus the 2021-2027 programming of the Fund for Development and Cohesion. In order to more effectively pursue the infrastructural strengthening of SEZs, Article 57 of Italian Decree-Law No. 77/2021 stipulated, inter alia, that the Regions must adapt the programming or reprogramming of the structural funds to the operational and development needs of the SEZs, choosing the appropriate strategic guidelines with the Commissioner in view of the full implementation of the strategic development plan.

### V.3 THE 2030 NATIONAL PLAN FOR ROAD SAFETY

The drafting of the 2021-2030 National Plan for Road Safety (*Piano nazionale di sicurezza stradale*) is nearing completion, in line with the provisions of the document ‘General Guidelines and Implementation Guidelines’ (*Indirizzi Generali e Linee Guida di Attuazione*) published by the MIMS (MIT at the time) in January 2021. The Plan, according to Italian Law No. 144 of 17 May 1999, ‘is a complex system of guidelines and measures for the promotion and incentivisation of plans and instruments to improve safety levels by road owners and managers, and of infrastructure interventions, prevention and control measures and regulatory and organisational devices aimed at improving safety pursuant to EU objectives’.

The Plan is strongly integrated with the international context and fully consistent with the strategic planning of the UN (Resolution by the General Assembly No. 74/299 Improving global road safety - 2/9/2020) and of the European Commission in the sector (EU Road Safety Policy Framework 2021-2030 - Next steps towards ‘Vision Zero’).

The approach to the Plan is that suggested at international level: the so-called ‘Safe System’. The Safe System is a major change from the approach followed in the past. It overturns the fatalistic view that road accidents are the price to pay for ensuring mobility. It seeks to put an end to victims and serious injuries caused by road accidents in the long term, with intermediate objectives to be defined over the years.

The general objective of reducing fatalities and serious injuries by 50% by 2030 has already been defined in the Guidelines, and the risk categories - cyclists, pedestrians, users of two-wheel motor vehicles, people over 65 and children - have already been identified through a preliminary analysis to be further developed in the Plan. Specific objectives will be defined for each category in order to maximise the efficiency and effectiveness of the resources invested in improving road safety.

Action strategies are organised on two levels:

- specific strategic guidelines for higher risk categories;
- general strategic guidelines affecting the whole system which are grouped according to the five pillars of road safety defined by the UN (Figure V.3.1).

**FIGURE V.3.1: THE FIVE PILLARS OF ROAD SAFETY DEFINED BY THE UN**



The Plan will propose the measures into which the strategies will be articulated and examine in detail some ongoing trends which will evolve over the decade and for which it will be necessary to take appropriate countermeasures:

- population (ageing and increase in resident foreigners);
- automation, Shared mobility and MaaS (autonomous vehicles, shared vehicle and public transport mobility, mobility as a service available for all the various public and private means and modes of transport through a single subscription);
- freight traffic and e-commerce (increasing volumes of goods and of vehicles used to distribute them);
- micro-mobility (diffusion of electric individual mobility vehicles such as electric scooters, segways, monowheels);
- regeneration of urban mobility spaces (redesigning and regulating urban mobility spaces, especially those for non-motorised mobility).

The monitoring system, necessary to make any corrections to the measures proposed in the Plan to implement the strategic guidelines, will be based on the definition and collection of four types of indicators:

- risk exposure indicators (urban, suburban and motorway vehicle-km);
- process indicators (progress of interventions);
- safety performance indicators that describe the level of safety of the different parts of the road network;
- impact indicators (accidents, injuries and deaths).

The Plan's national measures can be subdivided into: legislative measures, measures to strengthen control and repression, measures to improve the safety of road infrastructures and communication and awareness campaigns.

The implementation of the Plan at local level is carried out through two-year programmes, aimed at promoting the dissemination of activities to improve road safety.

The first implementation programme is to be approved by 31 December 2021.

#### **V.4 THE NATIONAL STRATEGIC PLAN FOR PORTS AND LOGISTICS**

The National Strategic Plan for Ports and Logistics (*Piano Strategico Nazionale della Portualità e della Logistica*), approved by the Italian Council of Ministers on 3 July 2015 and adopted on 6 August 2015 by Decree of the President of the Italian Council of Ministers, was drafted in implementation of Article 29 of Italian Decree-Law No. 133 of 12 September 2014, converted, with amendments, by Italian Law No. 164 of 11 November 2014, the so-called '*Sblocca Italia*'. The Plan is currently the main national strategic planning tool for the port sector, aimed at '*improving the competitiveness of the port and logistics system, promoting the increase in goods and passenger traffic and the promotion of intermodality in goods traffic, also in relation to the rationalisation, reorganisation and unification of the existing Port Authorities*'.

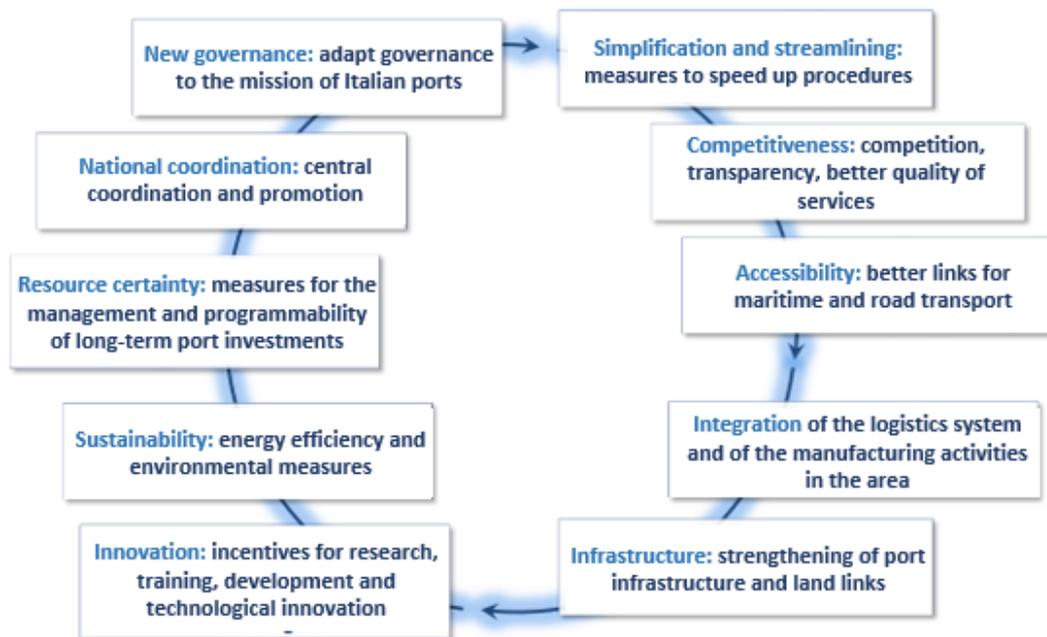
In short, the document recognises that international competitiveness is based on the ability of ports to guarantee full maritime accessibility, adequate infrastructure and terminal performance and, above all, extensive land accessibility in terms of rail and road connections to/from the port, with a view to an efficient and sustainable integrated door-to-door logistics chain.

The Plan, having recognised the extreme fragmentation of national infrastructure planning and programming as well as of port services, meant in the broadest sense, which are not competitive compared to competitors in terms of costs and times, identifies the main trends in port infrastructure demand and supply, also in terms of trends to 2020, providing a general picture of the main strengths and weaknesses of the country's port and logistics system.

In this context, the Plan does not merely take a snapshot of the current and expected future scenarios, but also outlines specific objectives, strategies and actions aimed at increasing the competitiveness of the entire Italian logistics system in the global market. In fact, the 'Sea' is considered a resource, a Euro-Mediterranean commercial and economic policy instrument and a factor both for the development-cohesion of Southern Italy and for sustainability, innovation and support for the country's production system.

More precisely, in order to relaunch the sector, a series of strategic objectives are identified (simplification and streamlining; competition, transparency and upgrading of services; improvement of accessibility to maritime links; integration of the logistics system; improvement of infrastructural performance; innovation; sustainability; certainty and programmability of financial resources; national coordination and partnership comparison; modernisation of the governance of the system) and then divided into as many Actions resulting in legislative, regulatory, administrative or operational initiatives.

**FIGURE V.4.1: THE NATIONAL STRATEGIC PLAN FOR PORTS AND LOGISTICS**



The implementation phase of the National Strategic Plan for Ports and Logistics led, among others, to the issuing of Italian Legislative Decrees 169/2016 and 232/2017, which amended Italian Law 84/1994, introducing significant reforms in the field of:

- port governance, by rationalising the number, functions and bodies of managing bodies, and institutionalising the National Conference for the Coordination of Port Authorities (*Conferenza Nazionale di Coordinamento delle Autorità di Sistema Portuale*) aimed at coordinating ‘major infrastructure investments’, planning port urbanism, state concession and marketing strategies and the international promotion of national port systems;
- planning simplifications, within the process of drafting and approving the Port System Master Plan (*Piano regolatore di Sistema Portuale*);
- operational simplifications, such as the creation of the Administrative Single Window (*Sportello Unico Amministrativo*) serving as a front office for those who operate in the port;
- planning environmental and energy sustainability in the port area, through the drafting of the Port System Environmental Energy Document (*Documento energetico ambientale di sistema portuale*) according to the Guidelines issued by Directorial Decree in agreement between the MITE and the MIMS prot. 408 of 17.12.2018.

## **V.5 THE NATIONAL COLD IRONING PLAN**

The environmental importance, the European regulatory framework and its deadlines, and the highly innovative content of the cold ironing infrastructure have made it necessary to launch a strategic planning and programming intervention through the National Cold Ironing Plan. Despite being the most efficient way of transporting large quantities of goods, maritime transport presents critical environmental issues due to the use of low-quality fuels, which cause negative externalities both during navigation and, above all, when stationed in ports. In particular, the engines running while at berth not only cause a high level of pollution in the port area (emission of CO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>) and in the territory in which the port is located, but are also a source of noise that can be heard over a significant radius of kilometres. The only way to stop the emissions and the noise is to electrify the docks by cold ironing and to upgrade the National Electricity Grid to bring the necessary power to the ports. Electricity is the most valuable form of energy, so any conversion carried out inexorably causes inefficiency, energy wastage and consequent cost increases. For this reason, ‘cable’ electrification is the optimal solution both technically and economically to eliminate emissions in the ports and therefore the technical solution to be pursued by the Port Authorities when implementing electrification projects.

Cold ironing is one of the guidelines set out in Directive 2014/94/EU (so-called DAFI Directive), which establishes a common framework of measures for the establishment of an infrastructure for alternative fuels in the European Union in order to minimise oil dependency and mitigate the environmental impact of the

transport sector. The directive provides for the construction of an electricity supply network along the coast to be completed by 31 December 2025: this is a priority for ports in the European TEN-T network and is considered relevant for other ports, unless there is no demand and the costs are disproportionate to the benefits, including environmental benefits.

The Plan involves all Port Authorities and three regions that have jurisdiction over certain ports (Sicily, Sardinia and Veneto). The total number of ports to be electrified is 40, of which 37 are part of the TEN-T network while two others are important in terms of traffic and environmental impact. Of the 40 ports, 12 are considered a priority for the implementation of the Plan and are the most important ports for cruise traffic (Genoa, Savona, La Spezia, Livorno, Civitavecchia, Naples, Palermo, Bari, Ravenna, Venice-Marghera, Trieste and Cagliari). In general, the first phase of the Plan will provide for the electrification of the quays for cruises and ro/ro-pax ships.

The investments envisaged by the Plan amount to approximately EUR 782 million, for a planned installed capacity of 712 MW to be implemented by 31 December 2025. The financial coverage of the Plan comes from different sources: EUR 700 million from the National Complementary Plan (*Piano Nazionale Complementare*) and the rest from the 2016-2020 PAC, EUR 29.4 million from the Investment Fund for Ports (*Fondo Investimenti Porti*), Italian Ministerial Decree No. 353 of 13 August 2020, and EUR 30 million from other sources.

The Plan, which is currently being finalised, analyses the regulatory context, the technological and economic scenario and European best practices, and outlines the investments and reforms to be implemented to ensure the success of the investments. In particular, the aspects on which the National Plan focuses are five:

1. environmental relevance: protecting the public interest by reducing pollution in port areas and in the surrounding territory;
2. infrastructural gap: overcoming the general lack of electrified docks compared to other European countries;
3. regulatory/normative gap: lack of a cold ironing electricity tariff that is competitive with respect to the cost of self-production; need for a reform of the authorisation processes to ensure that the infrastructures are built within the timeframes established by the Complementary National Plan; need to establish technical standards in the design of the works;
4. large investments and uncertain payback times: overcoming the obstacles that have so far slowed down the construction of electrified docks, such as the large investments needed to electrify the docks, the Italian electricity tariff among the highest in Europe and higher than the cost of self-production, as well as long payback times due to ship owners being uncertain about whether to use electrified docks;
5. lack of coordination among stakeholders: ensuring planning and programming actions, combined with cold ironing investment coordination tools, and coordination of the multiple stakeholders involved in the value chain from the production of electricity to the ship.

The objectives and goals of the National Cold Ironing Plan do not only concern the actual construction of electrified quays: the Plan also aims to be an enabling factor to promote directly and indirectly an improvement in the technological assets of ports so as to make them more competitive, in an increasingly challenging market

context, as well as resilient and in line with international standards. The aim of the National Cold Ironing Plan is to create the conditions for the transition towards ‘Green Ports’ by:

- reducing reliance on fossil fuels and environmental and noise pollution in ports and surrounding areas, and transforming port activities and the image of ports towards ‘Green Ports’, promoting the progressive electrification of consumption;
- implementing a uniform cold ironing network in Italy, avoiding distortions and arbitrage for both ports and ship owners/vessels through regulatory measures and by supporting the economic, financial and social sustainability of the projects with contributions;
- developing a network that is long-lasting, sustainable, flexible, modular and resilient to changes in context and demand;
- ensuring sustainability of investments. The high demand for electrical power in ports to power ships at berth calls for rethinking the energy supply infrastructure in ports in a green perspective, also by reducing as much as possible the land consumption in the vicinity of ports;
- raising awareness among shipowners to encourage the technological shift towards electrification of new and old ships through a retrofit, including through contributions;
- transforming electricity grids into Smart Grid models and promoting RES in Italy to reduce pollution in a well-to-wheel logic with a view to increasing the demand for electricity.

## **V.6 THE NATIONAL AIRPORT PLAN**

The National Airport Plan (*Piano Nazionale degli Aeroporti*) defines the strategic choices that are able to direct investment in the airport sector; it seeks to identify potential synergies to overcome existing critical issues and meet emerging needs, by defining criteria for identifying the various possible solutions and how to respond to them. The result is a rigorous structure of the overall airport network and the definition of the roles of the individual airports, which can at the same time create the conditions for greater transport intermodality, in line with European standards.

The Plan is based on a number of strategies, such as the classification of airports according to the structure of the European TEN-T network, the increase in airport capacity in existing airports, the safeguarding of the areas surrounding airports to make any necessary expansion possible, the integrated planning with the territory, also to promote the development of synergies with public and private entities operating near the airports, the long-term environmental sustainability of airports as a contribution to national and European policies, and a strong drive to build rail works and links to achieve intermodality levels, which are currently lacking, also in support of environmental policies.

The Plan, therefore, sets out the intervention strategies for the development of the national network, the priority works and the necessary interventions for the strengthening and improvement of services, defining the conditions for effectively allocating resources on the territory.

Particular attention is also paid to the issue of airport accessibility and intermodal connections, so that territories can reap the greatest benefits from the development of airports.

As a reference act for the design of the country's airport network to the year 2030, the current National Airport Plan was formalised in 2014 by the MIT (now MIMS) and transposed as the planning act underlying Italian Presidential Decree No. 201 of 17 September 2015, which identified airports of national interest pursuant to Article 698 of the Navigation Code.

According to the Plan's estimates, traffic demand by 2030 was estimated at around 250 million passengers, with a growth rate of 3.3% per year; however, looking at the data for 2018 and 2019, it can be seen that, in 2018, 184 million passengers were recorded, with an increase of 5.5% compared to 2017, while the final figures for 2019 already show 191 million passengers.

The evolution of the forecast scenario over the last five years has been profoundly altered by different factors, both in development and in recession. The first include the growth of traffic demand, in a medium-long term analysis, at a global and EU level, and the gradual exhaustion of the airport capacity reserve at airports with greater commercial potential, referred to both current allocations and to the forecast framework provided by the development plans of airport managers, approved or in the process of being approved. Among the second factors, as an exceptional event, the COVID-19 pandemic caused a reduction in the number of seats on board, estimated by ICAO on a global scale at around 60%, with a drop in passenger traffic of around 1,4 billion passengers and an economic loss of about USD 250 billion.

The necessary update of the current Plan, therefore, will take into account a delay in the growth of the sector due to the effects of the pandemic. The deadline for the revision of the National Airport Plan, commissioned by the Ministry to the Italian Civil Aviation Authority (*Ente Nazionale per l'Aviazione Civile* - ENAC), is 2035, a year in which the national passenger traffic forecast is estimated at 300 million passengers.

With such an estimate, it is necessary to implement system strategies and infrastructural development measures in order to support an additional traffic volume of approximately 100 million passengers compared to the volumes recorded in 2019.

It should be mentioned that this increase in traffic volume may not be evenly distributed throughout the country; moreover, on the basis of the estimates currently available, it can be assumed that the split between domestic and international flights may be set at 25% and 75%

The revision of the National Plan must follow a market-oriented approach, prioritising the development of airports capable of playing a significant role for the country, and dividing the national territory into traffic basins and macro-areas with a view to simplification and rationalisation.

In the Plan review, emphasis will also be placed on the integration of airport management, studying the proposal to encourage and incentivise the creation of regional or macro-regional airport networks and systems, with initiatives designed to better address critical market issues, while also improving competitiveness and developing the growth potential of individual airports.

## **V.7 THE NATIONAL STRATEGIC PLAN FOR SUSTAINABLE MOBILITY (PSN-MS)**

In order to implement a National Strategic Plan for Sustainable Mobility (*Piano Strategico Nazionale della Mobilità Sostenibile*, PSN-MS) for the renewal of the bus fleet of local and regional public transport services, the promotion and improvement of air quality with the use of innovative and sustainable technologies, in implementation of international agreements as well as EU guidelines and legislation, Italian Law No. 232 of 11 December 2016, art. 1, par. 613, provided for a significant and long-term funding for the renewal of the bus fleets used for local and regional public transport services and the introduction of alternative fuelled vehicles and of the related infrastructures, in line with the provisions of Italian legislative decree No. 257 of 16 December 2016, issued to implement the DAFI Directive 2014/94/EU on the deployment of an alternative fuels infrastructure.

The Plan was consequently issued in April 2019 by Decree of the President of the Italian Council of Ministers. The document contextualised the renewal of the bus fleet of the LPT within the broader theme of Sustainable Mobility, also in light of European strategic guidelines and constraints on mobility, energy and the environment, and reconstructed the reference framework in terms of Italy's commitments on urban sustainability and air quality. The Plan identified some of the main drivers behind the users' demand for LPT, defining the sector's status as regards both the characteristics of the circulating fleet and the operators, and the technologies for alternative fuel sources, including the state of the production chain in Italy.

The Plan's budget has a time horizon of 2033, with a total state commitment of EUR 3.7 billion for new vehicles and related support infrastructure, as well as almost EUR 2 million for studies and research and EUR 100 million to support the production chain.

The Plan provided for the use of resources with the objective of:

- a) qualitatively and rapidly improving the vehicle fleet, by replacing the most polluting and energy-consuming vehicles, so as to better meet the community's travel needs;
- b) improving air quality and reducing climate-altering emissions and particulate matter, also taking into account what is defined in European legislation, using reference benchmarks that also consider other countries' experiences, prospects and implementation methods;
- c) supporting a coherent infrastructure policy, of gas storage and electric recharging centres, especially in the first years of the Plan's application, in order to allow a greater diffusion of alternative energy buses.

In addition to matters relating to the implementation of European and national legislation, when the Plan was drawn up it was also taken into account that large urban centres tend to be the places with the greatest concentration of problems relating to traffic congestion and high levels of air pollution and, although local public road transport is not the main cause of pollution, the replacement of vehicles can contribute to improving air quality. Hence the urgent need to replace the most obsolete vehicles in order to proceed with the necessary rapid renewal of the fleet.

In the case of funding managed directly by the regions, resources have been allocated to the regions based on parameters such as the number of residents, the

number of passengers transported, the number of circulating vehicles, the average pollution level of the regional territory, the percentage share of the most polluting vehicles in the total fleet, the level of investment in sustainable vehicles with regional funds.

In order to distribute resources for the replacement of vehicles as well as for the construction of charging infrastructures, in the first three years of each five-year period, the regions have the possibility of using up to 50% of the allocated contribution to set up a support infrastructure network. The remaining 50%, or even more if the entity is already equipped with a support infrastructure, is to be used for the purchase of vehicles. In the following two years of each five-year period, 100% of the funding is to be used for the purchase of vehicles.

Pursuant to Article 1, paragraph 71, of Italian Law No. 205/2017, during the first application, i.e. limited to the first 5 years, a funding for high-pollution cities was also provided, envisaging the allocation of specific resources to metropolitan cities and provincial capitals with high PM10 and nitrogen dioxide pollution. The distribution parameters for the resources thus identified were the number of times the limits set by Directive 2008/50/EC were exceeded, particularly with reference to the concentration of PM10 particulate matter (days) and nitrogen dioxide (hours), the percentage of the most polluting vehicles in the total fleet, the number of residents, the number of passengers transported and the number of vehicles in circulation.

The Plan also provides for a specific line of funding for municipalities and metropolitan cities with more than 100,000 inhabitants; in this case, the allocation of resources is based on a ranking that depends on parameters commensurate with the territory in question, such as the degree of adoption of the Sustainable Urban Mobility Plan (*Piano Urbano della Mobilità sostenibile*, SUMP) and/or of the Strategic Mobility Plan (*Piano Strategico Mobilità*, PSM), the number of residents, the number of passengers transported, the number of vehicles in circulation, the amount of highly polluting vehicles on the total vehicle fleet and the number of times the limits set by Directive 2008/50/EC have been exceeded, particularly with regard to the concentration of PM10 particulate matter (days) and nitrogen dioxide (hours).

## V.8 THE GENERAL PLAN FOR CYCLING MOBILITY (PGMC)

The General Plan for Cycling Mobility (*Piano generale della Mobilità Ciclistica, PGMC*), which is currently being drafted, is the first implementation of the model defined by Italian Law No. 2 of 11 January 2018, 'Provisions for the development of cycling mobility and the implementation of the national cycling network'. The purpose of the PGMC is to define the framework of interventions for the development of cycling mobility in both urban and national contexts, outlining objectives and funding lines. To this end, the PGMC identifies the cycleways of national interest that make up the national cycle network '*Bicitalia*' and defines the resources that can be used to achieve these goals.

The PGMC also defines the public and private financial resources for each of the three years of the reference period, to be allocated to finance the measures envisaged. The PGMC also defines the guidelines aimed at ensuring effective coordination of the administrative action of regions, metropolitan cities, provinces and municipalities concerning cycling mobility and related infrastructures, as well as promoting user participation in the planning, implementation and management of the cycle network.

The PGMC also defines the operational guidelines for increasing cyclists' safety and for modal interchange between cycling, rail and LPT, with the aim of defining the national infrastructure model in which cycling can be integrated with LPT. At the heart of the model defined in the PGMC is the rapid implementation of a local cycling network interconnected with the national network. This is achieved by 'mending the existing infrastructures' which, until now, have not been combined into a single national sustainable mobility project.

In order to achieve these objectives, the PGMC establishes administrative priorities, taking into account any other type of intervention already planned within the national cycleway system. As for resources, it adopts the framework of the objectives financed by the NRRP, taking account of the deadlines and funding lines for the implementation of the measures to be carried out during the 2021-2026 planning period. The PGMC also takes into account the perspective that will be pursued through the identification of EU-derived resources, such as *PONs* (National Operational Programmes), *PORs* (Regional Operational Programmes) and *FSCs* (Funds for Development and Cohesion), which can be used to complete the national cycling network, in addition to national resources. The PGMC also has a further objective: to rapidly implement a participatory model for the development of the network. To this end, the main stakeholders have been constantly consulted in order to make planning decisions that are shared from the very beginning and concretely validated in a joint effort with the regions and local authorities, which play a fundamental role in defining and implementing the plans.

The fundamental objective of the PGMC is to complete the *Bicitalia* project, which will be able to definitively connect Italy to the European Eurovelo network, with a view to creating a major tourist and environmental driving force available to Italians and Europeans, through:

- the management of a model that provides for the development of infrastructures with a high tourist impact in the areas of great cultural value in Italy, with a timing consistent with the NRRP;

- the identification of a way of using urban mobility and the city's perimeter areas that allows the safe daily use (and not only for recreational purposes) of two-wheeled vehicles.

Lastly, among the objectives set out in the PGMC, there is the end-to-end approach, i.e. that of a cyclist-friendly city in which cyclist can use their means of transport (either private or shared) and are provided with purchasing support, traffic safety and road rules allowing effective cohabitation between pedestrians, cyclists and motorists.

## V.9 THE NATIONAL PLAN OF INTERVENTIONS IN THE WATER SECTOR

The MIMS, in line with its competences and functions in the field of dams and water infrastructures, is required to exercise the role of strategic coordinator in the planning of infrastructural interventions related to primary water supply, as a whole and for all sectors, together with the other key players in the process, with particular reference to the MITE for environmental regulation and energy policy, to the MIPAAF (Italian Ministry of Agricultural Food and Forestry Policies) for planning irrigation infrastructure needs, to the Hydrographic Basin District Authorities (*Autorità di Distretto dei Bacini Idrografici*) for planning water resources on a vast scale and to ARERA (Italian Regulatory Authority for Energy Networks and Environment) for economic regulation and performance efficiency controls.

The sustainable use and protection of water resources must be one of the pillars of the Italian Green Deal, with a National Investment Plan that has an integrated and unified vision and that becomes (gradually) the only national instrument for the public financing (and co-financing) of strategic infrastructures for the supply of water for civil, irrigation, industrial and energy purposes. The National Plan of Interventions in the Water Sector (provided for by Italian Law 205/2017, art. 1, paragraphs 516 et seq.), financed by an initial availability of EUR 100 million per year for 10 years, together with additional financial sources, for a total of EUR 1,577.21 million programmed from 2018 until 2033 (as per Table V.9.1), is a first fundamental step in this direction.

### FOCUS

#### The National Plan of Interventions in the Water Sector

The objective of the National Plan is to promote the strengthening and upgrading of the major water supply infrastructures through the planning and implementation of the measures required to mitigate the effects of drought, also with a view to combating the dispersion of water resources. The law provides that the Plan be adopted by Italian Prime Ministerial Decree, at the proposal of the MIMS, in agreement with the MITE, the MIPAAF, the MIBAC and the MEF, having consulted ARERA and after obtaining the agreement of the Unified Conference. Normally updated every two years, the Plan is currently divided into two Sections:

- **AQUEDUCTS SECTION**, whose main objectives are:
  - achieving adequate levels of technical quality;
  - recovering and expanding water capacity and transport, also with reference to reservoir capacity.;
  - disseminating tools aimed at saving water in agricultural, industrial and civil uses.
- **RESERVOIRS SECTION**, whose main objectives are:
  - completing the works on existing large dams or unfinished dams;

- recovering and increasing the reservoir and storage capacity of large dams, and securing priority water supplies for large groups of users in seismic areas classified as zones 1 and 2 and at high hydrogeological risk.

The reform of the National Plan is one of the commitments made by the Italian government in the NRRP. Therefore, the MIMS is reflecting on the necessary regulatory changes and is considering the possibility of proposing an additional allocation aimed at refinancing the National Plan of interventions in the water sector provided for by Italian Law 205/2017 (art. 1, paragraphs 516 et seq.) in order to ensure lasting support for the sector, to protect the environment and the quality of the final service to the different types of users and for the infrastructural and economic development of a strategic sector for the country. In particular, despite the aforementioned current economic availability of the National Plan (EUR 1.58 billion), the potential financial requirement estimated today for the water supply sector is over EUR 9 billion for the ‘reservoirs’ section alone (source: MIMS, based on data from the Hydrographic Basin District Authorities), to which the infrastructure requirement for the ‘aqueducts’ section must be added, which amounts to over 1,200 interventions for about EUR 10 billion (source: ARERA, based on data from the governing bodies of the territorial areas of the integrated water service).

**TABLE V.9.1: NATIONAL PLAN OF INTERVENTIONS IN THE WATER SECTOR - SCHEDULE OF ALLOCABLE FUNDING**

Year	Source (1) (M €)	Source (2) (M €)	Source (3) (M €)	Source (4) (M €)	Source (5) (M €)	Total (M €)
2018	50.00	-	-	-	-	50.00
2019	50.00	60.00	40.00	1.19	2.25	153.44
2020	50.00	60.00	40.00	17.80	7.00	175.80
2021	50.00	60.00	40.00	15.00	1.00	166.00
2022	50.00	60.00	40.00	25.00	8.00	183.00
2023		60.00	40.00	25.00	8.75	133.75
2024		60.00	40.00	20.00	8.86	128.86
2025		60.00	40.00	50.00	8.98	158.98
2026		60.00	40.00	10.00	8.63	118.63
2027		60.00	40.00	15.00	9.40	124.40
2028		60.00	40.00	12.80	9.65	122.45
2029				9.40	10.58	19.98
2030					10.89	10.89
2031					10.90	10.90
2032					10.90	10.90
2033					10.23	10.23
<b>TOTAL</b>	<b>250.00</b>	<b>600.00</b>	<b>400.00</b>	<b>201.19</b>	<b>126.02</b>	<b>1,577.21</b>

Financial sources: (1) Italian Law No. 205/2017, Article 1, Paragraph 523; (2) Italian Law No. 145/2018, Article 1, Paragraph 155, Sect. Reservoirs; (3) Italian Law No. 145/2018, Article 1, Paragraph 155, Sect. Aqueducts; (4) Italian Law No. 205/2017, Article 1, Paragraph 1072; (5) Italian Law No. 145/2018, Article 1, Paragraph 95, with remodulation by the MEF as per the public finance manoeuvre for the three-year period 2020-2022.

## V.10 THE HOUSING QUALITY INNOVATION PROGRAMMES (PINQUA)

The Housing Quality Innovation Programme (*Programma Innovativo per la Qualità dell’Abitare, PINQUA*), launched pursuant to Article 1 paragraph 437 et seq. of Italian Law 160/2019 and regulated by Italian Interministerial Decree 395 of 16 September 2020 and Italian Directorial Decree 15870 of 17 November 2020, responds to the need to incentivise public and social housing within an organic and coherent framework for the entire national territory, innovating the financial support system and the project tools towards a comprehensive vision of the housing issue, capable of looking at public and social housing policies as a potential trigger of a broader strategic urban design. The Programme is promoted in order to contribute to the reduction of housing deprivation, with particular reference to the suburbs, and is based on five main lines of action, to which the interventions and measures of the proposals refer:

- redevelopment, reorganisation and increase of the assets intended for social housing;
- repurposing of areas, spaces and public and private buildings also through the regeneration of the urban and socio-economic fabric also for a limited time;
- improvement of accessibility and safety of urban places and provision of services and urban-local infrastructures;
- regeneration of areas and spaces already built, especially large residential spaces, by increasing environmental quality and improving resilience to climate change also through densification operations;
- identification and use of innovative management, social inclusion and urban welfare models and tools as well as of participatory processes, also aimed at self-building.

These objectives, defined before the COVID-19 pandemic, have taken on a further and more intense significance over the last 18 months, starting with the housing emergency: according to the 2020 research by Federcasa and Nomisma, there are an estimated 1.475 million Italian families (5.6% of the total) living in conditions of housing hardship (783,000 in acute hardship, 692,000 with serious hardship). In addition to economic problems (progressive impossibility to sustain the costs of rent or living expenses), public and private housing is inadequate to meet contemporary needs.

This emergency period has also forced us to pay attention, among other aspects, to the average size of Italian housing, which is significantly lower than the European average, to the lack of urban residential facilities and services, elements that have proved to be highly critical factors when forced to stay isolated at home. It is believed that housing problems should be addressed by constructing about 200,000 new homes, which would bring the total number of homes available to the weaker social classes to over one million. Housing First programmes identify 'housing' as the first factor of social cohesion and in some European countries they have already produced significant results in terms of inclusion.

The challenge that PINQUA faces involves both the specific aspects of housing (starting with social equity and technological upgrading) and the impacts that renewed attention to these issues can develop, especially with regard to the sustainability, regeneration and safety of marginal and peripheral areas. The issue

of living is in this way interpreted within an incremental and progressive vision, in a path/process/project participated by different administrations in which the objective is no longer only the quality of the houses but also the virtuous transformations that interventions to improve the building stock can trigger, affecting the socio-economic and physical-spatial aspects of contemporary living. It is a cross-sectoral initiative of strategic importance, developed within the MIMS which intercepts some priority lines of action based on the key concepts of innovation, sustainability, resilience.

**FOCUS**
**Beneficiary entities and financed interventions**

The Programme is aimed at Regions (also as aggregators of intervention strategies coordinated with the Municipalities), Metropolitan Cities; Municipalities that are home to Metropolitan Cities, Provincial capitals, City of Aosta, Municipalities with more than 60,000 inhabitants. It works towards quantitative and qualitative objectives, financially supporting:

- interventions as per Article 3, paragraph 1, letters b), c), d) and f) of Italian Presidential Decree 380/2001, namely: i) extraordinary maintenance; restoration and conservative renovation; building restructuring; urban restructuring. The interventions referred to in letter e), that is, new constructions, building and urban transformation of the territory that do not fall into the categories defined in the previous letters, may be eligible for funding only in a residual manner and for specific densification operations;
- self-restoration interventions;
- interventions consistent with those referred to in CIPE Resolution No. 127 of 22 December 2017 concerning public residential housing, namely the updating of the programmatic addresses: i) for the use of the residual financial resources allocated to subsidised/facilitated building, as well as to meet the most urgent needs with extraordinary interventions in the residential building sector, also due to public disasters; ii) concerning the recent technical regulations of the sector (e.g. consistency with EU priority policies in terms of environment and safety in public buildings; zero land consumption; building and urban recovery; integration of functions and facilities; energy efficiency of buildings; quality of living; work flexibility; technological innovation in construction; seismic adaptation/improvement of buildings);
- interventions for the repurposing of unused, disused and degraded public spaces and buildings, including those intended to be used temporarily;
- interventions and measures to increase material and immaterial accessibility and safety, both of buildings and spaces, as well as territorial endowments and proximity services;
- interventions to redevelop public housing districts, to increase social housing, including the construction and purchase of housing to be used on rotation for temporary assignments;
- interventions on buildings that have already been the subject of public funding in the past, as long as they are interventions to complete the same buildings or other parts, as long as they are physically and functionally connected to those proposed in the regeneration program.

**Conditions and purpose**

The Housing Quality Innovation Programme is developed starting from some background conditions:

- the issue of housing, especially in relation to urban regeneration programmes, outlining on the one hand the persistence of a deep social discomfort due to the lack of supply, on the other hand the rise of a new demand, increasingly far from traditional models and connected to different housing needs and changed social and collective needs, in relation to the demand for a new quality of life;
- the housing policy sector, which needs a structured set of measures aimed in particular at the weaker segments of the market, whose urgency and social relevance has increased with the events related to the COVID-19 pandemic;
- the allocation of funds for housing policies in the last twenty years, which proved to be too small and fragmented, especially in terms of support for access to leases.
- In this complex framework, the **goals** of the Programme can be summarised in six points:
  - greater quality of living and life for citizens, with less standardised and more flexible housing, capable of responding to the fragmented needs of today's society;
  - improvement of the socioeconomic fabric in the urban context;
  - development of urban amenities and services related to living, in the awareness that the integration of different functions, that are compatible with the residence, is increasingly a fundamental issue to promote hospitable and quality urban places;
  - reconversion of properties and spaces now disused, both public and private, with organic interventions of demolition and reconstruction or recovery and building renovation;
  - extraordinary maintenance, technical and functional adjustments on existing social housing buildings;
  - actions aimed at seismic improvement, energy sustainability and technological innovation, transforming traditional buildings into smart ones.

## **APPENDIX: BREAKDOWN OF PRIORITY INTERVENTIONS AND PROGRAMMES FOR THE DEVELOPMENT OF THE COUNTRY**

### **A.1 RAILWAYS**

Over the next decade, the country system will be committed to continuing the action to relaunch rail transport, both for goods and for passengers, the importance of which is emphasised by the provision of more sustainable mobility policies, in line with the European Green Deal. The strong development of High Speed Rail on the Milan-Bologna-Florence-Rome-Naples section and the Turin-Milan-Verona-Venice cross-section, originating both from the strong increases in performance, linked to the construction of the new network, the entry of new operators and the consequent increase in quality and production efficiency, has generated significant advantages for users, but also differential concentration effects, such as to currently pose problems of both equity and efficiency. In fact, some parts of the country did not enjoy the connection to the new system and were penalised, in terms of speed and ease of travel. At the same time, the strengthening of regional and metropolitan railway services, which for several years has been a goal of primary importance also at the national level, continues to develop in a patchy way.

It is therefore necessary to overcome the traditional rationale that considers the regional segment as a residual service. Experience has in fact demonstrated the great effectiveness of a strategy aimed at differentiating this segment through the introduction of a metropolitan or suburban service level, capable of guaranteeing capillary high-frequency services to support the demand for mobility expressed by all large cities and for a 'fast regional' level of service, capable of guaranteeing medium-range connections between cities to support the need for mobility expressed by large widespread urban networks, with competitive speed and comfort compared to the use of private cars. In other words, it is a matter of supporting the progressive development of a network of multimodal and integrated public transport services, able to offer adequate alternatives to the use of the car, not only for urban mobility in the strict sense, but also for travel to city hubs and main interchange hubs, such as airports.

Obviously, the development of such integrated system will not be able to entrust the railway with the task of connecting all areas of the country. Therefore, it is necessary to provide for adequate levels of integration with other modes of transport (urban metro-tram networks, maritime and internal navigation, bus services) in order to ensure adequate levels of accessibility across all areas of the country (including internal areas or small islands), to fill the existing infrastructural gaps in the various areas of the national territory, to allow useful access to infrastructures and fast transport services and to allow the fast transit of goods.

In this perspective, thanks to the state and European resources already planned and regulated with the Programme Contracts stipulated with the network manager and to those coming from the Next Generation EU (NRRP), the construction of high-speed routes will continue to complete the infrastructural systems relating to the large trans-European transport networks and with the further interventions necessary to fill the main infrastructural gaps existing in the various areas of the country, allowing every citizen and goods to have easy access to infrastructures and high-speed transport services. In addition, many strategic objectives for the development of final user services are achievable through technological updating and through choices of regulation and management of the existing system, enhancing the infrastructure assets already built.

The following tables show the priority programmes and interventions (divided into interventions on the railway junctions and interventions on the priority lines), already defined in the previous Infrastructure Annexes to the DEF, associated with the framework of the resources guaranteed by the 2017-2021 Programme Contract and integrated by the provisions of the NRRP, whose resources are divided into two components: those that will finance existing projects (i.e. projects of functional phases already financed with state resources deriving from current legislation, which will be '*released*' as they are replaced by resources of Next Generation EU); those that will finance new projects (i.e. functional phases not funded yet). Furthermore, to supplement the resources coming from the Next Generation EU, the priority interventions are also financed by the State Complementary Plan Fund.

The tables show the different contributions of the financing instruments mentioned. The resources coming from the Italian Budget Laws for 2020 and 2021, equal to EUR 7.5 million, which will be included in the update to the 2017-2021 Programme Contract, still not formalised, and which will primarily finance, at least in part, the 'safety and environment' programme.

As for the programmes, in the 2017-2021 Programme Contract with RFI, the residual requirement also considers the years following the horizon of the Contract itself (both the 2022-2026 time frame and the horizon beyond 2026). The breakdown tables included in this Appendix show the overall residual requirement, while in the Summary table of Paragraph III.5, only the residual requirement corresponding to a medium-term horizon has been included, for homogeneity with the other priority investment programmes. (2026).

TABLE A.1.1 RAILWAY PRIORITY PROGRAMMES

Id	Programme	Description	Goals	Intervention cost (M EUR)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Complementary fund (M €)	Residual requirement (M €)
						Current projects	New projects		
1	Technological development to increase the capacity and improve the performance of the national network	Upgrading of traffic technologies through the creation of systems for train running control (SCMT), systems of signalling and technologies aimed at networks interoperability (ERTMS), as well as updating telecommunications and GSM-R systems	Set of programmes that aim at the technological upgrading of signalling systems in line with the European TSIs (ERTMS system), aimed at increasing the levels of safety, the circulation potential and the level of interoperability of the network managed by RFI.	14,309**	6,744	270	2,710		4,585**
2	Infrastructural development to increase the capacity and improve the performance of the regional networks	Infrastructural and technological upgrades of regional networks*	Improvement of the regularity of traffic, increase of capacity, improvement of accessibility and interchange, improvement of last-mile connections	4,915**	3,710	680	436		89**
3	Safety and environment	Tunnel and rail track safety, L.C. removal, acoustic remediation, hydrogeological and seismic interventions	Set of programmes aimed at making the network safe from a hydrogeological and seismic point of view, as well as at mitigating the environmental impacts of rail traffic	22,149**	4,109				18,039**
4	Accessibility to stations	Improvement of accessibility and compliance to legal obligations for passenger terminals, Station plan (raising platforms and upgrading of information systems) including the Plan for stations in the south, provided for by the NRRP	Set of programmes aimed at ensuring accessibility to passenger terminals, in a perspective of <i>Universal design</i> and overall usability.	5,651	2,095		700		2,856
5	Tourist promotion of minor railways	Promotion of minor railway lines according to landscape use and accessibility to sites of greatest interest from the hospitality point of view*	Programme aimed at promoting minor low-traffic railway lines on the Tourist Plan	350	169			181	0
6	Promotion of regional networks	Promoting regional networks (infrastructural and technological upgrading of basins)	Set of programmes aimed at strengthening the 2 <sup>nd</sup> -level SNIT infrastructures	4,556	970		217		3,369

Id	Programme	Description	Goals	Intervention cost (M €)	Available resources CDP MIMS- RFI Upd. 2018-2019 (M €)	Available resources		Complementary fund (M €)	Residual requirement** (M €)
						Next Generation UE (M €)	Current New projects projects		
8	Promotion of regional networks (Other Bodies)	Other Regional Railways (formerly licensed) not managed by RFI Compliance with the regional technical standard lines of the national network, both from an infrastructural and safety technological point of view	Greater integration between the national railway infrastructure and regional railways, expansion and integration of rail/road services, harmonisation of safety standards, new passenger and freight connections with airports, ports and terminals, offer optimisation with integration between HS and LPT, improvement of traffic steadiness	1,936				1,550	386
9	Upgrading, electrification and resilience in the South	Upgrading and renewal interventions for improving performances in terms of availability, reliability and safety in the railways of Southern Italy	Greater availability of the infrastructure, safety of the Railway operation, compliance with the Technical Standards of Interoperability and reduction of operating costs	5,205	2,075	20	2,400		709
<b>TOTAL</b>				<b>60,008</b>	<b>19,873</b>	<b>970</b>	<b>7,400</b>	<b>1,731</b>	<b>30,033**</b>

\*Cost updated according to the NRRP

\*\* The cost and requirements reported are the long-term overall ones; they should be reduced by about 30% when considering the medium term (2026)

**TABLE A.1.2 PRIORITY INTERVENTIONS - RAILWAYS RAILWAY (JUNCTIONS)**

Id	Node	Description	Intervention cost (M €)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Residual requirement (M €)
					Current projects	New projects	
1	Turin	Infrastructural and technological upgrading, P.Nuova-P.Susa fast line, completion of SFM (Metropolitan Railway System) stops, Orbassano stop**	744	197	80	50	417
2	Milan	Infrastructural and technological upgrading and new Milan sorting terminal	1,274	666	78	1	529
3	Genoa	Infrastructural upgrading and connection with the airport	214	63	25		125
4	Venice	Infrastructural and technological upgrading, restoration of the fork line and connection with the airport**	946	437	164	2	343
5	Bologna	Infrastructural and technological upgrading of Bologna junction; rail-road junction of Casalecchio di Reno	389	94			294
6	Florence	HS node, Rifredi-Statuto quadrupling	1,910	1,613		49	249
7	Rome	Infrastructural and technological upgrading, completion of the northern ring**, Pigneto** node; Tiburtina station interchange node; upgrading of the Castelli Romani lines; Campoleone-Aprilia-Nettuno, Lunghezza-Guidonia** track-doubling, track-doubling design of the Rome-Viterbo line	3,361	1,635	76	4	1,645
8	Naples	HS node, infrastructural upgrading, Traccia project, Pompei complex node; Vesuvio Est stop	1,309	776			532
9	Bari	Node arrangement and upgrading of Bari Sud, Bari Nord	1,184	351	205		628
10	Reggio Calabria	Infrastructural and technological upgrade	91	39			53
11	Palermo	Strengthening, infrastructural and technological upgrading	1,372	1,176			197
12	Catania	Railway connection with the airport	15	3	12		0
<b>TOTAL</b>			<b>12,808</b>	<b>7,049</b>	<b>641</b>	<b>106</b>	<b>5,012</b>
*Cost updated according to the NRRP							
**Intervention placed under receivership							

TABLE A.1.3 PRIORITY INTERVENTIONS - RAILWAYS (LINES)

Id	Line	Description	Intervention cost (M €)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Budgetary slippage (M €)	Residual requirement (M €)
					Current projects	New projects		
1	Turin-Lyon**	New Turin-Lyon line: base tunnel (including EU funding)	5,631	2,893				2,739
		New Turin-Lyon line: upgrading of the historical line	200	81				119
		Turin Belt and connection to the Turin-Lyon link (priority works)	1,700	66				1,635
2	Liguria-Alps***	Connections with the Swiss passes: Gallarate-Rho upgrading, Vignale-Oleggio-Arona doubling	2,826					
		Speeding up Turin/Milan-Genoa: Milan-Pavia quadrupling, Milan-Tortona-Genoa HSN, Turin-Alessandria-Genoa HSN	1,321	4,828	4,082			2,090
		Genoa Node and Third Giovi Pass	6,853					
3	Cross-section***	HS/HC Brescia-Verona West line	3,430	1,152	1,723			555
		HS/HC Verona est - Vicenza* fork line	3,140	838	526	1,421		355
		HS/HC Vicenza* crossing	1,075	150			925	0
		HS/HC Vicenza-Padua line	1,316				25	1,291
		Venice-Trieste strengthening, infrastructural and technological Trieste-Divaca upgrading, Udine-Cervignano doubling	2,213	277	0	17		1,919
4	Verona-Brenner***	Pass section: tunnel and lot 1 (Fortezza-P.te Gardena)	5,714	5,054				660
		Trento ring road*	1,180			930		250

Id	Line	Description	Intervention cost (M €)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Budgetary slippage (M €)	Residual requirement (M €)
					Current projects	New projects		
8	Adriatico-Jonica***	Infrastructural and technological upgrading	701	325	50	76		250
		Bologna-Lecce upgrading and speeding up; Termoli-Lesina doubling	1,349	1,267	80	3		0
7	Central Italy Apennine cross-sections***	Orte-Falconara Infrastructural strengthening and doubling	4,028	586	60	510		2,872
		Rome-Pescara strengthening	3,922	352		620		2,950
9	Naples-Bari***	Doubling and speeding up of Cancellone-Frasso-Telesino-Vitulano-Apice and Orsara-Bovino-Cervaro; new section of Apice-Orsara pass; integration of Cancellone-Napoli line with HS/HC	5,807	4,407	1,400			0
		Technological and infrastructural upgrading of the Naples-Bari-Lecce/Taranto route	430	430				0
10	Salerno-Reggio Calabria***	Infrastructural and technological upgrading of the historic line;	410	390				20
		Salerno-Reggio Calabria HS**	11,200		0	1,800	9,400	0
		Battipaglia-Potenza-Metaponto-Taranto speeding up*	1,900	36	16	434		1,414
11	Palermo-Messina-Catania***	Messina-Catania-Siracusa doubling and speeding up	2,559	2,515				44
		New Palermo-Catania connection: 1 <sup>st</sup> and 2 <sup>nd</sup> Phase	6,016	3,576	1,123	317		1,000
12	Cagliari-Sassari/Olbia	Infrastructural and technological upgrading, and speeding up	397	328	69			0
<b>TOTAL</b>			<b>75,319</b>	<b>29,549</b>	<b>9,129</b>	<b>6,061</b>	<b>10,350</b>	<b>20,229</b>

\*Cost updated according to the NRRP.

\*\* The cost for the entire Salerno-Reggio Calabria line is not defined yet; the PFTE (Technical and Economic Feasibility Project) is underway.

\*\*\*Intervention placed under receivership

Interventions to be submitted to *project review* and Feasibility Design, as identified in the previous Infrastructure Annexes to the DEF, with completed *project reviews* are included in the tables above, while designs still in progress are shown in the tables below.

**TABLE A.1.4 PRIORITY INTERVENTIONS TO BE SUBMITTED TO PROJECT REVIEW - MODE: RAILWAY (LINES)**

Id	Name	Description	Intervention cost (M €)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Residual requirement (M €)
					Current projects	New projects	
1	Genoa-Ventimiglia	Completion of Savona-Ventimiglia line doubling*	1,540	51			1,489
2	Verona-Brenner	Adduction section	2,224	40			2,185
3	Palermo-Catania-Messina	Palermo-Messina doubling	4,844	479	460		3,905
<b>TOTAL</b>			<b>8,608</b>	<b>570</b>	<b>460</b>		<b>7,579</b>

\*Intervention placed under receivership

**TABLE A.1.5 PRIORITY INTERVENTIONS TO BE SUBMITTED TO FEASIBILITY MACROSTUDY - MODE: RAILWAY (LINES)**

Id	Line	Description	Goals
1	Tirrenica Nord	Access to the Tyrrhenian ports; cargo upgrading of the historic BO-FI section with continuation to Pisa, strengthening of the Pontremolese line *, Pisa-Rome section, strengthening and speeding up of Pisa-Rome	Ensuring adequate accessibility of goods (in the first phase, module at least at 650m and profile at least P/C 45) to the ports of La Spezia, Marina di Carrara, Livorno, Civitavecchia, Naples and Salerno, as well as to the <i>inland</i> terminals and the production districts of Lazio and Campania. Speeding up passenger relations between Genoa and Rome (AVR network)

\*Intervention placed under receivership

Finally, some detailed FOCUS are shown in the following pages.

The first FOCUS highlights some interventions not falling within the SNIT scope, but proposed as part of the NRRP to reduce the existing infrastructural gap, especially at the local level, between the regions of the North Centre and the South of the country. The second and third FOCUS report, respectively, the indications on possible infrastructural and service improvement actions for the dynamic crossing system of the Strait of Messina and the assessment of alternative solutions for the stable crossing system of the Strait of Messina.

Interventions included in the NRRP within the Upgrading, Electrification and Resilience in Southern Italy Programme					
Description	Intervention cost* (M €)	Available resources CDP MIMS-RFI Upd. 2018-2019 (M €)	Available resources Next Generation UE (M €)		Residual requirement (M €)
			Current projects	New projects	
Resilience Plan for Southern Italy	231			231	0
(Rome) Venafro - Campobasso - Termoli	150			150	0
Palermo - Agrigento - Porto Empedocle	100			100	0
Barletta - Canosa Electrification	145	45		100	0
Trapani Birgi Intermodality and accessibility	40			40	0
Decimomannu-Villamassargia doubling (2020-2026 phase)	230			130	100
Olbia airport railway connection	170			170	0
Bari Lamasinata (2020-2026 phase)*	155	35		120	0
Port connection and Augusta bypass	135			135	0
Potenza - Foggia railway line - modernisation	323	213		110	0
Brindisi connection strengthening: airport and intermodal junction	164	98		66	0
Taranto connections strengthening: Port, Railway station, Taranto-Brindisi	58			58	0
Roccaravindola-Isernia-Campobasso electrification and speeding up	140	60	20	60	0
Salerno Arechi-Airport Pontecagnano connection completion	160	100		60	0
Albairate-Abbiategrasso doubling	120			120	0
Codogno-Cremona-Mantova doubling** 1 <sup>st</sup> phase and anticipation of 2 <sup>nd</sup> phase works	505	340		165	0
Ferrandina-Matera completion**	365	315		50	0
Ionica Sibari-Catanzaro Lido-Reggio Calabria/Lamezia Terme	918	618		300	0
Catania junction (2020-2026 phase)	956	252		95	609
Pescara-Foggia	140	100		140	0
<b>TOTAL</b>	<b>5,205</b>	<b>2176</b>	<b>20</b>	<b>2,400</b>	<b>709</b>

\*Cost updated according to the NRRP  
\*\*Intervention placed under receivership

### Guidance on possible actions to improve infrastructures and services for the dynamic crossing system of the Strait of Messina

With decision prot. No. 2665 of 3 September 2020, the STM has established a Working Group (WG) in charge of "*carrying out in-depth analyses on the current situation of crossing the Strait, providing guidance on possible effective actions to improve infrastructures and services, pending future implementations*", through :

- an analysis of the requirements;
- the identification of the main current criticalities;
- the definition of possible interventions.

The outcome of the work of the WG made it possible to identify some project proposals to be implemented in the short to medium term, in addition to those already planned and described in this Annex, including:

- regeneration of the ship for rail transshipment, also through retrofitting and/or hybridisation, in order to increase the quality of the passenger and freight service and make it more sustainable;
- renewal and retrofitting of railway rolling stock, also in order to speed up train boarding/disembarking manoeuvres and eliminating diesel traction, considering the possibility of using ETR rolling stock for crossing the Strait, which can then also circulate on the HS network;
- regeneration of fast passenger ships, also through retrofitting and/or hybridisation, in order to increase the quality of the service and make it more sustainable;
- redevelopment of the RFI railway stations in order to increase the quality of the railway service and better integrate it with that of crossing the Strait of Messina;
- strengthening and regeneration of landings and maritime stations, also in order to increase the capacity and flexibility of maritime services and the quality of travel for users with and without vehicles;
- promoting the energy transition of maritime mobility of the ports of the AdSP (Port System Authority) of the Strait through, for example, the construction of coastal LNG deposits, electrification of docks, LNG and Bio-LNG micro-liquefaction plants;
- increasing road accessibility to ports, in order to enhance road access/egress capacity to ports, reduce congestion in the cities of Messina, Reggio Calabria and Villa S. Giovanni and create '*storage lungs*' for trucks and cars within an integrated system of land and maritime mobility based on smart-road logics;
- proposals for legislative and regulatory interventions in the field, including: establishment of a permanent technical-political working group and with civil society for the management of a participatory and shared process for the implementation of project proposals; establishment of a special authority for the unitary and integrated management of mobility services on the Strait; incentives for freight and passenger connections within the framework of territorial continuity; systematisation of the rules applicable to the different types of services involved.

Overall, an investment of approximately EUR 520 million is expected to carry out these projects, with funds already available from the NRRP (Next Gen. EU and Complementary Fund), 2021 Investment Fund, Programme Contract and other sources.

### The evaluation of alternative solutions for the stable crossing system of the Strait of Messina

The activities of the Working Group (WG), established by MIMS STM on 27 August 2020 with Decision No. 2620, were dedicated to the technical support to decision-making activities on the possible developments of the project of the Strait of Messina stable crossing system.

The support concerned multiple aspects, and in particular:

- i) the socio-economic and transport reasons for the realisation of a stable crossing system of the Strait of Messina;
- ii) the decision-making process to be used for project selection;
- iii) the design and technology alternatives to be explored in the feasibility project;
- iv) the contents of the first phase of the technical and economic feasibility project.

The work of the WG has been carried out on the basis of original elaborations, especially in relation to the usefulness of a stable crossing of the Strait of Messina, of documentary analysis related to the large amount of design studies and elaborations developed since 1968, of hearings of technicians and companies that have worked on different design solutions, as well as the regional and metropolitan institutions of the cities of Messina and Reggio Calabria. The work carried out led to the conclusions summarised below.

The WG believes that there are profound reasons for the realization of a stable crossing system of the Strait of Messina, even in the presence of the planned strengthening/upgrading of maritime connections (dynamic connection), however necessary given the time required for the realisation of a stable connection.

The WG also made an international comparison of the connections built with bridges and tunnels in recent decades. From these analyses, it is clear that, among large islands in the world without a stable connection and comparable with the Italian case, Sicily has the highest connection potential in terms of the ratio between inhabitants and distance from the mainland, while there are several islands which, despite having a stable connection, have significantly lower connection potential, especially if they belong to the same country as the mainland to which they are connected.

The elements that emerged during the work carried out lead the WC to suggest that the formal evaluation of the connection system usefulness will be defined at the end of a decision-making process initially including the drafting of a technical and economic feasibility project. Such evaluation shall also be carried out on the basis of elements of economic-social, transport, territorial and environmental nature, and through the comparison of various alternative solutions, with a reference solution that shall take into account all the improvements of the dynamic crossing of the Strait of Messina currently being defined.

The WG also points out that the single-span bridge project cannot be realised yet without first carrying out design modifications and/or technical, legal, economic and environmental studies.

Another particularly important aspect is the method of choosing the financing model for the intervention, between the hypothesis of placing the burden directly at the expense of public finance (national, and where possible, European) or using private capitals to be generated as part of a concession relationship subsequent to the realisation of the work. In addition, the Italian Budget Law No. 178/2020 has allocated EUR 50 million for the preparation of a technical-economic feasibility project of alternative solutions for the stable crossing system of the Strait of Messina.

For details and in-depth analysis of the considerations made by the Working group, see the final report available at the following link:

<https://www.mit.gov.it/sites/default/files/media/notizia/2021-05/Relazione%20-%20GdL%20Attraversamento%20stabile%20stretto%20%281%29.pdf>

## A.2 ROADS AND MOTORWAYS

The national road network is an essential strategic component within the integrated system of infrastructures serving the demand for mobility of people and goods, both at a national and international level. The national road infrastructure stock, although significant, has room for improvement in terms of:

- promotion of the existing road stock and completion of ongoing projects on homogeneous road routes;
- technological strengthening and digitisation (e.g. smart roads);
- Maintenance and implementation of safety measure works on infrastructure (e.g. at seismic risk);
- decongestion and fluidification of suburban and highway sections (e.g. track widening);
- decongestion of urban and metropolitan areas (e.g. elimination of bottlenecks);
- upgrading and homogenisation of road itineraries with low motorway accessibility.

Moving from these considerations and from the characteristics and criticalities of the SNIT of 1st level (Paragraph III.3), both specific interventions aimed at solving localised problems related to sections or routes, and organic thematic programmes aimed at solving widespread criticalities that similarly affect significant portions of the road network have been identified. With reference to the Intervention Programmes, the following ones have been identified:

- Intervention programme for the conservation, promotion, upgrading to functional and safety standards;
- Intervention program for technological strengthening and digitisation (Smart Road);
- Intervention programme for the restoration of and implementation of safety measure works on infrastructures at seismic risk;
- Intervention programme for decongestion of motorway sections;
- Intervention programme for decongestion of motorway sections;
- Intervention programme for territorial resilience and connection of internal areas.

In particular, when choosing priority interventions, account was taken not only in terms of compliance with the strategic objectives indicated in Chapter I, but also in terms of the needs to complete interventions already partially carried out, as well as the synergy effects generated.

With regard to the resources financed, the tables do not take into account those coming from the Italian 2020 and 2021 Budget Law, as the update of the Programme Contract incorporating them has not yet been formalised (for a total additional amount of around EUR 2.5 billion).

The NRRP - NGEU did not fund road investments. The State Complementary Plan Fund, on the other hand, financed technological monitoring works on the main road network and, in particular, on the A24-A25 motorway, and road works falling within the scope of SEZ development strategy.

**TABLE A.2.1 PRIORITY PROGRAMMES ROADS AND MOTORWAYS**

N°	Name	Description	Project Feasibility	Presence in programming tools	Cost (M €)	Available funding (M €)	Additional requirements to be found (M €)
1	Promotion of the existing road stock	Preservation, promotion and compliance with functional safety standards of the existing road stock		Anas CdP PO MIT	10,831.38	7,629.73	3,201.65
		National road network reclassification. Extraordinary maintenance for safety requirements		Anas CdP PO MIT	1,100.67	1,100.67	0.00
2	Technological strengthening and digitisation (Smart Road)	A2 'Mediterranean motorway' Pilot Project			198.00	198.00	0.00
		Compliance of the 1 <sup>st</sup> -level SNIT (Integrated National Road System) road network with the Smart Road functional specifications, as indicated in the Annex to DM70			637.00	40.00	597.00
		Ecosystem for C- ITS services		DM70 (Smart Road)	2.00	0.00	2.00
3	Restoration of and safety measure implementation work on infrastructures, with particular attention to those at seismic risk	A24 and A25 motorway technological monitoring, viaduct seismic upgrading, tunnel upgrading and infrastructure and smart road upgrading works*		Strada dei Parchi S.p.A. concession (Extraordinary Commissioner) NRRP	3,190.00	2,990.90	199.10
		Interventions of safety measure implementation, restoration and strengthening of the road system of earthquake-affected areas.		Anas CdP	791.76	791.76	0.00
		Maintenance of bridges, viaducts and tunnels		ANAS CdP	4,234.79	4,234.79	0.00
		Strengthening and upgrading of Via Salaria (SS 4)*		ANAS CdP	1,131.92	489.68	642.24

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N°	Name	Description	Project Feasibility	Presence In programming tools	Cost (M €)	Available funding (M €)	Additional requirements to be found (M €)
		Programme of Technological Monitoring of the works belonging to the SNIT network		NRRP ANAS and motorway concessionaires	450.00	450.00	0.00
		SS4* upgrade to 4 lanes	X - FIRST SECTION DEVELOPED				
4	Decongestioning and fluidification of motorway sections (widening to third and fourth lanes)	Extension to the fourth lane of A1 motorway on the Milan South - Lodi section		Autostrade per l'Italia S.p.A. Concession	207.09	207.09	0.00
		Widening to the third lane of the A13 motorway in the Monselice - South Padua section		Autostrade per l'Italia S.p.A. Concession	184.62	184.62	0.00
		Widening to the third lane of the A13 motorway in the Bologna - Ferrara south section		Autostrade per l'Italia S.p.A. Concession	440.39	440.39	0.00
		Widening to the fourth lane of the A14 motorway in the section between the new junction of Ponte Rizzoli - Diramazione per Ravenna		Autostrade per l'Italia S.p.A. Concession	392.56	392.56	0.00
		Construction of the third dynamic lane on the A12 motorway in the Cerveteri - Torrimpietra section on the south roadway		Autostrade per l'Italia S.p.A. Concession	32.00	32.00	0.00
		New coast - inland road connection of Valfontanabuona (GE)	X	To be defined			
5	Decongestion of metropolitan areas	Catania ring road: construction of the third lane and upgrading of safety barriers		Anas CdP	217.41	4.00	213.41
		G.R.A. Ring road and A91 Roma-Fiumicino: construction of GRA complementary lanes between Via Casilina and the Tor Bella Monaca junction and strengthening of the Tiburtina junction.		Anas CdP	180.04	79.12	100.92
		Fluidification interventions of the Rome node	X	Anas CdP			
		Bari ring road: Strengthening of the variant in the section between Bari and Mola di Bari with the adoption of road B section		Anas CdP	350.00	350.00	0.00

N°	Name	Description	Project Feasibility	Presence In programming tools	Cost (M €)	Available funding (M €)	Additional requirements to be found (M €)
		Completion of the strengthening of the Florence node (A1 and A11 motorway)		Autostrade per l'Italia S.p.A. Concession	1,383.38	1,383.38	0.00
		Strengthening of Bologna motorway and ring road system		Autostrade per l'Italia S.p.A. Concession	1,602.00	594.75	1,007.25
		Gronda di Genova (so-called 'Ponente' ring road) new section for the strengthening of the A7-A10-A12 interconnection		Autostrade per l'Italia S.p.A. Concession	4,755.20	4,755.20	0.00
		Resilience for inland areas identified by SNAI's (National Strategy for Inland Areas) strategy		Internal Areas Committees NRRP:	300.00	300.00	0.00
6	Resilience of the secondary network and accessibility of inland areas	Extraordinary maintenance of secondary-network bridges and viaducts		Provinces and Metropolitan Cities	3,200.00	1,150.00	2,050.00
		Resilience of the secondary road network for inland and mountain areas		Provinces and Metropolitan Cities	13,000.00	5,852.00	7,148.00
		<b>Total</b>			<b>48,812.21</b>	<b>33,650.64</b>	<b>15,161.57</b>

\* Work placed under receivership.

TABLE A.2.2 PRIORITY INTERVENTIONS ROADS AND MOTORWAYS

N.	Name	Description	Project Review	Project Feasibility	Presence in programming tools	Cost (M €)	Funding (M €)	Additional requirement (M €)
1	A22 Brenner motorway	Strengthening of the A22 motorway between Verona nord and the interconnection with the A1 Modena motorway			Renewal of the concession of Autostrade del Brennero SpA	995.00	0.00	995.00
		New Campogalliano - Sassuolo motorway connection between the A22 motorway and the 467 S.S. (State road).			Campogalliano Sassuolo SpA Concession	422.00	422.00	0.00
2	Val d'Astico A31 motorway <i>NOTE: The feasibility of the entire work is subject to the solutions that will be identified by the project review of the second route</i>	New route, Piovene Rocchette - Valle dell'Astico, continuing north of the A31 motorway			(SEA in progress) Brescia-Verona-Vicenza-Padova SpA motorway concession	1,299.43	1,299.43	0.00
		Road infrastructure interconnection between Astico, Valsugana and Adige Valley		X	Brescia-Verona-Vicenza-Padova SpA motorway concession			
3	A4 Venice - Gorizia - Trieste motorway 25 Works	Strengthening of the A4 motorway by widening to the third lane in the sections between San Donà di Piave and Alvisopoli and between Gonars and Villesse			Concession	647.23	647.23	0.00
4	Pedemontana Veneta	New regional toll freeway Pedemontana Veneta <sup>29</sup>			Granting	2,258.00	2,258.00	0.00

<sup>29</sup> The infrastructure is about 95 km long, 65 km of which have already been commissioned, from Malo, A31 interconnection and up to Montebelluna. Formal communications from the concessionaire regarding the updates on completion times, following the delays due to the pandemic and the complete release from seizure by the Public Prosecutor of Malo tunnel, which only took place in October 2020 from 2016, show that by the end of 2021 the Montecchio Maggiore section up to the Malo tunnel, and the Montebelluna section up to Spresiano will be completed, reaching the completion of around 90% of the infrastructure. In March 2022 the completion of Pedemontana to the eastward the connection with A27 is expected; and finally, in August 2022, the completion of the Malo tunnel is expected, with the commissioning of the entire infrastructure.

N.	Name	Description	Project Review	Project Feasibility	Presence in programming tools	Cost (M €)	Funding (M €)	Additional requirement (M €)
5	Pedemontana Lombarda motorway	New regional Pedemontana Lombarda motorway (B2-C-D Sections)			Concession	2,681.90	2,681.90	0.00
6	A33 Asti Cuneo motorway	Completion of A33 Asti - Cuneo motorway			Asti Cuneo SpA Concession	348.00	348.00	0.00
7	Medio Padano motorway Route	Parma - Terre Verdiane motorway Connection (TiBre 1 <sup>st</sup> lot)			SALT Tronco Autocisa SpA Concession	423.86	423.86	0.00
		New Terre Verdiane - SP10 connection		X	SALT Tronco Autocisa SpA Concession renewal			
		New Cispadana Regional Motorway (Project Financing) and upgrading of the SP10		X	Regional Concession	1,308.00	1,208.00	100.00
		Upgrading of the Ferrara - Porto Garibaldi motorway connection (Project Financing)	X		Regional Concession			
8	Civitavecchia-Orte-Ravenna Itinerary	SS 675 Orte-Civitavecchia Completion - Monte Romano est - Civitavecchia* new section			Anas CdP	466.77	466.77	0.00
		E45/SS 3 bis Orte-Ravenna Upgrading		X	Anas CdP	1,153.31	1,153.31	0.00
		SS 309 Ravenna-Venezia Upgrading		X	Anas CdP	436.91	436.91	0.00
9	E78 - Transversal Tuscany-Umbria-Marche Route*	Selci Lama (E45) SECTION - S. Stefano di Gaifa Upgrading to 2 lanes: of the Guinza Tunnel (2 <sup>nd</sup> Lot) and of the Guinza - Mercatello Ovest Section (3 <sup>rd</sup> Lot)			Anas CdP	90.00	86.00	4.00
		Selci lama (E45) - S.Stefano di Gaifa Section. Upgrading to 2 lanes of the Variante di Urbania section			Anas CdP	130.00	8.00	122.00
		Selci Lama (E45) - S. Stefano di Gaifa Section Upgrading to 2 lanes of the Mercatello sul Metauro ovest - Mercatello sul Metauro est section (4 <sup>th</sup> Lot)			Anas CdP	100.00	3.80	96.20

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N.	Name	Description	Project Review	Project Feasibility	Presence in programming tools	Cost	Funding	Additional requirement
						(M €)	(M €)	(M €)
		Selci lama (E45) - S.Stefano di Gaifa Section. Upgrading to 2 lanes of the Mercatello sul Metauro est - S Stefano di Gaifa section (Lots 5-10) - Completion			Anas CdP	260.00	0.00	260.00
		Grosseto - Siena 1 <sup>st</sup> section: 4 <sup>th</sup> lot. Upgrading to 4 lanes from 27+200 km to 30+040 km			Anas CdP	105.52	105.52	0.00
		Grosseto - Siena 1 <sup>st</sup> section: 4 <sup>th</sup> lot. Upgrading to 4 lanes from 41+200 km to 53+040 km			Anas CdP	193.00	161.96	31.04
		Siena - Bettolle (A1) Section. Upgrading to 4 lanes of the Siena - Ruffolo (Lot 0)			Anas CdP	247.00	47.64	199.36
		Grosseto - Siena Section. (Existing) Casal di Pari tunnel improvement works.			Anas CdP	35.14	35.14	0.00
		Arezzo Node (S.Zeno)-Selci lama (E45) section. Upgrading to 4 lanes of the San Zeno - Arezzo - Palazzo del Pero Section - 1 <sup>st</sup> Lot			Anas CdP	218.00	0.00	218.00
		Arezzo Node (S.Zeno)-Selci lama (E45) section. Upgrading to 4 lanes of the San Zeno - Arezzo - Palazzo del Pero Completion			Anas CdP	209.01	0.00	209.01
		Selci Lama (E45) - S. Stefano di Gaifa Section Upgrading to 2 lanes of the Selci Lama (E45) - Parnacciano (Guinza) section, lot 1			Anas CdP	100.00	6.71	93.29
		Arezzo Node (S.Zeno)-Selci lama (E45) section. Upgrading to 4 lanes of the Le Ville - Selci Lama Section (E45) Lot7			Anas CdP	435.00	5.00	430.00
<b>10</b>	Tyrrhenian Center-North Route	Livorno Civitavecchia Route Completion		X	Ongoing transfer to ANAS			
<b>11</b>	Umbria-Marche Quadrilateral	Supplementary works to complete the itinerary			Anas CdP	292.92	243.04	49.88

N.	Name	Description	Project Review	Project Feasibility	Presence in programming tools	Cost	Funding	Additional requirement
						(M €)	(M €)	(M €)
12	Tyrrenian Central-Southern Route (RM-NA) <i>Note: project review completed for Tor de Cenci Latina and Cisterna Val Montone scissor crossing</i>	Tor de Cenci - Latina Regional motorway Southern Tyrrenian Corridor (Project Financing)	X		Concession to be activated	2,050.76	718.10	1,332.66
		Cisterna Val Montone* scissors crossing	X		Anas CdP	677.89	300.00	377.89
		Alternative route in the Municipality of Formia SS 7 (Pedemontana)			Anas CdP	300.00	79.25	220.75
		SS 7 quater Domitiana strengthening		X				
13	SS.N.372 Telesina Benevento-Caianello	Upgrading to 4 lanes from km 0+000 to km 60+900 - 1 <sup>st</sup> lot from km 37+000 (San Salvatore Telesino junction) to km 60+900 (Benevento junction)			Anas CdP	460.00	460.00	0.00
		Upgrading to 4 lanes from km 0+000 to km 60+900 - 2 <sup>nd</sup> lot from km 0+000 (A1 Caianello) to km 37+000 (San Salvatore Telesino junction)*			Anas CdP	468.59	0.00	468.59
14	Salerno-Potenza-Matera-Bari Route	RA5 5 and SS 407 Basentana regeneration - 2 <sup>nd</sup> part and completion			Anas CdP	423.06	338.69	84.37
		SS 658 Melfi - Potenza - Safety measure implementation works on the road layout in occasional sections and connection to the industrial plant			Anas CdP	103.59	73.59	30.00
					Anas CdP	29.65	29.65	0.00
					Anas CdP	64.97	64.97	0.00
		Upgrading of SS 96 Matera-Bari connections			Anas CdP	33.22	33.22	0.00
		Upgrading of the existing structures and new Salerno-Potenza-Bari sections - 4th section: from the Vaglio industrial area to the SP Oppido - SS 96 junction			Anas CdP	349.00	2.50	346.50
15	A2 SA-RC 'Autostrada del Mediterraneo'	Improvement of the adduction road network (A2 Salerno-Reggio Calabria) - Cosenza Nord (Settimo di Rende site) and Cosenza Sud junctions			Anas CdP	1,197.85	878.25	319.60
16	State Road Jonica 106*	3 <sup>rd</sup> mega-lot completion of the S.S. 106 Jonica, from the connection with the S.S. 534 in Roseto Capo Spulico			Anas CdP	1,335.12	1,335.12	0.00

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N.	Name	Description	Project Review	Project Feasibility	Presence in programming tools	Cost (M €)	Funding (M €)	Additional requirement (M €)
		Completion of the route	X					
17	Sardinian Route	SS.N.131 Carlo Felice SS.e and Centrale Nuorese - Upgrading branch line, safety measure implementation works and resolution of critical junctions with the completion of the Sassari-Olbia route			Anas CdP	499.51	289.91	209.60
18	Palermo-Catania A19	Upgrading and maintenance of the A19 Palermo-Catania motorway			Anas CdP	792.14	792.14	0.00
19	Agrigento-Caltanissetta SS640	Strengthening of SS 640 Agrigento-Caltanissetta connection			Anas CdP	1,535.05	1,535.05	0.00
20	Ragusa - Catania	Ragusa - Catania Route			Anas CdP	950.00	754.16	195.84
21	State Road 16*	SS16 Adriatica Falconara Baraccola - 1 <sup>st</sup> lot Falconara-Torrette section			Anas CdP	249.77	249.77	0.00
22	State Road 34	Safety measure implementation works on the sides of the SS 34 of Lake Maggiore			Anas CdP	34.00	34.00	0.00
23	A2 'Autostrada del Mediterraneo' motorway	Attributing motorway characteristics to the Salerno/Avellino spur route including the upgrading of the S.S. 7 and 7 Bis up to the Avellino east junction of the A16 motorway. 2 <sup>nd</sup> part A30 intersection - Road link for Avellino at Solofra junction			Anas CdP	130.00	130.00	0.00
24	A16 - A3 connection	Construction of a fast connection between the A3 motorway 'SA-RC (Contursi junction)' and the A16 motorway (Grottaminarda junction) - COMPLETION; 2 <sup>nd</sup> Lot Sant'Angelo dei Lombardi - Villamaina			Anas CdP	430.00	360.00	70.00
<b>TOTAL</b>						<b>26,970.17</b>	<b>20,506.59</b>	<b>6,463.58</b>

\* Work placed under receivership.

Within these programmes, the only one that does not provide for interventions requiring further public funding is ‘*Decongestion and fluidification of motorway sections*’, since concessionaires contribute to their funding to different extent.

The need to improve road safety and reduce accidents is met by carrying out several active and passive safety interventions. The former are aimed at making the road section compliant with current standards and correcting existing roadways.

The theme of sustainable accessibility, and therefore the ease of reaching some of the system’s nodes, in terms of both travel time, and comfort and safety, will be pursued through the completion of some sections of the SNIT network of 1<sup>st</sup> level, the speeding up of the tracks and the upgrading to the higher category. The list in the tables also includes numerous interventions to complete the TEN network.

The high exposure to the risk of extreme events and the fundamental importance of the road network to ensure the management of emergencies have been identified as a criticality of the Italian road network. In order to achieve a greater resilience of the primary network against critical events, a specific programme of interventions has been drafted. Within this programming there are two main actions, one in the motorway sector and the other relating to the remaining SNIT 1<sup>st</sup>-level network, both financed by the Complementary Fund: the first refers to the upgrading of the A24 and A25 motorways, which plays a fundamental role as a connection for the earthquake crater of L’Aquila; the second relates to the safety measure implementation on the areas affected by the earthquake, and represents the first step in addressing this issue in a broader programmatic perspective in the following steps.

**FOCUS**
**<sup>1</sup>Resilience of the road network in the NRRP**

Implementation of safety measures to the A24 A25 motorway system; technological monitoring of the national road network (SNIT); extraordinary maintenance of the Internal Areas of the SNAI Strategy.

The interventions included in the fund supplementary to the EU Next Gen. of the NRRP are closely interrelated, and have the following strategic objectives:

1. Increasing the degree of knowledge of the road network, with a special focus to the serving infrastructures, through the implementation of the Guidelines for Risk Classification and Management, safety assessment and monitoring;
2. Elaborating and sharing an innovative system of safety management, that allows to realise an widespread infrastructural network, where a capillary system of technologically advanced knowledge and monitoring is managed by a single platform, also equipped with artificial intelligence algorithms, for the management, correlation and analysis of data (also for predictive purposes) and supporting the necessary maintenance interventions, based on:
  - integrated digital systems and platforms for data collection, analysis, management, sharing, and processing;
  - innovative systems of investigation and structural monitoring, also dynamic of the network and related high-tech sensors, widely integrated in the road network for the control of the state of the road structures and the hydrogeological context;
  - advanced use of information methods and tools for the digitisation of works and networks (BIM and GIS);
  - advanced information systems for planning and deciding strategies and interventions and management, implementing and reporting on such interventions;

- promotion and provision of the high-level technical expertise necessary to carry out the process.
- 3. Interventions necessary to ensure the civil defence of the country and territorial cohesion between cities and inland areas, to be implemented with the methodologies described above.

### **Road structure monitoring and safety measure implementation on A24 and A25 motorways**

The A24 and A25 motorway system has been declared a strategic infrastructure for civil protection purposes, as the artery represents to date the only east-west connection system of the country in Central Italy able to ensure the passage of vehicles and aid column in the event of an earthquake; this system develops on an entirely seismic territory, crossing territories with seismic intensity reaching or exceeding 30% of the acceleration of gravity and intersecting with a complex and articulated system of active faults, which in recent decades have developed a significant series of earthquakes. In order to implement safety measures on this artery, of fundamental importance, the Government has appointed an extraordinary commissioner with a special State law, in charge of carrying out the necessary interventions to make safe the artery. However, to make these interventions efficient, it is necessary:

- instrumentally monitoring all bridges and viaducts;
- building a national-level data collection and analysis centre, able, at the same time, to be a service offered to all other service managers, interacting with the AINOP system;
- build a 'digital' road model by integrating smart road services with those of data collection and analysis related to safety;
- adapting the Gran Sasso tunnel (10 km) to the safety specifications for tunnels of the trans-European road network, also protecting the Gran Sasso catchment system; integration with green energy systems is also planned;
- consequently beginning the safety measure implementation works according to the Partial plans resulting from the analysis of the data collected, and adapting the infrastructure's bridges and viaducts.

Following the strategy of the internal areas, the same local authorities belonging to each area will precisely define and indicate the priorities of the various sections, while the provincial authority, responsible for the arterial road, will perform most of the necessary work.

The strategic goals of this programme, in many ways complementary to the first two, are:

1. Making up for the maintenance backlog on the secondary road network by 2026, entrusting, according to the principle of subsidiarity, the design and implementation of interventions to the implementing parties, who best know the needs of the territory managed, without, however, consuming the sums provided for micro - interventions,
2. Increasing the resiliency of the road infrastructure and the areas it serves;
3. Supporting, consequently, a decisive upgrading of the policies of the Department of Cohesion, but also encouraging civil defense and first aid operations in case of disaster, and the access to the landscape heritage of such areas;
4. Encouraging the economic and social recovery of the territory; the allocation of the above mentioned sums, besides providing for the recovery of the maintenance backlog which the secondary road network and the heritage of small municipalities currently experience, strengthening the growth potential of the country both in direct and indirect terms, harnessing such strengthening as an excellent driving force for an economic recovery, as the planned investments

will directly impact the territorial reality, and can be contracted, to a good extent, to small and medium-sized enterprises in the sector; in addition, these are interventions that do not require special authorisations or clearances, and therefore can be quickly implemented. This brings about a virtuous circle, both from an employment and economic perspective.

The Ministry of Sustainable Infrastructures and Mobility (MIMS) will support the development of such projects also by contributing to an upgrade of the knowledge and skills necessary for the planning, design, implementation and reporting of such works.

### **Technological monitoring of the SNIT road network**

The set of road infrastructures constituting the Italian road network is estimated to include over a million and a half units, most of which is over 50 years old, has serious maintenance deficiencies and is subject to severe human and environmental actions, the risks arising from the hydrogeological instability of the territory, increasingly aggravated by climate change. This highlights the complexity and onerousness of the actions necessary for the safety and full functionality of the road infrastructural network and the planning and execution of maintenance, implementation of safety measures, improvement, upgrading and replacement of the road infrastructures in order to prevent consequences in terms of human lives, as well as serious obstacles to the economic development and social cohesion of the country. It is therefore necessary that the actions aimed at increasing the safety of infrastructures must be organised according to objective criteria, with a managerial approach and based on the concept of risk, allowing the identification of priorities and the most appropriate tools for intervention.

To this end, the innovative technologies for surveys and technological monitoring and digital tools for data management and analysis offer a background that every road manager must now be equipped with; the complexities related to the number and degree of knowledge of the various managers, the heterogeneity of the types of road infrastructures and their level of preservation, combined with the resources currently available, makes it necessary to innovate the process that allows to address the issue according to intervention programmes based on the real need for maintenance, also to avoid that, with the procrastination of such interventions, even greater sums are required. Therefore, the current project provides for, starting from the SNIT network, contributing to the implementation of this widespread network, offering, moreover, the opportunity to the various managers to use the data collection and elaboration centre expected in the previous project. An innovative system will therefore be designed - with unique characteristics at the national level - intended to last over time and applicable to different cases, consistently included in a comprehensive open 'architecture', technologically advanced and digitally based, which looks at the more technological aspects (communications, data and their processing, analysis techniques, models) as well as the organisational aspects (structures and professional skills for analysis) and procedural aspects (standards, guidelines, 'best practices', information sharing and transparency), to be integrated with the National Computer Archive of Public Works (AINOP). The platform will also foster sustainable growth, new digital skills such as the development of artificial intelligence, IoT (Internet of Things), Deep learning, Big data, Machine learning, High Performance Computing, digitisation of construction processes and monitoring in the infrastructure sector, etc.

### **Extraordinary road maintenance serving Inland Areas**

The SNAI (National Strategy for Inland Areas) is a national policy of development and territorial cohesion that aims at counteracting the marginalisation and demographic decline of our country's inland areas; these areas are connected to the SNIT (National Integrated Transport System) network and therefore mainly reachable and accessible

only by the secondary road network; therefore maintaining this infrastructure system, generally characterised by a deep maintenance deficit, reveals any type of structural, economic or social intervention in these areas.

The presence of an efficient secondary network, therefore, represents the only way to allow inland areas to interact with the urban centres, to receive from them the territorial services at the provincial level (health, police and public safety, personal services, second level school education), but also the only viable way to exchange productivity between the internal areas, often characterised by the presence of attractive landscapes and natural spots (defined as cultural landscapes) and industrial and craft districts of high quality, with the centre of reference, but also with the national and European network. At the same time, extraordinary maintenance operations avoid the consumption of new land for the hypothetical development of alternative roads, allowing to preserve the delicate balance of these areas.

Furthermore, maintenance operations allow to regulate the flow of water, and therefore help in the fight against hydrogeological instability. Moreover, avoiding the depopulation of these areas and allowing some productive segments to return to maintain mountain territories, as result of a balance established over time between man and the natural environment, also allows to prevent flooding phenomena; even in these cases, the road network is often a first important bulwark to phenomena of instability. Finally, due to the country's characteristic orogeny, the Apennine and peripheral areas are affected by earthquakes that are on average more intense than those occurring in lowlands; representing the only link with the inland areas, it is essential that it remains accessible even after the occurrence of calamitous events.

In this sense the MIMS, in agreement with the Ministry for the South and Territorial Cohesion, has prepared, after carefully studying the needs of each area, a plan of maintenance interventions that will be scheduled directly by the individual Inland Areas, in accordance with the principle of proximity, through sums allocated through analytical calculation of geographical indicators (type of inland area, presence of mountain municipalities, length and type of road network) social ones (population around these areas, specific indexes of the presence of children and elderly people), and those related to natural hazards of the territories in question (earthquake, floods, landslides ...).

### A.3 PORTS

Pending the drafting of the PGTL and the DPP, and in compliance with the provisions of the Guidelines for the evaluation of investments in public works of the MIMS, the identification of interventions and port programmes was essentially carried out in continuity with what has been done in the previous Infrastructure Annexes to the DEF, taking into account the additional resources provided with the Complementary Fund to the NRRP. The review carried out has arranged the port interventions and infrastructure programmes into:

- OGV (interventions with legally binding obligations), considered as: a) interventions with a total amount higher than EUR 10 million being implemented as of 31.12.2020 or provided for by binding agreements, even in the absence of the construction site (bound for example by Programme Contract) or not undergoing implementation yet but already contracted; b) interventions related to the programme '*energy and environmental efficiency and digitisation*', which do not have dimensional limits, being usually interventions of limited size;

- some major interventions which, on the basis of the strategies and priority objectives defined in this document, are considered fundamental in terms of repercussions for the national port system, according to the planning maturity achieved. These interventions have been included as priority requirements of the national port system, falling in the table of projects submitted, or to be submitted, to a feasibility project.

The analysis of interventions<sup>30</sup> has been organised according to the programmes of port interventions already defined in the previous Infrastructure Annexes to the DEF and an additional programme, called ‘*infrastructure resilience to climate change*’ (described in the following Focus), as per Tables A.3.1 and A.3.2.

## FOCUS

### Key features of port programmes

The port programmes, within which the individual interventions and projects are included, represent homogeneous thematic categories as follows:

- maintenance of state-owned public property: the programme includes interventions on piers, service areas, docks, internal port roads in order to ensure the proper maintenance of state-owned public properties in the port land, including logistic infrastructures in use by the Bodies of Port Authorities - Coast Guard, making them compliant with anti-seismic regulations and regulations on health and safety in the workplace, as well as promoting the removal of architectural barriers;
- digitisation of logistics and ports: the programme of digitisation of logistics and Italian ports includes those typical actions already undertaken in recent years, such as *preclearing* and the implementation of *fast corridors* in the customs field, the development of the *Port Management Information System*, the implementation of the *European Maritime Single Window* and *Port Community Systems*. In this programme are resources and interventions that will be co-funded under Investment 2.1 of the NRRP are also included: digitisation of the logistic chain of M3C2.2 INTERMODALITY AND INTEGRATED LOGISTICS basically consisting in interventions of realisation or upgrading of *Port Community Systems*, their integration as well as the interoperability between them and the National Logistics Platform (NLP). In addition, works on the digital upgrading of ports will also be co-financed (from access to gates, to the digitisation of administrative processes and procedures within the administrative one-stop shop, etc.);
- last/second-to-last railway mile and connections to the port network<sup>31</sup>: the programme provides for the completion of the most suitable infrastructural

<sup>30</sup> In order to ensure an unambiguous framework with respect to the programmatic documents in which they were included, the individual interventions that constitute each priority programme were derived from the following sources and shared with the relevant Port System Authorities: the update of the port interventions in progress and those with legally binding obligations contained in the Infrastructure Annexes to DEF 2017, 2018, 2019 and 2020; the Three-Year Plans of Public Works of the 16 Port System Authorities and the Programme Contracts, where existing with respect to port interventions in progress, the interventions with legally binding obligations and the projects submitted or to be submitted to a planned feasibility project; port interventions in progress, interventions with legally binding obligations, priority requirements and projects submitted or to be submitted to feasibility projects identified on the basis of the quarterly compilation of the “*Interventions in planning and programming*” and “*Port File*” sheets of the “*Ports Platform*”, co-managed by the General Directorate for Ports of the MIMS and RAM Logistica Infrastrutture e Trasporti S.p.A.; port interventions included in the Complementary Fund, former Italian Legislative Decree No. 59/2021; port interventions defined in the Decree of the Minister of Infrastructure and Transport of 13 August 2020 on the “distribution of the resources of the Fund for the financing of investments and the infrastructural development of the country for the share attributed to the port sector”; port interventions provided in the NRRP included in Investment 4: M5C3 Special Economic Zones (SEZs) Interventions: SPECIAL INTERVENTIONS FOR TERRITORIAL COHESION and in Investment 2.1: Digitisation of the M3C2.2 INTERMODALITY AND INTEGRATED LOGISTICS logistic chain of the NRRP.

<sup>31</sup> Last and before-to-last-mile railway interventions in ports listed in the RFI Investment Programme Contract are specifically excluded from the list.

initiatives to optimise rail accessibility of Italian ports, in line with the features and area of influence of each port. Designing a system of coordinated interventions to develop rapid, economical, and reliable intermodal services. In particular, interventions are divided into 'last' mile, if falling within the port land, and 'before-to-last' mile, if falling within the competence of the national railway infrastructure manager;

- last road mile: the programme provides for the resolution of structural criticalities in road accessibility of some Italian ports, in order to optimise their market penetration in the influence areas of interest;
- maritime accessibility: interventions to improve maritime accessibility, aimed at accommodating vessels of a size consistent with the types of traffic to be attracted;
- resilience of infrastructures to climate change: the programme is included for the first time in this document and provides for specific interventions intended to developing and adapting port infrastructures to standards of quality, reliability and sustainability aimed at strengthening the capacity of the same infrastructures to face and overcome an unforeseeable natural or anthropic climate event;
- energy and environmental efficiency: the programme provides for the identification of a set of consistent and synergic projects aimed at significantly increasing the environmental sustainability of Italian ports, in line with the NSTPL (National Strategic Plan for Ports and Logistics) Action 7.1 "*Measures for the implementation of energy efficiency and environmental sustainability of ports*". Within this programme the interventions provided for by the National Cold Ironing Plan are included, while the interventions for the implementation of energy efficiency and waste management in (*green ports*) are not, being NRRP resources belonging to a different department;
- *waterfront* and cruise and passenger services: interventions to adapt land hospitality services, develop cruise terminals where necessary, and operating on the port-city relationship through projects for the promotion of urban *waterfronts* ;
- industrial activities in ports: interventions on the shipbuilding supply chain and value-added industrial activities in ports;
- selective increase of port capacity: the programme provides for, where necessary and in line with the strategic vision outlined above, a selective increase of port capacity in Ro-Ro segments and cargos.

**TABLE A.3.1 PRIORITY PORT PROGRAMMES AND INTERVENTIONS**

Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
1	Maintenance of public state-owned property	SAVONA - Segno stream safety measure implementation	15.00	-			15.00	0.00
		LIVORNO - Extraordinary maintenance on curvilinear dam	33.00	-	-	-	-	33.00
		MESSINA - Regeneration and refunctionalisation works of the offices and the entrance pavilion in the fair district of Messina	14.20	-	-	-	14.20	0.00
		PALERMO - Restoration and functional upgrading of the former Tirrenia building	19.30	-	-	-	-	19.30
		PALERMO -Molo Trapezoidal Regeneration	26.50	25.50	-	-	-	1.00
		RAVENNA - Restructuring the quay known as Marcegaglia	12.57	-	-	-	12.57	0.00
		RAVENNA - Upgrading of the operating quays - - 3 <sup>rd</sup> part, Lots 1, 2 and 3	60.00	45.00	-	-	15.00	0.00
		VENICE - Architectural and structural preservation for port use of the B Building 'Edificio Sali e tabacchi' of the 'former Monopoli di Stato' complex	14.70	-	-	-	1.70	13.00
		VENICE - Molo Sali - Works of restoration of sheet piles and completion of the quay for port use	16.00	16.00	-	-	-	0.00

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		TARANTO - Network of collection of rainwater in the common areas of the port and water supply and sewerage system in the east area of the port of Taranto	18.05	-	-	-	18.05	0.00
Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		TARANTO - Second lot of the safety measure implementation interventions, and groundwater reclamation in the former Belleli yard area	45.50	45.50	-	-		0.00
		TARANTO - San Cataldo Pier: upgrading, enlargement and structural upgrading of the east quay of the San Cataldo pier and of Taranto port's quay of wharf 1	25.50	-	-	-	25.50	0.00
		CATANIA - Restructuring, stabilisation and upgrading of quays and infrastructures of the new port	14.01	-	-	-	-	14.01
2	Logistics digitisation and ICT	-	-	-	-	-	-	-
3	Last/Penultimate Rail Mile and Port Network Connections	GENOA - Regeneration of the railway infrastructures connecting to the 'Campasso' park, realisation of electric traction in the 'Molo Nuovo/Parco Rugna'/'Linea Sommergebile' tunnel sections	17.80	-	-	-	17.80	0.00
		LA SPEZIA - Strengthening of La Spezia Marittima railway systems within the commercial port, in compliance with the P.R.P	38.98	-	-	-	-	38.98
		LA SPEZIA - Completion works of railway infrastructure of La Spezia Marittima inside the mercantile port	12.00	12.00	-	-	-	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		CIVITAVECCHIA - Interventions of reorganisation of the Rail system in the area Port Authority of Civitavecchia	18.46	-	-	-	14.29	4.17
		NAPLES - Road and railway connections inside the port area	26.50	-	-	-	26.50	0.00
		NAPLES - Reorganization of the last mile railway connections and the port road network	20.00	-	-	20.00	-	0.00
		GIOIA TAURO - New Intermodal Terminal	20.00	-	-	-	20.00	0.00
		TRAPANI - Connection between the port and the industrial area - strengthening	17.80	-	17.80	-	-	0.00
		ANCONA - North waterfront intervention for the upgrading and speeding up of the railway line with the materials of excavation of the seabed of the ports of the PORT SYSTEM OF THE CENTRAL ADRIATIC SEA	40.30	-	-	10.00	30.30	0.00
		TRIESTE - Works for the realisation of the new layout of the port equipment plan, phase 1	39.53	-	-	-	39.53	0.00
		TRIESTE - Extension of the common infrastructures for the development of the New Free Point of the port of Trieste.	188.54	-	-	180.00	-	8.54
		TRIESTE - Works for the realisation of the new layout of the port equipment plan, phase 2	32.20	32.20	-	-	-	0.00
		Venice - Rail and road upgrading works of the junction of Via della Chimica	12.00	-	-	12.00	-	0.00
		TARANTO - Logistic plate integrated to the intermodal system of the Adriatic corridor	219.14	-	-	-	219.14	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		TARANTO - Primary infrastructure and road-rail accessibility of the 'eco industrial park' area (former Ilva district)	50.00	-	50.00	-	-	0.00
4	Last Mile Road	GENOA - Rearrangement of the access system to the operational areas of the Voltri basin	20.03	-	-	-	20.03	0.00
		GENOA - Extraordinary programme of priority road interventions in the port area	141.24	-	-	-	141.24	0.00
		BARI - Construction of a truck road linking the A14 motorway to the port of Bari - Contracting authority Metropolitan City of Bari	210.00	82.00	-	-	122.00	6.00
		CAGLIARI - Connection road between the ro terminal to the west port with junctions on SS 195	10.00	-	10.00	-	-	0.00
		SAVONA - New urban road system in fregio Molo 8.44	20.58	-	-	-	20.58	0.00
		CIVITAVECCHIA - North ramps main road layout OO.SS. 2 <sup>nd</sup> lot	102.10	69.04	-	-	-	33.06
		CIVITAVECCHIA - Connection bridge with the sea wall (OO.SS. 2 <sup>nd</sup> lot)	10.10	-	-	10.00	0.10	0.00
		PIOMBINO - New access road to the port of Piombino (ss 398 Terre rosse junction part)	18.50	-	-	-	17.60	0.90
		SALERNO - SALERNO PORTA OVEST I PART: Realisation of a new branch of motorway exit, arrangement of the Cernicchiara motorway junction area, construction of a new connection (in tunnel) between the motorway and the port	125.92	-	-	10.00	115.92	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		*MESSINA - City of Messina: Realisation of the connection road between Viale Gazzi and the Railway landing (Approdo delle Ferrovie) for Via Don Blasco	27.00	-	-	-	27.00	0.00
		GIOIA TAURO - Completion works of the west quay on the north side	16.50	-	16.50	-	-	0.00
		ANCONA - New connection between SS 16 and the port of Ancona	99.61	-	-	-	-	99.61
		AUGUSTA - Safety measure implementation of the structures serving the access to the port of the island and realisation of the third connection between the port areas and the mainland	26.21	-	26.21	-	-	0.00
5	Maritime accessibility	SAVONA - New Vado Ligure dam, first phase	75.71	-	-	45.00	30.71	0.00
		GENOA - New Dam of the Port of Genoa	950.00	-	-	500.00	450.00	0.00
		GENOA - New Pilot Tower	19.50	-	-	-	19.50	0.00
		GENOA - Sampierdarena dredging and passenger port	10.00	-	-	-	10.00	0.00
		LA SPEZIA - Reclamation and excavation of the seabed outside the Fornelli Est Pier	11.86	-	-	-	11.856	0.00
		LA SPEZIA - Dredging 2° and 3° port basin in the Mercantile Port of La Spezia	27.60	-	-	-	-	27.60

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		<i>CIVITAVECCHIA - 13 quay extension 2<sup>nd</sup> lot (OO.SS. 2<sup>nd</sup> lot)</i>	68.33	-	-	26.65	-	41.68
		<i>CIVITAVECCHIA - New access to the historical basin (OO.SS. 2<sup>nd</sup> lot)</i>	43.25	-	-	43.25	-	0.00
		<i>PORTO TORRES - Definitive and executive planning on the basis of the preliminary project and for the realisation of the works for the extension of the west sea wall</i>	36.26	-	-	-	36.26	0.00
		<i>SALERNO - Excavation of the commercial port seabed</i>	38.10	-	-	-	38.10	0.00
		<i>SALERNO - Extension of the outer pier and cut of the final part of the inner pier</i>	23.00	-	-	-	23.00	0.00
		<i>SALERNO - Extension of the Manfredi Pier</i>	25.00	-	-	15.00	-	10.00
		<i>SALERNO - Dredging of the commercial port of Salerno and of the entry channel - phase 2</i>	40.00	-	-	40.00	-	0.00
		<i>NAPLES - Excavation of the port area seabed of Naples with storage of the dredged materials in the depositing site of the east dock (1<sup>st</sup> part)</i>	33.63	-	-	-	33.63	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		NAPLES - Excavation of the port area seabed of Naples with storage of the dredged materials in the depositing site of the east dock (2 <sup>nd</sup> part)	12.50	-	-	-	12.50	0.00
		NAPLES - Port of Naples - Extension and strengthening of the Duca D'Aosta dam	150.00	-	-	150.00	-	0.00
		GIOIA TAURO - Completion works of the western quay on the north side	16.50	-	16.50	-	-	0.00
		GIOIA TAURO - Cut of the western docks, G-H-I sections	40.00	-	-	-	20.00	20.00
		GIOIA TAURO - Work of deepening and stabilisation of the port channel along the east quay, A-B-C sections	50.00	50.00	-	-	-	0.00
		MILAZZO - Completion of quays and wharves inside the port basin and excavation of the seabed	12.58	-	-	-	1.90	10.68
		TRAPANI - Dredging works of the outer port and the areas westwards Ronciglio jetty	67.50	-	-	67.00	-	0.50
		PALERMO - Excavation of the Crispi 3 basin seabed and related mattress resurfacing	39.30	-	-	-	39.30	0.00
		TERMINI IMERESE - Completion works of the external outer breakwater from the mileage point 1,205.00 mt to the mileage point 1,455.00 mt, of the Port of Termini Imerese (2 <sup>nd</sup> part) - 1 <sup>st</sup> functional lot	20.00	-	-	-	20.00	0.00
		TERMINI IMERESE - Completion works of the inner pier of the Port of Termini Imerese - I part	21.45	-	-	-	21.45	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		TERMINI IMERESE - Completion works of the external outer breakwater from the mileage point 1.205,00 mt to the mileage point 1,455.00 mt, of the Port of Termini Imerese - 1 <sup>st</sup> part	19.11	-	-	-	19.11	0.00
		TERMINI IMERESE - Port of Termini Imerese: Dredging works of the port at an altitude of 10,00 a.a.s.l.	35.00	-	-	-	35.00	0.00
		BRINDISI - Completion of the port infrastructure through quay construction and realisation of the back depositing material between the petrochemical wharf and Costa Morena Est	58.72	-	-	58.00	-	0.72
		BRINDISI - Completion of the quay construction in Capobianco area and realisation of the dredging functional to it up to the altitude of 12 m a.a.s.l.	50.00	-	-	30.00	-	20.00
		BARLETTA - Extension of both the outer piers and deepening of seabeds according to the PRP estimates	25.00	19.92	-	-	-	5.08
		PESCARA - Works of deviation of Canale di Pescara's port	52.20	21.20	-	-	-	31.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other Sources State (M €)	Residual Requirement (M €)
		RAVENNA - Ravenna Port Hub - PHASE 2 Deepening of the Candiano and Baiona channels, upgrading of existing operational quays, new terminal in the Trattaroli peninsula and use of the material extracted for the implementation of the P.R.P. ( <i>Piano regolatore portuale</i> ) in force 2007- 3 <sup>rd</sup> part (Candiano and Baiona channel deepening to - 14.50 - Lots 1 and 2)	85.00	40.00	-	45.00	-	0.00
		RAVENNA - Ravenna Port Hub - - PHASE 2 'Deepening of the Candiano and Baiona channels, upgrading of the existing operational quays, new terminal in the Trattaroli peninsula and use of the extracted material, pursuant to the P.R.P. in force 2007 - - 4 <sup>th</sup> part (construction and management of the treatment plant of excavation materials)	155.00	-	-	85.00	70.00	0.00
		RAVENNA - Deepening of the Piombone Channel: - - 1 <sup>st</sup> lot functional arrangement of the Piombone channel, pursuant to the P.R.P. - - 2 <sup>nd</sup> lot Restoration of Pialassa Piombone and physical separation of the valley areas from the port areas through artificial damming	29.71	-	-	-	29.71	0.00
		VENICE-CHIOGGIA - Excavation of canals at the altitude as PRP and sediment disposal.	10.00	10.00	-	-	-	0.00
		TRIESTE - Extension works of the 6 <sup>th</sup> pier root of the New Free Port of Trieste - APT prog. No. 1801.	18.31	8.00	-	-	10.31	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		LIVORNO - Reprofiling of the quay of the access channel in the area of Torre del Marzocco 2 <sup>nd</sup> Lot	13.00	-	-	-	13.00	0.00
		TARANTO - New external dam for the protection of the port outside Taranto's roadstead - western section	18.80	-	-	15.70	-	3.10
		TARANTO - New external dam for the protection of the port outside Taranto's roadstead - eastern section	20.00	-	-	20.00	-	0.00
		AUGUSTA - Upgrading of a section of the Commercial Port quay - 2 <sup>nd</sup> part	29.31	-	-	-	29.31	0.00
		AUGUSTA - Completion of the resurfacing and restoration works of the outer breakwater of the port of Augusta, north and central branch, 1 <sup>st</sup> part	54.63	54.63	-	-	-	0.00
		CATANIA - Resurfacing of the external mattress of the port's outer breakwater	49.00	-	-	-	49.00	0.00
6	Resilience of infrastructure to climate change	NAPLES - Regeneration works of the monumental area of the port of Naples. New passenger terminal at Calata Beverello - city-port connections and mobility reorganisation	24.50	-	-	-	24.50	0.00
		NAPLES - Strengthening and regeneration of the infrastructures of the monumental area of the port of Naples intended for passenger traffic, port activities and connection with the city	74.10	-	-	26.00	-	48.100

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		SALERNO - Stabilisation and functional upgrading of some piers and quays	40.00	-	-	40.00	-	0.00
		PALERMO - Strengthening of the south quays of Piave and S.Lucia piers and static upgrading of the Vittorio Veneto quay	45.00	-	-	45.00	-	0.00
		PALERMO - Stabilisation of the outer Acquasanta pier	12.00	-	-	12.00	-	0.00
		PALERMO - Completion of the outer breakwater of Arenella port	19.00	-	-	19.00	-	0.00
		TERMINI IMERESE - New quay for the logistics	60.00	-	36.00	-	-	24.00
		CATANIA - Stabilisation and recharge of the mattress of the outer breakwater of the port of Catania, strengthening of the head	70.00	-	-	70.00	-	0.00
		MANFREDONIA - Restructuring and refunctionalisation of the Alti fondali pier	120.00	-	40.00	80.00	-	0.00
		ORTONA - Connection of the last mile with the port and strengthening of related infrastructures, reactivation of the railway section of the north pier and deepening of the seabed by means of reclamation and consolidation of the quay	19.80	-	19.80	-	-	0.00
		VENICE - Works of embankment restoration of B depositing sites - Environmental restoration of the embankment of the north bank of the south channel	31.00	-	-	27.50	-	3.500

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		MARINA DI CARRARA - Marina di Carrara Waterfront	33.37	-	-	10.17	23.20	0.00
7	Energy and environmental efficiency	NAPLES - Executive planning and execution of the works of 'realisation of the completion of the port sewage system'	18.00	-	-	-	18.00	0.00
		VENICE - Safety measure implementation works of the Site of National Interest of 'Venice - Porto Marghera'	41.69	-	-	-	41.69	0.00
		ADSP OF THE WESTERN LIGURY SEA - Genoa, Savona, Vado Ligure - Cold Ironing	29.40	-	-	29.40	-	0.00
		ADSP OF THE ORIENTAL LIGURY SEA - La Spezia - Cold Ironing	17.50	-	-	17.50	-	0.00
		ADSP OF THE NORTHERN THYRRHENIAN SEAS - Livorno Piombino, Portoferraio - Cold ironing	77.50	-	-	77.50	-	0.00
		ADSP OF THE NORTHERN-CENTRAL THYRRHENIAN SEA - Civitavecchia - Cold Ironing	80.00	-	-	80.00	-	0.00
		ADSP OF THE CENTRAL THYRRHENIAN SEA - Naples, Salerno - Cold Ironing	40.00	-	-	40.00	-	0.00
		ADSP OF THE SARDINIAN SEA - Cagliari, Olbia, Golfo Aranci, Porto Torres, S. Teresa di Gallura, Portovesme - Cold Ironing	70.83	-	-	70.83	-	0.00
		ADSP OF THE WESTERN SICILY SEA - Palermo, Trapani, Termini Imerese, Porto Empedocle - Cold Ironing	47.00	-	-	47.00	-	0.00
		ADSP OF THE EASTERN SICILY SEA - Augusta, Catania - Cold Ironing	89.10	-	-	89.10	-	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		ADSP OF THE SOUTHERN TYRRHENIAN AND IONIAN SEA - Gioia Tauro - Cold Ironing	2.00	-	-	2.00	-	0.00
		ADSP OF THE IONIAN SEA - Taranto - Cold Ironing	55.00	-	-	55.00	-	0.00
		ADSP OF THE STRAIT - Messina, Milazzo, Reggio Calabria, Villa San Giovanni - GREEN STRAIT Project - LNG coastal depot and electrification of the quays of the ADSP strait ports.	110.00	-	-	50.00	-	60.00
		ADSP OF THE SOUTHERN ADRIATIC SEA -Bari, Brindisi - Cold Ironing	25.66	-	-	-	25.66	0.00
		ADSP OF THE CENTRAL ADRIATIC SEA - Ancona, Ortona, Pescara, Pesaro, San Benedetto del Tronto - Cold ironing	11.00	-	-	11.00	-	0.00
		ADSP OF THE NORTHERN-CENTRAL ADRIATIC SEA - Ravenna - Cold Ironing	35.00	-	-	35.00	-	0.00
		ADSP OF THE NORTHERN ADRIATIC SEA - Venice- Cold Ironing	89.80	-	-	89.80	-	0.00
		ADSP OF THE EASTERN ADRIATIC SEA - Trieste, Monfalcone - Cold Ironing	23.75	-	-	23.75	-	0.00
8	Waterfront and cruise and passenger services	GENOA - Erzelli Station	65.00	-	-	-	65.00	0.00
		GENOA - East Waterfront	10.00	-	-	-	10.00	0.00
		GENOA - Mitigation and completion of the Prà canal promenade, southern side	15.50	-	-	-	15.50	0.00
		*LA SPEZIA - New passenger maritime station in the first port basin of La Spezia.	42.50	-	-	-	42.50	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other Sources Sources (M €)	Residual Requirement (M €)
		NAPLES - Regeneration intervention of the monumental area of the port of Naples - Restoration and promotion of the former General Warehouses building existing volume	20.10	20.10	-	-	-	0.00
		PALERMO - Maritime Station: Refunctionalisation and restyling	28.62	-	-	-	28.62	0.00
		BARI - Refurbishing and extension of the Ferry and Cruise Terminal	10.00	-	-	-	-	10.00
9	Industrial activities in ports	GENOA - Safety measure implementation and hydraulic upgrading works on the Molinassi and Cantarena streams, works of compliance with the safety standards of workplaces, along with rationalisation works of the accessibility of the industrial port area of Genova Sestri Ponente - PHASE 1	156.60	-	-	-	156.60	0.00
		GENOA - Hennebique Regeneration	133.27	-	-	-	133.27	0.00
		GENOA - New Calata olii minerali mooring structure	15.15	-	-	-	15.15	0.00
		GENOA - Safety measure implementation works and hydraulic upgrading of Molinassi and Cantarena streams, works of compliance with the safety standards of the workplaces, as well as rationalisation of the accessibility of the industrial port of Genova Sestri Ponente - HYDRAULIC SAFETY MEASURE IMPLEMENTATION OF THE STREAMS OF GENOVA'S PORT URBAN AREA - SESTRI PONENTE - MULTEDO	52.00	-	-	-	52.00	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		CAGLIARI - Primary infrastructural works on the outer ports of the Channel Port for shipbuilding activities - 2 <sup>nd</sup> Phase	31.33	31.33	-	-	-	0.00
		NAPLES - Static sanitation of the dry dock no. 2 with upgrading of the basin pumping system no. 1	29.00	-	-	-	29.00	0.00
		GIOIA TAURO - Construction of the industrial shed in the Free Zone of the port of Gioia Tauro former Isotta Fraschini	16.50	-	-	-	16.50	0.00
		MILAZZO - Construction works of an industrial open wharf in Giammoro	24.99	-	-	-	11.62	0.00
		PALERMO - Safety measure implementation works of the 150.000 LPT dry dock - Works and design - 2 <sup>nd</sup> Functional Lot	81.00	81.00	-	-	-	0.00
		PALERMO - Safety measure implementation works of the 150.000 LPT dry dock - Works and design - 1 <sup>st</sup> Functional Lot	39.00	-	-	-	39.00	0.00
		PIOMBINO - Interventions related to the new PRP and / or APQ ( <i>Accordo di programma quadro</i> ) of 24/04/14 for the construction of areas for industrial logistics port of Piombino 1 <sup>st</sup> functional lot	22.75	-	-	-	18.20	4.55
		PIOMBINO - Interventions related to the new PRP - Areas for logistics/industrial Port of Piombino - west quay of north dock - 1 <sup>st</sup> functional lot	34.47	-	-	-	-	34.47
		Taranto - Molo San Cataldo: multipurpose service hub for port uses	12.75	-	-	-	12.75	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		ANCONA - Construction of a new apron to extend the existing ones, construction of a new fitting-out quay, extension of the dry dock	40.00	40.00	-	-	-	0.00
10	Selective increase in port capacity	GENOA - Expansion of the Container Terminal Ponti Ronco and Canepa	63.48	-	-	-	63.48	0.00
		VADO LIGURE - Construction of a 250.000 m <sup>2</sup> sea expansion for a new container terminal and reorganisation of the current bulk terminal and the two wharves for the unloading of oil products	296.71	-	-	-	296.71	0.00
		GENOA - Infrastructural upgrading of new Calata Bettolo for replacement agreement intervention	16.50	-	-	-	16.50	0.00
		* LA SPEZIA - Canaletto apron and quay in the new Mercantile Port of La Spezia	85.00	-	-	-	85.00	0.00
		LA SPEZIA - Construction and electrification of the new cruise pier in the 1 <sup>st</sup> port basin of La Spezia	33.54	-	-	30.00	-	3.54
		Livorno - Darsena Europa - maritime works and dredging - 1 <sup>st</sup> phase	450.00	200.00	-	-	250.00	0.00
		CIVITAVECCHIA - First Functional Lot of Strategic Works (2 <sup>nd</sup> part): Dock Service quay construction	36.10	-	-	-	36.10	0.00
		FIUMICINO - Commercial Port (PRP) 1 <sup>st</sup> functional lot (1 <sup>st</sup> part)	47.17	30.00	-	-	-	17.17
		*FIUMICINO - Commercial Port (PRP) 1 <sup>st</sup> functional lot (completion)	204.29	-	-	-	10.00	194.29
		GAETA - 'Works of completion of the commercial port of Gaeta'	33.09	-	-	-	-	33.09

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		CAGLIARI - Quay construction works of the new Ro Ro Terminal at the west outer port of the Channel Port	100.00	-	-	99.35	0.65	0.00
		CAGLIARI - Extension of the quay on the north-east side of the Channel Port	33.72	-	-	-	-	33.72
		CAGLIARI - Infrastructure works in the areas behind the new quays on the south-west side of the evolution basin of the Channel Port - G1W and G2W area	13.82	13.82	-	-	-	0.00
		NAPLES - Port of Naples: Completion of the east dock	20.00	-	-	20.00	-	0.00
		*MESSINA - City of Messina: Construction works of the logistic platform of Tremestieri with annexed port station platform	74.47	-	-	-	74.47	0.00
		BRINDISI - Completion works of port ferry boat mooring structures and S. Apolinnare Ro-Ro of the port of Brindisi (in 2 functional parts).	35.50	-	-	-	29.33	6.17
		Taranto - Multipurpose pier: interventions for the dredging of 2.3 cmm. of sediment	83.00	-	-	-	83.00	0.00
		ANCONA - 2 <sup>ND</sup> PHASE OF WORKS AT SEA: Completion and functionalisation works of the new straight quay and the back aprons 1 <sup>st</sup> functional part	37.00	-	-	-	37.00	0.00

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Id	Name	Description	Cost Intervention (M €)	Available Resources MD 353 'Port Decree' (M €)	Available Resources NRRP: (M €)	Available Resources Complementary Fund (M €)	Other State Sources (M €)	Residual Requirement (M €)
		RAVENNA - Ravenna port hub - - PHASE 1 Deepening of Candiano and Baiona canals, upgrading of existing operational docks, new terminal in Trattaroli peninsula and use of extracted material as per P.R.P. in force 2007 - - 1 <sup>st</sup> and 2 <sup>nd</sup> part	250.08	-	-	-	250.08	0.00
		RAVENNA - Upgrading of the operational quays - - 3 <sup>rd</sup> part, Lots 4 and 3	70.00	-	-	-	-	70.00
		TRIESTE - Trieste Hub port - Logistics platform between the timber loading dock and the mineral oil free point	132.43	-	-	-	132.43	0.00
		TRIESTE - Preparatory works for the settlement of logistic and industrial activities in the Noghere area, also in view of the integration with the Noghere port terminal to be constructed	60.00	-	-	60.00	-	0.00
		TRIESTE - Partial quay construction project of the Noghere terminal (phase 1 according to 2016 PRP), including dredging of the service and connection channel to the road system	135.00	-	-	45.00	-	90.00
		*TRIESTE - Intervention components in the project of infrastructural and functional modernisation of the container terminal of the 7 <sup>th</sup> Pier in the Port of Trieste	290.00	-	-	100.50	189.50	0.00
		VENICE - Montesyndial - New Container Terminal	184.45	-	-	32.66	-	151.79
		VENICE - Reclamation and infrastructuring at former Montefibre former Syndial terminal area	55.40	-	-	-	55.40	0.00
		<b>TOTAL</b>	<b>9,583.51</b>	<b>947.24</b>	<b>232.81</b>	<b>2817.66</b>	<b>4,346.11</b>	<b>1239.69</b>

\*With the exception of interventions marked with an asterisk in which there are also private contributions

TABLE A.3.2 PORT PROGRAMMES AND INTERVENTIONS IN FEASIBILITY PLANNING		
Id	Name	Description
1	Maintenance of public state-owned property	CIVITAVECCHIA - State Building*
		CIVITAVECCHIA - Service Building*
		FIUMICINO - Implementation of hydraulic safety measures on the mouth and new pedestrian bridge
		CAGLIARI - Preliminary design of the works of 'continuation of the quay of the bulk terminal of the Channel Port of Cagliari'
		PALERMO - Static upgrading of the Sammuzzo quay
		BRINDISI - Maintenance and modernisation works of the port infrastructures of Marina Militare Naval Station
		BARI - Realisation of buildings to be destined to tertiary/executive activities and port warehouses within the regeneration intervention of the Pizzoli Pier
		BARI - Regeneration works of former Cianciola area
		VENICE - Completion of the works for the dock of the east bank of the west channel
		VENICE - Upgrading of the accessibility to the port area of Santa Marta
		VENICE - Upgrading of former monopoly areas (various parts) within the port area
VENICE - Management and modification of the stormwater disposal networks of Pier B of Terminal Rinfuse Venezia Spa and Vecon Spa in Porto Marghera		

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Id	Name	Description
		RIO MARINA - Technical and Functional Upgrading of the Port Master Plan of Rio Marina Port
		CATANIA - Extension and consolidation works of the eastern dock of the fishing port
		AUGUSTA - Extraordinary maintenance of the Commercial Port and Nuova Darsena Servizi
2	<b>Logistics digitisation and ICT</b>	LIVORNO - Fibre optic connection between the Port of Livorno and the Tuscan Freight Village "A. Vespucci"
3	<b>Last/Penultimate Rail Mile and Port Network Connections</b>	GENOA - Upgrading interventions of Fuori Muro Park (construction of a new station with 750-meter tracks, track electrification, compliance of track spacing, centralisation of switches and construction of the signalling system)
		SAVONA - Upgrading of the Vado Ligure railway terminal (Works of arrangement of the side along the access road network to the port of Vado Ligure for intermodal terminal widening)
		LA SPEZIA - Logistic platform behind the port of S. Stefano Magra - 3 <sup>rd</sup> functional lot
		LIVORNO, PIOMBINO - Railway Plan of the AdSP of the Northern Tyrrhenian Sea
		RAVENNA - Project for the strengthening of the railway backbone southwards the port of Ravenna
		TRIESTE - Works for the realisation of the new layout of the port equipment plan, phase 1bis-ICT
		TRIESTE - Works of renovation and functional upgrading of the Aquilinia - ex Aquila railway junction. Project No. 1898
		TRIESTE - Works of renovation and functional upgrading of the Aquilinia - Muggia railway junction. Project No. 1925
4	<b>Last Mile Road</b>	CIVITAVCCHIA - 2° part of the Colombo seawall enlargement project*
		LIVORNO - AdSP of the Northern Tyrrhenian Sea - Reorganisation and optimisation of the port road viability - Separation of port and city traffic flows - Reduction of interference, accidents and emissions at the Port/City interface - Rationalisation and optimisation
		BARI - Works for the removal of tracks and upgrading of the roadway of the Marisabella - S.Vito connection backbone

Id	Name	Description
		VENICE - Monitoring planning and design of structural restoration and AdSPMAS (North Adriatic Sea Port Authority) road and pedestrian viaducts
5	Maritime accessibility	<p>GENOA - New Dam of the Port of Genoa</p> <p>LA SPEZIA - Emergency safety measure implementation works on the Italy pier seabed in the Mercantile Port of La Spezia</p> <p>LA SPEZIA - Reclamation and subsequent excavation of the area in front of Molo Garibaldi and access channel to the 1<sup>st</sup> basin in the cargo port of La Spezia</p> <p>CIVITAVECCHIA - Extension of dock 13 I lot (II lot OO.SS.)</p> <p>CAGLIARI - Dock construction for service boats at Porto Foxi - 1<sup>st</sup> Phase</p> <p>GIOIA TAURO - Development of the quay of the south evolution circle for the potential settlement of other multipurpose activities</p> <p>TRAPANI - Upgrading works of the Garibaldi quay</p> <p>PORTO EMPEDOCLE - dredging works of the port</p> <p>PORTO EMPEDOCLE - Mattress resurfacing works of the western pier from mileage point 431,00 to mileage point 1431,00</p> <p>PORTO EMPEDOCLE - Port of Porto Empedocle: Darsena di Ponente - Feasibility project of the works for the realisation of protection reef of Darsena di Ponente</p> <p>ANCONA - Quay construction of the external front of the Clementino pier</p> <p>ANCONA - Works at sea 2<sup>nd</sup> phase 2<sup>nd</sup> part, 430-meter inner outer breakwater realisation</p> <p>PESCARA - Interventions of dredging on the commercial dock and ancillary works</p> <p>LIVORNO - Calata Orlando and Accosto 55 cutting</p> <p>PIOMBINO - Realisation of the first phase of enlargement of the internal quays</p>

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Id	Name	Description
		AUGUSTA - Upgrading of a section of the dock of the Commercial Port for the docking of container ships II part
		AUGUSTA - Surfacing completion and restoration of outer breakwater of the port of Augusta South branch - 2 <sup>nd</sup> part
6	<b>Resilience of infrastructures to climate change</b>	<p>LA SPEZIA - Restructuring and enlargement of Molo Italia in the Mercantile Port of La Spezia, with redevelopment of the protection reef</p> <p>NAPLES - Regeneration works of the monumental area of the port of Naples. New passenger terminal at Calata Beverello - city-port connections and mobility reorganisation</p> <p>PIOMBINO - Planning of the infrastructural interventions, also environmental ones, concerning the implementation of the New Port Master Plan for the realisation of the quays located in front of the depositing sites in the port of Piombino, including dredging and construction</p> <p>PIOMBINO - Infrastructural interventions, also environmental ones, concerning the implementation of the New Port Master Plan for the completion of inner and outer breakwaters in the port of Piombino</p> <p>PIOMBINO - Design of the environmental mitigation of the waterfront and landscape mitigation of the area, in compliance with the requirements DVA-DEC 2012-0000478 of 18 September 2012</p> <p>VILLA SAN GIOVANNI PORT - structural recovery of 0 loading dock, construction of a new fast-means dock and passenger terminal</p>
7	<b>Energy and environmental efficiency</b>	<p>LA SPEZIA - Line of setback to protect the Canaletto e Fossamastra populated area - 1<sup>st</sup> and 2<sup>nd</sup> functional lot, as well as displacement towards the sea of the sound protection barriers between Via Giulio Della Torre and Via S.Cipriano with completion of green areas and bicycle path</p> <p>CIVITAVECCHIA - Sewage treatment plant outfall (2<sup>nd</sup> lot OO.SS.)*</p> <p>CIVITAVECCHIA - South area outfall (2<sup>nd</sup> lot OO.SS.)*</p> <p>PALERMO - Renovation of port sewage system</p> <p>VENICE - Management and modification of the stormwater disposal networks of Pier B of Bulk Terminal Venezia Spa and Vecon Spa in Porto Marghera</p>
8	<b>Waterfront and cruise and passenger services</b>	TRAPANI - New Cruise Terminal T pier.

Id	Name	Description
		<p>PORTO EMPEDOCLE- Works of Crispi SO pier quay construction and new purpose terminal with restyling and functional upgrading of state-owned building line</p> <p>PORTO EMPEDOCLE - Port of Porto Empedocle: Feasibility project for the construction of the new Maritime Station of Porto Empedocle</p> <p>VENICE - Realisation of a new cruise terminal</p> <p>CATANIA - Realisation of a maritime station</p> <p>RAVENNA - Project for the strengthening of the ferry terminal of the port of Ravenna</p> <p>RAVENNA - Project for the realisation of one or more port approaching channels</p>
9	Industrial activities in ports	<p>GENOA - Relocation of Carmagnani/Superba coastal deposits</p> <p>GENOA - Safety measure implementation works and hydraulic upgrading of Molinassi and Cantarena streams, compliance with the safety standards of the workplaces, as well as rationalisation of the accessibility of the industrial port area of Genova Sestri Ponente - PHASE 2</p> <p>GAETA - Alternative to the Port PRP and connected interventions - (Realisation new slipway for shipbuilding delocalisation - Frattasi plan)</p> <p>Augusta - Realisation of the district of the shipbuilding - port of Augusta</p> <p>CASTELLAMMARE - Safety measure implementation works on the port</p> <p>GIOIA TAURO - Dry dock - industrial plant</p> <p>BRINDISI - Realisation of new gas jetty and upgrading of the Enichem jetty.</p> <p>AUGUSTA - District of the construction area site - Construction of port quay and equipped aprons in Pantano Daniele</p>

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Id	Name	Description
10	Selective increase in port capacity	GENOA - Complementary flooring works for the expansion of Ponte Ronco and Canepa Container Terminal
		LA SPEZIA - Terminal del Golfo apron and quay (ENEL diffuser covering)
		Naples - extension of the eastern quay by means of a depositing site (technical and economic feasibility study and preliminary investigations)
		MESSINA - Upgrading and enlargement works of Marconi, Peloro and Rizzo quays of the port of Messina
		MESSINA - Upgrading works of the 1 <sup>st</sup> September quay
		MESSINA - Upgrading and extension works of the logistic terminal of Molo Norimberga (5*)
		BARI - REQUALIFICATION OF THE S.CATALDO PIER - ENHANCEMENT OF THE INFRASTRUCTURES RELATED TO THE LOGISTIC HEADQUARTER OF BARI FOR THE PORT AUTHORITIES
		ANCONA - Works at sea 2 <sup>nd</sup> phase completion and functionalisation of the new straight quay and the back aprons (2 <sup>nd</sup> functional part)
		ANCONA - Completion of the new quays planned by the P.R.P. in the Mercantile Port area
		ANCONA - dredging of the port reservoir and sediment transfer behind the north reef
		RAVENNA - Completion of the quays in the Piombone channel for the realisation of the Agri-food Terminal
		CATANIA - Enlargement works of the inner quays of the outer breakwater between the root and the eastern groyne - port of Catania
		LIVORNO - Activities for implementation of Darsena Europa

*\*Project review to be launched*

## A.4 AIRPORTS

The future of air transport is strongly related both to its ability to integrate within a consistent and harmonised transport network, and to the development of technologies ensuring the reduction of environmental impacts. The development of a new national strategy is based on the intermodality of transport systems and, at the same time, encourages the reconversion activities of air transport and its related infrastructures, promoting decarbonisation programmes with the goal of zero emissions. It is therefore necessary to encourage the renewal of fleets with the purchase or replacement of new generation aircrafts, which are less polluting both in terms of harmful emissions and other environmental impacts such as noise. The strategy for the development and use of minor airports will also necessarily be subject to technical, economic and environmental optimisation assessments.

In terms of planning, traffic forecasts for the next 15 years are being updated and the National Airport Plan is currently under review. As part of this review, a specific section will be devoted to defining the strategies behind the development of the future freight network, in order to outline the infrastructure needs and priorities for intervention in this area. This document will also allow to update the volumes and characteristics of the expected traffic and the development strategies that will then be incorporated into the next year releases of the DEF. In particular, the time horizon for the review of the National Airport Plan is currently set at 2035, thus shifted by five years compared to the current version. Without considering the upgrading necessary to be made in the short term to take into account the impact on the airport sector related to the COVID-19 pandemic, the passenger traffic forecast can currently be set at a baseline of 300 million passengers in 2035. These estimates will, however, need to be confirmed in light of the forecasts contained in further analysis and in-depth studies of the sector.

Airport investments follows the procedure of Programme Contracts, which govern the commitments undertaken by the companies holding the total management concession regarding the carrying out of infrastructure works aimed at upgrading and developing the airport during the contractual period. The interventions provided for in the Planning Agreements are carried out at the expense of the airport manager, which bears the costs of financing. At the same time, the effects of these costs are reflected in airport fees and may affect the levels of accessibility and competitiveness of the areas served. Thus, the need remains for them to be evaluated against the general interest criteria.

The Programme Contracts represent the implementation, in the short term, of the interventions planned in airport Master Plans to satisfy the demand for air transport generated and attracted by the reference basin of the airport in question. Airport Master Plans undergo some procedures aimed at verifying the environmental and urban planning compatibility with the acquisition of relevant authorisations. This approval process actually allows the direct construction implementation of the works contained in the Master Plans, ensuring compliance with the timing of implementation of the works as provided for in the Programme Contracts.

In the previous Annexes to the DEF, starting from 2017, specific programmes have been outlined, defining areas of development related, potentially, to the

entire airport network and focusing on a particular requirement/area of intervention. The development scenario described in each programme is based on the forecasts and contents of the current National Airport Plan, attached to Presidential Decree No. 201 of 17 September 2015. This strategic framework for the development of the national air transport network will necessarily take into account the outcome of the appeals lodged against the approval of certain Airport development plans, such as those of Rome Fiumicino, Florence and Salerno Pontecagnano. In particular, the failure to complete the approval process for the medium-term development of Fiumicino airport creates a significant criticality for the entire national airport system, given the role of primary international *hub* that this airport plays within the system itself.

#### AIR CARGO DEVELOPMENT

The air cargo programme includes all the interventions aimed at supporting air cargo activities, a strategic sector for the support of export activities of particular relevance, due to the value of the goods moved. It should also be remembered that, during 2020, the continuity of airport cargo movements (first and foremost, *all-cargo*) ensured the supply of goods, despite being almost completely absent, due to *lockdowns*, scheduled intercontinental flights, in whose holds, historically, almost half of cargo traffic travels. Initial traffic data for 2020 shows that airports with a more specialised focus performed better than the overall airport average.

The programme includes interventions aimed at increasing the attractiveness and competitiveness of air cargo and is made up of infrastructural interventions relating to the development of new capacity, and those aimed at solving bottlenecks. Among the infrastructural interventions, the most significant is related to the development of *Malpensa cargo centre*, a project that would bring the capacity of the *cargo city* close to 1 million tons, almost twice the current handling, but equal to 50% of the traffic generated by Paris Charles de Gaulle and Frankfurt. Other *cargo city* interventions are planned in the Programme Contracts of Fiumicino, Bergamo, Catania, Bologna, Venice and Parma.

#### RAIL ACCESSIBILITY

The rail accessibility programme aims at increasing the standards of accessibility by public transport to airports, and in particular by rail access. In the Long Term Plan at least all airports included in the 1<sup>st</sup> level SNIT network will be the subject of feasibility projects with respect to improving the level of rail accessibility. Among those with the greatest potential in terms of current traffic and growth profiles are the airports of Venice, Bergamo Orio al Serio, Naples, Milan Linate, Florence, Brindisi and Catania and concern the development of the railway network, the construction or completion of sections of the subway line and light systems (such as *people movers*), able of guaranteeing connection with the airport in question. In particular, major works concern the railway connection to the airports of Fiumicino, Venice, Bergamo, Brindisi and Catania, whilst works for the extension of the subway line concern Milan Linate, Florence (tramway recently completed) and Naples Capodichino. Within the scope of projects included in the NRRP, further developments are related to the rail connection to Olbia airport, interventions for

intermodality and accessibility of Trapani Birgi and completion of Salerno Arechi - Pontecagnano Airport connection.

#### OPTIMISING THE USE OF AIRSIDE CAPACITY

The programme consists, on the one hand, of technological and/or procedural interventions allowing an increase in the capacity to manage movements (both in the airspace and on the ground), and therefore a greater volume of traffic with unchanged physical infrastructures and, on the other hand, also infrastructural interventions aimed at a better harnessing the capacity. Regarding the first block:

- *performance based navigation* (PBN) procedure. Procedures designed to facilitate the sequencing of aircrafts on approach and already in force at the main domestic airports (Fiumicino, Malpensa, Venice, Bologna, etc.) will be extended to other strategic airports;
- AMAN (Arrival Manager). AMAN is a tool dedicated to support the effective planning of arrival sequences at major airports by suggesting actions aimed at minimising delays and overall consumption. With the Extended Horizon feature, arrivals management is extended to 'en-route' airspace by expanding AMAN's horizon from 100-120 nautical miles to 180-200 nautical miles from the arrival airport;
- ATM-Airport platform. The ATM platforms operating at the major national airports, i.e. the system for processing and presenting the information needed by Air Traffic Controllers to carry out air traffic planning and control operations, are being replaced with a new platform that will allow to ensure the surveillance of all means of transportation (aircrafts and vehicles) over the entire airport surface, also providing a series of ground traffic planning tools and alarms in the event of potential conflicts between moving vehicles (A-SMGCS);
- Remote towers. The *Remote Tower* project provides for management from a remote control centre of air traffic, arriving and departing from multiple airports. This solution provides greater flexibility in managing service schedules at smaller airports, while also allowing for cost savings without negatively impacting safety and/or service delivery.

Moreover, as part of the projects included in the NRRP, specific interventions will be carried out at airports, Approach Control Services (APP) and Area Control Centres (ACC), equipping them with fully digitised air traffic management systems. These projects, also including the New Tower Automation project, concern the airports of Rome-Fiumicino and Bergamo, the ACCs of Lamezia, Ronchi, Bari, Verona, Turin, Genoa, Naples, Florence, Palermo, and the ACCs of Rome and Milan.

In relation to the infrastructure interventions, the programme includes the interventions on flight infrastructure that increase the capacity use of runways. Projects relating to the construction of new runways involve Fiumicino, Florence and Catania airports. In the case of Fiumicino, the intervention is carried out with the aim of complementing a growth profile estimated at over 60 million passengers per year in the medium/long term. With respect to Florence and Catania, the interventions will aim at overcoming the infrastructural constraints that currently limit the use of certain categories of aircraft at the two airports. Another important project concerns the extension of the runway at Salerno-Pontecagnano, which

allow, after the creation of the Campania airport system, deriving from the commercial agreement between the two management companies, to solve the capacity limitations of Naples Capodichino airport.

As mentioned above, the projects regarding the development of the airside at Rome Fiumicino, Florence and Salerno are under the *project review* phase, following appeals submitted against the approval procedures for these projects.

#### SECURITY AND INVESTMENT IN SUPPORT OF THE PASSENGER

The programme contains the interventions aimed at increasing the levels of security checks in the sector, and the interventions in support of the passenger to improve the quality of the service and the overall *travelling experience*, favouring convenience and at the same time increasing the security standards of travellers. With respect to security, the implementation of systems and equipment for hold baggage screening continues, following the implementation of EU Regulation 1998/2015. A particular area of investment concerns the improvement of passenger services within the terminals. The main projects included in the programme are connected with terminal development activities at the airports of Venice, Bergamo Orio al Serio, Verona, Fiumicino, Pisa and Milan Linate.

Below are shown the tables containing, for each of the programmes including interventions classified as invariant in the 2017 Annex to the DEF, the detailed description, economic value, available funding, and remaining resource requirements updated to the current year. In addition, the interventions for which *project reviews* and Feasibility Projects identified in the 2017 and 2018 Annex to the DEF are still in progress are reported.

## PROGRAMMES

TABLE A.4.1 AIRPORT PRIORITY PROGRAMMES						
<b>Id</b>	<b>Name</b>	<b>Description</b>	<b>Intervention cost (M €)</b>	<b>Available Resources (M €)</b>	<b>Residual requirement (M €)</b>	<b>Notes</b>
1	Rail accessibility	Connections to the airports of some of the main urban nodes by metro or RFI network (Naples, Milan Linate, Genoa, Lamezia Terme, Bergamo, Florence, Venice, Catania), also through the realisation of interchange stops or the improvement of their accessibility or integration	848	n.a	n.a	Only complementary works carried out within the airport grounds by the management companies are taken into consideration
2	Air cargo development	Capacity building (cargo city, logistics spaces, aprons) for competitiveness in the air cargo sector, and integration of the logistics network for the airports of Milan Malpensa, Rome Fiumicino, Bergamo Orio Al Serio, Catania, Bologna, Venice	136	0	0	Tariff investments financed as per Cdp
3	Development of airside capacity at current airports	Strengthening of flight infrastructure for the support of runaways	440	0	0	Tariff investments financed as per Cdp
4	Passenger Terminal, Security and passengers experience	Introduction of interventions to improve security, and interventions in support of passengers to improve the quality of service and the overall travelling experience	1,097	0	0	Tariff investments financed as per Cdp
		Expansion of terminal capacity for intercontinental hubs (Rome Fiumicino, Milan Malpensa, Venice)	580	0	0	Tariff investments financed as per Cdp
<b>TOTAL</b>			<b>3,101</b>	<b>0</b>	<b>0</b>	

**TABLE A.4.2 PROGRAMMES TO BE SUBMITTED FOR AIRPORT PROJECT REVIEW**

<b>Id</b>	<b>Name</b>	<b>Description</b>	<b>Motivations and Objectives of the Project Review</b>
1	Rail accessibility	Strengthening of rail services connecting to Malpensa (Rho-Gallarate, Southern link, Northern link)	Project under RFI (Italian Railway Network) responsibility that does not provide for other interventions under ENAC (Italian Civil Aviation Authority) responsibility

**TABLE A.4.3 PROGRAMMES TO BE SUBMITTED TO AIRPORTS FEASIBILITY PROJECT**

<b>Id</b>	<b>Name</b>	<b>Description</b>	<b>Objectives of the Feasibility Project</b>
1	Rail accessibility	Connections to the airports of some of the main urban nodes by metro or RFI network (Naples, Milan Linate, Genoa, Lamezia Terme, Bergamo, Florence, Venice, Catania), also through the realisation of interchange stops or the improvement of their accessibility or integration	Outlining the most appropriate solution with the objective that all first level SNIT airports are provided with adequate rail accessibility
		Strengthening of railway accessibility -Fiumicino: strengthening of the current infrastructure, also with technological interventions and modifications to the station PRG (General Master Plan), and strengthening of the current RFI railway terminal, assessing the possibility of rail connection of the Rome-Civitavecchia line	Upgrading the current FL1 line, adapting the airport station for the use of HS trains with the addition of new tracks, creating a new access to the airport also from the Rome-Civitavecchia line
3	Development of airside capacity at current airports	Introduction of technological and organisational innovations and development of supplementary infrastructures for the greater use of the airport capacity and airspace management: <i>Free Route Airspace</i> (FRA) - new route definition model based on direct trajectories, new minimum separation limits between aircrafts, PERFORMANCE BASED NAVIGATION (PBN) procedures for Rome airport	Optimising the existing airside capacity use
4	Passenger Terminal, Security and passengers experience	Introducing interventions to improve security, aimed at increasing the levels of the security checks, intervention in support of passengers to improve the quality of service and the overall travelling experience	Making the passenger journey seamless by ensuring higher safety requirements

## INTERVENTIONS

<b>TABLE A.4.4 INTERVENTIONS IN PROJECT REVIEW AIRPORTS</b>			
<b>Id</b>	<b>Name</b>	<b>Description</b>	<b>PR motivations and objectives</b>
1	Development of Fiumicino airport air side and land side	Construction of a new runway (fourth runway) and upgrading of the terminal capacity in line with passenger growth forecasts	Assessment of the airport development strategies given the results of the VIA (Environment Impact Assessment) carried out on the 2030 Master Plan
2	New Catania airport runway	Construction of a runway able to accommodate aircraft used in the medium-long range and burying of the railway line	Integration between the railway burying and runway extension projects
3	New Florence airport runway	New runway with a length of 2400 meters and consequent reconstruction of the terminal	Verification of airport development strategies upon the submission of the request for environmental compatibility as a result of the findings of the previous appeal

## A.5 SUSTAINABLE URBAN MOBILITY

The strategies planned within the metropolitan areas are consistent with the main ‘*energy and climate*’ objectives of the EU and Italy to 2030 and 2050, explained in the NRRP and PNIEC (Integrated National Plan for Energy and Climate). In particular, the macro-objectives ‘*decarbonisation*’ and ‘*ecological transition*’ are pursued in line with the strategies of the M2 mission of the NRRP and the explanatory table of the PNIEC “*Main measures planned to achieve the objectives*”, under the entry ‘*transport efficiency*’.

The planning tool within which the new mobility interventions in the urban area must find a transport justification and a strategic coherence is represented by the Sustainable Urban Mobility Plan (SUMP) which, in a medium-long time horizon (10 years), develops a system vision of urban mobility, suggesting the achievement of environmental, social and economic sustainability objectives through the definition of actions aimed at improving the effectiveness and efficiency of the mobility system as a whole, and its integration with the urban and territorial layout and developments.

Sustainable mobility of cities is based first of all on a structure of LPT axes, which in large urban areas should be realised through rapid mass transport systems (subways, tramways, urban railways), integrated with each other and with the remaining mobility systems, collective or individual ones, (buses mainly electrically driven or at least with reduced CO<sub>2</sub> emissions, cabs, *shared* vehicles, urban cycleway or micro-mobility systems, especially for the last mile or for short distances), with the aim of reducing the share of modal distribution allocated to private transport. Achieving the goal of full integration between the different nodes can be facilitated by mobility services that, in terms of ‘*Mobility as a Service*’ (MaaS) help the user to use the different modes easily and conveniently. Within this framework, the need to carry out a wide-ranging reform of the LPT is confirmed, which, based on new indicators, can identify and select those transport solutions that are as intermodal and optimised in their routes as possible.

The following paragraphs describe the individual actions planned by the MIMS to achieve the objectives set, with the quantification of the resources allocated. At the same time, during the emergency phase, in order to support the local public transport sector, following the negative effects deriving from the pandemic emergency, specific funds were allocated to compensate for the lower traffic revenues recorded during this period and for additional services, in the attempt to guarantee the balanced budgets of the operating companies, and therefore the regularity and continuity of the service for citizens.

### URBAN PLANS FOR SUSTAINABLE MOBILITY

The approach to strategic urban mobility planning is based on “*Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan*” by ELTIS, approved in 2014 by the European Commission’s Directorate General for Mobility and Transport and updated in 2019. The SUMP, which is part of the vast-area urban planning scenario, must be conceived from a point of view of integration and systematisation of the territorial and transport planning tools already existing at a

local level, if the administrations are equipped with them, placing itself as a higher-order Plan compared to Sector Plans.

Italian Legislative Decree 194/16 provided for the adoption of uniform criteria at the national level for the preparation and application of SUMP, and MIT (now MIMS) Decree No. 397 of 2017 outlined the Guidelines for their drafting and adoption, in compliance with Directive 2014/94/EU. At the same time, with Ministerial Decree n.171/19 and Ministerial Decree n.594/19, state resources were made available for the preparation of SUMP by those who were still in default. Ministerial Decree No. 397/2017 also provided for the establishment, within MIMS, of a Technical Committee for the monitoring of SUMP, to be carried out both at a general level and using the indicators shown in special tables. This is done in order to improve the overall process, including the possibility of modifying some aspects of the Guidelines (while remaining consistent with the European law) and the indicators themselves, to facilitate the system's commissioning and wide application. The Committee, as a first step, has prepared a database to verify how many municipalities and metropolitan cities have complied with the obligation to have a SUMP; subsequently, the SUMPs have been transmitted by the local authorities to the MIMS for an assessment of compliance with the Guidelines, a condition considered essential to obtain the government funding necessary for the implementation of the development of rapid mass transport, including the renewal of the vehicle fleet

The Committee has developed an evaluation methodology that has been applied to all the SUMP sent (29 so far); following the evaluation, some recommendations for improvement have been sent to the municipalities, for their virtuous implementation. Overall, a substantial compliance with the Guidelines has been verified, with some widespread weaknesses: difficulties in involving neighbouring municipalities to analyse traffic relations or to define macro-scale strategies, demand analysis often lacking with regard to the urban logistics and freight component, strategic objectives not fully consistent with those defined by the Guidelines, a limited definition of Plan scenarios and monitoring indicators sometimes disconnected from the Plan objectives. In this regard, the action of the Technical Committee is aimed at proposing improvement solutions to resolve these criticalities, both at the level of the individual party and at the level of subsequent redefinition of certain details of the decree itself.

### **MASS RAPID TRANSIT DEVELOPMENT PLAN FOR METROPOLITAN AREAS**

The implementation, strengthening and development of an integrated Rapid Mass Transport (TRM) system remains the strategic mobility priority for the country's large metropolitan areas, and especially for the Metropolitan Cities, consistently with the objectives of the PNIEC and those defined within the SUMP. Mobility projects must always be accompanied by an integrated urban regeneration project, in line with economic, environmental and social sustainability.

In order to support the municipalities and metropolitan cities in the construction of new rapid mass transport infrastructures, starting from the 2017 Italian Budget Law, a special expenditure chapter of the "*Investment Fund*" refinanced annually, with a ten-year expenditure profile, has been used: the first *tranche* of resources, relating to the year 2017 (EUR 1.397 billion), was allocated in December 2017 with Ministerial Decree No. 587, in line with the programmes

identified in the Annex to the 2017 DEF, giving priority to the completion of the interventions under construction and extraordinary maintenance of plants and the vehicle fleet of existing MRT lines. With similar criteria, resources from the Development and Cohesion Fund (EUR 1.218 million for mobility infrastructures in urban areas) had been allocated to MRT through the Infrastructure Operational Plan under the Ministry's responsibility (CIPE Resolution No. 54 of 1 December 2016). A further allocation of resources occurred with Ministerial Decree No. 86 issued on 28 February 2018, which allocated EUR 191.06 million remaining from previous specific funds.

Starting from 2018, consistently with the "*Guidelines for the Evaluation of Public Works*" issued by Ministerial Decree No. 300 of 2017, the Ministry has established a standardised evaluation procedure for access to MRT funding, published annually on the institutional website in the form of a "*Notice for the Financing of Interventions on MRT*", with a detailed definition of the rules to be complied with and the tables to be filled in for the preparation of the design-related documents. After having verified that the intervention is contained in the SUMP, the projects are subjected to a multi-criteria analysis (ex-ante evaluation) on the basis of pre-established criteria: in addition to the design quality, the socio-economic and environmental profitability of the work is verified (which the proponent must demonstrate, applying the methodology of cost-benefit or cost-effectiveness analysis, as appropriate, and using the dedicated tables, in order to make possible consistent comparison), the design maturity, the technical-administrative feasibility of the work, the economic adequacy, the transport justification, the financial and managerial sustainability. Projects eligible for funding are then listed in a ranking useful for the allocation of the deployed resources, which is carried out by ministerial decree after obtaining the authorisation at the Unified Conference; every year the chapter dedicated to MRT of the Investment Fund is refinanced, in order to allow a steady and virtuous implementation of projects.

During 2019, the ex-ante assessment procedure described above came into full swing, leading to the allocation of the 2018 annual share of the "*MRT Investment Fund*", amounting to EUR 2.319 billion (first Notice for the allocation of resources to be deployed to the development of MRT), with attribution decree No. 607 of December 2019 and subsequent MDs for the financing of individual works whose documentation, while being suitable with respect to the ex-ante assessment criteria, required some integration (overall, with subsequent MDs, additional EUR 1.3 billion was financed).

The deadline for submitting the applications for MRT development funding requests of the second Notice issued by MIMS expired on 15 January 2021. Eligible projects will be supported by two sources of funding: resources from Next Generation EU, falling under the NRRP (Component M2C2 of the M2 mission - total resources equal to EUR 3,600 million, EUR 1,400 million are to cover projects already funded by existing legislation, while EUR 2,200 million represent new resources), and national resources from the 2019 and 2020 Italian Budget Law (Investment Fund for MRT - EUR 600 million).

As already mentioned, the overall Tables for all the metropolitan cities of already funded and ongoing MRT interventions are shown at the end of this paragraph.

In order to develop and expand the rapid mass transport system in metropolitan cities, a very important role is also played by urban and suburban railways of the networks of RFI and other and other managing operators (former granted railways). To give a few examples, the metropolitan cities of Milan, Turin and Naples are equipped with a rapid mass transport system that cannot disregard the strong integration between the networks of metro, tram, formerly grant railways and the urban and suburban railway managed by RFI; for the Metropolitan City of Rome it will be fundamental the closing of the railway ring managed by RFI with the completion of the northern arch, in an advanced design phase, to develop the enormous potential of the surface rapid mass transport network, given the undoubted difficulties encountered in the further extension of the underground metro network.

For the national urban areas below 100,000 inhabitants, drawing up SUMP is not mandatory, but strongly recommended, at least for medium-sized cities, even considering multiple urban areas aggregated together, where there are significant transport connections.

The travels of users using public transports can be carried out through low environmental impact solutions, with the diffusion of buses with alternative traction and/or infrastructure corridors for preferential transit of BRT-type LPT, *Bus Rapid Transit*. The various solutions must always be implemented, not only in the field of passenger transport but also of goods, maintaining consistency with urban policies through the increasingly compelling use of integrated planning tools (*biciplan*, Logistics Plan, LPT plan, etc.).

## **RENEWAL OF THE ROLLING STOCK**

Improving the sustainability of mobility in urban areas requires a substantial renewal of LPT vehicles, which is one of the key measures included in the National Integrated Energy and Climate Plan (PNIEC). In this regard, starting from the last 4 years, an extraordinary programme of renewal of the road vehicle fleet has been launched in Italy according to article 1, p. 613 of Law 232/16, which has led to the approval of the National Strategic Plan for Sustainable Mobility (PSN-MS), with the primary objective of providing regions and local authorities, LPT companies and the industry with medium-term strategic guidelines in relation to the various technological options, steering the use of the financial resources allocated towards the progressive development of alternative-fuel fleets, even going beyond the requirements of the DAFI Directive.

During 2020 and 2021, implementing decrees were issued to allocate PSN-MS resources, for a total amount of EUR 3.88 billion. Specifically, the resources will be granted in three five-year periods starting in 2019, providing for different rankings, respectively, to assign contributions:

- to regions, for a total amount of EUR 2.2 billion (Ministerial Decree No. 81 of 14/02/2020);
- to metropolitan cities and provincial capitals with high PM10 and nitrogen dioxide pollution, limited to the first five years of application, for a total amount equal to EUR 398 million (MD 234 of 06/06/2020);

- to municipalities and metropolitan cities with more than 100,000 inhabitants, for a total amount equal to EUR 1.1 billion plus EUR 185 million deriving from the 2019 investment fund (MD 71 of 09/02/2021).

In addition to what is provided for in the PSN-MS, with reference to the renewal of buses, between the end of 2016 and the beginning of 2021 additional resources for a total amount of 460 million have been allocated from national sources (Investment Fund and FSC). To these resources, those provided by the 2014-2020 PON METRO and POC METRO (rotation fund), amounting in total to EUR 93 million shall be added. In addition to these substantial resources allocated and distributed for the renewal of the vehicle fleet, specific measures have also been planned for the disposal of the most obsolete and polluting vehicles, in line with the measures set forth by the PNIEC. As of 1 January 2019, the nearly 6,000 Euro 0 vehicles can no longer be driven nationwide. In addition, paragraph 11-bis of art. 27 of Italian Decree-Law No. 50 of 24 April 2017 provides that service agreements relating to the operation of public transport services entered into after 31 December 2017 may no longer provide for the circulation of Euro 0 or Euro 1 vehicles.

For the renewal of the railway rolling stock used in urban and regional public transport, in the same period of time EUR 1,420 million was financed from National Sources and FSC. On the other hand, for the renewal of the maritime, lake, lagoon and river LPT fleet, again in the same period of time, around EUR 500 million were allocated from state sources. Within the NRRP, Mission 2, Component M2C2, an additional EUR 1.9 billion are expected for the purchase of exclusively electrically-driven or hydrogen-driven buses, to be used for LPT in urban areas.

## URBAN CYCLING

With the aim of strengthening urban cycling, Law No. 2 of 11 January 2018, Article 6 provides that municipalities, not part of metropolitan cities, and metropolitan cities prepare and adopt urban cycling plans, called 'Biciplans', as sector plans of their own Sustainable Mobility Urban Plans (SMUP). In June 2020, as part of the Table of Monitoring of Urban Plans for Sustainable Mobility, established at the Ministry, General Directorate for Local Public Transport, with the support of the STM (*Struttura Tecnica di Missione*) and involving also ANCI, the University of Catania, AIIT - *Associazione Italiana per l'Ingegneria del Traffico e dei Trasporti* and Fiab, the Guidelines for the drafting and implementation of the Biciplan, a document that aims to be an aid tool in the design of Biciplan were approved, developed on the basis of updated and scientifically valid knowledge, providing good practices in line with the design tools of the existing bicycle routes.

With regard to interventions of legal or regulatory nature, with Italian Legislative intervention carried out at the time of conversion of Italian Decree-Law No. 76 of 16.07.2020, important supplementary rules to the motorway Code, aimed at safer cycling mobility, were introduced in Article 49. In particular, the definition of 'urban cycle route' has been introduced into the system which, by providing priority for velocipedes and a speed limit not exceeding 30 km/h, allows for particularly advantageous travel for cyclists in urban areas. Further measures have also been provided for in order to facilitate the cycling of road areas, including the possibility, in some cases, to identify a two-way cycle lane, suitable to allow the circulation of velocipedes in the opposite direction to that of other vehicles.

In August 2020, ministerial decree No. 344 of 10.08.2020 was issued, allocating EUR 137.2 million to the design and construction of cycle stations and interventions concerning the safety of city cycling by Metropolitan cities, municipalities capitals of metropolitan cities, municipalities capitals of regions or provinces, and municipalities with populations over 50,000 citizens. As part of these resources, a directorial decree identified the resources specifically intended for the design and implementation of works aimed at connecting railway stations and university poles in seven Italian cities (Bari, Milan, Naples, Padua, Palermo, Pisa and Rome). These resources shall be added to what has already been provided for by the Italian Budget Law for 2020, with the relative Fund of an amount equal to EUR 50 million for each year from 2022 to 2024. Furthermore, EUR 42.10 million had already been funded for urban cycleway safety intervention programmes (MD dated 29 December 2016) and for regional cycleways (MD dated 22 December 2017).

Previously, the Infrastructure Operational Plan had assigned EUR 83.625 million (FSC funds) to the Regions for the development of local cycleways, although not always included in a regional or municipal planning tool, while under the NRRP EUR 200 million have been indicated for urban cycle paths for interventions aimed at strengthening cycling mobility, of which EUR 150 million are new resources and EUR 50 million replace resources already financed under the current legislation. This measure is expected to create about 570 km of urban cycling paths. Finally, for the development of urban cycling mobility, an additional EUR 150 million are already available from state funding, deriving from the fund for the development of urban cycle networks identified by the 2020 Italian Budget law (Law No. 160 of 27.12.2019, art. 1, par. 47).

### **DIGITAL SERVICES FOR MOBILITY AND THE MODERNISATION OF LPT**

The goal of sustainable urban mobility can only be achieved through a concurrent set of actions, aiming at improving the efficiency of individual transport modes and systems, increasing the quality and attractiveness of Public Transport and effectively integrating different modes into urban transport. In any case, it is necessary to facilitate the user in the creation and use of multimodal '*door-to-door*' travels, the only alternative to the use of personal cars. These actions are even more important today than in the past, as the historical modal imbalance of our cities risks worsening due to at least two concomitant factors: the possible disaffection towards the use of collective transport due to the impact of COVID19 and the possible attractiveness of future self-driving vehicles (robotaxis).

The concrete actions, which supplement and complement the strengthening and modernisation of fleets and the push towards '*soft*' mobility, include: the launch, with pilot projects in various urban realities and the creation of national enabling structures, of MaaS services; the use of technological innovation in Local Public Transport systems, aimed at increasing the quality of services, greater integrability and ease of use as part of integrated MaaS services.

These actions are the subject of the MaaS4Italy NRRP project, within Component M1C1 (Digitisation, innovation and security in PA) for a value of EUR 40 million. The project contains:

- the creation of a national platform that allows transport operators to display their data and services according to European standards and interact with MaaS operators;

- support for the digitisation of local passenger transport operators, with particular reference to remote management systems and the dematerialisation of payment/ticketing and control systems/services;
- the implementation of MaaS pilot projects in different metropolitan areas to prove the potential of MaaS services and encourage their spreading.

### TABLES OF MRT DEVELOPMENT PROGRAMMES FOR 14 METROPOLITAN CITIES

As already mentioned, the overall Tables for all metropolitan cities of already funded and ongoing MRT interventions are shown below.

The Tables are not integrated with the funding related to Notice No.2, as the projects are still being evaluated. Therefore, an additional funding of EUR 2,800 million is available (coming in part from the NRRP - NGEU, in part from national sources), but still to be allocated.

The residual requirement shown in the tables below, therefore, only takes into account those interventions for which the allocation of resources has already taken place. In addition to what will emerge from the evaluations related to Notice No.2, it is estimated that additional funding requests for the coming months, particularly related to the development of metros in major urban areas and other MRT systems in medium-sized cities, will result in additional resource requirements of at least EUR 8 billion.

#### Additional Metro Development Interventions

**FOCUS**

Further metro development interventions for the major urban areas concern: Turin's Line 2, to be completed at least for the entire Politecnico-Rebaudengo functional section; Rome's Metro C, with the completion of Venezia station and a lot of the T2 section; extensions of Milan's M1, M2 and M4 lines; Naples' Line 10, from Afragola station to the connection with other lines; further development of Catania's Circumetnea. For other cities with populations over 100,000 citizens, a major upgrade of tram, BRT or similar systems is expected.

TABLE A.5.1 BARI METROPOLITAN CITY PROGRAMME

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet					
		FNB: SCMT ground equipment; Remodulation of PBA distances; removal of the Train Stop system and equipment implementation works with SCMT system of the existing double track Fesca San Girolamo - Cecilia section of the Bari-Lamasinata-Quartiere San Paolo railway line.	2.67	2.67		
		FNB: Construction works of the SCMT Encoder ground subsystem (SST) - Barletta-Andria section;	8.08	8.08		
		FNB: Bari Centrale - Bitonto line - Removal of one PL and conversion, for upgrading, of further three PPLs	14.00	14.00		
		FSE: setting-up with SCMT system	35.39	12.39	23.00	
2	Strengthening and promotion of existing TRM lines	Appulo lucane railways - SCMT - safety measure implementation works	21.89	21.89		
		FNB: Great Project, completion of the railway upgrading of the metropolitan area of Nord-Barese	145.52	50.00	95.52	
		Torricella Ferrovie Nord Barese Stop	3.30	3.30		
		Rail-road interchange terminal on via Cifarelli Ferrovie Appulo Lucane	3.20	3.20		
		Libertà Ferrovie Appulo Lucane stop and track doubling at Bari Nord station	18.00	18.00		
		Villaggio dei Lavoratori Ferrovie Appulo Lucane stop	5.61	5.61		
		Completion of the intermodal Lamasinata terminal: completion of the rail-road exchange parking lot (3 <sup>rd</sup> lot)	10.00	10.00		
		PL Removal Km 16+524 Bari direction through the realisation of new roads and upgrading of existing roads	7.00	7.00		
3	Completion of TRM lines being constructed	Sud est barese railway scissor crossing works	10.00	10.00		
4	Extension of the TRM network	Extension of the FM1 line, from Cecilia station to the new Region station	36.00	36.00		
		TOTAL	320.66	202.14	118.52	0.00

**TABLE A.5.2 BOLOGNA METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Renewal of the rolling stock to be deployed to the Metropolitan Rail System: Acquisition of 7 ETR 350 electric trains and 19 FLIRT rolling stock	165.90	41.50	124.40	
2	Strengthening and promotion of existing TRM lines	Railway line with Bologna - Portomaggiore metropolitan service: interference removal with the road network in the urban section of Bologna (by burying part of the railway line)	46.43	46.43		
3	Completion of TRM lines being constructed	Realisation of the stops of the metropolitan railway service in the municipality of Bologna and the project of identifiability of the metropolitan railway service	49.32	49.32		
4	Extension of the MRT network	First tramway line of Bologna (Red Line)	511.32	509.64	1.68	
TOTAL			772.97	646.89	126.08	0.00

**TABLE A.5.3 CAGLIARI METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (mln €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Purchase of new tram and rolling stock	9.00		9.00	
2	Strengthening and promotion of existing TRM lines	Doubling of the Caracalla - L. Gennari section of the tramway line, completion and upgrading of stops, stations, ground signalling network of all existing lines and CRM	8.50		8.50	
3	Completion of TRM lines being constructed					
4	Extension of the MRT network	Tramway Line 3: realisation of the Repubblica - Bonaria - Matteotti tramway line and supply of 3 trams and road compatibility interventions	31.80	15.30	16.50	
		Realisation of the Quartu Sant'Elena tramway line with the purchase of 4 trams	129.91	129.91		
		Realisation of the Bonaria-Poetto tramway line	44.18	30.60		13.58
TOTAL			223.39	175.81	34.00	13.58

**TABLE A.5.4 CATANIA METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Supply no. 54 UDT for operating and under-construction sections of the railway system with metropolitan service	219.78	59.50	42.00	118.28
		Circumetnea Railway: metro section Supply/Revamping of rolling stock	9.99	9.99		
		Supply of 15 UDT rolling stock and railway section	82.50	3.29	13.21	66.00
2	Strengthening and promotion of existing TRM lines					
3	Completion of TRM lines being constructed	Circumetnea railway, completion of works in progress on Nesima - Monte Po' section	100.00	100.00		
		Circumetnea railway, completion of works in progress (civil works) Stesicoro - Palestro section	90.00	90.00		
4	Extension of the MRT network	Circumetnea railway. Metro section - extension of the line from Monte Po' to Paternò and construction of the depot	609.77	155	112.7	25
		Circumetnea railway. Metro section - line extension from Stesicoro to Airport	402.00		402.00	
TOTAL			1514.04	417.78	569.91	209.28

**TABLE A.5.5 FLORENCE METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet					
2	Strengthening and promotion of existing TRM lines					
3	Completion of TRM lines being constructed	Tram Line 2- Lot 2 VACS	44.04		35.20	8.84
4	Extension of the MRT network	Line 2.2 Tram - Sesto Fiorentino Extension - Scientific Hub (for the design a funding of EUR 1.58 million has already been allocated)	232.19	50.10	2.08	180.01
		Line 3 (2 <sup>nd</sup> lot) - Libertà - Bagno a Ripoli section (3.2.1)	305.94	200.62	105.32	
		Line 3 (2 <sup>nd</sup> lot) - Libertà - Rovezzano section (3.2.2)	259.28	249.28	10.00	
		Line 4.1 - Leopolda - Piagge section	166.00	166.00		
TOTAL			1007.45	666.00	152.60	188.85

**TABLE A.5.6 GENOVA METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of	Supply of new rolling stock for the third generation metro system (14	70.00	70.00		

	the vehicle fleet	vehicles)				
2	Strengthening and promotion of existing TRM lines	Genoa-Caselle - Principe Granarolo line - SCMT - maintenance	18.04	18.04		
3	Completion of TRM lines being constructed	Metro Station Corvetto - To be completed civil finishes and station facilities.	45.00			45.00
		Extension of the Dinegro depot - Upgrading of Brin's operation track	56.45	38.57	17.88	
4	Extension of the MRT network	Extension of the metro line from Brin to Canepari	64.28	64.28		
		Extension of the metro line from Brignole to Martinez	18.10	18.10		
		Strength axis system for Local Public Transport	471.64	471.64		
		TOTAL	743.51	680.63	17.88	45.00

**TABLE A.5.7 MESSINA METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Maintenance and improvement of the tramway fleet	6.79	6.79		
2	Strengthening and promotion of existing TRM lines	Restoration and maintenance works of the tramway line	4.45	4.45		
3	Completion of TRM lines being constructed					
4	Extension of the MRT network					
		TOTAL	11.24	11.24	0.00	0.00

TABLE A.5.8 MILAN METROPOLITAN CITY PROGRAMME

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Replacement of bidirectional rolling stock for the tramway - Supply of 50 new trams	150.00	90.00	60.00	
		M1 metro line: renewal of the train fleet: purchase of 21 new 106-metre, 6-carriage rolling vehicles	207.90	207.90		
		Trolleybus fleet renewal: purchase of 80 trolleybuses, of which 30 already contracted out, 50 to be contracted out with state resources	67.67	42.30	25.37	
2	Strengthening and promotion of existing TRM lines	Replacement of M2 line signalling systems	166.65	134.00	32.65	
		M2 line: design of technological upgrading to increase train frequency	2.50	2.50		
		First fire upgrading interventions pursuant to MD 21.10.2015	72.93	46.99	25.94	
		Interventions to speed up and improve the accessibility of existing tram networks	58.00			58.00
		Circular trolleybus: fast lane in protected area from Piazza Cappelli to Via Tertulliano	14.70	8.82	5.88	
3	Completion of TRM lines being constructed	Circular trolleybus: fast lane in protected area Pergolesi - Piccinini section	6.65	4.00	2.65	
		M3 subway line: - signalling system renovation: - upgrading / modernisation of the train fleet with the purchase of 25 new 106-metre, 6-carriage rolling stock units	352.14	352.14		
		M1 metro line. extension between Sesto FS - Monza Bettola section	229.20	149.90	79.30	
4	Extension of the MRT network	M4 metro line - Lorenteggio - Linate section	2043.44	1061.73	981.71	
		Milan - Seregno metro tramway	232.99	128.53	104.46	
		Milan - Limbiate metro tramway 1 <sup>st</sup> functional lot, Milan Comasina - Varedo depot	98.00	67.84	30.16	
		Milan - Limbiate metro tramway 2 <sup>nd</sup> functional lot	55.00	40.00	15.00	
		TRAM Line 7 - 2 <sup>nd</sup> lot: Tramway extension Adriano- Gobba district	42.00	1.50	17.00	23.50
		M5 metro line extension to Monza -	1265.00	900.00	365.00	
		Extension of the M1 metro line Bisceglie-Baggio-Olmi-Valsesia section: 3.3 km of track, three stations, a depot for 12 trains.	358.00	210.00	148.00	
TOTAL			5422.77	3448.15	1893.12	81.50

TABLE A.5.9 NAPLES METROPOLITAN CITY PROGRAMME

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Naples metro - purchase of rolling stock	193.00	20.00	173.00	
		'Rainbow' line - Piscinola - Aversa centro section strengthening - depot	562.95	323.06	185.89	54.00
		Regional Metro system - Metrocampania Nord Est - technological works	35.76	35.62	0.14	
		Railway equipment on EAV regional railway lines	15.00	15.00		
		Strengthening and promotion of the FSM ex Cumana line	239.79	221.62	18.17	
		Strengthening and promotion of the FSM ex Circum vesuviana line	599.24	401.12	198.12	
2	Strengthening and promotion of existing TRM lines	Naples Garibaldi Complex junction - DESIGN	4.50	4.50		
		Strengthening and promotion of the FSM ex Circumflegrea line: completion and static restoration of the old Camaldoli tunnel	117.30	117.30		
		Technological functional modernisation of metro line 1 and improvement of safety and comfort standards	54.65	27.32	27.33	
		Upgrading of the city tramway system with upgrading of the gateway in Via Nazionale delle Puglie and construction of some interconnection sections	40.00	40.00		
		Line 1: Dante-Garibaldi-Centro Direzionale section	1787.00	939.80	847.20	
		Line 1: Centro Direzionale-Capodichino section	643.00	163.00	480.00	
		Line 1: closure of the ring: Di Vittorio - Capodichino section	42.50	42.50		
		Line 1: extension of the Piscinola workshop depot - first phase	14.60	11.46	3.14	
		Line 1: extension of the Piscinola workshop depot - second phase	32.90			32.90
		MCNE: Section Piscinola-Secondigliano-Capodichino (about 3.6 Km)	410.21	320.12	90.09	
		Line 6: Mostra-Municipio section	790.00	303.90	486.10	
		Line 6: Mostra - Arsenale - Arsenale workshop depot - first phase	220.00	220.00		
		Line 6: Mostra - Arsenale - Arsenale workshop depot - second phase	50.00	38.00		12.00
		Line 7: Soccavo-Mostra scissor crossings between the Cumana and Circumflegrea lines (approximately 3.30 km)(4)	351.74	351.74		
4	Extension of the MRT network	-	-	-	-	-
		TOTAL	6204.14	3596.06	2509.18	98.90

**TABLE A.5.10 PALERMO METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet					
2	Strengthening and promotion of existing TRM lines	Completion of railway ring with metro service	277.10	203.08	74.02	
3	Completion of TRM lines being constructed					
4	Extension of the MRT network	Extension of the existing tramway line 3 along Viale della Regione Siciliana passing through the FF.SS. station. Orleans to Bonagia	110.58	54.68		55.90
		Extension of the existing tramway line 1 from the FF.SS. station. Notarbatolo to the Via Duca della Verdura until the FF.SS. central station and from Via Balsamo to Via Crocerossa.	159.36	88.83		70.53
		Palermo Tram System - Phase II - D, E2, F, G sections and interchange parking lots	504.41	481.27		23.14
TOTAL			1051.45	827.86	74.02	126.43

**TABLE A.5.11 REGGIO DI CALABRIA METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet					
2	Strengthening and promotion of existing TRM lines	Metropolitan Railway System - Reggio Calabria Centrale - Melito P.S. section: realisation of 3 stops and technological upgrade	23.00	23.00		
3	Completion of TRM lines being constructed					
4	Extension of the MRT network					
TOTAL			23.00	23.00	0.00	0.00

**TABLE A.5.12 ROME METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Supply of new rolling stock (5 trains for metro A and 12 trains for metro B)	163.20	134.40		28.80
		Extraordinary maintenance for the rolling stock of the A and B metro lines	72.22	66.00	6.22	
		Metro C - increase of the rolling stock (4 trains)	36.40	36.40		
		Acquisition of new rolling stock for the Rome tram network	158.97	158.97		
2	Strengthening and promotion of existing TRM lines	Extraordinary metro maintenance: Implementation of the extraordinary maintenance plan concerning A, B-B1 metro lines and MD 21/10/15 upgrading - innovation and automation of minimum interventions	279.37	225.12		54.25
		Extraordinary maintenance of the Roma Lido railway, including the transformation into a metro and maintenance of the Roma Viterbo railway (Riano - Morlupo section), with technological upgrading	400.97	400.97		
		Interventions on Rome-Giardinetti railway	3.00	3.00		
		Extraordinary maintenance of formerly-granted regional railways	24.00	24.00		
3	Completion of TRM lines being constructed	Metro C: completion of the T3 section with integration of works in progress to comply with the MIT requirements - increase of the rolling stock	1146.26	564.40	237.60	344.26
4	Extension of the MRT network	Eur Magliana Mb - Villa Bonelli Fs cableway (FL1) (Magliana cableway)	29.95	29.95		
		Battistini - Torvecchia - Casalotti G.R.A. cableway (Casalotti cableway)	109.59	109.59		
		Via Tiburtina tramway (p.le Verano - p.le st. Tiburtina)	23.45	23.45		
		Viale Palmiro Togliatti tramway (Togliatti tramway)	184.26	184.26		
		Termini - Giardinetti - Tor Vergata line (tramway line) - Ordinary gauge solution	213.82	213.82		-
TOTAL			2845.46	2174.33	243.82	427.31

**TABLE A.5.13 REGGIO DI TORINO METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet	Purchase of rolling stock (4 trains) for the operating metro line and future extension (Lingotto - Bengasi section)	28.60	28.60		
		Purchase of rolling stock (No. 8 trains) for the operating metro line and future extension (Collegno-Cascine Vica section)	56.90	56.90		
		Tramway network: supply of new trams	175.00	175.00		
2	Strengthening and promotion of existing TRM lines	Public subway parking Bengasi square Interchange parking Bengasi square (metro interchange)	20.00	14.52	5.48	
		Line 10/: connection with corso Giulio Cesare along via Cecchi and corso Emilia (with junction for the connection to the Porta Milano GTT district) (tramway line)	13.66	8.53		5.13
		Line 3 - construction of the terminus in corso Quintino Sella and the return ring in largo Toselli (tramway line)	3.73	3.73		
3	Completion of TRM lines being constructed	Rebaudengo - railway link interconnection	186.00	168.00	18.00	
		Metro line extension- Lingotto - Bengasi section	193.60	140.04	53.56	
		Equipment of the entire Canavesana line	11.89	11.89		
		Turin Ceres - SCMT - whole line	18.88	15.78	3.10	
		Metro - Line 1: Workshop expansion	7.44	7.44		
4	Extension of the MRT network	Extension of the metro line - Collegno-Cascine Vica section	271.84	271.84		
		Metro - Line 2: first section	828.00	828.00		
TOTAL			1815.54	1730.27	80.14	5.13

**TABLE A.5.14 VENICE METROPOLITAN CITY PROGRAMME**

Id	Category	Intervention description	Intervention cost (M €)	Defined State funding (M €)	Other funding (M €)	Residual requirement (M €)
1	Renewal and improvement of the vehicle fleet					
2	Strengthening and promotion of existing TRM lines	SCMT-RTB-PAI.PL Realisation	3.02	3.02		
3	Completion of TRM lines being constructed					
4	Extension of the MRT network					
TOTAL			3.02	3.02	0.00	0.00

## A.6 NATIONAL CYCLEWAYS

The bicycling sector has been growing steadily since 2013, with an increase of over 40% in 2018. In 2020, due in part to the COVID-19 emergency, the demand for cycling and micro-electric mobility (scooters, segways, hoverboards and similar devices) has increased substantially; initial analyses show a 20% increase in the number of cyclists in 2020 compared to 2019.

The Ministry's interventions are aimed at facilitating and promoting the growth of the sector, to be implemented both through targeted interventions of regulatory simplification and reorganisation, and through the allocation to local and territorial authorities of resources specifically dedicated to the creation of urban, metropolitan, regional or national bicycle networks. National-level interventions are intended primarily to ensure a solid and lasting development of tourist-recreational cycle paths, mostly to be built in the inland areas of the country.

The Italian Ministerial Decree No. 517/2018 allocated EUR 16.62 million to each of the national cycleways identified by the Italian Law No. 208/2015, par. 640, and subsequent amendments and additions, with the exception of the GRAB cycleway to which the amount of EUR 14.88 million has been allocated, sufficient for the complete financing of the work.

The additional funding already available for the priority cycleways (a total of EUR 200 million) has not been allocated yet, as their allocation depends on the state of progress of the project reached by each cycleway.

**TABLE A.6.1 CICLEWAY PRIORITY INTERVENTIONS**

	Technical-economic feasibility project		Route realisation			
	in progress	completed	Estimated Cost* (M €)	Resources allocated by Italian MD No. 517/2018 (M €)	NRRP Resources (M €)	Residual requirement** (M €)
Tyrrhenian Cycleway	X		325.00	16.62	44.50	263.88
Adriatic Cycleway	X		558.52	16.62	74.00	467.90
VEN-TO Cycleway		X	195.40	16.62	51.00	127.78
Cycleway of the Sun		X	38.08	16.62	21.46	-
Sardinia Cycleway	X		340.00	16.62	33.00	290.38
Apulian Aqueduct Cycleway		X	97.38	16.62	39.50	41.26
Magna Grecia Cycleway	X		441.27	16.62	61.50	363.15
Garda Cycleway	X		194.40	16.62	30.00	147.78
GRAB cycleway		X	14.88	14.88	-	-

	Technical-economic feasibility project		Route realisation			
	in progress	completed	Estimated Cost* (M €)	Resources allocated by Italian MD No. 517/2018 (M €)	NRRP Resources (M €)	Residual requirement** (M €)
Trieste - Lignano Sabbiadoro - Venice Cycleway	X		105.90	16.62	30.00	59.28
<b>TOTAL</b>			<b>2,310.83</b>	<b>164.46</b>	<b>384.96***</b>	<b>1,894.21</b>

\* cost to be updated on the basis of the progress of project activities;

\*\*cost which not include any forms of co-financing;

\*\*\*the amount differs from the total funding of EUR 400 million since it does not include the accounting reporting of the full funding of the cycleways of the Sun and GRAB, already available, partly or fully, under current legislation.

As indicated in the Table, as part of the NRRP, a funding of EUR 400 million is planned, divided between new resources (EUR 250 million) deriving from the European NGEU fund, and state financial resources (EUR 150 million), already available under current legislation.

This measure is expected to create about 1,250 km of urban touristic cycling paths.

Finally, an additional EUR 50 million from state funding will be dedicated to the development of cycling in the tourism sector.

## A.7 WATER INFRASTRUCTURES

The Italian water sector is characterised by a significant need for investment, necessary to make the infrastructures compliant with the highest international standards. The investments required to fill the infrastructure *gap*, both in absolute terms and between the North and South of the country, must make possible, as a priority, what follows:

- making primary water infrastructures (large water supply systems, reservoirs, large withdrawals) efficient and resilient, with a view to adapting to climate change, so as to ensure the overcoming of water crises now increasingly more frequent by overcoming the ‘*emergency*’ attitude (security of water supply);
- planning and implementing the essential maintenance interventions necessary especially for the upgrading and/or maintenance of safety of large and small dams, but also of large water derivation and adduction systems, both in terms of safety of structural works and the consequent recovery/increase of useful and transport capacity, and therefore economic value (infrastructure safety), as well as a more effective management of water resources and a simultaneous reduction of losses, including in distribution networks (resource optimisation);

- completing the large water schemes/systems that still unfinished, especially in Southern Italy (recovery of large unfinished works), possibly redesigning them from a more modern point of view, where necessary.

In addition, considering that the drinking water sector today accounts for about 20% of withdrawals, while the agricultural sector as a whole uses about 53% of withdrawals and the Industrial use and that related to energy account for 21% and 6% respectively, it is essential for a greater coordination between Central Administrations, according to a renewed National Water Strategy able to address the issue of major national water infrastructures both in terms of new works and the preservation of existing assets, with non-sectorial approaches, funding appropriate to the strategic objectives to be pursued, certain and shared rules for the identification of priorities, in respect of a unitary government of water resources, aimed at regulating the transfer of resources on the basis of water needs and availability of individual regions.

Water emergencies, more frequent in the last years, generate more and more serious consequences, with important repercussions on a social and economic context already heavily penalised by the health emergency related to COVID-19. Moreover, investments involving urgent maintenance and/or upgrading of existing water infrastructures (dams, bypasses, water supply systems, distribution networks) can be activated quickly, with self-evident positive effects also for a rapid economic recovery of the country.

As provided for in the Italian Decree Law No. 76 of July 2020 (known as Simplifications Decree Law), moreover, with the decrees of the President of the Council of Ministers of April 2021 the activities of the Commissioners appointed for the implementation of interventions on 57 public works have been launched: among these, 11 are infrastructural interventions in the water sector, for a total amount at the design stage, estimated at EUR 2.8 billion (it should be noted that for some interventions the design is in progress, at the conclusion of which it will be possible to establish the final amounts). The 11 interventions are divided into three groups:

- the first, relating to improvements or upgrading of infrastructure already operating that, following periodic control and monitoring activities carried out by the concessionaires/managing bodies of water resources, have shown the need for significant extraordinary maintenance. Within this group fall the dams of Govossai, rio Olai, Monte Pranu, Cantoniera, rio Mannu di Pattada and Maccheroni;
- the second, relating to interventions for the completion of unfinished dams: Cumbidanovu, Montinieddu, Is Canargius and Pietrarossa;
- the third, relating to the primary adduction works from Peschiera springs, for the supply of the city of Rome.

The interventions on the dams aim to increase the total available resource of almost seven hundred million cubic meters, to be deployed for irrigation, drinking, hydroelectric use and protection of downstream areas (lamination).

### **THE NATIONAL PLAN OF INTERVENTIONS IN THE WATER SECTOR**

To date, for the National Plan of Interventions in the Water Sector, in the two sections with three different measures, works have been financed for a total of about EUR 590 million (Table A.7.1). The additional resources available under applicable legislation are currently being programmed (for the years up to 2026,

equal to approximately EUR 710 million) together with the additional resources of the National Recovery and Resilience Plan (equal to UER 900 million), within the investment measure 4.1 of Mission 2, Component 4.

**TABLE A.7.1: MEASURES TAKEN IN ORDER TO IMPLEMENT THE NATIONAL PLAN**

Measure	Section	Subject	Amount
Interministerial Decree No. 526 of 5 December 2018	-	MIMS*	EUR 250 M
Prime Minister's Decree of 17 April 2019	Water storages	MIMS**	EUR 260 M
Prime Minister's Decree of 1 August 2019	Aqueducts	ARERA***	EUR 80 M

\*in agreement with MIPAAF; \*\*in agreement with MEF, MIBAC, MITE, MIPAAF, after consulting ARERA; \*\*\*final proposal drafted by the MIMS, based on ARERA guidelines, in agreement with MEF, MIBAC, MITE, MIPAAF.

Table A.7.2 shows some of the main interventions, in economic terms, provided for in the above measures. In detail, for the three financing measures outlined above, Tables A.7.3, A.7.4 and A.7.5 show the geographical distribution of the financed interventions, the amount of financing by region of location of the intervention and the distribution of the interventions by class of amount.

**TABLE A.7.2 MAIN INTERVENTIONS OF THE NATIONAL PLAN**

Completion and upgrading of water supply in the Flegreo Domitiana area	Campania	EUR31,521,067
Expansion basin on Cavaliere torrent in Fossatella	Molise	EUR30,000,000
Reconstruction of the integrated water plant supply system of Ascoli Piceno Ato 5	Marche	EUR27,000,000
Upgrading of the salt barrage at the mouth of the Adige River	Veneto	EUR20,000,000
Primary adduction works from the reservoir on the Chiascio river	Tuscany	EUR17,267,000
New lifting station of the aqueduct of Venice and Chioggia	Veneto	EUR 8,200,000
Implementation of aqueduct networks and plants in the Municipality of Calvisano	Lombardy	EUR 7,600,000
Interconnections of ATO3, ATO 4 and ATO 5 water supply systems	Marche	EUR 6,100,000

**TABLE A.7.3 INTERVENTION ALLOCATION INTERMINISTERIAL DECREE NO. 526 OF 5 DECEMBER 2018**

Location	Region	No. interventions	Financing	No. Total interventions	Total Funding
NORTH-CENTER	EMILIA ROMAGNA	4	EUR 21,610,170.00	15	EUR 90,800,170.00
	LOMBARDY	1	EUR 20,000,000.00		
	PIEDMONT	3	EUR 13,700,000.00		
	TUSCANY	4	EUR 12,040,000.00		
	VENETO	3	EUR 23,450,000.00		
SOUTH-CENTER	ABRUZZO	1	EUR 20,000,000.00	8	EUR 124,356,338.40
	BASILICATA	1	EUR 700,000.00		
	CALABRIA	1	EUR 26,500,000.00		
	CAMPANIA	1	EUR 31,521,067.20		
	MOLISE	1	EUR 30,000,000.00		
	APULIA	3	EUR 15,635,271.20		
ISLANDS	SARDINIA	4	EUR 31,530,424.00	7	EUR 34,726,424.00
	SICILY	3	EUR 3,196,000.00		
<b>TOTAL</b>				<b>30</b>	<b>EUR 249,882,932.40</b>

**TABLE A.7.4 INTERVENTION ALLOCATION AS PER ITALIAN DPCM (DECRETO DEL PRESIDENTE DEL CONSIGLIO DEI MINISTRI) OF 17 APRIL 2019**

Location	Region	No. interventions	Financing	No. Total interventions	Total Funding
NORTH-CENTER	EMILIA ROMAGNA	6 (1 s.p.)	EUR 34,870,000.00	34	EUR 172,793,000.00
	FRIULI VENEZIA GIULIA	3	EUR 9,300,000.00		
	LIGURIA	3	EUR 1,900,000.00		
	LOMBARDY	3	EUR 15,500,000.00		
	MARCHE	2	EUR 32,000,000.00		
	PIEDMONT	2	EUR 15,000,000.00		
	TUSCANY	7 (3 s.p.)	EUR 29,171,000.00		
	VENETO	8 (4 s.p.)	EUR 35,052,000.00		
SOUTH-CENTER	ABRUZZO	1 (1 s.p.)	EUR 1,200,000.00	16	EUR 66,335,000.00
	BASILICATA	4 (1 s.p.)	EUR 14,500,000.00		
	CALABRIA	2	EUR 15,400,000.00		
	CAMPANIA	1	EUR 6,311,377.00		
	LAZIO	3 (1 s.p.)	EUR 11,660,000.00		
	MOLISE	2 (1 s.p.)	EUR 7,483,783.00		
	APULIA	2 (1 s.p.)	EUR 8,279,840.00		
	APULIA - CAMPANIA	1 (1 s.p.)	EUR 1,500,000.00		
ISLANDS	SARDINIA	5 (3 s.p.)	EUR 7,810,000.00	7	EUR 20,872,000.00
	SICILY	2 (1 s.p.)	EUR 13,062,000.00		
<b>TOTAL</b>				<b>57</b>	<b>EUR 260,000,000.00</b>

s.p.: sola progettazione (design only)

**TABLE A.7.5 INTERVENTION ALLOCATION AS PER ITALIAN DPCM OF 1 AUGUST 2019**

Location	Region	No. interventions	Financing	No. Total interventions	Total Funding
NORTH-CENTER	EMILIA ROMAGNA	1	EUR 3,850,000.00	15	EUR 49,800,000.00
	FRIULI VENEZIA GIULIA	1	EUR 2,000,000.00		
	LOMBARDY	6	EUR 21,000,000.00		
	MARCHE	2	EUR 6,900,000.00		
	PIEDMONT	1	EUR 3,600,000.00		
	TUSCANY	1	EUR 3,000,000.00		
	VENETO	3	EUR 9,450,000.00		
SOUTH-CENTER	ABRUZZO	2	EUR 5,300,000.00	6	EUR 17,100,000.00
	CAMPANIA	3	EUR 7,400,000.00		
	LAZIO	1	EUR 4,400,000.00		
ISLANDS	SICILY	5	EUR 13,100,000.00	5	EUR 13,100,000.00
<b>TOTAL</b>				<b>26</b>	<b>EUR 80,000,000.00</b>

### OPERATIONAL PLAN FOR FSC DAMS 2014-2020

With CIPE Resolutions No. 54 of 2016 and No. 12 of 2018, respectively, the "Operational Plan for the 2014-2020 Development and Cohesion Fund - Line of Action" was adopted: *Dams Extraordinary maintenance and safety measure implementation works* and its update, which provides for 144 interventions of extraordinary maintenance and safety measure implementation works on large dams, for a total funding of EUR 468 million. Interventions amount to 56% dams for which it is necessary to complete the testing operations, and to 44% dams that need extraordinary maintenance. Funding has been ensured only to public concessionaires/managing bodies, while dams for hydroelectric use only and those for industrial use only remain excluded.

The two largest islands, where reliance on dam infrastructures is significant, for both potable and irrigation use, cover more than 45% of the interventions. Most of the interventions have an amount of less than EUR 5 million, while the interventions with funding equal to or greater than EUR 10 million are five (Table A.7.6)

**TABLE A.7.6:2014-202 FSC DAM OPERATIONAL PLAN MAIN INTERVENTIONS**

Region	Dam Name	Amount (M €)
Sicily	Pietrarossa	60.0
Sicily	Pozzillo	25.0
Sicily	Olivo	20.0
Campania	Persano	10.0
Sardinia	Cantoniera	10.0

To date, the fundings finalised through agreements signed between the MIMS and the implementing subjects concern 126 interventions for a total amount of deployed resources equal to EUR 403.22 million (Table A.7.7). Agreement signatures are being finalised for 3 interventions, whilst 11 interventions have been removed from the list and four have been remodeled.

**TABLE A.7.7 2014-2020 FSC DAM OPERATIONAL PLAN INTERVENTION ALLOCATION**

Location	Region	No. interventions	Financing	No. Total interventions	Total Funding
NORTH CENTER	Emilia-Romagna	8	EUR 10,925,000.00	36	EUR 61,475,000.00
	Friuli-Venezia Giulia	1	EUR 1,500,000.00		
	Liguria	3	EUR 11,000,000.00		
	Lombardy	4	EUR 7,500,000.00		
	Marche	5	EUR 10,100,000.00		
	Piedmont	4	EUR 4,700,000.00		
	Tuscany	8	EUR 13,525,000.00		
Umbria	3	EUR 2,225,000.00			
SOUTH CENTER	Abruzzo	1	EUR 1,350,000.00	43	EUR 127,770,000.00
	Basilicata	11	EUR 30,625,000.00		
	Calabria	8	EUR 30,320,000.00		
	Campania	9	EUR 26,700,000.00		
	Lazio	3	EUR 6,000,000.00		
	Molise	4	EUR 21,500,000.00		
	Apulia	7	EUR 11,275,000.00		
ISLANDS	Sardinia	19	EUR 67,700,000.00	47	EUR 213,975,000.00
	Sicily	28	EUR 146,275,000.00		
				126	EUR 403,220,000.00

For several years now, at the instigation of the MIMS, hydroelectric concessionaires have been carrying out a **programme of efficiency, modernisation and extraordinary maintenance of large dams for hydroelectric and multiple use**. These are complex interventions that cover a time span of several years, almost always carried out when the tank is full, as it is not possible to empty the tank, and work without conditioning for the multiple uses allowed. The development and implementation programmes of individual interventions proceed following the development of safety audits on the operating structures, carried out, in terms of priority, for the changed hydrology and new knowledge of seismic actions.

Currently, the largest hydroelectric concessionaires plan to complete the safety audit phase by 2022. At the same time, some interventions have been launched on complementary works to the dam structure (guard houses, bridges serving the road system, accesses, concrete and metal works constituting the drain systems, etc.). Numerous projects are being drafted and numerous interventions are in the design phase: for some of them the authorisation process is underway, for others, the works have been assigned.

The investments planned for 2021 and 2022 amount to EUR 330 million, even if the uncertainties on the development of the regulation on the renewal of hydroelectric concessions, the regime of extensions of concessions and the amendments in the rules of assignment, with reference to secondary legislation not defined yet, make it difficult to plan extraordinary maintenance interventions.

## OTHER FINANCING FOR THE WATER SECTOR

By Ministerial Decree of June 2015, the competences on water and electricity systems defined as '*strategic*' by the Italian Objective Law, which until that date

fell within the scope of the Technical Structure of Mission<sup>32</sup>, have been transferred to the General Directorate for Dams and Water Infrastructure. The activity concerned the preliminary examination of the requests for payment of the funding allocated by CIPE (Interministerial Committee for Economic Planning). The ‘*transferred*’ interventions are 56 water systems, including six in the electricity sector and one in the hydrocarbon exploitation sector (the latter two types of interventions with non-public funds). Out of 56 interventions in the water sector, amounting to approximately EUR 2.2 billion, those completed are 19 for EUR 830 million (about 37%), those not started (more than 15 years after the financing granted) are 12 for EUR 572 million (about 25%), four are funded on other programmes.

Following the transfer of competencies from the Directorate General for Networks, the activities related to the Operating Programme Water Resources of the Community Support Framework (QCS) 1994/99 have also been transferred to the Directorate General for Dams and Water Infrastructure. The amount of the programme of water works to be financed amounts to EUR 232 million, but the available funding is about EUR 187 million, with a schedule that is about 20% higher than the financial availability.

#### **THE NATIONAL RECOVERY AND RESILIENCE PLAN FOR WATER INFRASTRUCTURES**

There are two investment measures under M2C4, falling within MIMS’s responsibility:

- Investment 4.1: Investments in primary water infrastructures for the safety of water supply, for an amount of resources equal to EUR 2.00 billion (of which EUR 1.1 billion coming from current legislation: National Plan for Interventions in the Water Sector, FSC 2014-2020, and EUR 0.9 billion represent additional resources of the NRRP);
- Investment 4.2: Reduction of losses in water distribution networks, including digitisation and monitoring of networks, for an amount of resources equal to EUR 0.9 billion (fully additional resources of the NRRP).

In particular, the first one concerns interventions on reservoirs and primary supply systems for drinking water and/or irrigation purposes, aimed at optimising/enhancing/completing water infrastructures for derivation, accumulation and adduction of water resources, increasing resilience to climate change (extreme drought events) of main water supply sources and water schemes. The main types of intervention concern the increase/restoration of storage and/or transport capacity, the interconnection of systems, the replacement of qualitatively degraded supply sources, the increase of water/energy efficiency, the recovery of water resources and the reduction of waste.

The EUR 1.1 billion provided for under current legislation will be guaranteed by identifying interventions among those already programmed or being programmed using national resources (National Plan for interventions in the water sector) in line with consistency and time constraints of the NRRP. The schedule of the National Plan will therefore be fully complementary and synergic with that of the NRRP’s additional resources.

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<sup>32</sup> former Art. 163 of Italian Legislative Decree No. 163/2206.

With respect to programming of available resources (both from current legislation and from additional NRRP resources), the selection of interventions is being completed, starting from the infrastructure requirements identified by the relevant bodies (Regions, District Authorities, Field Authorities) and submitted to MIMS and ARERA. In particular, there is a comprehensive and up-to-date database fed by proposals recently submitted by the District Authorities to the MIMS Dams and Water Infrastructure Directorate and Government Bodies of ARERA Field. These proposals have been activated by the requests from MIMS and ARERA to arrange the available financial resources on the National Water Plan for the Reservoir and Aqueduct sections, respectively.

The interventions surveyed, aimed at ensuring the safety of primary water supply, for drinking, irrigation or multiple purposes, can be grouped into the following categories:

- re-efficiency and/or extraordinary maintenance of existing water works and schemes (recovery and/or increase of reservoir or transport capacity, increase of derivation capacity for multiple uses, maintenance of safety of storage and derivation infrastructures, reduction of losses/waste of resources);
- new works (or completions of interventions) of interconnection, large water supply systems (between districts, systems and sub-systems);
- new works (or completion of interventions) of water resource build up and withdrawal (dams, expansion tanks for irrigation use, etc.).

Measure 4.2 concerns instead interventions on urban distribution networks for drinking water, aimed at reducing water losses and the digitisation of the same networks. This measure will be implemented by means of a public notice, currently being prepared by the MIMS with the collaboration of ARERA, to collect proposals from the operators in the sector, i.e. Those subjects regulated by ARERA with legitimate concession, in accordance with Italian Legislative Decree No. 152/2006, operating throughout Italy. The notice will require project proposals focused on the most current methods of reducing water losses, through the districting and digitisation of distribution networks (*smart network*), according to the following main types of actions:

- assessment of the consistency of networks and their representation through GIS to proceed to the asset management of the infrastructure;
- installation of smart tools for flow rate, volume, pressure and level measurement;
- hydraulic modelling of the network and installation of pressure control valves to reduce leakage;
- Division of networks into districts and active leakage control;
- pre-localisation of leaks through classical (acoustic) and innovative methods (radar, satellite and/or aerial scanning, etc);
- identification of network sections that may need to be replaced or reinstated.

In addition to the investment measures described above, there is also Reform 4.1 - "*Regulatory Simplification and Governance Strengthening for the Implementation of Investments in Water Supply Infrastructures*". The reform proposal is not only related to the implementation of the NRRP, but related to the entire water supply sector, structural and permanent. In particular, it's intended to act on the legislation governing the National Plan of Interventions in the Water

Sector (Law 205/2017, Article 1, paragraph 516 et seq.), according to the following lines of action and general objectives:

- increasingly make the National Plan the main instrument of central public financing of investments for the strengthening of water supply systems, the modernisation of large water infrastructures for drinking, irrigation, industrial/energy/environmental purposes, the increase of resilience and environmental sustainability of large water schemes, the reduction of losses in adduction and distribution systems, the fight against drought;
- strengthening the role of the MIMS, as the main institutional entity responsible for programming and planning investments in water supply infrastructures;
- overcoming the division between the ‘reservoir’ and ‘aqueduct’ sections, also in order to rationalise and simplify the administrative and decision-making processes;
- involving ARERA for support in the drafting of the entire Plan, with reference to investments in those sectors where ARERA plays the role of regulatory authority;
- streamlining the procedures for implementing the Plan, while coordinating with other ministries, bodies and subjects involved;
- simplifying reporting and monitoring procedures for investments funded by the Plan;
- providing central accompanying measures by the MIMS (directly or through state-owned companies) for those subjects with less design and spending capacity;
- providing for effective replacement mechanisms in the event of inaction by the financed parties or replacement of interventions that do not successfully complete the authorisation process.

### **REACT-EU**

The objective of this line of intervention is to launch an industrial and efficient management of the service that will allow losses to be maintained at levels considered internationally physiological (15-20%). The allocation of the Programme to the water sector of the southern regions consists of EUR 313 million from the Funds, as per EU Regulation 2020/2221 of the European Parliament and the Council of 23 December 2020. As part of the 2014-2020 National Infrastructure and Networks Programme, managed by the MIMS, carrying out interventions that will be selected through a Public notice addressed to subjects operating in southern areas and regulated by ARERA with lawful attribution, pursuant to Italian Legislative Decree 152/2006 is expected. 152/2006 operating in southern areas. In particular, the investments planned in this area are functional to the achievement of the following objectives:

- achieving a reduction in leakage in drinking water networks;
- increasing the resilience of water systems to climate change;
- strengthening the digitisation of networks, to be transformed into a ‘*smart grid*’, to promote an optimal management of water resources, reduce waste and limit inefficiencies.

In order to achieve the objectives indicated, investments will be financed for the modernisation and efficiency of water distribution networks, favouring innovative projects that provide for the use of new technologies. To this end, it will

be essential to be equipped with advanced control systems that allow monitoring not only of the main junctions, but also of network's sensitive points, through the measurement and acquisition of flow rates, operating pressures and water quality parameters.

Investment projects on distribution networks, aimed at achieving the general objectives of the European water legislation, adaptation to climate change and national regulation of the sector, must be drawn up according to an approach, based on international *best practices of asset management*, in which the replacement of more or less wide sections of the networks is only the last step of a methodological path providing for, first of all, an adequate monitoring of the functional parameters and a careful analysis of the network behaviour, pressure control, its possible districting, planning of activities of reduction and active control of losses and, only at the end, the identification of the network sections to be replaced or rehabilitated with the identification of the most appropriate mix of interventions. The planned actions will be, therefore, actions of upgrading of water infrastructures through the digitisation and monitoring of networks and use of measurement and control tools.

The main expected results concern the improvement of the integrated water service for civil uses and the reduction of losses in the aqueduct network. These results would allow to reduce the '*water service divide*' between the reality of the centre-north and that of the South, allowing access to an essential public service in a uniform manner throughout the country and to reduce the waste of water resources, contributing to the efficient use of resources and environmental sustainability.

## **A.8 SUSTAINABLE BUILDING INFRASTRUCTURES AND PROGRAMMES**

Cities represent a fundamental place for defining the overall territorial socioeconomic dynamics and the challenges posed by the economic and pandemic crisis. The answer to the crisis lies in a new vision of housing policies that, through constant collaboration and sharing between institutions, the production, business, finance world and the civil society, can be achieved through integrated actions and projects with a common denominator: environmental sustainability and increased use of innovative technologies and digital systems.

Being now mostly consolidated, urban areas pose problems of regeneration, building units replacement and reconnection of fragmentations. On the one hand it is necessary to rethink cities in terms of a greater presence of services, on the other hand urban planning must become functional to the needs of the population, paying attention to the territorial contexts on which intervention is planned, and having as its objective the improvement of the quality of life and work of citizens. For this reason, it is essential to strengthen a national policy for urban regeneration, built on a strategy shared with regions and local authorities, respecting the competences of Title V of the Constitution.

In particular, action should be taken to:

- implement and rationalise sector regulations, laying the foundations for a specific regulatory framework for urban regeneration;
- build a vision of interventions in cities based on integration, resilience, social cohesion, quality, sustainability, safety and strengthening of existing assets,

which gives new momentum to social infrastructures, including public and social housing, and in which centrality is given to the lives of citizens and to living spaces and places (moving from the *'builders of buildings'* rationale to that of *'builders of communities'*);

- identify a governance for city policies, as a facilitator of dialogue between the various actors involved in the processes.

The main ongoing initiatives funded by MIMS and NRRP's sector programmes are described below.

### THE HOUSING QUALITY INNOVATION PROGRAMME: A PATH ALREADY STARTED

In line with the rationale of the social function of housing as a measure to fight inequalities, as well as to support welfare, a first significant result can be achieved by the implementation of the National Housing Quality Innovation Programme (PINQUA). PINQUA is currently in the initial assessment phase of the proposals received. The High Commission, established pursuant to paragraph 439 of article 1 of the Italian Law 160/2019, is carrying out the assessment activities of the administrative and technical documentation. The acceptance of the worthy proposals into the second phase of assessment takes place on the basis of seven criteria, in accordance with Article 8 of the Italian Interministerial Decree No. 395 of 16.09.2020, defined in relation to the indicators contained in the computerised model: indicators of environmental, social, cultural, urban-territorial, economic-financial, technological and procedural impact.

#### FOCUS

##### Evaluation Criteria

- quality of the proposal and consistency with the purposes of Article 1, paragraph 437, of Law 160 of 2019, ability to develop responses to the needs/requirements expressed, presence of innovative and green economy aspects, compliance with the Minimum Environmental Criteria (CAM), as well as the ability to coordinate and/or gather subjects in an associated form in terms of legality of self-consolidated realities;
  - the extent of interventions in relation to public residential buildings, with preference given to areas of greatest housing tension, and level of integration both with the context, with particular reference to the implementation of specific regional policies, and with interventions in relation to social residential buildings (integrated unitary system of housing services) also in terms of social mixité and diversification of housing supply and related services;
    - restoration and promotion of cultural, environmental and landscape assets, that is to say restoration and reuse of significant architectural remains, even if not directly bound, provided that they are connected and functional to the proposed regeneration programme presented; contiguity and/or proximity to historic centres or parts of cities belonging to the 'Città identitarie' initiative;
      - - outcome of the *'zero balance'* of the consumption of new land through recovery and redevelopment interventions of areas already urbanised or, if not built up, included in urban areas strongly consolidated, taking into account the importance of the interventions in terms of seismic safety and energy upgrading of existing buildings, also through their demolition and reconstruction;
        - activation of public and private financial resources, also taking into account the possible provision of areas or properties;
        - Involvement of private operators, including those from the third sector, with particular involvement and direct participation of stakeholders, as well as associations, particularly if they operate in the area of intervention;

- application, for the drafting of the proposal, of the BIM methodology, as well as innovative measures and models of management, support and social inclusion, urban welfare and activation of participatory processes.

The Programme provides for a category of proposals falling under the ‘*standard procedure*’ (maximum three per proposing body) eligible for funding up to EUR 15 million each; a category of ‘*high performance pilot projects*’, with high strategic impact on the national territory. The latter, characterised by a particular innovative force, especially in terms of urban regeneration, will be the subject of funding with additional resources, including those of the NRRP, as per European and national instructions, as they are oriented to the implementation of the *Green Deal* and the *Digital Agenda*. ‘*Pilot*’ proposals may be co-funded up to EUR 100 million each, for the 2021-2027 annual period, within the limits of the fundings.

**TABLE A.8.1 PINQUA, SUMMARY OF PROCEDURES, RESOURCES AND STANDARDS**

Category	Maximum contribution	Realisation time	Eligible expenses	Available Resources	Application standards
Standard Procedure	EUR 15 million for each proposal	2020-2033		EUR 853, 81 million of the fund pursuant to Italian Budget Law 160/2020, article 1, paragraph 443, according to the following scanning yearly: 2020: 12.18: 2021: 27.25: 2022: 74.07: 2023: 93.87: 2024: 94.42: 2025: 95.04: 2026: 93.29: 2027: 47.15: 2028: 48.36: 2029: 53.04: 2030: 54.60: 2031: 54.64: 2032: 54.64: 2033: 51.28:	
Pilot Procedure	EUR 100 million for each proposal	2021-2027	Technical expenses for design, verification, validation, works management, safety coordination during the design and execution phases, testing; Expenditures related to the implementation of the intervention subject matter of the proposal and provided for in the economic framework; Contingency expenses for a maximum of 10% of the total cost of the work and supplies for which funding is requested and only if included in the economic framework.	To these initial funds the following shall be added: EUR 2.8 billion, allocated in the NRRP (Mission 5 - Inclusion and Cohesion / Declination M5C2 - Social infrastructure, families, communities and third sector / Area of intervention 2 - Urban regeneration and social housing) for the 2020-2026 period; EUR 380 million of national resources for the 2027-2033 period.	The funding of at least one proposal per region is guaranteed Minimum share of funding to the SOUTH: 50% of NRRP funds 34% of total resources

The Programme as a whole interprets the complexity of the processes it intends to launch and develop, identifying a medium-long time span of 13 years (until 2033) for the provision of its effects. The objective is therefore a system of structural incentives that allows for adequate planning of the design, contracting and construction phases of the works themselves, in a renewed relationship of collaboration and trust between central and local authorities proposing the works.

It also encourages opportunities for co-funding by other local entities, integration with initiatives already underway, and the possibility of support from community and private resources. The following table summarises the time schedule and financial aspects related to the implementation of the objectives of the Programme.

On the other hand, with regard to the proposal approval process and funding deadlines, the time schedule is structured as follows:

**TABLE A.8.2 PINQUA, TIME SCHEDULE**

Category	Phases	Deadline
Standard Procedure	Deadline for the submission of proposals Phase 1 (preliminary project)	16.03.2021
	High Commission evaluation deadline	within 90 days
	Publication of the Programme Approval Decree	within 60 days
	Deadline for documentation submission Phase 2 (final project)	within 240 days
	Check deadline and clearance issue deadline	within 90 days
	Publication of the Approval Decree and of the Proposals definitively admitted to the Funding	within 60 days
	Convention / Programme Contract stipulation	within 120 days
Pilot Procedure	Deadline for proposal submission (final project, in one phase)	16.04.2021
	High Commission evaluation deadline	within 90 days

### **PINQUA: Standard procedure for proposals**

The picture that emerges from the proposals submitted is that of a strong need and drive for innovation on the issue of housing. In terms of numbers, the situation is as follows:

- 282 proposals received, for over 1,500 interventions;
- 141 different proposing bodies;
- total financing requested amounting to EUR 3,838 million.

Also the geographical distribution of the standard proposals justifies the choice of MIT (now MIMS) to launch an ambitious and open programme, as evidenced by the response of local authorities, which show a strong need for innovation with respect to the issues of public and social housing, involving without distinction many territories and areas of our country.

**TABLE A.8.3 PINQUA, STANDARD PROCEDURE PROPOSALS**

Territorial scope	Regions	Number of proposals	Requested funding (PHASE 1) expressed in €
South	Abruzzo, Basilicata, Calabria, Campania, Molise, Apulia, Sardinia, Sicily	112	1,518,012,832.18
Center	Emilia Romagna, Lazio, Marche, Tuscany, Umbria	77	1,244,471,776.39
North	Friuli Venezia Giulia, Liguria, Lombardy, Piedmont, Valle d'Aosta, Veneto	93	1,082,462,294.27

This is a satisfactory and promising outcome, for at least three reasons: it allows the constitution, beyond the concretisation of the proposal, of an archive of relevant projects - useful also for the future - with respect to the very topical theme of urban regeneration, considered an absolute priority in the field of territorial

policies; it helps to strengthen the role of cities and territory within the NRRP, placing it back at the centre of development policies; it confirms the thesis of the MIT (today MIMS) oriented to boost the proactive capacity of municipalities and regions through calls for tenders that put on the list proposals worth funding.

### PINQUA: High Performance Pilot Projects

Alongside the standard procedure are the so-called ‘*high-performance pilot projects*’, having a high strategic impact on the national territory, characterised by a particular innovative force especially in terms of urban regeneration. Under this category, as of the deadline of 04/16/2021, the following were submitted:

- 8 pilot projects, by 8 different territorial authorities, for a total requested funding of EUR 659,660,954.

**TABLE A.8.4 PINQUA, PILOT PROJECTS**

Proposing body	Proposed intervention	Requested funding expressed in €
Municipality of Milan	Milan, metropolis of districts. Infrastructure for habitability in public city districts	99,998,363
Municipality of Genoa	Caruggi, renewal of the historic centre	87,000,000
Municipality of Ascoli Piceno	15 interventions related to: social housing, international housing, public residence, multifunctional redevelopment and technological development	78,327,854
Municipality of Bari	Construction of a park in the infrastructural area and of the central station plate; regeneration of the complex of the former Rossani barrack, to be used as an integrated service hub for the district - home of citizenship	100,000,000
Municipality of Brescia	Tintoretto - The power of tower: demolition and reconstruction of the Tintoretto Tower	42,400,155
Municipality of Messina	Redevelopment of the southern zone areas designated for urban housing and service provision.	99,607,907
Municipality of Lamezia Terme	2021 Lamezia ‘Spazio Generazione’	100,000,000
Lombardy Region	Gratosoglio 2.0: sustainable strategies for a great public district	52,326,675

#### Common features of the proposals

### FOCUS

Although the evaluation of proposals by the High Commission is currently underway, it is possible to underline in advance some qualitative aspects emerging from the requests for funding, in order to establish a sort of active observatory of needs and expectations on the theme of housing by local communities, in line with the NRRP’s objectives:

- need for radical regeneration interventions on the public residential stock through energy retro-fitting and technological upgrading, in line with the proposals of ecological transition and physical, social and economic sustainability of the territory;
- demand for new types of housing, capable of responding adequately to the renewed needs of living and increase of digital connections as inherent factors of the residential space, consistently with an innovative vision of the public and social housing model;
- more intense integration between private residential spaces and public open spaces, with attention to the regeneration of degraded, abandoned or underused areas, towards a development that protects and defends the soil resource;
- importance of a careful and sensitive design towards open space and public green, also in view of functional synergies with urban and territorial areas with the presence of social housing;

- the need for new definitions of local mobility patterns, especially in terms of bicycle and pedestrian paths and the demand for services to support residential neighbourhoods, towards a model of a 15-minute city;
- a strong push towards integration of public intervention with private operators, especially investment funds and third-sector entities (representing around 25% of the sums deployed in the proposals submitted).

The proposed interventions fall within a complex geography of places and urban and territorial conditions, operating at different levels of intervention, from the territorial to the urban one up to the more punctual and building one. These include:

- historical centres and consolidated cores;
- historical villages in inland areas;
- 1960s-1970s residential district, often suburban ones;
- urban voids and decommissioned industrial areas
- natural edge areas and waterfronts (river, maritime, and lake);
- buildings confiscated from organised crime.

Within this diverse geography of interventions, three different approaches predominantly stand out:

- punctual interventions on strategic nodes;
- widespread interventions to build an urban system, also with respect to the ability to trigger large-scale transformations;
- discontinuous interventions on distant territories (belonging to different municipalities, adjacent or not) often characterised by similar or complementary functions, able to constitute integrated systems.

## OTHER FUNDING FOR SUSTAINABLE PUBLIC CONSTRUCTION

With regard to investments in public construction, the most significant other experiences attributable to the Ministry's initiative are:

- the implementation of the Recovery Programme of public residential housing owned by municipalities and former IACP referred to in art.4 of Law 80 of 2014, which has allocated EUR 815 million to make available, through ordinary maintenance (line a) or extraordinary maintenance and energy and technological efficiency (line b), the 48,244 (of which 5,716 line a and 42,488 line b) non-usable units surveyed by MIT in 2015 with the help of regional authorities. EUR 3 82,96 million (years 2014 - 2024) are allocated to the interventions of line b, EUR 321 million (years 2018 - 2029) are allocated to the exceeding interventions of line b. EUR 72,28 million scheduled years (2014 -2017) concerning the programme of line a) to date fully completed. As of 12/31/2019, a total of nearly 12,971 housing units has been made available, 4,961 of which required minor interventions, (line a) while 8,013 units required major extraordinary maintenance, line b). Due to the dilution over time of the available resources, the numerical size of the recovered housing units is only 25% of the total housing units surveyed as not usable due to the conditions of degradation, and to such units the housing units that in the five-year period have become unavailable due to lack of extraordinary maintenance must be added. Considering the high yield of this expenditure in terms of rapid supply of ERP housing units through contracts of simple replicability, it seems necessary and appropriate an investment to complete the coverage of the requirements ascertained at the time by regional authorities, equal to EUR 65 million.

- The FIA (*Fondo Investimenti per l'Abitare*), launched in 2011 with the contract between the Ministry of Infrastructure and the CDP Investimenti sgr (Deposit and Loan Funds), with which the former undersigned EUR 140 million in Fund shares, to which EUR 1 billion from CDP, EUR 500 million from banking groups, EUR 220 million from insurance groups and EUR 168 million from pension funds were added. Through the Integrated System of Real Estate Funds - SIF (29 operational funds) FIA's participation was enhanced up to a EUR 3 billion signature with targets of fixed return (2-3% of return above inflation).

As of 12/31/2019, the System was deployed for a total of 219 initiated interventions for a total of 15,100 social housing units and 5,200 beds in temporary and student residences. New projects have been launched during 2020. 75% of the housing units is intended for medium-to-long-term rental. The housing units are reserved for families with an income higher than that required to access Public Residential Housing-ERP, but who have difficulty in meeting their housing needs on the market, due to the presence of sales or rent prices too high or the lack of an adequate supply. SIF's offer is characterised by a prevalence of fixed-price rental (typically 30 to 50% below the market rent) and an innovative formula that also provides access to community welfare, i.e. a stable network of social services and human relations, based on the principles of sharing and solidarity, which represent a new type of housing.

At the moment, the interventions planned cover more than 100 municipalities and the absorption of the residential units built shows, as a whole, an outcome equal to more than 90% of the units available for rent and for sale by agreement and about 80% of the units for rent with a future sale agreement. The tangible beginning of the system has required very long trial-stage times and has seen little participation of initiatives located in the southern regions. This experience, on the other hand, has provided interesting benchmarks and can help to suggest some significant functional innovations.

Among other active programmes in the field of 'housing' promoted by the MIMS, the programme '*Safe, Green and Social. ERP ITALY. Energy, Seismic and Social Regeneration Programme*', proposed by the Ministry together with the Department of Casa Italia of the Presidency of the Council of Ministers, holds a special place. Again, this is an initiative to financially support interventions on the existing building stock, linked to the Missions of the NRRP (Mission M2). The Programme is aimed exclusively at public residential housing, addressing the housing needs of the most disadvantaged and marginalised segments of the population in the housing market. From this point of view, the implementing subjects correspond to the institutions that manage the assets, i.e. Regions, Municipalities, Istituti Autonomi Case Popolari (Public Housing Independent Organisations) or ATER (Territorial Board of Residential Housing), whichever named.

The context analysis and the choice of interventions will be made with the aim of responding to the needs of the most vulnerable part of society. In this perspective, the Public Housing Programme is in line with the European Union's guidelines, starting from the challenges posed by the *Green Deal* and is aimed at the sustainable renovation of the existing housing stock.

In addition, in order to address the challenge of resilience (to seismic, energy-environmental, and social risk), consistently with the goals of the NRRP, it is aimed at building homes that are seismically safer, more energy efficient, less polluting, and more socially equitable.

**FOCUS**
**Lines of Intervention**

The Programme provides for the adoption of profound reforms of the current modes of public intervention in the sector, to ensure both a significant implementation effectiveness of the NRRP resources and a new governance structure at the national level. The identification of the residential complexes on which to take action will take place through discussions with Regions, local authorities and property management bodies. Going into detail of determining the specific measures to be implemented in each building, it is necessary to expand and redefine the types of eligible interventions set forth by Article 4 of the Italian Decree-Law, dated 28 March 2014, No. 47 converted, with amendments, by Law No. 80 of 23 May 2014, which provides for the development of a '*Programme for the recovery and optimisation of properties and public residential housing units owned by municipalities, IACPs and public housing bodies having the same purposes as IACPs, both through the restoration of public housing units and through the extraordinary maintenance of housing also for the purpose of energy, static-plant upgrading and seismic improvement of buildings*'. Overall, it is estimated to intervene on at least one-tenth of the existing public building stock.

Currently, under the criteria defined by the Italian I.D. of 16 March 2015, the following lines of action are provided:

- minor interventions aimed at making vacant dwellings readily available through maintenance and energy efficiency works. Interventions of less than EUR 15,000 to be carried out within sixty days from the regional measure of granting the funding are considered of minor importance;
- interventions of restoration of '*public*' housing, or rather not assigned, and extraordinary maintenance to be implemented through the implementation of the following types of interventions, cumulatively eligible for funding in the limit of EUR 50,000 per housing:
  - energy efficiency of housing units through the improvement of energy consumption and the raise of at least one class of energy performance or the reduction of at least 30% of consumption recorded in the last two years of use of the building;
  - safety measure implementation of the building's structural components through interventions of seismic upgrading or improvement;
  - removal of products and building components with the presence of harmful and dangerous materials such as asbestos, lead, etc.;
  - overcoming architectural barriers;
  - extraordinary maintenance on the common parts of the housing unit and on those of relevance;
  - splitting and merging with renovation and replacement of parts of buildings, including structural parts.

The Programme has a financial availability of EUR 2 billion, according to the following financial schedule:

TABLE A.8.5 ANNUAL ALLOCATIONS

Amount of financing [M €]	Annual allocations					
	2021	2022	2023	2024	2025	2026
2,000.00	200.00	400.00	350.00	350.00	350.00	350.00

TABLE A.8.6: TIME SCHEDULE OBJECTIVES

Deadline	Activities
by the third quarter of 2021	Issuing a primary law containing criteria for the allocation of sums among the Regions and the Italian D.P.C.M. on allocation, in agreement with the Regions, with the identification of criteria for the planning of interventions
Q4 2021	Regional calls for proposals
Q1 2022	Receipt of the intervention schedule by Regions and adoption of the Decree (MIMS, in agreement with Casa Italia) of the Schedule approval
Q1 and 2 2022	Publication by Regions and/or implementing bodies of calls for tenders for the implementation of interventions or the purchase of real estate assets
from Q3 2022	Measures, issued by the Implementing bodies, for the assignment of the design and/or execution of works
from Q4 2022	Start of work and/or purchase of properties
Q4 2024	Completion of interventions with final inspection certificate transmitted by the Implementing bodies and payment of the balance of works, or purchase of properties related to the interventions (for at least 50% of the amount of the Plan)
Q4 2025	Completion of the interventions with final testing certificate transmitted by the Implementing bodies and payment of the balance of the work, or purchase of property related to the interventions (remaining 50% of the amount of the Plan)

The expected outcomes, starting from Q2 of 2026, are as follows:

- a surface area of ERP (Public Housing) buildings affected by energy efficiency measures of 4.5 million square meters, equal to about 1/10<sup>th</sup> of the entire surface area of the public housing building stock in Italy;
- a surface area of ERP buildings affected by seismic upgrading or improvement interventions of 1.4 million square meters, equal to about 1/30<sup>th</sup> of the entire surface area of the public housing building stock in Italy;
- an increase of the surface area reached through the purchase of ERP properties amounting to 450,000 square meters, equal to about 1/100<sup>th</sup> of the entire surface area of the public housing building stock in Italy;
- a reduction in energy consumption of about 27,000 toe, equal to a saving of 35% of the average consumption per accommodation subject to intervention, or about 1.8 toe;
- a reduction in CO<sub>2</sub> emissions into the atmosphere of approximately 80,000 (tons/year).

Finally, in compliance with Italian Decree-Law No. 59 of 6 May 2021, the draft decree law of the MIMS "Urgent provisions for the implementation of investments aimed at reducing the infrastructure divide, the decarbonisation of transport and the strengthening of the public housing stock, as well as on infrastructure and traffic safety" is being prepared, regarding the Supplementary Fund for a total of EUR 30,622.46 million for the years 2021-2026. This draft decree, in article 1, paragraphs 10 and 11, provides that through a Prime Ministerial Decree, based on a proposal from the Minister of Sustainable Infrastructures and Mobility, after consultation with the Casa Italia Department of the Presidency of the Council of

Ministers, and subject to agreement during the Joint Conference pursuant to article 8 of Italian Legislative Decree No. 281 of 28 August 1997:

- allocation indicators are identified for the regional distribution of the resources as per paragraph 6, taking into account the number of public housing units in each region, the size of the population living in the region and the size of the regional population living in seismic zones 1 and 2;
- the procedures for the eligibility for funding of interventions are established, with priority for those carried out in seismic zone 1 and 2, those that provide for joint actions of both seismic class improvement and energy efficiency, as well as those in relation to which at least the project of technical-economic feasibility is already available in accordance with Article 23 of motorway Italian Legislative Decree No. 50 of 18 April 2016;
- the methods for the provision of funding and its monitoring are regulated, through the system referred to in Italian Legislative Decree No. 229 of 29 December 2011.

### JUDICIAL FACILITIES AND PRISONS

Another building sector within the MIMS's competence, strongly pressed by the pandemic emergency, is that of judicial buildings, where urgent interventions are needed in terms of increasing numbers and capacity, as well as modernisation and efficiency of existing structures. It is now common knowledge that Italian prisons experience a condition of strong structural inadequacy that significantly hinders their essence, enshrined in the Constitution itself, as places of recovery and rehabilitation of the weakest subjects.

The COVID-19 emergency further brought to the forefront this situation, characterised by overcrowding and a lack of shared spaces and spaces dedicated to collective activities (work and/or recreation) that can offer opportunities for work and community reintegration. Most of the building stock, both old and new, is in a state of inadequate maintenance, with a shortage not only of relational spaces, but also of unsuitable hygienic standards. Moreover, the effects of overcrowding, together with the vast structural deficiencies of prison buildings, not in line with the most advanced research and experiments in the field of recovery, highlight even more the state of physical degradation of the buildings.

#### **FOCUS** Normative references

Art. 6-bis of the Italian Decree-Law No. 92 of 26 June 2014, converted, with amendments, by Law No. 117 of 11 August 2014, has provided for the closure, as of 31 July 2014, of the functions of the Government's Extraordinary Commissioner for Prison Infrastructures and the definition, by decree of a non-regulatory nature, of the measures necessary to ensure continuity of activities.

Paragraph 12 of art. 3 of the Italian Decree-Law No. 133 of 12 September 2014 provided for a new allocation of the available resources - amounting to EUR 452 million - in the Budget Forecast of the Ministry of Infrastructures and Transport and the Ministry of Justice according to the ordinary competences. With an inter-ministerial decree of 10 October 2014 (Ministry of Justice and Ministry of Infrastructures and Transport), interventions were reallocated between the two departments and changes and integrations to the prison construction program were also regulated, demanding to the Joint Committee the task of coordinating, planning and monitoring the implementation status of the program prepared by the Government's Extraordinary Commissioner.

The status of implementation of planned interventions is 75% of the entire prison building program.

**TABLE A.8.7 OTHER SPECIFIC INFRASTRUCTURES - INTERVENTIONS OF PRISON BUILDING OF MIT'S COMPETENCE WITH ASSIGNED RESOURCES**

	Location	Type	No. places	Amount allocated	Status	Body taking over management to complete the works
1	LECCE	NEW CONSTRUCTION	200	€ 12,722,395.70	WORKS BEING STARTED	Interregional Superintendency of Public Works for Campania, Apulia, Molise and Basilicata
2	TARANTO	NEW CONSTRUCTION RENOVATION	200	€ 12,725,475.71	WORK IN PROGRESS (50%)	Interregional Superintendency of Public Works for Campania, Apulia, Molise and Basilicata
3	TRAPANI	NEW CONSTRUCTION	200	€ 14,300,508.38	WORK IN PROGRESS (36%)	Interregional Superintendency of Public Works for Sicily and Calabria
4	MILAN OPERA	NEW CONSTRUCTION	392	€ 37,784,507.67	WORK IN PROGRESS (5%)	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
5	VICENZA	NEW CONSTRUCTION	200	€ 12,491,336.95	WORK IN PROGRESS (10%)	Interregional Superintendency of Public Works for Veneto, Trentino and Friuli Venezia Giulia
6	SUMONA	NEW CONSTRUCTION	200	€ 15,610,904.53	WORK IN PROGRESS (5%)	Interregional Superintendency of Public Works for Abruzzo and Sardinia
7	PARMA	NEW CONSTRUCTION	200	€ 13,137,927.41	WORK IN PROGRESS (5%)	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
8	SIRACUSA	NEW CONSTRUCTION	200	€ 13,479,346.36	WORK IN PROGRESS (66%)	Interregional Superintendency of Public Works for Sicily and Calabria
9	FERRARA	NEW CONSTRUCTION	200	€ 12,954,881.87	Waiver of contract, evaluation 2nd in ranking	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
10	CALTAGIRONE	NEW CONSTRUCTION	200	€ 14,437,648.20	WORK IN PROGRESS (25%)	Interregional Superintendency of Public Works for Sicily and Calabria
11	TRANI	NEW CONSTRUCTION	200	€ 13,207,765.26	WORK IN PROGRESS (3%)	Interregional Superintendency of Public Works for Campania, Apulia, Molise and Basilicata
12	BOLOGNA	NEW CONSTRUCTION	200	€ 12,817,112.19	EXECUTIVE PROJECT UNDER REVIEW	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
13	ROME REBIBBIA	NEW CONSTRUCTION	400	€ 27,588,156.50	EXECUTIVE PROJECT UNDER REVIEW	Interregional Superintendency of Public Works for Abruzzo and Sardinia
14	CATANIA	NEW CONSTRUCTION	442	€ 33,000,000.00	WORKS BEING AWARDED	Interregional Superintendency of Public Works for Sicily and Calabria
15	SAN VITO AL TAGLIAMENTO	NEW CONSTRUCTION	442	€ 29,969,774.00	WORKS BEING AWARDED	Interregional Superintendency of Public Works for Veneto, Trentino and Friuli Venezia Giulia
16	REGGIO CALABRIA - ARGHILLA'	NEW CONSTRUCTION		€ 20,000,000.00	EXECUTIVE PROJECT VALIDATED	Interregional Superintendency of Public Works for Sicily and Calabria
17	SASSARI - BANCALI	COMPLETION OF NEW CONSTRUCTION	465	€ 2,910,199.37	WORKS COMPLETED	Interregional Superintendency of Public Works for Abruzzo and Sardinia
18	CAGLIARI - UTA	COMPLETION OF NEW CONSTRUCTION	586	€ 10,987,510.43	WORKS COMPLETED	Interregional Superintendency of Public Works for Abruzzo and Sardinia
19	NOLA	NEW CONSTRUCTION	900	€ 75,000,000.00	LOCATIONING PRELIMINARY PROJECT PREPARED	Interregional Superintendency of Public Works for Campania, Apulia, Molise and Basilicata
20	ANCONA MONTACUTO	EXTRAORDINARY MAINTENANCE		€ 2,091,409.86	WORK IN PROGRESS	Interregional Superintendency of Public Works for Tuscany, Marche and Umbria
21	AUGUSTA	EXTRAORDINARY MAINTENANCE		€ 2,081,550.97	WORK IN PROGRESS	Interregional Superintendency of Public Works for Sicily and Calabria
22	ENNA	EXTRAORDINARY MAINTENANCE		€ 2,366,786.71	WORK IN PROGRESS	Interregional Superintendency of Public Works for Sicily and Calabria
23	PALERMO UCCIARDONE - SEZ V	EXTRAORDINARY MAINTENANCE		€ 3,096,260.36	WORK IN PROGRESS	Interregional Superintendency of Public Works for Sicily and Calabria
24	PALERMO UCCIARDONE - SEZ VI	EXTRAORDINARY MAINTENANCE		€ 1,525,673.49	WORK IN PROGRESS	Interregional Superintendency of Public Works for Sicily and Calabria
25	LIVORNO PAD. D	EXTRAORDINARY MAINTENANCE	122	€ 7,500,371.10	WORKS BEING AWARDED	Interregional Superintendency of Public Works for Tuscany, Marche and Umbria
26	LIVORNO PAD. C	EXTRAORDINARY MAINTENANCE	136	€ 9,502,626.60	WORKS BEING AWARDED	Interregional Superintendency of Public Works for Tuscany, Marche and Umbria
27	MILAN SAN VITTORE - RAGGI IV	EXTRAORDINARY MAINTENANCE	379	€ 14,000,000.00	PRELIMINARY PROJECT	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
28	MILAN SAN VITTORE - RAGGI II	EXTRAORDINARY MAINTENANCE				
29	NAPLES POGGIOREALE	EXTRAORDINARY MAINTENANCE		€ 4,245,546.13	WORKS BEING STARTED	Interregional Superintendency of Public Works for Campania, Apulia, Molise and Basilicata
30	LOMBARDY			€ 15,563,185.23	AWAITING INSTRUCTIONS FROM THE DAP	Interregional Superintendency of Public Works for Lombardy and Emilia Romagna
31	PIANOSA	EXTRAORDINARY MAINTENANCE	150	€ 5,000,000.00	AWAITING INSTRUCTIONS FROM THE DAP	Interregional Superintendency of Public Works for Tuscany, Marche and Umbria
			6614	€ 452,098,860.98		

The Joint Committee, established in 2014, given the failure of the objectives set by the commission management of prisons by the Ministry of Justice, noted that

only following the transfer of Penitentiary Building Funds to the MIT (now MIMS) and, in particular, to the decentralised structures of the Interregional Superintendencies for OOPPs (Public Works), it was possible to allocate EUR 261,643,092.60, against financial requirements of EUR 452,732,097.02, and start part of the interventions. In relation to the requests received from the Superintendencies for the OOPPs, the financial resources needed to complete the plan described in the above table were further made available as shown in the following table:

**TABLE A.8.8 FURTHER AND MORE RECENT FUNDING ON PRISONS**

Prison	Further funding in €
Verziano-Brescia	50,000,000
Opera-Milan	50,000,000
San Vito a Tagliamento	45,000,000
Nola	50,000,000
Various interventions on prison institutes within the competence of the Florence local Education Authority	10,000,000
<b>Total financial requirement</b>	<b>205,000,000</b>

For the 2019-2021 three-year period, resources have been allocated pursuant to Art. 1, paragraph 95, of Italian Law No. 145 of 30 December 2018, entitled "*State forecast budget for the financial year 2019 and multi-year budget for the 2019-2021 three-year period*", equal to:

- 2019: EUR 300,000.00 in surplus account;
- 2020: EUR 700,000.00 in terms of accruals and cash flow;
- 2021: EUR 1,000,000.00 on an accrual basis (forecast).

Schematically, it is possible to state that the requirement, with respect to prison building, mainly concerns: from a quantitative point of view, the current capacity of prisons and the problem of inadequate facilities; from a qualitative point of view, the maintenance, updating and innovation of design, with attention to the promotion of historical heritage.

Interesting, in this sense, are the contents of the SPACE I 2020 report of the Council of Europe, drawn up annually as part of the project *Statistiques Pénales Annuelles du Conseil de l'Europe* and published on 8 April 2021, which provides an interesting picture of the conditions of the penitentiary institutions in the 47 member states of the Council of Europe

**FOCUS****SPACE I 2020 Report**

The data contained in the Report, provided directly by the prison administrations of each State, refer to 31/01/2020, so they do not take into account yet the measures applied to deal with the spread of the COVID-19 pandemic within prisons:

- the most worrying factor in Italy is the overcrowding. In fact, compared to a formal capacity of 54,052 beds in detention facilities, which are actually reduced to 50,692 due to the unfit for use of 3,360 beds, there are 60,971 inmates. These numbers bring the overcrowding percentage to 120.3%;
- the growth rate of the detainee population, which currently stands at 101.2 detainees per one hundred thousand inhabitants, is on the rise compared with previous years. In fact, although in the long term there has been a decisive decrease, quantified in 12.4 percentage points of difference compared to the value of 2010, since 2016 there has been a turnaround that only in the last

year has corresponded to an increase of 1.6%. The Italian figure is lower than the average calculated for all the countries of the Council of Europe, equal to 124 inmates for every 100,000 inhabitants;

- lastly, the Report indicates the number of employees in the state prison administration, broken down by job description. In particular, the document shows that in Italy, out of 41,286 total employees, only 1.9% - that is to say 788 people - are employed in educational activities. This percentage is much lower than the average among all Council of Europe member states, which stands at 3.3%.

Lastly, some funding has been allocated to the MIMS in the NRRP that, under Mission 2 Green Revolution and Ecological Transition, component M2C3: Energy efficiency in public buildings, for EUR 0.346 billion concern judicial courts.

## FOCUS

### NRRP: Efficiency of court buildings

Given the complexity of the Italian justice system, contributing to the upgrading of facilities to ensure efficiency, resilience and technological delivery of services is essential to ensure the achievement of the country's objectives. In particular, the investment line aims to intervene promptly on inadequate facilities that affect the delivery of judicial service, allowing the creation of a renewed urban environment for the benefit of users and the entire community. The intervention focuses on the maintenance of existing assets, allowing the protection, strengthening and recovery of the historical heritage that often characterises the offices of the Italian administration of justice. In addition to energy efficiency, the programme also aims to:

- ensure the economic, environmental and social sustainability of the interventions through the use of sustainable materials and the use of self-produced electricity from renewable sources;
- adapt structures, reducing the vulnerability of buildings;
- carry out monitoring and measurement analyses of energy consumption aimed at maximising efficiency and minimising consumption and environmental impact.

The measure aims to intervene on 48 buildings by the middle of 2026 by making 290,000sqm efficient, with a saving of about 2,500 tCO<sub>2</sub> and 0.7 Ktoe per year and a consequent reduction in emissions of 2.4KtCO<sub>2</sub> per year.

From the NRRP it emerges the special attention assigned to the energy promotion and regeneration of judicial buildings and the recovery of the heritage concerning the related administrative entities. It can be stated that, most of the building stock, both old and new, is in a state of inadequate maintenance, with a shortage not only of relational spaces, but also of unsuitable hygienic standards. The objectives integrated in the document, particularly sensitive to new ecological and digital conditions, can be summarised as follows:

- Compliance with construction structures and buildings and reduction of seismic vulnerability, with attention to the regeneration of the historical and state heritage;
- rationalisation of consumption through the use of appropriate materials, consistently with the objectives of economic, environmental and social sustainability
- activation of appropriate analysis, aimed at increasing the energy efficiency of buildings and the consequent savings in consumption, also through the update of systems.

These aims, designed to address the serious structural inadequacy of the judicial building, intend to ensure better housing conditions and use of places of detention, as well as re-educational and collective services.

## **A.9 WORKS PLACED UNDER RECEIVERSHIP**

Article 9 of Italian Decree-Law No. 76 of 16 July 2020 provided for provisions aimed at reviewing, expanding and extending the discipline of extraordinary commissioners, as referred to in Article 4 of Italian Decree-Law No. 32/2019, known as ‘Unlocking Construction Site Decree’. Under these provisions, the criteria for identifying the works to be ordered are:

- high level of design complexity;
- particular difficulty in execution or implementation;
- complexity of technical-administrative procedures;
- significant impact on the socio-economic fabric.

The works placed under receivership, therefore, do not necessarily correspond with the priority interventions identified in the Infrastructure Annexes to the DEF, as these identification criteria do not completely correspond to the methodology for identifying priority requirements described in Paragraph III.4; in particular, not all works placed under receivership fall within the SNIT, but many are identified starting from local contexts. In this document, however, the interventions placed under receivership, have been highlighted among the priority ones.

An first list of 57 works placed under receivership, with an estimated value of approximately EUR 83 billion, of which about 44% for works and infrastructures in the South, led to the identification, by means of a specific Prime Ministerial Decree, of 29 Special Commissioners; these are

- 16 rail infrastructures;
- 14 road infrastructures;
- 12 public security offices;
- 11 water infrastructures;
- 3 port infrastructures;
- 1 Rapid mass transport infrastructure.

In June 2021 further 44 works to be unblocked through receivership were identified and sent to the Chambers for their opinion, for a further EUR 13.2 billion, of which:

- 15 rail infrastructures;
- 18 road infrastructures;
- 9 public security offices;
- 2 Rapid mass transport infrastructures.

With the positive opinion of Parliament, 101 works have been placed under receivership, for a total value of EUR 95.9 billion, of which EUR 28.7 billion in the North (30%), EUR 27.2 billion in the Centre (28%) and EUR 40 billion in the South (42%).

In addition to these, there is the placement under receivership of the safety measure implementation works of the motorway system consisting of the A24 and

A25 arteries, classified as of primary national interest in case of civil defense, whose commissioner was directly appointed by a special State law (Art. 206 Urgent interventions for the restoration and safety measure implementation of the A24 and A25 motorway section following the seismic events of 2009, 2016 and 2017 of Italian Decree Law 34/2020) with the task of implementing the intervention plan of over EUR 3 billion, already included in the Infrastructure Annex to the DEF of 2020.

Specifically, the Special Commissioners:

- directly perform the functions of contracting authority and operate as exception to law provisions, without prejudice to compliance with the mandatory constraints arising from the membership to the European Union;
- make any decision deemed necessary for the start or continuation of the works, even if suspended, with the most economically advantageous solution, in any case in compliance with the principles relating to the award and execution of contracts and concessions, energy and environmental sustainability, conflict of interests;
- carry out the activities of planning, design, contracting and execution of the necessary interventions.

The approval of projects by the Extraordinary Commissioner, in agreement with the Presidents of the territorially competent Regions, replaces, for all legal purposes, any authorisation, opinion, approval and clearance necessary for the start or continuation of the works, with the exception of the following:

- for those relating to environmental protection, for which the deadlines for the relevant procedures are halved,
- for those relating to the protection of cultural and landscape assets, for which the deadline for the adoption of the authorisation, opinion, approval and clearance is set at a maximum of sixty days from the date of receipt of the request, after which, should the competent authority fail to issue an opinion, the above mentioned acts are understood to have been issued.

Once the approval process has been completed, the Commissioner proceeds to award the works, also thanks to the opening of special accounting for operating expenses and the implementation of the interventions. Lastly, in order to accelerate and better monitor the progress of the works, the Commissioner may appoint a sub-commissioner.

The website of the Ministry of Sustainable Infrastructures and Mobility publishes the interventions placed under receivership, the implementation schedules and the profiles of the Commissioners appointed for each individual work.