

- Metropolitan cities and capitals of metropolitan cities;
- Municipalities capital of the Region;
- Municipalities with over 100,000 inhabitants;
- Municipalities (individually or through agreements between local authorities, in accordance with art.30 of TUEL) with a population equal to or less than 100,000 (only where the interventions solve serious existing critical issues for mobility duly argued);
- Regions with rapid mass transport systems not delegated to Local Authorities.

The final beneficiaries of the intervention are the urban population of the affected areas.

Timeline: The implementation period of the interventions of macro-group A will last 6 years, from 2021 to 2026 (cf. Table 3). The interventions will be progressively activated. The interventions of macro-group B and the specific timeline will be defined after the results of the expression of interest planned by January.

3.2.7 Sustainable mobility “Affrettati Lentamente”.

Challenges:

In 2017, private cars have been the most used vehicles in Italy for each typology of Municipalities (e.g. metropolitans cities, suburbs of the metropolitan area, municipalities with a different range of inhabitants). Sustainable mobility choices are more frequent in the municipalities in the center of the subways areas, especially due to the greater incidence of people who travel on foot for study or work reasons (24.5%) or who exclusively use public transport (22.8%). The bike is used above all in municipalities with over 50,000 inhabitants (3.2%). (ISTAT, 2018).

As noted, sustainable mobility plays a key role from many points of view (economic, environmental, passenger comfort).

To this extent, it is necessary to increment the level of dedicated infrastructures and services including the creation of cycle paths, the development of shared mobility and info-mobility. These measures are fundamental both for sustaining the increasing demand and to promote a “soft” mobility.

The project proposal addresses the challenges and priorities identified in the country-specific recommendations. In particular, it addresses point 21 of the Council Recommendations on Italy’s National Reform Programme 2020, which states that meeting the challenges related to the environment and climate change, including sustainable urban mobility, is an opportunity to improve productivity and create jobs while avoiding unsustainable practices. The project proposal is also consistent with the European Commission’s Report on Italy - 2020 which identifies sustainable transport as one of the priorities on improving environmental sustainability.

Objective

The intervention objectives is to support the development of infrastructures and services for sustainable mobility as an alternative or integration of existing public transport services. The intervention includes actions for the promotion of sustainable mobility through the promotion of modal shift in passenger transport, including the creation of cycle paths, the development of shared mobility and info-mobility.

The project proposal stems from the need to give continuity and systematise the actions promoted by the Ministry of the Environment to favour the propensity for modal change and improve air quality in the urban environment, reduce polluting and climate-altering emissions. Through the implementation of the project, the aim is to develop alternative and / or supplementary sustainable mobility services and infrastructures to local public transport services.

Implementation

The estimated total cost of “Affrettati lentamente” intervention is 80 million euros, with a maximum funding for each municipality of 2 million euros for the implementation of one or more measures covered by the expression of interest for a total of 40 projects to be financed.

The estimate is based on similar measures carried out in previous years through specific Ministry of Environment (MATTM) funding programmes; it would allow the funding of at least 40 projects proposed by as many Municipalities with the consequent dissemination of the know-how and achievement of results on most of the national territory.

The interventions will be identified through a publication of an expression of interest within the Q4 2021 and subsequent selection of projects according to a series of criteria, including environmental effectiveness, identification of the beneficiary municipalities (they are responsible for the implementation and will implement the projects). The admission ranking will be defined by the Q2 2022. The start of the work is Q4 2022 and the conclusion of the intervention by Q2 2026.

Target population: 150 municipalities of 50,000 inhabitants with 40 projects to be financed.

Timeline: The measure will last 5 years (from 2021 with the start of administrative procedures to 2026).

4. Green and digital dimensions of the component

a) Green Transition:

b) Digital Transition:

See Table 1 work in progress

5. Milestones, targets and timeline

See Table 2 work in progress

Below are presented all Milestones (M) and Targets (T) related to each Reform and Investment of this component 'Energy Transition and Sustainable Mobility'.

Reform 1. Simplification of authorization procedures for renewable onshore and offshore plants and new legal framework to sustain the production from renewable sources and time and eligibility extension of the current grants for renewable plants

- M1: By Q1 2021, a first proposal draft of the reform in order (i) to widen the eligibility perimeter and (i) to extend the grants availability period
- M2: By Q2 2021, a first consultation update to consolidate the first proposal draft
- M3: By Q2 2021, the final approval enactment
- T1: By Q4 2023, additional 6 GW awarded in the auctions, considering a time and eligibility extension of the current grants for renewable plants (PV plants, wind farms, offshore and repowering)
- T2: By Q4 2026, increase of net cumulative 10,5-15 GW of installed capacity in order to reach the NECP target
- T3: By Q4 2026, achievement of 2-3 Mton/y of CO2 reduction

Reform 2. New legislation providing a quota obligation system to use renewable gas for importers and producers of natural gas

- M1: By Q1 2021, primary regulation and implementing decree issued with notification to the European Commission
- M2: By Q3 2021, obligation to release a quota of renewable gas to all producers and importers of fossil natural gas

Reform 3. Smarter procedures for project evaluation in the local public transport systems sector with fixed installations and in the rapid mass transport sector

Reform 4. Adoption of national programs on air pollution control (in accordance with Directive (EU) 2016/2284 and with the Climate Decree Legislative Decree no.111/2019)

Investment 1. Development and support for the supply chain of renewables

1.1 Renewable Energy Sources (RES)

1.1.1 Support for the development of the authorization of projects such as project pv floating and wind farms offshore, projects that are developed on PA sites (disposed in the last 3 years), or are low ground consumption or combined with storage technology

- M1: By Q1 2021, Design of rules for access to benefits and definition of the implementing process
- M2: By Q2 2021, Preparation of call for tenders
- M3: By Q3 2021, Publication of call for tenders
- M4: By Q1 2022, Allocation of grants/loans
- Mn. Milestones from M2 to M4 to be repeated from Q2 2022 with a similar timing
- T1: By Q4 2026, increase of net cumulative 4,5-5 GW of installed capacity in order to support the NECP target
- T2: By Q4 2026, contribution to the achievement of 2-3 Mton/y of CO2 reduction

1.1.2 Support to the development of innovative integrated offshore renewable plants

- M1: By Q2 2022, obtaining all the required permits for Lidar installation from the Authority
- T1: By Q2 2022, completion of a wind measurement campaign with n.1 Lidar floating installation in the northern coast of Adriatic Sea
- T2: By Q3 2022, completion of a wind measurement campaign with n.1 Lidar floating installation located in the southern and western coast of Sardinia region and northern coast of Adriatic
- T3: By Q3 2022, completion of a wind measurement campaign with n.1 Lidar fixed installation on oil&gas platform in the northern coast of Adriatic Sea
- T4: By Q3 2022, completion of a wind measurement campaign with n.1 Lidar floating installation in the southern coast of Adriatic Sea
- T5: By Q3 2024, installation of a PV floating plant in the northern coast of Adriatic Sea with a total power installed of 100MWe.

- M2: By Q3 2024, Authorizations for the construction of electrical infrastructures obtained (Autorizzazione Unica Dlgs 387/2003)
- T6: By Q3 2024, installation of electrical infrastructure related to offshore renewable plants at northern coast of Adriatic Sea and with the chance to enhance the local grid
- T7: By Q3 2024, installation of a northern coast of Adriatic Sea energy system storage with a total power of 50MW/MWh
- T8: By Q2 2025, installation of southern Sardinia electrical infrastructure related to offshore renewable plants and with the enhancement of the local grid
- T9: By Q3 2025, installation of southern Sardinia offshore wind floating system uses an innovative pendulum system to restore stability and to minimize motions and final weight of the foundation

1.1.3 Promotion of RES for collective and individual self-consumption

- M1: By Q1 2021, definition of the rules for access to benefits and definition of the organizational structure necessary for receiving the requests submitted to the GSE
- M2: By Q2 2021, publication of the methodologies and periods within submit the applications for the benefits
- M3: By Q4 2026, allocation and distribution of public funding to the winners of the tender
- T1: By Q4 2026, achievement of the 2500 MW of new power generation, and validation through the GAUDI platform

1.2 Development of an Italian supply chain for renewable technologies production (PV cells and panels, and medium-large size wind turbines)

- M1b: By Q3 2021, Contract signature with technological partner to obtain the license for on-shore AeroGenerator of medium-high power
- T1b: By Q4 2021, 70% of the documents, specifications and drawings needed to start the production are completed
- M1a: By Q2 2022, Design for permitting and request filed
- T2b: By Q2 2022, 80% attendance to Technology transfer/training lectures
- M2a: By Q3 2022, Permissions obtained by the relevant Authorities
- M2b: By Q4 2022, procurement and delivery of the main components for prototype nacelle (gear box, generator) available for front runner assembly step
- M3a: By Q4 2022; Design specifications for procurement contracts
- M3b: By Q4 2022, factory ready to manufacture new components according to the technical specification
- M4a: By Q1 2023; Procurement contracts with suppliers for the Cell and Module lines. Procurement Orders placed over the PO List
- T4b: By Q1 2023, first nacelle assembled and tested according to the specifications
- T3b: By Q2 2023, nacelle assembled and tested according to the specifications
- M4b: By Q4 2023, certification for commercial purpose obtained in order to declare engine class
- T5b: By Q4 2023, first wind turbine is installed and first commissioning is done
- M5a: By Q1 2024, the tools needed to be installed in the Cell and Module manufacturing line are manufactured and ready for shipment by the Suppliers
- T6b: By Q1 2024, the assembly station for prototype is improved and other 2 stations are installed
- M6a: By Q2 2024, installation of the Cell and Module facility manufacturing tools is completed
- T7b: By Q3 2024, a small pre-series batch of 4 turbines is assembled. The process for the 4 pre-series turbines is organized for all 4 turbines at once
- T8b: By Q4 2024, the assembly stations for pre-series are improved and other 3 stations are installed
- M7a: By Q3 2024, the Cell and Module line is started up and ready for process set up
- T1a: By Q2 2026, the Cell line and Module lines are running firstly at the pace of 2 and then 3 GW/year production

1.3 Projects at local Level (Municipalities)

1.4 Reinforcement and digitalisation of power grid infrastructure

1.4.1 Installation of thermal energy storage systems

- M1: By Q2 2021, preparation of all the technical documentation required to obtain the permission to build the plant

- M2: By Q3 2022, obtaining all the necessary authorisation to install the thermal storage
- M3: By Q4 2022, final approval of the economical feasibility of the investment associated with the project
- M4: By Q1 2023, start of the execution and installation phase of the storage plant
- T1: By Q4 2025, installation of three thermal storage systems on a selected areas

1.4.2 Interventions to make electricity distribution networks smarter (Smart Grid)

- T1: By Q4 2026, interventions on 8000 MVA electricity distribution networks to increase the integration of renewable energy
- T2: By Q4 2026, interventions on 230 electrical substations to make them smarter

1.4.3 Interventions to increase the resilience of the distribution network

- T1: By Q4, 2026, Improvement of the resilience of 4000 km of the distribution network to extreme weather events

1.4.4 Installation of integrated EV charging stations

- M1: By Q1 2021, definition of rules for access to benefits and organization for receiving applications
- M2: By Q3 2021, publication of a public notice, communicating the opening of the counter for the presentation of applications for benefits
- M3: By Q4 2022, identification of tender winners and dissemination of benefits
- M4: By Q4 2025, verification of the operational characteristics of the charging point
- T1: By Q4 2026, installation of n° 222 EV charging stations on motorway
- T2: By Q4 2026, installation of n°1800 charging stations on sub-urban areas
- T3: By Q4 2026, installation of n° 3537 charging stations on urban center areas
- T4: By Q4 2026, installation of n° 100 charging stations connected to storage

Investment 2. Promotion of clean hydrogen production and use

2.1 Production of Hydrogen in brownfield sites

- M1: By Q3 2021, completion of the feasibility study and business plan
- M2: By Q2 2022, obtaining all the required permits & authorizations from the Authority
- M3: By Q2 2023, procurement completed and construction activities launch
- T1: By Q2 2026, construction of 5 to 10 Hydrogen Valleys in abandoned industrial areas

2.2 Production of Electrolysers and Development of an Italian Hydrogen Supply Chain

- M1: By Q4 2021, completion of the feasibility study and business plan to set up a development programme based on a modular approach to satisfy a wide range of application
- M2: By Q4 2022, 1st step of procurement and 1st step of construction activities completed, such as: feedstock management, assembling, prototype tests
- M3: By Q4 2023, construction and procurement completed & commissioning started, starting the manufacturing of the first prototype 1:1 scale
- M4: By Q4 2024, execution of experimental campaign on the prototype to verify its behaviours in different operating conditions and obtained the proper certifications
- M5: By Q4 2025, industrial production
- T1: By Q4 2024, construction of 1 Gigafactory for the production of key components and material for electrolysers
- T2: By Q4 2025, target annual capacity of 1 GW of electrolysers

2.3 Hydrogen Use in hard-to-abate industry

- M1: By Q4 2022, Engineering, permitting and 1st step of the procurement are completed
- M2: By Q2 2023, all the procurement phases are completed and construction activities
- T1: By Q2 2026, realization of a first prototype in the industry "hard to abate" by testing the use of green hydrogen
- T2: By Q2 2026, CO2 emission reduction equal to 0.283t/tsteel

2.4 Hydrogen Use in Heavy Goods Transport on Wheel

- M1: By Q4 2021, completion of the feasibility study and business plan of the project
- M2: By Q4 2022, obtaining all the required permits and authorisations
- M3: By Q4 2022 Secure contracts for the procurement of materials and for the supply of hydrogen through tank trucks
- T1: By Q4 2026, installation of 40 Hydrogen refuelling stations suitable for trucks

2.5 Hydrogen Use in Railway Mobility

- M1: By Q4 2021, completion of the feasibility study and business plan
- M2: By Q1 2022, engineering, permitting and 1st step procurement completed
- M3: By Q3 2023, procurement completed and construction activities & commissioning started
- M4: By Q4 2024, construction & commissioning completed
- T1: By Q2 2026, construction of 7 hydrogen refueling stations with the infrastructure necessary for the service of the diesel train fleet with hydrogen-powered trains.
- T2: By Q2 2026, reduction of emissions equal to 550 tCO₂ / year

2.6 Hydrogen Research & Development

- T1: By Q2 2026, 4 Projects in 4 different research lines are developed: mobility, transport, industry, residential and building

2.7 Hydrogen Combustion Technology Development for green power generation

- M1: By Q3 2022, design of new Gas Turbine combustion system (Burner Design & Config. Setup) are completed
- M2: By Q4 2024, combustion systems tested on field, though specific procedures
- M3: By Q2 2026, test in full scale test facility: burner tested and validated in single burner, full scale, full pressure and full temperature test rig
- T1: By Q2 2026, Burners able to use hydrogen, replacing NG, up to 70%
- T2: By Q2 2026, 40% CO₂ emissions reduction with respect to standard configuration operated with 100% of Natural Gas

Investment 3. Sustainable local transport, cycle paths and rolling stock renewal

3.1 Investment in soft mobility (National Plan of Cycle Path)

- T1: By Q4 2022, realization of 1,000 km of urban and metropolitan cycle paths
- T2: By Q4 2026, realization of 1,626 km of tourist cycle paths

3.2 Green local public transport and Rapid Mass Transport

3.2.1 Strengthening of the green transport industry, the related national supply chains related and smart mobility

- M1: By Q1 2021: adoption of a MiSE directive to define the guidelines and implementation methods of the intervention for the busses supply chain measure;
- M2: By Q2 2021: adoption of a legislative scheme with MISE/MEF for the introduction of incentives for the recreational craft support measure
- T1: By Q2 2023: a number of 60 companies will receive incentives from the busses supply chain measure;
- T2: By Q2 2024: a number of 200 companies will receive incentives from the recreational craft support action;
- M3: By Q3 2022: Decree of MEF establishing a new line of Smarter Italy on sustainable and smart mobility;
- T3: By Q1 2025: 20 innovation tenders for smart and sustainable mobility are launched through the Smarter Italy program (1 procurement per year).
- or outboard engines for recreational craft with four-stroke outboard engines.

3.2.2 Renewal of the regional public transport bus fleet with clean fuels vehicles

- M1: By Q4 2021, conclusion of administrative procedures for the purchase
- T1: By Q4 2026, dismissal of 63 EURO 0 buses
- T2: By Q4 2026, dismissal of 250 EURO 1 buses
- T3: By Q4 2026, dismissal of 4,826 EURO 2 buses

3.2.3 Renewal of the regional public transport railway fleet with clean fuels trains

- M1: By Q4 2021, conclusion of administrative procedures for the purchase
- T1: By Q4 2026, renewal of 59 electric powered trains
- T2: By Q4 2026, purchasing of 21 hydrogen powered trains

3.2.4 Renewal of the regional public transport naval fleet with clean fuels naval units

- M1: By Q4 2024, conclusion of administrative procedures for the purchase
- T1: By Q2 2025, 22 ro-ro pax and passengers only dual-fuel or full-electric powered ferries purchased

3.2.5 Digitalization of local public transport

- T1: By Q4 2026, 3 large cities where new ecosystem for connected vehicles is developed
- T2: By Q4 2021, 9 renewal of local public electric buses
- T3: By Q3 2022, 6 realization of charging infrastructure
- T4: By Q4 2022, realization of 40.30 kilometers digital lanes infrastructure and of traffic control system
- M1: By Q4 2021, verification and design of the platform and ex-ante assessment
- M2: By Q4 2023, national platform in shared test and adaptation of local systems
- M3: By Q4 2025, provision of C-ITS services
- M4: By Q2 2023, development of advanced ADAS systems
- M5: By Q4 2023, development of the information and management system of smart grids and MaaS installation

3.2.6 Development of Rapid Mass Transport systems (metro, streetcar, BRT)

- T1: By Q4 2026, realization of 57 kilometers of lines realized (tramway)
- T2: By Q4 2026, realization of 84 kilometers of lines realized (trolleybus)
- T3: Q4 2026, realization of 4 kilometers of lines realized (cableway)
- T4: Q4 2026, realization of 50 kilometers of lines realized (bus rapid transit system lanes)
-

3.2.7 Sustainable mobility (“Affrettati Lentamente”)

- M1: By Q4 2021, publication of expression of interest
- M2: By Q2 2022, identification of beneficiaries

6. Financing and costs

See Table 2 work in progress

3 M2C3 - Energy upgrading and renovation of buildings

1. Description of the component

Summary box

Policy area: Energy efficiency, redevelopment and safety of public and private buildings, including residential construction, climate policy, social policy.

Objectives: The objectives of this component are:

a) *Green Transition:* the energy requalification of buildings can reduce energy consumption by X ktoe per year, increase efficiency energy by X% compared to a normal scenario and reduce the GHG emissions of X tCO₂ per year during the period 2021-2026, improving environmental and health performance.

b) *Jobs and growth:* efficiency improvements and redevelopment of buildings stimulate investment, create new jobs, promote the adoption of digital technologies, improve the resilience of the real estate portfolio support SMEs.

c) *Social resilience:* the interventions to improve the efficiency of buildings aim to renovate the existing building stock and alleviate the problems of energy poverty by reducing energy bills, while improving the affordability of housing and living conditions.

Reforms and investments:

Outcome 1: Energy efficiency program for public buildings.

Investment 1.1: School building security and energy upgrading plan;

Investment 1.2: School building replacement and energy upgrading plan;

Investment 1.3: Energy efficiency program for State-property buildings;

Investment 1.4: Program “Safe, green and social” for public housing;

Investment 1.5: Energy upgrading and renovation of public buildings in metropolitan areas;

Investment 1.5: Upgrading courthouses.

Outcome 2: Energy and seismic efficiency program for private and public residential buildings.

Investment 2.1: Time extension of the 110% superbonus to improve energy efficiency and buildings safety.

Estimated costs:

EUR 29,230 million to be covered by RRF

M2C3 - Energy upgrading and renovation of buildings

	Resources (euro/mld)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
1. Energy efficiency program for public buildings	6.10	4.62	10.72	0.32	11.04
- Program for the safety and energy upgrading of schools	5.87	0.50	6.37	0.05	6.42
- Energy efficiency program for State-property buildings	-	-	-	-	-
- Realization of new Schools by building replacement	-	0.80	0.80	-	0.80
- Program "Safe, green and social" for public housing	-	2.00	2.00	-	2.00
- Energy upgrading and renovation of public buildings in metropolitan areas	0.23	0.87	1.10	0.25	1.35
- Upgrading courthouses	-	0.45	0.45	0.02	0.47
2. Energy and seismic efficiency program for private and public residential buildings	10.26	8.26	18.51	-	18.51
TOTAL	16.36	12.88	29.23	0.32	29.55

Note: (b) includes FSC existing resources, to be devoted to specific measures.

2. Main challenges and objectives

a) Main challenges

The objective of the component is to give a strong impulse to the renewal of the public and private building heritage, first of all to significantly increase its energy efficiency, an action necessary to achieve the decarbonisation objectives of the economy set by the National Plan for Energy and Climate (PNIEC). Energy efficiency also allows significant savings, first of all, for the PA since a substantial part of the resources will be directed to the renovation of public buildings, schools, as well as residential buildings, starting with those with the worst energy efficiency. The efficiency measures will also make it possible

to intervene on the seismic safety of buildings in the areas at highest risk and to wire the buildings in synergy with the provisions of mission 1 on digitization.

A similar efficiency and safety measure is also envisaged for private buildings, through a robust and targeted incentive scheme. In this case, as well as for public buildings, Italy is characterized by an antiquated housing stock and with energy standards below the European average.

- **Climate changes.** Environmental sustainability and the fight against climate change are the central challenges of the European Union. The ambitious goal of achieving "climate neutrality" in EU countries by 2050 is also pursued through a strategy that aims to improve the energy efficiency of buildings, given that the building stock is the largest energy consumer in Europe (40% of consumption) and responsible for 36% of greenhouse gas emissions. Therefore, a process of redevelopment of existing buildings helps to achieve significant energy savings, especially in Italy where the real estate portfolio has structural characteristics that are examined and detailed below. In the broader appreciation of the potential of real estate efficiency, the same EU measures provide an exemplary role for public buildings, establishing in the Directive 2012/27/EU on energy efficiency that, from January 1st, 2014, the 3% of the total covered usable area of the heated and/or cooled buildings owned by the central government and occupied by it, must be renovated/upgraded every year to meet at least the minimum energy performance requirements.
- **Age of the building heritage.** In Italy, as highlighted in the National Plan for Energy and Climate, buildings for residential use amount to about 12 million with almost 32 million homes. More than 60% of this building stock is over 45 years old, that is, it is prior to Law 373/1976¹⁶, first law on energy saving¹⁷. This partly explains the high number of properties in the worst energy classes. In fact, 51% of residential buildings and 39% of non-residential buildings are characterized by poor energy performance, in energy class F and G (Energy Performance Certificate)¹⁸. It follows that the same buildings are unprepared to protect occupants from high temperatures and more frequent natural hazards, in changing climatic conditions, taking into account that about 37% of the total surface of non-residential buildings (schools, offices, shopping centers , hotels) is located in climatic zone E¹⁹ and in

¹⁶PNIEC - National Plan for Energy and Climate.

¹⁷Of these buildings, over 25% record annual consumption from a minimum of 160 kWh/m² year to over 220 kWh m² (PNIEC).

¹⁸Enea (2020) WEEE - Annual Energy Efficiency Report.

¹⁹Presidential Decree 412/1993 divides the Italian municipalities into 6 winter zones, based on degree days, on which the legislative, construction and energy requirements of the building and the operating methods of the systems depend. The Italian climatic zones share similar average temperatures during the various seasons. The climatic zones are therefore areas of the Italian territory that theoretically have the same climate, for which it is, therefore, possible to imagine the same or similar conditions. They have been defined so as to be able to establish the daily duration and the periods of ignition of

general almost 70% in temperate or cold areas.

- **Need for investment.** Italy intends to pursue a reduction in consumption by 2030 equal to 43% of primary energy and 39.7% of final energy compared to the PRIMES 2007 reference scenario²⁰. As regards the absolute level of energy consumption by 2030, Italy aims to reach a target of 125.1 Mtoe of primary energy and 103.8 Mtoe of final energy, starting from the estimated consumption in 2020. To this end, provides for a minimum final consumption reduction target of 0.8% per year in the period 2021-2030, calculated on the basis of the 2016-2018 three-year period. According to the PNIEC estimates, the achievement of the further national decarbonisation objectives, of a reduction in the non-ETS sectors equal to -33% compared to 2005 levels, require a significant commitment in terms of incremental investments.
- **High initial costs:** The investment required to significantly improve energy performance by carrying out a "deep renovation" of buildings (with an improvement of at least 60% in energy efficiency)²¹ often requires high upfront costs compared to gradual savings on long-term energy costs, so finding suitable financing solutions is challenging. The difficulty of finding internally the financial resources necessary to carry out energy efficiency interventions or even just to carry out the necessary planning activities (energy audit, business plan) preparatory to the implementation of the interventions themselves, is the first "block" to overcome.

b) Objectives

The component consists of two lines. The first concerns the implementation of a program to improve the efficiency and safety of the public building heritage, with reference to schools, public housing, municipalities and judicial citadels. The second provides for the introduction of a temporary incentive for energy redevelopment and anti-seismic adaptation of private real estate, through a tax deduction equal to 110% of the costs incurred for the interventions.

The component is in line with the country-specific recommendations for Italy for 2020 (CSR-3), which suggest concentrating investments and investment policies on energy efficiency. Italy is on track to reach its climate and energy targets for 2020, but further efforts are needed to reach the targets for 2030. Italy has decided to bring the share of renewable energy to 30% of final consumption gross national energy consumption in 2030 and to reduce energy consumption by 9.3 Mtoe/year until 2030²². The construction

the thermal systems (heating) in order to contain energy consumption. The climatic zones (also called climatic bands) are identified on the basis of the degree days and are six (from A to F);

²⁰The benchmarks may change with the PNIEC update.

²¹On the basis of primary energy savings, the European Observatory of the building stock has identified the following levels of renovation: light (less than 30%), medium (between 30% and 60%) and deep (over 60%). More generally, to be considered 'profound' a restructuring would have to generate efficiency in terms of both energy and greenhouse gas emissions.

²²The PNIEC identifies an indicative breakdown of the various sectoral contributions to the overall ob-

sector plays a central role in achieving these goals. While the share of SMEs adopting energy efficiency measures in 2017 is slightly higher in Italy than in the EU as a whole, the residential sector is responsible for over a third of total energy consumption. In fact, most of the 14.5 million Italian buildings were built before the adoption of the criteria for energy saving and the corresponding legislation, suggesting the opportunity of a widespread diffusion also of prevention interventions, in consideration of the exposure to the seismic risk of our country.

In light of these considerations, all the investments of the component aim to directly support the interventions in energy efficiency, thus taking into account the CSR-3 of 2020.

The component also supports the European flagship project "Renovate" (COM (2020) 575), improving the energy efficiency of public and private buildings and contributing to the doubling of the renovation rate and the promotion of deep renovations by 2025.

The investment objectives of this component are threefold.

Twin transition:

Green transition. The buildings are responsible for the X% of energy consumption in 2019. The set of interventions proposed has the potential to reduce energy consumption by X ktoe per year, increase the annual energy efficiency of X% compared to a normal scenario and reduce greenhouse gas emissions by X tCO₂ per year in the period 2021-2026. Thanks to the hoped-for acceleration of the interventions to improve the efficiency of existing buildings and deep renovation with the application of performing technologies, all the investments of the component contribute to the reduction of 26 MtCO₂eq of emissions in the civil sector by 2025 (PNIEC objective). Furthermore, this component reinforces the achievement of the envisaged objective of increasing energy efficiency on the building stock of the central public administration equal to at least 3% per year of the useful covered area (Article 5 of Directive 2012/27/EU). Finally, the initiatives intend to increase the national percentage of nZEB (Nearly Zero Energy Building - buildings whose energy consumption is almost zero)²³ compared to the stock of existing buildings,

jective of reducing energy consumption of 9.3 Mtoe/year, highlighting in the civil sector a reduction of 5.7 Mtoe in energy consumption by 2030, to which they contribute in particular 3.3 Mtoe reduction in the residential sector and 2.4 Mtoe in the tertiary sector. The industrial sector would achieve a reduction in consumption of approximately 1.0 Mtoe. While the transport sector, thanks to interventions to shift private passenger mobility towards collective mobility and/or smart mobility, road-to-rail freight transport and vehicle efficiency, manages to contribute to the gap between the two scenarios by 2030 for about 2.6 Mtoe. These parameters may undergo changes following updates of the PNIEC.

²³The definition of NZEB is contained in the European Directive 2010/31/EU on the energy performance of buildings (art.2): “*building with very high energy performance, determined in accordance with Annex I. The very low or almost zero energy requirement should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on site or nearby*”. The Directive was implemented with the Decree-Law of 4 June 2013 n. 63, converted with amendments

which in 2019 are less than 0.03% on a regional basis, while, less than 10% of the total nZEB are existing buildings that have been redeveloped to achieve this standard (mainly small single or two-family buildings and schools)²⁴.

Including X% of climate spending (see Table 1), this component contributes to the goal of dedicating at least 37% of spending to climate goals, while respecting a just and sustainable transition.

Further benefits are expected from the extension of the useful life of the properties, such as resilience to climate change and environmental disasters, by profoundly renovating housing and the building stock with a long-term perspective. Part of this component is also the replacement of heating systems, based on fossil fuels, which contribute to excessive air pollution, with cleaner alternatives powered by renewable energy.

The application of green public procurement through this component will increase the demand for more sustainable buildings and provide a stimulus for eco-innovation.

Jobs and Growth:

Work and growth. Creating jobs, stimulating local investments and their positive spillover effects on the local economy, promoting the adoption of digital technologies and the integration of renewable energies. In general, building efficiency processes have shown to have wide repercussions in environmental, economic and employment terms, due to the plurality and breadth of economic activities that they feed - specialized audit services, installation and maintenance, diagnosis and ICT, standard products high - thus contributing jointly to economic growth, as well as to the reduction of energy consumption and polluting emissions. A multiplier of the positive effects induced by efficiency actions, in terms of income production and employment, is the improvement of the knowledge and skills of workers and service providers as well as the potential creation of a pool of new employment and development of new qualified professions, both at higher level and at university and post-university level.

Social resilience:

By increasing the rate of deep energy renovation of existing buildings, including public buildings and national residential buildings, including social housing, it is possible to achieve substantial savings for the public budget. Furthermore, the reduction of energy bills mitigates the risks of energy poverty, particularly in the poorest performing buildings occupied by low-income and vulnerable families, while improving living conditions, enhancing thermal comfort, removing harmful substances. (e.g. asbestos, old lead

by Law 3 August 2013, n. 90 (in GU 03/08/2013, n. 181).

²⁴In Italy, the number of nZEB buildings in 2018 amounted to approximately 1,400 buildings, mostly of new construction (90%) and residential use (85%), as indicated by the nZEB Observatory - ENEA, Costanzo E., Basili R., Hugony F., Misceo M., Pallottelli R., Zanghirella F., Labia N., 2019. Observatory of nearly zero energy buildings (nZEB) in Italy 2016-2018.

pipes), improving facilities, ensuring that redeveloped housing units remain affordable for low-income families.

c) National strategic context

In general, in line with the national strategic objectives (PNIEC) and in the broader European regulatory and policy framework (Clean energy package) there is the potential to significantly reduce energy consumption in the building sector, through a huge program of interventions of redevelopment aimed at improving energy efficiency, capable of making a significant contribution to achieving climate neutrality by 2050.

3. Description of the reforms and investments of the component

1) Energy efficiency program for public buildings.

Investment 1.1: Structural rehabilitation of school buildings - School building security and energy upgrading plan

Challenges: The average age of the school structures clearly shows the need for a major requalification plan, in the awareness that the need to guarantee the quality of teaching also passes through the requalification and innovation of the learning environments, as also highlighted in the "2019 School Building Report" of the Agnelli Foundation. Starting from the data from the School Building Registry of the Ministry of Education, the Report deepened the analysis of 39,000 active buildings (about 150 million square meters), highlighting that school buildings in Italy have an average age of 52 years with strong regional heterogeneity, and that two out of three date back to more than 40 years ago. Considering that many of them are no longer adequate from the point of view of safety and sustainability and that most of them are still lacking also from the point of view of energy efficiency (only 38% of these buildings are equipped with double glazing, just 12% have external wall insulation and just over 25% are equipped with photovoltaic panels), the investment focuses mainly on the renovation, safety and energy requalification of these buildings, as well as the digitisation of learning environments through the internal wiring of schools.

Objectives: The goal is to create an energy efficiency program, seismic adaptation and safety of part of the school buildings, including digitization of the learning environments through the internal wiring of the schools, in such a way as to favor a progressive reduction of energy consumption and climate-altering emissions, an improvement in energy classes, an increase in the seismic safety of buildings and the digitization of learning environments. In addition, the program will promote participatory planning, involving the subjects who live in these places every day (teachers, students and the school community), the development of the territory and the enhancement of services to the community, the employment effects on companies in the sector.

The rate of renovation of the surface of the school buildings that is intended to be carried

out is equal to 20% of existing assets, thus reaching the share of 50% overall, considering the starting situation equal to 30% of buildings already efficient and safe. The proposed redevelopment plan is part of the reform of the school building reorganization, started with the establishment in 2012 in the budget of the Ministry of Education of the Single Fund for school building, and continued with the definition of three-year programs on the basis of annual plans drawn up by the regions. Up to now, investments of over 8 billion euros have been favored with the implementation of over 14,000 interventions.

The proposed redevelopment plan aims to renovate an area of X sqm of school buildings. The building renovations undertaken will result in a reduction in energy consumption (toe) of at least X%, passing from X toe to X toe, with an increase of X m³ surface area of schools with increased energy qualification by 2026.

The energy savings achieved will reduce annual greenhouse gas emissions by X tCO₂ and it will have significant positive social implications by improving learning conditions in schools.

Implementation: The program manager is the Ministry of Education, which is responsible for authorizing, monitoring and reporting on the interventions. The implementation of the interventions and works is the responsibility of the local authorities (Municipalities and Provinces) owners of public buildings used for school use which are also responsible for implementing the monitoring data on the information system. The Ministry of Education, in consideration of the investments in progress, has already defined a monitoring and reporting information system (GPU) on the model of those used for the reporting of European structural funds. In addition, the system also records the pre and post operam project indicators and is connected with the National Registry of the school buildings and with other national databases (eg BDU, BDAP). For the purposes of reporting and monitoring the works, on-site checks are also envisaged through the use of the school building task forces of the Agency for territorial cohesion.

Timeline: The implementation time is expected to start in 2021 and will last until 2026.

Investment 1.2: Construction of new schools through building replacement - School building replacement and energy upgrading plan

Challenges: The low energy performance, linked to the age of the school building heritage, where they cannot be adequately improved with a redevelopment of existing buildings (e.g.: buildings with a very high average age or in the case that the cost of demolition is demonstrated compared to that of the improvement), can be effectively addressed with a plan for the construction of new schools through a progressive building replacement, especially in areas at greatest seismic risk, to ensure that safe, comfortable and innovative environments are available, also in consideration of the need for support teaching based on new methodologies.

Objectives: The objectives of the program concern the progressive building replacement of a part of the old and not very innovative school patrimony; the construction of new modern, welcoming, innovative and sustainable structures from an environmental and energy point of view, in such a way as to favor the reduction of consumption and polluting emissions, the increase in the seismic safety of buildings and green areas and the digitization of learning environments through the internal wiring of schools; the participatory planning of learning environments, involving the subjects who live in these places every day (teachers, students and the school community), in such a way as to positively affect the teaching and learning of students; the development of the territory and the enhancement of services to the community;

The building replacement plan aims to intervene on n. x school buildings (x% compared to existing assets), equal to an area of x sqm.

The actions undertaken will lead to a reduction in energy consumption (toe) of at least xx%, passing from x toe to x toe, with an increase in energetically redeveloped surface equal to x m³ by 2026.

The energy savings achieved will reduce annual greenhouse gas emissions by x tCO₂ and it will have significant positive social implications by improving learning conditions in schools.

Implementation: The program manager is the Ministry of Education, within the terms and in the manner indicated in the previous section, relating to the implementation of the investment 1.1.

Timeline: The implementation time is expected to start in 2021 and will last until 2026-

Investment 1.3: "Safe, green and social" for public housing

Challenges: Home represents a fundamental element for consolidating and relaunching welfare measures, especially in a moment of extreme social exposure. To face the challenge of resilience towards seismic, environmental and social risk, a public housing program will be established aimed at creating, through redevelopment interventions, seismically safer homes and at the same time reducing their polluting emissions.

Objectives: The objective of the program is to support energy efficiency, seismic improvement and the reduction of management costs of the housing stock of national public housing. Overall, for energy efficiency it is estimated to intervene on approximately 10,200,000 m², representing 1/5 of the entire surface of the public residential building stock in Italy; for the seismic improvement it is estimated to intervene on about 1/5 of the value indicated above, about 2,000,000 m², starting from the assumption that almost half of the national territory falls into categories 1 and 2 of seismic classification, mostly areas with a low population density thus not including the large metropolitan areas,

where most of the public residential buildings are located.

The expected results aim to ease the transition of energy class from class G (buildings with the worst performance) to class E and the seismic improvement of the entire surface subject to intervention. A reduction in consumption of at least xx%, with a variation from x toe per year post investments.

The savings achieved through building renovation will reduce annual greenhouse gas emissions by x tCO₂ and will have significant positive social implications by improving housing conditions and promoting, where appropriate, the participation of residents of social housing units.

Implementation: The reference for coordinating the project is the Presidency of the Council of Ministers - Home Italy Department. The intervention priority will be given to the buildings with the worst performances (those with an EPC class F and lower).

The control room, set up at the Casa Italia Department, with the participation of the Ministries directly concerned (MEF and MIT) and the Regions, has general guidance and liaison tasks. The Casa Italia Department and the Regions ensure, on an operational level, monitoring during construction, to be carried out with an intense presence / reminder action on the territory and at the implementing bodies, aimed at identifying specific critical issues and promptly implementation of effective and practicable operational solutions.

During the operational phase, a control task force will be set up with the presence of ANAC, CdC, GdF, for the execution of anticipated control activities.

Timeline: The implementation time is expected to start in 2021 and last until 2025.

Investment 1.4: Energy efficiency and redevelopment of public buildings in metropolitan areas

- Projects being defined with ANCI, which concern the redevelopment of municipal-owned buildings for social uses. -

Investment 1.5: Improvement of judicial citadels

Challenges: To increase the resilience of the judicial system - linked to the issues of energy efficiency / anti-seismic consolidation of buildings - and fill the lack of functional spaces essential for making judicial activity efficient and effective, a program is proposed for the implementation and efficiency of the so-called "Judicial citadels". The interventions for the construction of the citadels have the objective of generating a concrete and visible improvement of the services provided to citizens, as well as strengthening the presence of the State and democratic institutions in urban contexts often burdened by

conditions of economic and social hardship.

Objectives: The program aims at redeveloping and enhance the real estate assets of the administration of justice in an ecological and digital manner. Among the primary objectives there is also the reduction of urban land consumption, combining into unitary buildings both the main functions and the services attached to each judicial office. Almost all the projects will insist on the existing heritage and therefore on maintenance, allowing the protection, enhancement and recovery of the historical heritage that often hosts the offices of the Administration, redeveloping the existing ones, rationalizing consumption and ensuring the economic, environmental and social sustainability of the interventions through the use of sustainable materials and renewable energy.

The milestones are the identification of the contracting parties and the relative stipulation of contracts. They measure the completion of all the preparatory phases for the operational start-up of the activities. As a time horizon, the achievement of this intermediate step is set at the fourth quarter 2023, due to the complexity of the interventions to be carried out. The specific target of the program is estimated in at least 40 buildings to be redeveloped, including the construction of the judicial citadels.

Implementation: The program manager is the Ministry of Justice. The implementation of the investment proposal envisages the following macro activities: signing of the memorandum of understanding between the various administrations involved in which objectives, responsibilities and roles are established; design of the work, which includes, in addition to a series of preliminary investigations (geological, structural), three levels of subsequent technical investigations (technical and economic feasibility project, final project and executive project), the final result of which is the drafting of the executive project; assignment of the execution of the work, in which the tender notice will be published for the assignment of the construction works of the citadel and has as its objective the selection of the person who will carry out the work, concluding with the signing of the contract; execution of the work, which is the construction phase of the judicial citadel and begins with the delivery of the works and ends with the issue of the certificate of completion of the works; the technical-administrative testing, in which a third party is responsible for certifying that the object of the contract, in terms of performance, objectives and technical-economic and qualitative characteristics, has been carried out and performed in compliance with the provisions and contractual agreements, and ends with the issue of the test certificate.

Timeline: The implementation time is expected to start in 2021 and will last until 2026.

2) Energy and seismic efficiency program for private and public residential buildings.

Investment 2.1: Extension of the superbonus to 110% for energy efficiency and building safety

Challenges: In order to face the challenge of the high initial costs of the renovation of buildings and the long payback periods, it is intended to extend the recently introduced 110% Superbonus measure (Article 119 of the Relaunch Decree)²⁵ to finance the energy and seismic requalification of residential buildings. The support will be provided in the form of a tax deduction, available for those who intend to carry out renovations / energy requalification of the building, such as those of thermal insulation of building envelopes, replacement of winter air conditioning systems and reduction of the seismic risk of buildings, as well as the installation of solar photovoltaic systems and infrastructures for charging electric vehicles. This tool is aimed at stimulating local economies and recreating lost jobs, both along the entire construction chain and in the production of goods and services for housing, as well as for the weakest categories most affected by the pandemic.

Objectives: The benefit is for expenses incurred for interventions carried out on common parts of buildings, on functionally independent real estate units and with one or more independent accesses from the outside, located inside multi-family buildings as well as on individual real estate units. The objective of the initiative is to extend the Superbonus measure, from the current 2021 until 2023, which finances energy redevelopment and seismic risk reduction works of national residential buildings at no cost, thanks to the operating mechanism of the subsidy, which raises the deduction rate for expenses incurred to 110%. The extension of the measure aims to triple the positive effect - in terms of annual energy savings generated by the energy requalification interventions - stimulated by the normal Ecobonus, shifting to deep redevelopment interventions. The eligibility of the interventions is conditioned by the improvement of at least two energy classes of the building or of the real estate units located inside multi-family buildings or, if this is not possible, the achievement of the highest energy class before and after the intervention, to be demonstrated through the certificate of energy performance (APE). Two categories of intervention are admitted to deductions of 110%: the "driving interventions" the achievement of the highest energy class, to be demonstrated through the energy performance certificate (APE), before and after the intervention. Two categories of intervention are admitted to deductions of 110%: the "driving interventions"²⁶ and the "driven interventions", the latter are admissible on condition that they are carried out jointly with at least one of the driving interventions. The objective is equal to 3 million square meters redeveloped per year, corresponding to approx 1% of the total area occupied by residential buildings.

Furthermore, the expected results aim to triple the annual savings generated by the

²⁵The measure was introduced in the "Relaunch" emergency package, formally converted into law on 18 July 2020, with the aim of contributing to the relaunch of the Italian economy in response to the COVID-19 crisis.

²⁶The driving interventions concern the building envelope, requiring an external insulating coating for an area of at least 25% of the building and the systems.

Ecobonus, quantified in 0.3 Mtoe of additional annual savings from new interventions, starting from a baseline of current level of energy savings generated by the Ecobonus equal to 0.1 Mtoe of additional annual savings from new interventions.

The milestone identified is the approval of the extension rule of the Superbonus measure for interventions carried out until 31 December 2023.

Implementation: The body in charge of the tool is the Ministry of Economic Development and tax bodies (Revenue Agency). The implementation procedures envisage a tax deduction of 110%, to be divided among the entitled parties in 5 annual installments of the same amount, within the limits of the capacity of the annual tax deriving from the tax return. In order to ease the generalized use of the measure, the facilitation mechanism provides for the possibility, instead of the direct use of the deduction, to opt for an advance contribution in the form of a discount from the suppliers of the goods or services or, alternatively, for the assignment of the credit corresponding to the deduction due.

In addition to the formalities ordinarily provided for tax deductions, for the purposes of using the incentive, the taxpayer must also acquire the approval of the documentation certifying the existence of the conditions that give the right to the tax deduction, including sworn certification technique relating to energy efficiency and seismic risk reduction interventions by qualified technicians and the attestation of the adequacy of the expenses incurred in relation to the subsidized interventions based on specific cost tables.

The mechanisms activated for some time for the Ecobonus, the Sismabonus and the Superbonus will be used for the monitoring and verification of the targets.

Target population: Condominiums, Individuals, outside the exercise of business activities, arts and professions, owners of the property object of the intervention, autonomous public housing institutes (IACP) or other institutions that meet the requirements of European legislation on "in house providing", undivided housing cooperatives, non-profit organizations and voluntary associations, amateur sports associations and clubs.

Timeline: The implementation time is expected to be in the fourth quarter of 2023 (December 31, 2023) (see Table 2 for details). Specifically, the measure applies to expenses incurred up to 30 June 2022 and up to 31 December 2022 for IACPs. It can be applied for a further six months in the cases of works carried out by condominiums and IACP when at least 60% of the works have been carried out before the expiry date of the measure. In order to give more time for more complex interventions, it is planned to extend the application of measure (i) for the IACP to 30 June 2023, extended by a further six months when at least 60% of the works have been carried out; and (ii) for condominiums up to 31 December 2022, regardless of the completion of at least 60% of the works.

4. Green and digital dimensions of the component

a) Green Transition:

Construction as a whole - housing, workplaces, schools or other public buildings - is the largest consumer of energy in the EU and a major contributor to carbon dioxide emissions. Overall, buildings in the EU are responsible for 40% of energy consumption and 36% of greenhouse gas emissions, mainly due to construction, use, renovation and demolition.

In Italy, as highlighted in the National Energy and Climate Plan, over 60% of the buildings for residential use were built prior to Law 373/1976, the first law on energy saving, and of these buildings, in addition to 25% recorded annual consumption from a minimum of 160 kWh/m² year to over 220 kWh/m². For national non-residential buildings - schools, offices, shopping centers, hotels, hospitals - the PNIEC reports the estimated average consumption for the different uses and climatic zones, highlighting, among other things, the most energy-intensive buildings, such as for example hospitals, with average electricity consumption of 303 kWh/m² and thermal consumption of 342 kWh/m².

Buildings, responsible for greenhouse gas emissions due to significant energy consumption, must therefore become more resilient as they are particularly vulnerable to the impacts of climate change. In line with EU guidelines, the achievement of ambitious emission reduction targets - up to climate neutrality by 2050 - significantly contributes to the construction of energy-efficient, sustainable buildings equipped with key enabling technologies (for example, advanced and sustainable building materials, digital interconnections). Building renovations improve energy performance and increase the use of renewable energy (for example, using solar photovoltaic systems, heat pumps),

Therefore, including the X% of climate expenditure (see Table 1 below), this component contributes significantly to the 37% target set by this regulation (proposal). The component also contributes to wider environmental objectives with an environmental expenditure equal to X% (see Table 1 below).

In addition, all investments foreseen in the component contribute to the green transition, taking into account the climate and environmental objectives defined in Regulation (EU) 2020/852 (Taxonomy Regulation) and the mitigation of climate change. The investments, in fact, concern the construction and renovation of energy and resource efficient buildings, with particular attention to environmental sustainability, as well as to technological innovation with a view to economic resilience.

b) Digital Transition:

- in progress ... -

See Table 1 work in progress

5. Milestones, targets and timeline

See Table 2 work in progress

6. Financing and costs

See Table 2 work in progress

Cost estimation method

Investment 1: Structural rehabilitation of school buildings - School building security and energy upgrading plan

Costs defined on the basis of national three-year programs and annual plans drawn up by the Regions. three-year programming of the Ministry of Education.

Investment 2: Construction of new schools through building replacement - School building replacement and energy upgrading plan

Costs defined on the basis of national three-year programs and annual plans drawn up by the Regions. three-year programming of the Ministry of Education.

Investment 3: "Safe, green and social" for public housing

For the housing stock of public residential buildings, the method of estimating costs for energy efficiency interventions took into account the implementation of a typical intervention that ensures a passage of energy class from class G to class E (e.g. : 1970s building , centralized system, light fixture, with more than 30 real estate units). Data provided by Federcasa and a medium-sized Aler were taken as a reference: the average costs of an energy efficiency intervention with a double class jump amounted to € 127 per sqm.

For seismic safety, on the other hand, reference was made to the average costs for interventions on the residential building heritage sustained during the 2009 earthquake emergency in L'Aquila and the White Paper for the reconstruction of the territories hit by the earthquake of 6 April 2009. In this document the costs of repairs on damaged buildings are compared with the costs that would be incurred on intact buildings; estimating an average cost on intact buildings of 350 € per sqm.

Investment 4: Energy efficiency and redevelopment of public buildings in metropolitan areas

[to be defined...]

Investment 5: Efficiency of judicial towns

[to be defined ...]

Investment 6: Extension of the super bonus to 110% for energy efficiency and building safety

The estimates were made taking into account the average costs for the energy and seismic upgrading of buildings recorded by the Ecobonus and Sismabonus incentive measures already in place for years, as well as the energy savings obtained from the application of the eco-bonus.

4 M2C4 - Protection of land and water resources

1. Description of the component

Summary box

Policy area: Protection of the territory and of the water resource, fight against hydrogeological instability, sustainable irrigation and reforestation

Objectives: The safety of the territory, intended as the availability of water resources, the elimination of soil and water pollution and the mitigation of hydrogeological risk, is a fundamental aspect for protecting the health of citizens and for attracting businesses, investors and tourism.

The objectives of this component are:

(i) Prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory in urban areas;

(ii) Guarantee the security of water supply for drinking, irrigation and industrial purposes and the reduction of water dispersions;

(iii) Ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters.

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

Jobs and growth: The fragility of the Italian territory and the stress on water resources in terms of both quantity and quality are critical issues that determine a structural economic weakness. The safety of the territory and the efficient and sustainable use of natural resources are therefore preparatory elements for the socio-economic development of the country.

The investments related to this component will contribute to creating and maintaining a significant number of jobs and to both local and national economic growth. The prevention of hydrogeological instabilities and an efficient integrated water service are necessary conditions for the health and quality of lives of citizens, for the establishment and maintenance of productive activities in the territories, and for the attraction of tourism. Furthermore, many of the proposed interventions, especially those of a structural nature, involve the opening of construction sites that generate jobs.

Social resilience: The measures envisaged by this Action will contribute to increase investments in the management of water resources in the South, in order to reduce the Water Service Divide of the South compared to the Center - North of the country. The internal areas of the country will be interested by investment priorities, in particular those related to the irrigation sector.

Reforms and investments:

Outcome 1: Prevent and combat the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory in urban areas.

Reform 1.1: Simplification and acceleration of the procedures for implementing interventions against hydrogeological instability;

Investment 1.1: Structural and non-structural interventions for flood risk management and hydrogeological risk reduction (including innovation and digitization of territorial monitoring networks);

Investment 1.2: Urban Forestry;

Investment 1.3: Interventions for the resilience, the enhancement of the territory and the energy efficiency of the Municipalities;

Outcome 2: Guarantee the security of water supply for drinking, irrigation and industrial purposes and the reduction of water dispersion.

Reform 2.1: Simplification of legislation and strengthening of Governance for the implementation of investments in the water supply infrastructure;

Reform 2.2: Revision and strengthening of the governance model of reclamation consortia;

Investment 2.1: Investments in primary water infrastructures for the security of water supply1;

Investment 2.2: Investments in the resilience of the irrigation agro-system for a better management of water resources (including digitalization and technological innovation of distribution networks;

Outcome 3 Ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters;

Reform 3.1: Measures for the full implementation of the assignments for the Integrated Water Service;

Investment 3.1: Investments aimed at reducing losses in water distribution networks, including digitization and monitoring of networks;

Investment 3.2: Investments in sewerage and wastewater treatment;

Investment 3.3: Interventions in port areas to fill the deficit of facilities for the management of waste collected at sea.

Estimated costs:

EUR 14,830 million to be covered by RRF

M2C4 - Protection of land and water resources

	Resources (euro/mld)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
1. Measures to counter hydrogeological risks	3.36	0.25	3.61	-	3.61
2. Urban forestry	0.03	0.30	0.33	0.20	0.53
3. Sustainable forestry management and rural land maintenance (*)	-	-	-	-	-
4. Sustainable management of integrated water services	1.46	2.92	4.38	-	4.38
- <i>Primary water infrastructure for the security of water supply</i>	<i>1.46</i>	<i>0.90</i>	<i>2.36</i>	-	<i>2.36</i>
- <i>Resilience of the irrigation agro-ecosystem</i>	-	<i>0.52</i>	<i>0.52</i>	-	<i>0.52</i>
- <i>Measures to reduce losses in water distribution networks, including their digitalization and monitoring</i>	-	<i>0.90</i>	<i>0.90</i>	-	<i>0.90</i>
- <i>Sewerage and wastewater treatment</i>	-	<i>0.60</i>	<i>0.60</i>	-	<i>0.60</i>
5. Resilience, safety and energy efficiency of the municipalities	6.00	-	6.00	-	6.00
6. Port area facilities for the management of waste collected in the sea	-	0.50	0.50	-	0.50
TOTAL	10.85	3.97	14.83	0.20	15.03

Note: (b) includes FSC existing resources, to be devoted to specific measures.

2. Main challenges and objectives

a) Main challenges ²⁷

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

- According to the data collected by the Higher Institute for Environmental Protection and Research (ISPRA) and reported in the Report on hydrogeological instability in Italy (2018 edition), 7,275 municipalities (91% of the total) are at risk from landslides and / or floods; 16.6% of the national territory is classified as more dangerous; 1.28 million inhabitants are at risk of landslides and over 6 million inhabitants at risk of floods. Only with reference to the landslide phenomenon, the main events (those that caused deaths, injuries, evacuees and damage to buildings, cultural heritage and infrastructures) are a few hundred a year and constantly increasing: 70 events in 2011, 85 in 2012 , 112 in 2013, 211 in 2014, 311 in 2015, 146

²⁷The data on the Integrated Water Service cited in this section come largely from the paper Acqua N.144: "Development of the South. Let's start from water" by REF Ricerche, February 2020.

in 2016, and 172 events in 2017.

- The costs for the restoration of damages and the reconstruction of the territories affected by emergency events are huge: in 2018 alone, with the Legislative Decree 119/2018 (tax decree) and the law 145/2018 (budget 2019), more than EUR were allocated 3.1 billion for the mitigation of hydrogeological risk in areas where disasters had occurred and a state of emergency had been declared.

Delays in the implementation of hydrogeological risk reduction projects

- The project selection procedure and the method of transferring financial resources is complex and lengthy, and the assignments by tender, often conducted by small local authorities, has led to delays in the time required to carry out the works. In addition, only a limited number of projects could be set up, and the establishment of planning funds has only partially overcome this problem.
- With the identification of the extraordinary commissioners for hydrogeological instability an improvement has begun in the overall spending capacity. However, since they have not been equipped with adequate technical support structures, to perform the contracting authority functions and sometimes their monitoring / approval functions, the Commissioners rely on local authorities, whose weakness constitutes a bottleneck in the procedures.

Fragmented and inefficient management of water resources, characterised by high losses

- Lack of strong public governance at the basin level to ensure integrated management of water resources - for civil, irrigation and industrial use - and lack of solid wholesale managers from a technical and financial point of view.
- Fragmentation of the managers in the Integrated Water Service (they are 290, more than 3 for the Optimal Territorial Area) and poor effectiveness and industrial capacity of the implementing subjects in the water sector in the South.
- Insufficient planning capacity of the reclamation Consortia, especially in the southern regions. Need to improve their governance to ease the implementation of investments to intercept the needs of the agricultural sector.
- High level of water resource losses: in distribution for civil uses the average loss is 41% (51% in the South) and it causes rationing in periods of drought. Even in irrigation use, the losses are very high and the margins for improving efficiency are significant. “Intelligent” extraordinary maintenance is therefore required, using digital tools and pressure regulation in order to efficiently reduce leaks.

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

- 987 infringement procedures have been opened by the EU against Italy, most of which concern purification and water quality. They are concentrated in Sicily (255 cases), Calabria (190), Campania (104), as well as in Lombardy (147 cases).²⁸

²⁸Since May 2018, Italy has been ordered to pay 30 million euros for each six-month delay in bringing

- There are delays in spending the funds available for the Integrated Water Service (SII) in the South. The data from the Department for Cohesion Policies and the Agency for Territorial Cohesion show that funds and contributions (from the EU) are available for the Integrated Water Service - ESI - and national - FSC funds), but that the spending capacity is rather limited²⁹. Currently, around EUR 4 per capita per year vs. EUR 40 per capita per year nationwide.

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

- In order to improve the effectiveness and efficiency of investments in water infrastructures and in the protection of the territory against hydrogeological risk, it is necessary to have monitoring systems in the following fields: (i) monitoring of the territory, to favour the full integration of the information collected and data processing to support intervention decisions in critical areas; (ii) monitoring of water networks to detect malfunctions and reduce waste; (iii) monitoring of water infrastructures for the prediction of their useful life and the planning / verification of maintenance interventions.

b) Objectives

1) *Prevent and contrast the effects of climate change on hydrogeological instability phenomena and on the vulnerability of the territory of urban areas.*

- Mitigate the risks related to hydrogeological instability by combining structural and non-structural measures, in order to reduce the damage caused by the increasingly frequent extreme weather events, poor widespread forest management, as well as the lack of maintenance of forest hydraulics systems in mountain and hilly areas.
- Invest in the creation of territorial monitoring systems to have a valid database, aimed at a more effective planning of interventions and risk prevention.
- Increase the resilience of territories in urban areas through interventions aimed at reducing their vulnerability to the negative effects of climate change; through preventive and mitigation actions aimed at favoring the enhancement and sustainable development of the territory.

2) *Ensure the security of water supply for drinking, irrigation and industrial purposes and a reduction in water dispersion*

into compliance with the law the over 70 agglomerations with more than 15,000 equivalent inhabitants that lack adequate sewerage systems and purifiers.

²⁹For the 2007-2013 and 2014-2020 programming cycles, the total amount of public resources available is € 10.3 billion. Of these, about 83% should go to the territories of the South and the Islands, 12% to the North and 3% to Central Italy. The area of the South and the Islands is experiencing significant delays: the rate of completion of the interventions in July 2019 was "only" at 18%, for an amount of 760 million euros of expenditure, while 22% of the projects, corresponding to 1,464 million euros in loans, had not yet started.

- Improve the security of water supply by planning extraordinary maintenance, upgrading and completing water supply systems (dams, reservoirs, diversions and supply networks), including through monitoring and control systems to identifying the main vulnerabilities. Primary water infrastructures for civil, agricultural, industrial and environmental uses must be made efficient and resilient, with a view to adapting to climate change and ensure the overcoming of increasingly frequent water crises and of "emergency" policies.
- Increase the efficiency and resilience of the irrigation agro-ecosystem to extreme climatic events, such as instability and drought, by investing both in infrastructural interventions and in monitoring of usages (through the digitization and technological innovation of networks), for more sustainable management of water resources and a reduction of losses.

3) *Ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters.*

- Obtain a significant reduction in the dispersion of water in the distribution networks, also with the aid of new technologies, to favor the complete transformation of the water networks into a "smart network" and increase the resilience of systems to climate change.
- Achieve a higher quality of inland and maritime waters through investments in purification and wastewater treatment plants, which have beneficial effects on public health and the environment and allow for a reduction in infringements of EU directives;;
- Contribute to overcoming the water service divide between the South and the Center-North of the country, giving a concrete impetus to the begin an industrial management in areas of the country where the integrated service has not yet been entrusted to managers able to guarantee effective implementation of interventions.

c) National strategic context

The Action represents a clear and effective response to the priority challenges identified for Italy by the European Council where, in the communication COM (2020) 512 final of last May 20, the Council highlighted, among other things, that Italy is very vulnerable to extreme meteorological phenomena and hydrogeological catastrophes, and that infrastructural deficits in water management generate an environmental and health impact that entails considerable costs and loss of income for the Italian economy.

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

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

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

Investments in purification are defined in the "Plan for the collection and purification of waste water and overcoming EU infringement procedures" of the Ministry of the Environment and Protection of the Territory and the Sea (MATTM).

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

With specific reference to the issue of the integrated water service tariff, since 2012 the tariffs have been regulated by the Regulatory Authority for Energy, Networks and the Environment (ARERA) as a national regulator in line with the EU principles of cost coverage and "the polluter pays ". With Resolution 580 of 27 December 2019, ARERA approved the Method for the 2020-2023 tariffs, a regulatory scheme, which, in full consistency with the European regulatory framework, intends to bring those who are late towards national standards. It aims at increasing the efficiency of operating and management costs, as well as improving the awareness of citizens.³⁰

Finally, with respect to investments for the reduction of hydrogeological risk, we have the "National Plan for the mitigation of hydrogeological risk, the restoration and protection of the environmental resource" (so-called Proteggi-Italia), referred to in the DPCM of 20 February 2019. The Plan pursues the formation of a unitary framework of needs and is structured in different areas and intervention measures (emergency measures, prevention measures, maintenance and restoration measures, as well as simplification and governance strengthening measures).

³⁰In the context of water tariffs for agricultural use, there are regional regulations that quantify water uses for irrigation (based on the guidelines issued by MIPAAF with DM 31/07/2015), as well as a database (Webgis SIGRIAN) to quantify collective and individual water uses (and allow monitoring of illegal subtractions).

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

- EAFRD resources (1 billion euro) for sustainable forest management, for forest hydraulics works in mountain and hilly areas with high hydrogeological and landslide risk and for the maintenance of rural areas;
- REACT-EU resources (200 million euros) for urban forestry interventions;
- Ordinary national resources, as provided in particular by the latest Budget Law, for interventions to combat hydrogeological instability (160 million euros) and for the resilience and enhancement of the territory in the municipalities (600 million).

3. Description of the reforms and investments of the component

1) Prevent and contrast the effects of climate change on hydrogeological instability phenomena and the vulnerability of the territory in urban areas.

Reform 1.1: Simplification and acceleration of the procedures for implementing interventions against hydrogeological instability.

Challenges: In its investigation relating to the 2016-2018 planning fund, the Court of Auditors highlighted the absence of an effective national policy to combat hydrogeological instability, of a preventive and non-emergency nature; the difficulty of administrative bodies to include the protection of the territory into their ordinary functions; the weakness of the implementing subjects and of the Extraordinary Commissioners / Presidents of the Region, who do not have dedicated technical structures. The Court of Auditors also underlined the procedural stickiness, the absence of adequate controls and a unitary system of databases.

Objectives:

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

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

- the Extraordinary Commissioners for hydrogeological instability can avail themselves of technical assistance and operate in derogation from the Code of Public Contracts, always in compliance with the mandatory constraints deriving from be-

longing to the European Union;

- the maximum deadline for issuing opinions at the conference of services is thirty days.

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

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

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

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

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

Timeline: approval by Q1 2022.

Investment 1.1: Structural and non-structural interventions for flood risk management and hydrogeological risk reduction (including innovation and digitization of territorial monitoring networks

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

Objectives:

- Securing built-up areas and hydrographic basins exposed to hydrogeological risk;
- Environmental remediation and mitigation of climate change effects;
- Greater level of control and management of flood risk;
- Increase of environmental and territorial knowledge and enhance specific survey activities, in order to implement a policy of prudent and sustainable management of the water resource and of the territory;
- Innovation and digitization of territorial monitoring systems, to favor the full integration of the information collected and the processing of data to support intervention decisions in critical areas of the territory.

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

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

Furthermore, in addition to the measures described, with particular regard to the mitigation of risks in mountain, hilly and rural areas, EAFRD will finance (with 1 billion euro) sustainable forest management interventions, extraordinary maintenance and refurbishment of forestry hydraulics in mountainous and hilly areas with high hydrogeological and landslide risk, forest fire prevention and reconstruction of degraded forest areas, management and maintenance of rural areas.

Implementation:

The interventions may concern the entire national territory; structural measures will be selected by the MATTM starting from those inserted in the ReNDiS database on the basis of technical and objective criteria (such as people and goods at risk, the frequency of calamitous event to be addressed, the approved design level and the construction site),

considering the necessary compatibility with the timing of the Recovery Plan (dictated not only by the design maturity, but also by the type and size of the intervention).

As regards the methods of implementation, starting from Legislative Decree 91/2014, the interventions on the subject of hydrogeological instability are implemented by the Presidents of the Region as extraordinary Government Commissioners. However, even within the same regulatory framework, the regional administrations do not act in the same way: in many cases the Commissioners, lacking adequate technical support structures, delegate the implementation to the beneficiary Municipalities. This explains the need for reform no. 1.1 which aims, among other things, at strengthening the technical structures of the Commissioners.

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

Timeline:

- project selection by Q3 2021;
- completion of the design and assignment of the works by Q4 2023;
- completion of the works by Q3 2026.

Investment 1.2: Urban forestry

Challenges: Italian cities are increasingly exposed to problems related to air pollution, the impact of climate change and the loss of biodiversity, with evident negative effects on the well-being and health of citizens. This makes it important to implement measures aimed at environmental sustainability and the enhancement of the territory in the urban environment.

Objectives: In line with national and EU strategies, the project includes a series of large-scale actions aimed primarily at metropolitan cities, to improve the quality of life and well-being of citizens through the development of urban and peri-urban forests. The goal is to plant millions of trees, identifying the places and quantities according to the principle of using "the right tree in the right place". The Charter of the Ecoregions of Italy drawn up at the level of "34 ecoregions" will make it possible to select and assign to each metropolitan area the most suitable trees in terms of ecological, biogeographical and other different local needs. In this way, it will be possible to contribute to:

- preserve and enhance the widespread naturalness, biodiversity, and ecological processes linked to the full functionality of ecosystems;
- contribute to reducing air pollution in metropolitan areas, thus protecting human health;
- recover man-made landscapes by enhancing internal areas in direct ecological relationship with urbanized areas (ecological corridors, territorial ecological networks)

and enhancing the system of protected areas present in the immediate vicinity of metropolitan areas;

- curb soil consumption and restore useful soils.

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

To supplement the resources of the PNRR, 200 million euros from REACT-EU will also be allocated to urban forestry interventions.

Implementation: The implementing bodies of the interventions will be the Municipalities, with a focus on Metropolitan Cities. The project is consistent with the experimental activity for urban reforestation launched pursuant to article 4 of the law of 12 December 2019, 141 (so-called national “climate law”). The implementation of the project can therefore be based on the scheme adopted pursuant to the aforementioned law, which envisages a planning phase managed by metropolitan cities; the presentation of detailed operational programs to the Committee for the development of public parks set up pursuant to article 3 of the law of 14 January 2013; the transfer of resources to metropolitan cities by the Ministry of the Environment for the implementation of interventions.

For the preliminary activities relating to the detailed operational programs, the Committee for the development of public green spaces makes use of the ISPRA and the National Network System for the protection of the environment, as per Law 132/2016.

Target population: Inhabitants of the Municipalities.

Timeline: - to be defined -

Investment 1.3: Interventions for the resilience, enhancement of the territory and energy efficiency of the municipalities

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

Objectives: This investment aims to increase the resilience of the territories and promote their enhancement and sustainable development, through a varied set of interventions, of medium-small size, located in urban areas. The safety measures, aimed at reducing the vulnerability of the territory before the adverse of climate change effects and at limiting

damage, are accompanied by preventive and mitigation actions that intervene on the causes of climate change and promote the energy sustainability of the territory.

The planned interventions have, in particular, the following objectives:

- Prevention and mitigation of risks connected with hydrogeological risk and safety of the inhabited areas exposed to these risks;
- Road safety;
- Making buildings safe (through seismic improvement and adaptation interventions);
- Energy efficiency of buildings and public lighting systems.

Implementation: The interventions fall under current legislation and concern the urban areas of the entire national territory. The /implementing bodies are the Municipalities. In particular, the resources are assigned to the Municipalities by decrees of the Ministry of the Interior, with the exception of the resources referred to in the budget law n. 145 of 2018, art. 1, paragraph 139, assigned to the Municipalities of their territory by the Regions with ordinary statute.

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

Timeline: 2026Q2

2) Ensure the security of water supply for drinking, irrigation and industrial purposes and a reduction in water dispersion.

Reform 2.1: Simplification of legislation and strengthening of Governance for the implementation of investments in the field of water supply infrastructures.

Challenges: The articulated regulatory framework, the fragmented management of the water resource and of infrastructures connected to its supply have a negative impact on the capacity to plan and implement investments.

Objectives:

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

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

- making the National Plan the central public financing instrument for investments in the water sector by unifying the economic resources relating to water supply

infrastructures under the Plan;

- overcome the division between the “reservoirs” and the “aqueducts” section;
- involve ARERA to support the making of the entire Plan;
- simplify the training and updating procedures of the Plan;
- simplify the procedures for reporting and monitoring the investments financed;
- provide for central accompanying measures by MIT (directly or through a state company) for subjects that have lower capacity to plan and implement.

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

Furthermore, to promote the planning and implementation of interventions according to a systemic and organic logic and strengthen the Governance of the sector, the process of strengthening the district basin Authorities³¹, already started by the MATTM through a community project (We create PA - Line L6W1, funded under the PON Governance 2014-2020), will continue.

Target population: users of the water resource for different uses.

Timeline: approval of the regulatory provision by the first half of 2022 and finalization of the "internal" procedures for the implementation of the reform (methods to recognize needs, selection criteria, guidelines for the evaluation of investments) within the following year.

Reform 2.2: Revision and strengthening of the governance model for the reclamation consortia.

Challenges: On the national territory, some consortium structures have been commissioned, even for a long time. This has significantly limited their activity and planning capacity. In addition, the financial situation of the consortium bodies, in many cases precarious, due both to the various crises in the agricultural sector and to ineffective administrative functioning of the consortia themselves.

Overall, what has been described has penalized entire regional territories and their inhabitants, especially in the southern regions, resulting in a poor capacity for maintenance of the territory and innovation in the management of water for irrigation, as well as an inefficient use of economic resources destined to activities for the defense of the soil and the creation of reservoirs.

Objectives:

³¹In complementarity with the measures to strengthen the district authorities themselves envisaged in the context of reform no. 1.1, for a more effective contrast to hydrogeological risk.

- Promote the updating and strengthening of the governance model of the reclamation consortia, favoring the return to self-government of the commissioned consortia;
- Strengthen the planning capacity of the reclamation consortia, also through regional planning centers.

More specifically, the reform will concern the reorganization of the reclamation consortia through the revision of the criteria referred to in the State-Regions Agreement of 18 September 2008 (which include: the definition of the reclamation areas; the subjects and functions of the consortia; financial system of interventions and private participation; consultation and collaboration with local authorities and agricultural entrepreneurs; supervision and internal management control). In particular, it is envisaged the review of the procedures to allow for substitutive powers by the State and to reduce the time to decide the commissioning of entities, placing a time limit on the same entities, so as to guarantee the completion of all the actions necessary to return to the self-government of consortia in the shortest possible time.

Implementation: From a procedural point of view, MIPAAF will assess the strengths and weaknesses of the current governance system; consequently, in agreement with the Regions and Autonomous Provinces, it will elaborate a proposal to modify the criteria referred to in the aforementioned Agreement.

The established criteria must be incorporated into regional laws. To overcome the risk of non-transposition, all means of preventive consultation will be used. Based on the recognition of the existing regional regulations (Q4 2021), MIPAAF will present a reform proposal to the Regions (Q4 2022). Reward mechanisms linked to the effective implementation of the criteria within regional laws will also be included in the planning on national funds.

Target population: Reclamation consortia and inhabitants in rural areas of the country.

Timeline: The deadline for the approval of the Agreement is set for the end of 2023.

Investment 2.1: Investments in primary water infrastructure for the security of water supply.

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

Objectives:

- Water supply security of important urban areas and / or large irrigated areas;
- Adjustment and maintenance of the safety of structural works;

- Greater resilience of infrastructures, also with a view to adapting to climate change;
- Recovery and increase of the useful transport capacity, with consequent economic repercussions, and improvement of the quality of the water resource.

In order to achieve the objectives indicated, investments financed will include measures for extraordinary maintenance and the upgrading and / or completion of the derivation, storage and primary supply infrastructures³².

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

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

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

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

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

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

³²The interventions on the distribution networks will be financed on the investment line no. 2.1.

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

Investment 2.2: Investments in the resilience of the irrigation agrosystem for the better management of water resources (including digitalisation and technological innovation of distribution networks).

Challenges: The spectrum of continuous water crises, due to scarcity and the different distribution of the resource, has important effects on agricultural production, in particular where constant irrigation is a necessary practice and an essential condition for competitive agriculture. To increase the capacity to deal with emergency situations, it is essential to quantify the volumes used for irrigation purposes, to increase the efficiency in the irrigation of water and also to favor the use of non-conventional water to supplement the conventional ones.

Objectives:

- Improve water resource management and reduce losses;
- Encourage the measurement and monitoring of uses both in collective networks (through the installation of meters and remote control systems) and for private uses (through a monitoring system of private concessions);
- Prevent illegal uses of water in rural areas;
- Increase the resilience of the irrigation agro-ecosystem to extreme climatic events, drought events in particular.

In order to achieve the objectives indicated, infrastructural interventions on the networks and irrigation systems and on the related digitalisation and monitoring systems will be financed, consisting in the conversion of the irrigation system towards higher efficiency systems. Furthermore, purification monitoring systems will be implemented with the potential for irrigation reuse. Finally, the data system for collective uses (SIGRIAN) will be developed, to record and monitor the volumes used in self-supply and To prevent illicit uses of water (also thanks to the joint measurement of the volumes used on collective distribution networks).

Implementation: Irrigation and reclamation bodies will be responsible for the implementation of the interventions. The Ministry of Agricultural, Food and Forestry Policies will carry out the recognition and selection of the interventions in the initial phase of the launch of the Plan, using the National Database of investments for Irrigation and the Environment (DANIA). The latter will allow a selection based on objective criteria, being a tool that collects the interventions (implemented by the irrigation bodies, already financed or only planned), cataloging them through technical and financial-procedural information, also considering their territorial classification. Specifically, priority will be given to projects with a high construction capability and deemed to be of greater terri-

torial strategic importance by the regional authorities.

Target population: Agricultural production sector, population of rural areas made safe.

Timeline:

- project selection by Q3 2021;
- assignment of the works in phases and by Q3 2023;
- completion of the interventions by Q3 2026.

3) Ensure the sustainable management of water resources along the entire cycle and the improvement of the environmental quality of inland and maritime waters.

Reform 3.1: Measures for the full implementation of the assignments for the Integrated Water Service.

Challenges: In the South, the insufficient presence of industrial managers and the vast presence of management in economy traces a picture of the very fragmented and complex water sector: there are 1,069 managers, 995 of which are Municipalities that manage the service in economy (in particular, 381 in Calabria, 233 in Sicily, 178 in Campania, 134 in Molise). Previous experiences show that in the South an autochthonous evolution of the system is not viable, without a central intervention aimed at its resolution.

Objectives:

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

Implementation: In order to give concrete and specific impetus to the industrialization process of the sector, conditions to allocate of PNRR resources will be the establishment of Local Government Bodies and the successful entrusting of the integrated service to managers able to guarantee the efficient implementation of interventions.

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

In this regard, the MATTM, with the project Mettiamoci in Riga - Intervention Line 7, as part of the PON Governance 2014-2020, provides for the definition and signing of specific Memoranda of Understanding with Regions and Government Bodies in the area,

to give support, where delays are recorded, in the preparatory activities for the drafting of the Area Plans and the award of the integrated water service. To date, discussions are underway with the Regions of Sicily, Calabria, Molise and Campania to finalize the memoranda of understanding and start the support activity through a specific working group.

Target population: Users of the integrated water service.

Timeline:

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

Investment 3.1: Investments aimed at reducing losses in water distribution networks, including digitization and monitoring of networks.

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

Objectives:

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

In order to achieve the objectives indicated, the financed investments will concern the modernization and efficiency of the water distribution networks, favoring innovative projects that involve the use of new technologies. To this end, advanced control systems must be provide to allow monitoring of the main nodes as well as of sensitive points of the network, through the measurement and acquisition of flow rates, operating pressures

and water quality parameters.

An example of a “flagship” project of great economic, social and environmental value could be that relating to the restructuring of the water networks of the cities of Potenza and Matera in Basilicata. The managing body is the in-house company Acquedotto Lucano, which already has available a feasibility study and which could quickly prepare a technical-economic feasibility project to be tendered by the end of 2021. Current losses in the water distribution networks are very high (over 50%). Also the supply cost is very high as it concerns purified water raised a few hundred meters to an upper level. The manager’s difficult financial situation does not allow these investments to be activated exclusively on the tariff.

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

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

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

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

Investment 3.2: Investments in sewerage and purification.

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

Objectives:

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

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

Another example of an intervention of great impact, in the context of the digitisation and control of the sewerage network, could be that relating to the management of rainwater in the city of Rome, where ACEA has already in the pipeline - based on the tariff system - an investment of 20 million euros to be launched by the end of 2021. A viable hypothesis may consist in increasing the project amount envisaged with the financial resources of the PNRR, allowing better management of rainwater in Rome, which currently creates numerous problems to citizens.

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

Target population: Users of the integrated water service.

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

Investment 3.3: Interventions in the port areas to fill the deficit of facilities

for the management of waste collected at sea.

Challenges: The lack of facilities for the management of waste collected at sea in the various port areas of the country leads to a worsening of the quality of maritime waters, causes considerable damage to the marine ecosystem in contrast with the principles of the circular economy.

The construction of new facilities and the modernization of existing ones therefore appear necessary, also in light of the provisions of Directive 883/2019 on port facilities for the collection of waste produced by ships, currently being implemented and, more generally, by the Directive framework on marine strategy 2008/56 / EC (Marine Strategy Framework Directive -MSFD) which constitutes the environmental pillar of the maritime policy of the EU (IMP) and of the "Blue Economy". Moreover, the intervention responds to the provisions of Directive 904/2019, also in the transposition phase.

Objectives:

- Improve the quality of maritime waters by reducing the pollution generated by plastic abandoned in the sea;
- To fill the deficit of facilities for the management of waste produced by ships and waste captured at sea, with particular attention to the recovery of fishing equipment, in the various port areas of the country;
- Contribute to the recovery of the marine ecosystem and the promotion of the circular economy.

In order to achieve the indicated objectives, it will be possible to carry out both construction interventions of new plants and interventions to adapt existing plants (intervention 1). Alongside the "structural" interventions, information and training actions will be organized for operators in the fishing sector and local communities, to raise awareness on the prevention of the phenomenon of abandonment of waste and its correct management (intervention 2).

Implementation:

The intervention is promoted by the Ministry of the Environment and the Protection of the Territory and the Sea. The other central administrations involved are the Ministry of Agricultural, Food and Forestry Policies and the Ministry of Infrastructure and Transport. The implementing bodies will be the Municipalities and / or Port Authorities depending on the type and size of the port, but the Port Authorities, the Maritime Authorities and any Marine Protected Areas will also be involved locally.

As regards the structural / plant projects, specific agreements will be stipulated between the Ministry of the Environment and the other Competent Authorities to identify the criteria for the realization of the projects.

Following the cognitive analysis carried out in the first year, the interventions - which

may concern the entire national territory - will be selected on the basis of the following priority criteria:

- absence or inadequacy of port facilities for waste collection;
- port size and / or port type;
- insistence of the port waste collection facility in protected marine areas of environmental value;
- presence of research, experimentation and development activities already planned or launched at the local level for the recovery of waste collected accidentally or voluntarily.

With reference to training and information measures, specific guidelines will be developed by the Ministry of the Environment, with the support of public research bodies.

Target population: the populations in the basin of the port areas of the country.

Timeline: For intervention 1 the cognitive activity will end with the definition of the already mentioned agreements between the Ministry of the Environment and the competent Authorities, while for intervention 2 the aforementioned guidelines will be drawn up (4Q2021). For the subsequent implementation of the plant interventions, an overall duration of 4 years is estimated, from design to final construction.

4. Green and digital dimensions of the component

a) Green Transition:

This Action envisages almost 55% of expenditure for the climate (see Table 1), thus contributing very significantly to the green transition by promoting a more efficient and sustainable use of water resources and prevention actions against the risks associated with climate change.

In particular, through investments 2.1, 2.2, 3.1, 3.2 and 3.3, the improvement of the environmental infrastructures for the management of water and waste and the reduction of pollution are pursued, protecting the health and well-being of citizens from environmental risks and impacts. The aim of investment 1.1 and investment 1.2, is to protect and restore biodiversity and natural ecosystems, to increase carbon absorption capacity, and to strengthen resilience in the face of climate change.

With reference to the climate and environmental objectives defined in the EU Regulation 2020/852 (Taxonomy Regulation), this Action provides a contribution in each of the following areas:

- Adaptation to climate change (through measures to reduce hydrogeological risk);
- Mitigation of climate change (through interventions for energy efficiency in munic-

- ipalities and urban forestry measures);
- Sustainable use and protection of water and marine resources (through measures relating to water supply infrastructures, the irrigation agrosystem and water distribution networks);
 - Pollution prevention and reduction (in particular, through investments in the “sewage and purification” sector aimed at reducing pollution of maritime and inland waters);
 - Protection and restoration of biodiversity and ecosystems (to which we contribute mainly through urban forestry interventions);
 - Transition towards a circular economy (in particular, through the investment aimed at filling the plant deficit of the port areas for the management of waste collected at sea).

b) Digital Transition:

Based on the codes provided for in the Recovery Fund Regulations, this Action does not directly contribute to the achievement of the aforementioned target, even if it provides for important measures to favor the "digital management" of the water resource and related networks, to be transformed into a "smart network ". In particular, the installation of software equipment and applications and hardware platforms for the implementation of remote control systems and the digitization of measuring instruments is envisaged.

Table 1 - Green and Digital Impact

Short title	Green objectives				Digital objectives	Transition challenges	
	Climate	Environmental	Intervention field	DNSH	Tag	Green	Digital
	Tag	Tag					
<i>Objective 1</i>							
Investment 1.1 Interventi strutturali e non strutturali per la gestione del rischio alluvioni e la riduzione del rischio idrogeologico	100%	100%	35	Si	-	-	-
Investment 1.2 Forestazione urbana	40%	100%	50	Si	-	-	-
Investment 1.3 Interventi per la resilienza, la valorizzazione del territorio e l'efficientamento energetico dei Comuni - messa in sicurezza del territorio/dissesto idrogeologico	100%	100%	35	Si	-	-	-
Investment 1.3 Interventi per la resilienza, la valorizzazione del territorio e l'efficientamento energetico dei Comuni - messa in sicurezza ed efficientamento energetico degli edifici	40%	40%	25	Si	-	-	-
Investment 1.3 Interventi per la resilienza, la valorizzazione del territorio e l'efficientamento energetico dei Comuni - messa in sicurezza delle strade	0%	0%	62	Si	-	-	-
<i>Objective 2</i>							
Investment 2.1 Investimenti nelle infrastrutture idriche primarie per la sicurezza di approvvigionamento idrico	40%	100%	40	Si	-	-	-
Investment 2.2 Investimenti nella resilienza dell'agrosistema irriguo per la migliore gestione delle risorse idriche (compresa la digitalizzazione e l'innovazione tecnologica delle reti di distribuzione)	40%	100%	40	Si	-	-	-
<i>Objective 3</i>							
Investment 3.1 Investimenti finalizzati alla riduzione delle perdite nelle reti di distribuzione idrica, compresa la digitalizzazione e il monitoraggio delle reti	40%	100%	39-bis	Si	-	-	-
Investment 3.2 Investimenti nella fognatura e depurazione	40%	100%	41-bis	Si	-	-	-
Investment 3.3 Interventi nelle aree portuali per colmare il deficit di impianti per la gestione dei rifiuti raccolti a mare	40%	100%	44	Si	-	-	-

5. Milestones, targets and timeline

See Table 2

Reform 1.1 (procedures for implementing interventions against hydrogeological instability)

Milestone:

- Adoption of the decree by Q3 2021;
- Conversion of the decree law into law by Q1 2022;
- DPCM issue for the revision of the project selection criteria by 2022Q1.

Investment 1.1 (flood risk management and hydrogeological risk reduction)

Milestone:

- project selection by Q4 2021;
- completion of the design suitable for the contract of works by 2023Q3;
- awarding of works by Q4 2023;
- completion of the works by Q3 2026.

Target to 2026:

- Reduction of people at direct risk: to be defined
- Reduction of people at indirect risk: to be defined
- Reduction of people at risk of losing their home: to be defined
- Number of Municipalities subject to safety measures: to be defined

Investment 1.2 (urban forestry)

Milestone and Target: to be defined

Investment 1.3 (resilience, enhancement of the territory and energy efficiency of municipalities)

Milestone and Target: to be defined

Reform 2.1 (governance in the area of water supply infrastructure)

Milestone:

- Preparation of the regulatory provision and presentation to Parliament by 2021Q3;
- Approval of the regulatory provision by Q1 2022;
- Development of internal procedures for the implementation of the reform by 2022Q4.

Reform 2.2 (governance model of land reclamation consortia)

Milestone:

- Recognition of the current governance system by MIPAAF by Q4 2021;
- Reform proposal presented by MIPAAF to the Regions by Q4 2022;
- Approval of the new State-Regions Agreement by Q4 2023.

Investment 2.1 (security of water supply)

Milestone:

- selection of 80% of projects by Q2 2021, selection of the remaining 20% of projects by Q2 2022;
- completion of the design suitable for the contract of works by 2022Q4;
- awarding of works by 2023Q3;
- completion of the works by 2026Q2.

Target to 2026:

- Number of projects completed (interventions on reservoirs and/or supply systems): to be defined;
- Number of complex water systems for which security of supply is increased: to be defined.

Investment 2.2 (Resilience of the irrigation agrosystem)

Milestone:

- project selection by Q3 2021;
- financing of selected projects by Q3 2022;
- awarding of works by Q3 2023;
- completion of the works by Q3 2026.

Target to 2026:

- % Increase of withdrawal sources equipped with meters: from 24% current (baseline) to 41%;
- Area (expressed as a% of the total) that passes to a more efficient management of the irrigation resource as a result of the interventions: from the current 8% (baseline) to 12%.

Reform 3.1 (full implementation of the assignments in the Integrated Water Service)

Milestone:

- Signing of memoranda of understanding between the MATTM and the regions concerned by Q2 2021;
- Verification of the constitution of the ATOs and the assignment of the SII by Q2 2022.

Investment 3.1 (water distribution networks)

Milestone:

- selection of 70% of projects by Q3 2021, selection of the remaining 30% of projects by Q2 2022;
- completion of the design suitable for the contract of works by 2022Q4;
- awarding of works by Q3 2023;
- completion of the works by Q3 2026.

Target to 2026:

- Kilometres of district water network: baseline: 128,000 km; 2026 target:150,000 km;
- Reduction of percentage water losses: baseline 50%; 2026 target:to be defined

Investment 3.2 (sewerage and purification)

Milestone:

- selection of 70% of projects by Q3 2021, selection of the remaining 30% of projects by Q2 2022;
- completion of the suitable design for the works contract by Q2 2023;
- awarding of works by Q4 2023;
- completion of the works by Q3 2026.

Target to 2026:

- Reduction in the number of non-compliant equivalent inhabitants: baseline 3,572,574 equivalent inhabitants non-compliant; 2026 target:to be defined

Investment 3.3 (plant deficit in port areas for waste management)

Milestone:

- Conclusion of the information and investigation activities by Q4 2021;
- Award of works (for intervention 1, relating to the structural / plant part) by Q4 2023;

Target to 2026:

- Number of ports in which action is taken for plant adaptation: 150.

6. Financing and costs

This component will be coherent with the policy objective "*A greener Europe*" of the cohesion policy 2021 - 2027. The interventions financed by the PNRR and those financed by the structural funds will be linked by a complementary and/or integration relationship, and an ex ante demarcation will be foreseen to avoid planning overlaps.

See Table 2 work in progress