Mission 2 - Green revolution and ecological transition

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Mission's main objectives:

Sustainable agri-food systems

Achieve a sustainable agri-food chain, improve the competitiveness of farms and their climate-environmental performance, strengthen the logistics infrastructure of the sector

Circular economy

Make the waste management system performant, stressing the production of secondary raw materials reducing waste disposal in industrial sectors.

Implement the circular economy paradigm, minimizing environmental and climate impact, reducing pollutants and CO2 and creating jobs in the green economy.

Circular economy principle should be applied also to the agricultural sector implementing conversion of waste into biogas and biomethane.

Mission's financing snapshot:

M2 - Green revolution and ecological transition					
	Resources (euro/mld)				
	Existing (a)	New (b)	Total (c) = (a)+(b)	REACT-EU (d)	TOTAL NGEU (e) = (c) + (d)
M2C1- Sustainable agriculture and circular economy	-	5.90	5.90	1.10	7.00
M2C2 Renewable energy, hydrogen and local sustainable mobility	2.95	14.58	17.53	0.69	18.22
M2C3 - Energy upgrading and renovation of buildings	16.36	12.88	29.23	0.32	29.55
M2C4 - Protection of land and water resources	10.85	3.97	14.83	0.20	15.03
TOTAL	30.16	37.33	67.49	2.31	69.8

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

1 M2C1 - Sustainable agriculture and circular economy

1. Description of the component

Summary box

Policy area: European strategy "Farm to fork", infrastructures relating to the logistics of the agri-food sector, waste management, circular economy, environmental sustainability.

Objectives: The objectives of this component are:

a) Achieve a sustainable agri-food chain, improve the competitiveness of farms and their climate-environmental performance, strengthen the logistics infrastructure of the sector.
b) Make the waste management system performant, with emphasis on production of secondary raw materials to be used in different industrial sectors minimizing waste disposal.
c) Implement the circular economy paradigm, minimizing environmental impact also regarding the global warming (reduction of pollutants and CO2) and creating jobs linked to the green economy.

Circular economy principle should be applied also to agricultural sector implementing practice on conversion of waste into biogas and biomethane.

Reforms and investments:

Outcome 1: Sustainable agriculture.

Investment 1.1: Initiatives for sustainable agriculture
a) Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture, and plant nursery sectors.
b) Agri-solar Park.
c) Logistics plan for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sector sectors.

Outcome 2: Circular economy and enhancement of the integrated waste cycle.

Reform 2.1: National strategy for the circular economy: definition of specific legislation aimed at the ecological transition and implementation of the European action plan for the circular economy;

Investment 2.1: New plants and revamping of existing waste treatment plants.

Investment 2.2: Circular economy projects.

Investment 2.3: Ecological transition in the South of Italy (*projects to be defined*)

Estimated costs:

EUR 5.90b to be covered by RRF (7.0b total NGEU)

M2C1- Sustainable agriculture and circular economy					
	Resources (euro/mld)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
1. Sustainable agriculture	**-**	**2.50**	**2.50**	**-**	**2.50**
2. Circular economy and enhancement of the integrated waste cycle	**-**	**3.40**	**3.40**	**1.10**	**4.50**
- New recycling plants and modernisation of existing ones	*-*	*1.50*	*1.50*	*-*	*1.50*
- Circular Economy projects	*-*	*1.90*	*1.90*	*0.30*	*2.20*
- Ecologic transition in Southern Italy	*-*	*-*	*-*	*0.80*	*0.80*
TOTAL	**-**	**5.90**	**5.90**	**1.10**	**7.00**

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

2. Main challenges and objectives

a) Main challenges

The Covid-19 pandemic has underlined the importance of a solid and resilient food system that works under all circumstances and which is able to ensure citizens have a sufficient supply of food at affordable prices. Furthermore, the transition to sustainable food systems also represents a huge economic opportunity, both for farmers, fishermen and producers in the aquaculture sector as well as for food processors and catering services. This transition will allow them to make sustainability their distinctive trait and to ensure the future of the Italian and EU food supply chain.

In connection with the agro-food issue, but not only, the need to reduce the production of waste has emerged, with attention to unsorted urban waste as well as to the development of effective models of separate collection. One of the main challenges is, in fact, to increase the "quality" of the waste produced also to close the circular economy cycle.

The **"Farm to Fork"** strategy, at the heart of the European Green Deal, comprehensively

addresses the challenges posed by achieving sustainable food systems, recognizing the inseparable links between healthy people, healthy societies and a healthy planet. Moving to a sustainable food system can bring environmental, health and social benefits, deliver economic benefits, and ensure that recovery from the crisis leads us on a sustainable path.

The strategy therefore constitutes a comprehensive approach to the value that citizens attribute to food sustainability. An opportunity to improve lifestyles, health and the environment. Creating a supportive food environment that facilitates the choice of healthy and sustainable diets will benefit consumers' health and quality of life and reduce health costs for society.

In line with the Action Plan for the circular economy (COM/2020/98), more emphasis will be placed on reducing waste production, reducing the quantities of unsorted municipal waste, and developing effective models of separate collection

The development of the **circular economy paradigm** is part of the provisions of the new Action Plan for the circular economy (COM/2020/98), one of the pillars of the Green Deal, approved on March 11th, 2020. The plan provides for a strategic framework, characterized by measures to ensure the design of sustainable products, the accountability of producers and consumers towards more sustainable choices, the increase of circularity in production processes (with particular reference to sectors that use more resources: electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and construction, food).

Italy in September 2020 has already implemented the directives of the "Circular Economy Package" with the recycling targets[1] or urban waste: at least 55% by 2025, at least 60% by 2030, at least 65% by 2035 and a restriction on their disposal in landfills of no more than 10% by 2035[2]. In line with this reference framework, Italy's project proposals about circular economy aim to fill the structural gaps that hinder the development of the sector.[3].

The main criticalities were identified in:

- plant deficiencies, for the treatment and valorisation of the organic fraction of waste;
- shortcomings of existing plants in relation to the need to reduce the production of new waste and consequent need for modernization of existing plants;

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[1] Legislative Decree 3 September 2020, n. 116, on "*Implementation of directive (EU) 2018/851 amending directive 2008/98/EC on waste and implementation of directive (EU) 2018/852 amending directive 1994/62/EC on packaging and packaging waste*", published in the O.J. of 11 September 2020.

[2] Legislative Decree 3 September 2020, n. 121, on "*Implementation of Directive (EU) 2018/850, amending Directive 1999/31/ EC on landfills of waste*", published in the O.J. of 14 September 2020.

[3] All percentages are expressed in terms of "weight".

- inadequacy of separate collection systems, in relation to the new challenges to achieve recycling targets also through technological innovation;
- need to support local administrations (Regions, Municipalities) with governance at a central level that allows for strengthening local policies in the implementation of infrastructure for the creation of circular supply chains.

b) Objectives

The component is in line with the country-specific recommendations for Italy for 2020 (CSR-3), which suggest focusing investments on the green and digital transition, in particular on clean and efficient energy production and use, on research and innovation, on sustainable public transport, on the management of waste and water resources.

The objectives of the interventions of this component are different:

1. **Promote the green transition of the agri-food supply chains.** Italy, in line with the EU strategy (Farm to Fork), aims to reduce the environmental and climatic footprint of its food system and strengthen its resilience, guarantee the security of food supply in the face of climate change and loss of biodiversity, lead the global transition towards competitive sustainability from producer to consumer and exploit new opportunities. This means pursuing the following specific objectives:
    - ensuring that the food supply chain has a neutral or positive environmental impact, preserving and restoring the land, marine and freshwater resources on which the food system depends, helping to mitigate climate change and adapt to its effects, protect soils, soil, water, air, plant health and animal health and welfare and reverse biodiversity loss;
    - provide with security of food supply, nutrition and public health by ensuring that everyone has access to nutritious and sustainable food in sufficient quantities that meet high standards of safety and quality, plant and animal health, and that at the same time satisfy nutritional needs and food preferences;
    - preserve the economic affordability and sustainability of food while generating more equitable economic returns in the supply chain.
2. **Improve the management of urban solid waste and implement the circular economy paradigm.** This component aims to adopt new legislation defining the national strategy for the circular economy and regulating the organisation and operation of the waste/recycled material traceability system. This objective must also be achieved through targeted interventions on the territory which, on one hand, make it possible to solve critical situations in metropolitan areas in difficulty through the construction of new plants and, on the other, aim at the implementation of new projects with a high innovative content, allowing adequate collection and recovery of Waste Electrical and Electronic Equipment (WEEE), the closure

of the management cycle of the sewage sludge produced by wastewater treatment, as well as the creation of poles for waste produced by large users (ports , freight villages, health sector, etc.).

In particular, in the context of waste recovery and circular economy models, the production of environmentally sustainable biomethane will be increased - obtained from the organic fraction of the separate collection of urban solid waste, or from waste of plant and animal origin - and allocate it to transport, to cover the current share of fossil methane in transport equal to approximately 1 bcm (billion cube metres). This use can also make use of the existing methane gas infrastructure and the largest Italian fleet of methane vehicles in Europe (approximately 1 million vehicles). To this end, it is necessary to promote the increase of urban separate waste collection in harmony with national objectives, in order to allocate the organic fraction to new biomethane production plants, possibly built at local level (Regions, Provinces and Municipalities), to be used also in the fleets of vehicles for waste collection, providing for their gradual renewal in line with the provisions of the aforementioned Deployment of Alternative Fuels Infrastructure - DAFI directive. At the same time, there is a positive impact on the automotive industry and on the component industry for biogas plants.

The proposed interventions then have, more generally, the aim of contributing to the creation of new jobs linked to the green economy, stimulating local investments and their positive spill over effects on the local economy. In fact, the proposed investments represent an opportunity in terms of improving 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.

3. Description of the reforms and investments of the component

1) Sustainable agriculture.

The investment program consists of three main lines of intervention for the competitiveness, energy requalification and logistical capacity of the Italian agricultural sector.

Investment 1.1a: Supply chain and district contracts for the agri-food; fishing and aquaculture; forestry, floriculture, and plant nursery sectors.

Challenges:

Despite Italy's good performance in terms of quality and controls in the agri-food, forestry and fisheries and aquaculture supply chains, production methods remain to be reviewed in light of the new objectives of the Farm to fork[4] strategy in terms of reducing production

[4] Farm to Fork Strategy – for a fair, healthy and environmentally-friendly food system COM (2020) 381 final, 20.05.2020

inputs. The strategy plans to:

- reduce dependence on pesticides and antimicrobials, reduce excessive use of fertilizers, enhance organic farming, improve animal welfare and reverse the loss of biodiversity;
- ensure that agriculture, fisheries, aquaculture and the food value chain contribute adequately to climate objectives;
- ensure the sustainability of food production (including fish production), develop renewable energy production and improve energy efficiency in the agricultural and food sectors;
- ensure the security of food supply;
- reduce food losses and waste.

There is a lack of efficiency in the Italian production chains in the agricultural, forestry and fisheries and aquaculture sectors, for which the development of supply chain and district contracts can improve the sustainability of production processes, transformation, marketing and recycling and reuse of waste, also avoiding practices that are not sustainable at the environmental level, with evident repercussions also on the strengthening of the productivity and profitability of the sectors.

Objectives:

The proposed intervention aims to strengthen the instrument of supply chain and district contracts for the agri-food, forestry, fishing and aquaculture and horticultural sectors, through integrated investment programs throughout the country.

The supply chain and district contracts implement investment programs aimed at the green and circular transition of companies, at the growth of employment and the rate of innovation for these production sectors.

In particular, the creation and strengthening of supply chain and district contracts aim to achieve the following specific objectives:

- for the agri-food sector, to reduce the environmental impact of the food processing and retail trade sectors;
- for the fisheries and aquaculture sector, to promote the ecological sustainability of the product through incentives for "blue growth" as a system approach to the economy of the sea.
- for the forestry sector, to promote the efficient use of forest resources, enhancing business aggregation and associations, business agreements and networks;
- floriculture and plant nursery sectors, to increase the autochthonous and certified tree and forest production, to replace obsolete and inefficient greenhouses from an energy point of view and / or to make the related heating systems more efficient.

Implementation:

The managing Authority is the Ministry of Agricultural, Food and Forestry Policies, which is responsible for identifying priority strategic lines for the investment framework, defining the legal framework, selecting beneficiaries, as well as monitoring and reporting on interventions.

For each of the sectors affected by the initiative, the expected ***milestones*** are:

a) Identification of intervention priorities (by Q2 2021)
b) Publication of the call for the selection of investment programs (by Q4 2021)
c) Approval of the final rankings of public calls for the granting of aid (by Q2 2023)

The ***targets*** set for 2026 are represented by the number of new supply chain contracts signed and are quantified in:

- n. 35 contracts for the agri-food sector
- n. 20 contracts for the fisheries and aquaculture sector
- n. 20 contracts for the forest sector
- n. 20 contracts for the floriculture and plant nursery sectors

It is estimated that by the third quarter of 2026 all investment projects, financed through the signed contracts, will be fully realized

Target population: Companies that directly contribute to the production, collection, transformation and marketing of products from the identified supply chains and companies that provide services and means of production.

Timeline: 2021-2026 (see Table 2 for details).

Investment 1.1b: Agri-solar Park.

Challenges:

From an analysis conducted on the National Data Bank of the Zootechnical Registry, a total of 201,782 zootechnical structures opened before 1990 are registered in the country. The use of asbestos was prohibited only in 1992 (with Law no. 257 of 27 March 1992 - *Rules relating to the cessation of the use of asbestos*), therefore until then the adoption of Eternit/asbestos for the construction of the roofs of agricultural and agro-industrial buildings was prevalent. Of all the structures built before 1990, around 69% are currently active, while the remaining 31% refer to companies that have ceased or merged into other activities.

The agricultural sector is also responsible for 10.3% of the EU's greenhouse gas emissions and 68% of the total agricultural area is used for livestock production[5]. In order to help reduce the environmental and climatic impact of animal production, the challenge that

[5] Eurostat 2019 (UE-27).

this initiative wants to address is to develop the production of renewable energy while at the same time reclaiming the structures from asbestos (rural houses and warehouses are often ideal for placing solar panels).

The proposed interventions contribute to achieving the objectives set for 2030 by the Integrated National Plan for Energy and Climate (PNIEC) in terms of energy production from renewable sources in gross final consumption (30% share of the total).

Objectives:

The proposed intervention aims to modernize the roofs of buildings for productive use in the agricultural, livestock and agro-industrial sectors, thus increasing the sustainability, resilience, green transition and energy efficiency of the sector.

The project aims to incentivize the installation of solar energy panels, exploiting the useful surfaces of agricultural and agro-industrial production buildings. The specific goals are:

- improve insulation, thermal insulation and comfort of reared animals;
- remove the Eternit/asbestos present in the roofs of livestock facilities;
- install photovoltaic panels, creating a network of micro-power plants, spread throughout the territory, without soil consumption;
- improve the energy efficiency of buildings and support the transition towards self-consumption of energy from renewable sources;
- develop decentralized models of energy.

The project also makes it possible to improve the competitiveness of farms by reducing energy supply costs, which together represent more than 20% of farms' variable costs. In this way, the initiative allows agricultural businesses to be economically more resilient, while improving their climate and environmental performance.

Implementation:

The managing Authority is the Ministry of Agricultural, Food and Forestry Policies. For the implementation of the interventions, two widely tested and used procedures are currently under analysis (I.S.I. Call, Sabatini), in order to identify the most appropriate solution to the timing imposed by the RRF Regulation and more responsive to the needs of the sector.

For the purposes of implementation, the proposing Authority recommends the amendment of current legislation, providing for specific exceptions to the provisions relating to municipal urban planning (provided that the interventions do not lead to changes in cubature).

The expected **milestones** are:

a) Preparation of the procedure for submitting applications (by Q3 2021)
b) Start of the application procedure (by Q4 2021)

The **targets** set for 2026 are represented by:

- Surface covered with photovoltaic panels: 13,250 sq. m;
- Energy produced by the photovoltaic panels installed: 1,300 - 1,400 GWh (Gigawatt hour at full capacity);
- Increase of solar energy produced in Italy: + 5% compared to the baseline of 24,000 GWh[6].

Target population: All the companies in the livestock sector that intend to modernize the roofs of the company production sheds.

Timeline: 2021-2026 (see Table 2 for details).

Investment 1.1c: Logistics plan for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors.

Challenges:

Italy ranks eighteenth in the world ranking in terms of infrastructure competitiveness, defined by the *"infrastructure"* indicator of the *World Economic Forum 2019*[7], highlighting an infrastructural gap - albeit improving - compared to the standards achieved by other developed economies. The proposed project intends to fill this gap in the country, focusing on the logistics of the agri-food, horticultural, fishing and aquaculture sectors, which are characterized by strong specificities throughout the supply chain.

Furthermore, the Logistics Plan aims to reduce the environmental impact of the transport system in the agri-food sector, by reducing traffic in the most congested areas and times, and to express the potential, in terms of exports, of Italian agri-food SMEs, improving accessibility to freight villages and hub services, the logistical capacity of wholesale markets and the traceability of products.

The improvement of sustainability (environmental, economic and social) is ensured through the reduction of emissions, the reduction of traffic in more congested areas and times, the reduction of waste and the reuse of by-products

These interventions are in line with the guidelines of the *Farm to Fork strategy*, with the general objective of "*reducing the environmental and climatic footprint of the food system and strengthening its resilience, guaranteeing the security of food supply in the face of climate change and loss of biodiversity, lead the global transition towards competitive sustainability from producer to consumer and exploit new opportunities*".

Objectives:

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[6] Fonte: GSE, Rapporto delle attività 2019

[7] Fonte: *WEF The Global Competitiveness Report 2019.*

The plan for the logistics of the agricultural sector consists of contributions to companies and organizations that support investments aimed at achieving the following objectives:

- improve the storage capacity of cereals and agricultural raw materials, and accessibility to freight villages and hub services;
- strengthen the infrastructure of the food, floriculture and plant nursery markets;
- develop an integrated logistic system for fish industry supply chains;
- improve the logistical capacity of wholesale food markets, to ensure sustainable products at a low environmental and economic cost;
- increase rail freight transport and interconnections between ports, freight villages and logistic structures serving metropolitan areas;
- encourage a more equitable distribution of value along the supply chain to avoid food waste and promote social agriculture, through the application of emerging and innovative technologies in production processes, in precision agriculture and in product traceability.

Implementation:

The managing Authority is the Ministry of Agricultural, Food and Forestry Policies.

The expected **milestones** are:

a) Identification of intervention priorities
b) Preparation of the measure and levels of aid and publication of the "expressions of interest"
c) Opening of the call
d) Approval of the rankings and granting of aid

The ***target*** set for 2026 is equal to 60 interventions carried out, considering an average of three interventions per region.

Target population: Individual and associated companies (freight villages and wholesale market management companies), producer organizations, cooperatives and consortia, transport operators, port authorities, public administrations, local authorities.

Timeline: 2021-2026 (see Table 2 for details).

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2) Circular economy and enhancement of the integrated waste cycle.

This line intervenes on the revamping of existing installations and the construction of new waste treatment plants for the enhancement and closure of the waste cycle, on the reconversion, through tender interventions, of industries such as chemistry towards the replacement of more polluting raw materials with recycled materials, and on the ecological transition of the South.

Reform 2.1: National strategy for the circular economy

Challenges: Despite the commitment and initiatives at EU and national level, the amount of waste generated is not decreasing. The annual production of waste from all economic activities in the EU amounts to 2.5 billion tonnes. To cancel the link between economic growth and the consequent increase in waste production, a considerable effort must be made along the entire value chain that includes production activities as well as private citizens[8].

The implementation of sustainable products policy and its translation into specific legislation is essential to make progress in preventing waste generation. It is also necessary to build, further strengthen and better implement EU waste laws.

Furthermore, at the national level, the development of the circular economy varies considerably between regions, often leading to the initiation of EU infringement procedures and consequent fines[9].

Objectives:

The reform aims at creating a national strategic framework to strengthen the coherence and effectiveness of circular economy policies, also in line with European provisions and in synergy with other national policies/strategies (National Strategy for Bioeconomy, Industrial Policies and Transition 4.0, Integrated National Plan for energy and climate, Cohesion policies implemented through the European Structural and Investment Funds).

The reform will pursue the reduction of the use of non-renewable raw materials, the decrease in the volume of waste, the reuse and recycling of waste, through the introduction of traceability systems of material flows, technological innovation, the diffusion of good practices and the adoption of tools to foster synergy between the public and private sectors and plan infrastructures to close the waste cycle.

The primary and secondary legislation will be modified for the recognition of the end of the waste qualification for numerous types of materials produced in the recycling chain and to speed up the authorization procedures for plants and their operation.

In particular, the Reform wants to act through two lines of intervention:

1. Define the national strategy for the circular economy:

i. Establish, monitor and periodically update national objectives for the transition to an economic and environmental model based on the efficient use and management of resources and on the extension of the life of prod-

[8] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A new action plan for the circular economy - For a cleaner and more competitive Europe. Brussels, 11.3.2020

[9] 2020 European Semester: Country Report - Italy

ucts and materials in all phases of the value chain (design, production, distribution, consumption and end of life management), in urban and industrial areas and throughout the territory.

ii. Identify the strategy to improve the reduction of the use of non-renewable raw materials, the prevention of waste production, the reuse and recycling of waste, through the introduction of traceability systems for material flows, technological innovation, dissemination of good practices and the adoption of tools that can foster synergy between the public and private sectors.

iii. Plan waste infrastructures.

The **milestones** and the **targets** are currently being defined.

2. Regulate the organization and functioning of the traceability system, simplifying and making administrative processes more timely and homogeneous:

i. Regulate the organization and operation of the traceability system by allowing dialogue with the management systems of users, public and private, through specific interfaces, favouring administrative simplification, ensuring a preliminary period of experimentation and the sustainability of costs borne by the components of the system.

ii. Promote the digitization of business systems.

iii. Guarantee the traceability of material flows and their quality to the advantage of the development of circular supply chains and to counteract environmental dumping

The **milestones** and the **targets** are currently being defined.

Implementation:

The responsibility for the reporting and implementation of the Reform in question lies with the Ministry of the Environment and the Ministry of Economic Development.

The proposed Reform plans to address the following points:

- **Coordinate, promote, control and monitor the circular economy in Italy:** define and promote a National Strategy for the Circular Economy by defining the European Action Plan for the Circular Economy; draw up an annual report on the implementation at national level of the actions resulting from the strategy for the transition to the circular economy; strengthen and promote the activities of the Italian Platform for the Circular Economy (ICESP); create a national technical coordination and integrated control structure; set up a communication and promotion program for consumers and businesses, with particular attention to SMEs; define a strengthened control and surveillance system for safety, efficiency and sustainability in the circular economy sectors by fully systematising and integrating

existing structures and, where necessary, strengthen them, ensuring efficiency and simplification; implement regulatory reform and transposition programs based on the European Action Plan for the Circular Economy.

- **Sustainability of products and processes:** introduce regulatory measures to favour the repairability and durability of products; define regulations and/or mechanisms that encourage the sharing economy, collaboration, leasing/rental instead of purchase, forms of local reuse/recovery of resources, the development of integrated production-distribution-customer chains; implement the community legislation relating to the sustainability of categories of products with high environmental impact (AAE, vehicles, waste oils, packaging, plastic products, etc.).
- **Waste reduction and enhancement:** implement waste reduction objectives and adopt waste prevention measures including, for example, the implementation of the recently adopted obligations for extended producer responsibility schemes; adopt the harmonized model at EU level for separate waste collection and labelling to facilitate separate collection; implement the legislation relating to the "End of Waste" and by-products, integrated and intelligent implementation of other European regulations (REACH, SCIP, SUP, etc.) to strengthen sustainable production.
- **Make the production system more circular:** create a national technological hub and territorial competence centers for the circular economy to support the production system; create tools for the diagnosis of company resources (to be made in a mandatory perspective) and for the monitoring and traceability of companies in terms of circularity; define tools to promote eco-design in sectors with a high environmental impact; implement on an Italian scale the European strategic agenda for research and innovation in the circular economy (project H2020 - Cicerone) and strengthen Italian participation in European actions; develop other innovative market and/or financial tools for the circular economy (e.g. reward mechanisms, tax deductibility of leasing / rental costs for durable goods, VAT rate reductions, etc.), possibly integrated with the principles of energy efficiency and other sectors.
- **More circular urban, industrial and rural areas:** develop policy tools to make smarter services and industries for recycling and reuse, data science based and digital, starting new trials both at the scale of large cities and in rural areas; work for the revision of the rules on state aid for the environment and energy; develop policy tools for promotion actions for the integrated development of creative industries for well-being, health, and the green and digital transition, including improvements in circular and sustainable water management; develop policy tools to develop forms of circular industrial districts for the green conversion of traditional industrial sites into "zero emission" sites by implementing processes of industrial symbiosis also through the definition of specific rules.
- **Monitor and evaluate progress:** define a monitoring plan, indexes and national indicators for measuring progress towards the implementation of the Circular Economy, including the assessment of socio-economic and environmental impacts, also for the purpose of achieving climate neutrality objectives for the transition to the

circular economy and the implementation of the United Nations Sustainable Development Goals for 2030. The monitoring plan must include two independent assessment reports to verify the progress of the planned actions, including any critical issues that have emerged, and guide the updating of the strategy.

Target population: Whole national territory.

Timeline: The timing is currently being defined.

Investment 2.1: New plants and revamping of existing waste treatment plants

Challenges:

There is an extreme heterogeneity between regions in the North and South of the country as regards plant equipment for waste management. The location of the plants, mainly concentrated in the North, involves significant flows of waste from the Center-South to the North: the Center exports about 550,000 tons, corresponding to 38% of the quantities collected and the Peninsular South about 420,000 tons, or 30% of the waste collected.

The strengthening of the plant equipment is necessary not only to bridge the gap between the Central and Southern regions but also that existing between the same Northern regions and the lack of service in some large metropolitan areas of Central and Southern Italy and beyond (e.g. metropolitan areas of Roma Capitale, Naples, Bari, Reggio Calabria and Palermo): overall, about 1.3 million tons have been processed in plants in regions other than those of production and this quantity represents about 18% of organic waste from separate collection.

The management of organic waste and unsorted urban waste are the two main supply chains of intervention for achieving the objectives set out in the circular economy package directives by 2035.

The quantity of organic sorted waste collected in 2018 amounts to about 7 million tons – corresponding to 40% of sorted waste and 23% of total urban waste – of which about 3.7 million in the North, 1.4 million in the Center and in the Peninsular South, 0.3 in Sicily and 0.2 in Sardinia.

With regard to the management of unsorted urban waste and plants needed for the closure of the circular economy cycle, the emergency linked to national non self-sufficiency in the management of urban waste and special waste deriving from urban waste is known, including the management of waste resulting from the recycling of materials.

In addition to pursuing the circular economy and the recycling objectives deriving from European regulations, it is equally urgent to equip the Country with plants that allow the closure of the recovery cycle, with the aim of national and regional self-sufficiency.

The use of landfill as a waste cycle closure plant is the prevailing system in the central and southern regions, which makes it more difficult to achieve the target of landfill disposal, equal to a maximum of 10% by 2035, identified by Europe. In these regions, in fact, urban waste undergoes treatments in Mechanical Treatment (MT) and Mechanical Biological Treatment (MBT) plants, from which special waste originates, whose destination is mainly the landfill or transport of waste to the north.

Compared with the objectives of the circular economy (actual recycling equal to 65% of the total urban waste and use of landfill equal to 10% of the total urban waste) a further 25% of total urban waste, consisting mainly of non-recyclable residual urban waste, sorted waste from the selection of dry fractions (packaging waste, bulky waste, textile waste, WEEE) and from waste intercepted at the entrance to the organic fraction treatment plants, still remains to be managed.

Objectives:

The intervention involves investments for the enhancement and closure of the waste cycle. The focus will be on the upgrading of existing plants and the construction of new plants for the closure of the waste cycle with the production of secondary raw materials. The investments will also be aimed at strengthening separate waste collection with investments in new generation vehicles and implementing the logistics for waste fractions.

The investment plan has two macro-objectives:

1) **Address particularly critical situations in the metropolitan cities of Roma Capitale, Napoli, Palermo, Bari and Reggio Calabria.**

   The main objectives to be achieved are autonomy in the management of urban waste at the regional level:

- Reduction of waste production through strong communication activities and the promotion of collection and reuse centers for waste as well as of goods and materials that the owner has decided to discard. (*The project selection criterion is the guaranteed percentage reduction in waste production compared to the average of the last 5 years*).
- Adaptation of the plant equipment to close the urban waste cycle according to the principles of proximity while minimizing the shipment of waste deriving from treatment outside the region, even if destined for recovery. (*The project selection criterion is the guaranteed percentage reduction of waste deriving from the treatment of municipal waste destined outside the region*).
- Rapid increase of separate collection up to 55% of overall urban waste collected (targeting the goal of 65% by 2035), with subsequent maximization of preparation for reuse and recycling to achieve the objectives of Directive 2018/851 and that is to prepare for reuse and to recycle at

least 65% of collected urban waste by 2035. (*The project selection criterion is the achievement of the 70% separate collection targets - targeting the 82% target by 2035 - and the preparation for reuse and recycling of 55% of municipal waste from separate collection*).

- Progressive reduction in landfill disposal of residues from the treatment of unsorted municipal waste, maximizing material recovery and filling. The percentage of waste recovered with the production of materials and/or destined for filling with replacement of virgin resources must be at least 50% of the unsorted waste collected by 2025. (*The project selection criterion is the guaranteed percentage of unsorted municipal waste recovered after treatment*).
- Re-naturalization of areas heavily impacted by waste disposal through the adoption of innovative techniques for accelerating biological degradation processes and conversion of landfill biogas also to produce biomethane to be used in transport, further reducing flare disposal. (*The project selection criterion is the relevance of the re-naturalization intervention for environmental context and extension*).

The interventions that involve the construction of new recovery plants must preferentially be already hinged in the required authorization procedures, with exceptions to be assessed according to the social acceptability of the intervention, and the construction site must be demonstrated so that the objectives indicated above are achievable in the expected times. Projects must therefore be provided for these interventions with the level of detail, according to the type of interventions, which allows for the precise verification of the paths indicated above.

2) **Implement highly innovative "flagship" projects throughout the national territory.**

The main objectives to be achieved are:

- Collection and recovery of Waste Electrical and Electronic Equipment (WEEE) aimed at the pursuit of a collection of 70% of the weight of such waste placed on the market and the simultaneous recovery of 100% of the waste collected. (*The project selection criterion is the guaranteed percentage of WEEE collected, guaranteed percentage of WEEE collected and sent for recovery*).
- Closure of the management cycle of the purification sludge produced by the treatment of urban waste water according to the principles of proximity with innovative recovery techniques, with reference to nitrogen and phosphorus. Maximize the exploitation of outgoing flows by creating synergies with the treatment of other types of waste for which there is an unsatisfied demand for recovery. (*The project selection criterion is*

the minimization of the quantity of sludge destined outside the region to treatment and/or agronomic recovery platforms, compared to the quantities thus managed in 2020).

- Creation of treatment centers for the recovery of waste produced by large users (ports, airports, railway stations, hospitals, school buildings), such as packaging waste, kitchen and canteen waste, WEEE, bulky items, mattresses, road sweeping waste, hazardous municipal waste, waste from the health and veterinary sector. (*The project selection criterion is the innovativeness of the proposal with reference to the totality of the types of waste intercepted*).

Milestones and the **targets** are currently being defined.

Implementation:

For the implementation of the national strategy on the circular economy and, in particular, to support local authorities in the implementation of the planning objectives regarding the reduction of waste production and the effective construction of treatment, recovery and recycling plants, the Ministry of the Environment introduced the "National Program for waste management" (art. 198bis of Legislative Decree 152/06) implementing EU directives. The program, which must be approved within 18 months of the entry into force of the Directive (26.09.2020), defines the criteria and strategic lines to which the Regions (competent bodies in the field of waste management planning) must comply. The definition of the National Program began on November 12th, 2020 with the establishment of the institutional table. The consultation phase on the program outline (which must be subjected to subjecting to Strategic Environmental Assessment) will see the involvement of all the main stakeholders to ensure maximum transparency of the process.

It should then be noted that both the Ministry of the Environment, with the creation of the General Directorate for the Circular Economy, and the Ministry of Economic Development, with the Circular Economy Division, have ad hoc structures for the management and monitoring of interventions

The implementation of the National strategy for the circular economy will be accompanied by a communication, education and information program aimed at strengthening citizens' cognitive tools and guiding the architecture of choices towards sustainable models. The communication, education and information program will be developed by the Ministry of the Environment in collaboration with the Ministry of Economic Development, and with other departments interested in sectorial competence, and will see the involvement of the National Association of Italian Municipalities (ANCI), associations of category and NGOs with the aim of ensuring consistency in the actions implemented for the development of the circular economy in our country. Action will be taken on the reduction of waste production, on food waste and on information to citizens, starting from school age, relating to the construction of plants and infrastructures serving the circular supply

chains.

The communication schemes will also be developed with innovative tools such as those borrowed from behavioural sciences (*nudging*).

Target population: Regional administrations, Municipalities, citizenship.

Timeline:

The timing of the realization of the investments foresees a 2026 horizon, starting from available projects proposed by Metropolitan Cities, already present in the regional planning, verified by the Regulatory Authority for Energy, Networks and Environment (ARERA) for the tariff profiles and, in any case, verified for financial sustainability profiles, indicating any leverage effect for the share borne by private implementing bodies.

Investment 2.2: Circular economy projects

This group of interventions is financed through a Fund specifically intended to achieve the objectives of the circular economy with the aim of reducing the use of raw materials in industrial processes, gradually replacing them with materials produced from scraps, residues, waste.

The interventions must be consistent with the European Plan for the circular economy (Circular Economy Action Plan) with the aim of reducing the net production of waste and the landfilling of all process waste (under this purpose all the actions aimed at the valorisation of waste and the production of intermediate products to be allocated to the various production sectors by progressively reducing the supply of raw materials from abroad). Interventions will be financed on the Fund by activating, where possible in relation to the implementing body and the economic and financial sustainability of the intervention, financial instruments aimed at maximizing the leverage effect and the contribution of private capital and lenders such as the EIB.

Timing: An implementation period of 5 years is estimated (2021-2026).

The estimated cost on the RRF amounts to € 1.90 billion. An additional cost of € 0.30 billion is expected from REACT-EU. The total cost therefore amounts to € 2.20 billion.

a) Development of biomethane according to criteria promoting circular economy

Challenges:

In the Italian context, biomethane plays a strategic and central role for the purposes of decarbonization and circular economy, as it allows to maximize energy recovery from organic residues of agricultural, agro-industrial matrix and organic waste related to the agricultural process.

Agriculture is responsible for about 9% of the GHG emissions of the country Italy. The animal husbandry has an important part of this responsibility (CH4, N2O emissions). In this context, anaerobic digestion, a process underlying the production of biomethane, applied to livestock effluents is indicated as a solution to improve the situation (ISPRA, 2020) without reducing the size of the livestock.

In recent years, Italy stood out among European countries for having the largest number of active biogas plants. This result was facilitated by the economic support issued by the GSE to produce electricity, obtained from the combustion of the biogas produced.

In order to fulfil the requirements of the NECP 2030, especially for the achievement of the objectives on the share of biofuels among fuel mix, in the coming years, with the help of this project, the incentive process will be focused on supporting the production of biomethane, valid both for self-consumption uses in the place of production, and for injection into the existing network infrastructures. This last application generates an overall saving of greenhouse gases compared to the life cycle of fossil methane between 80 and 85%.

In addition to reducing CO2 emissions deriving from the transport and consumption of fossil methane, this project will contribute to reducing CH4 and ammonia emissions related to the storage and distribution of livestock effluents that are normally produced during the breeding and agriculture process.

Objectives:

This project mainly contributes to solving two issues of great interest for the Italian country: the green transition towards a circular economy with reduced CO2 emissions and the creation of jobs in areas far from industrial centers or cities. A more detailed analysis of the benefits, that would be obtained by the implementation of the project, are as follow:

- *green transition*: reduction of GHG emissions as methane, nitrous oxide and ammonia from agriculture; increase in soil fertility through a recycling of bio-nutrients; valorisation of the by-products of the agro-industrial sector; encourage the conversion of diesel-fuelled mechanical vehicles to biomethane-fuelled vehicles, improving efficiency and emissions.
- *job creation*: the biogas supply chain is a short and highly integrated supply chain in the territory, allowing the mitigation of the economic and social impacts of the crisis even in rural areas. It has been estimated that the project could create around 90.000-100.000 hires[10] in the period 2021-2026.

[10]based on publication "Gas for Climate Job creation by scaling up renewable gas in Europe; Navigant Netherlands BV, Reference No: 203997, Date: 18 November 2019" and using prudential and proportional criteria with respect to the impacts generated in 2012-2017 period, by the first biogas plants.

This Investment aims at the following 5 specific objectives:

1. Reconversion and efficiency improvement of existing agricultural biogas plants towards the total or partial production of biomethane to be allocated in the industrial heating and cooling sector and residential as well as in the tertiary sector and construction of structures for proper management input biomass and digestate (storage coverage, etc.).
2. Support to the construction of new facilities to produce biomethane, for the same uses.
3. Dissemination of agro-ecological practices in the biogas production phase (minimum soil working sites, innovative low-emission systems for the distribution of digestate) to improve the efficiency of nutrient use with a clear reduction in the use of synthetic fertilisers and an increase in organic matter in soils, as well as the creation of centralized treatment clusters for the valorisation of digestate and effluent with the production of organic fertilisers.
4. Replacement of obsolete and low-efficiency mechanical vehicles with methane/biomethane powered vehicles. This scrapping measure shall be integrated with the investments planned for conversion under the first objective 1 or extended to all the agricultural holdings concerned, contributing to the modernisation of the fleet of Italian farms while creating a greater diffusion and demand for methane-powered vehicles with a positive impact even in an industrial sector in which Italy is a world leader.
5. Promotion of investments for efficiency (use of heat in the farm and reduction of emissions) of existing small-scale plants for which it is not possible to access the conversion measures.

Implementation:

The development of biomethane generation is expressly provided for by the NECP, which provides an important contribution of it to achieve the set goal of renewables contribution in the transport sector. The NECP also provides for the possibility of imposing mandatory quotas of renewable methane also in sectors different from transport. The proposed project joins the existing financial support, for the promotion of biomethane in the transport sector (already present in the Italian system) and the possibility to convert existing plants in the agricultural sector which, due to the constraints on the materials that can be used, often encounter difficulties in using of the benefits provided by the authorities.

To achieve the first target (T1), this project provides a granting contribution -in compliance with the limits of grants and loans provided for in the European framework the investment required (40%)- for the partial or total conversion of an existing biogas plant (efficiency of biomass management infrastructures, upgrading system, network connection costs, purchase of agricultural machinery for use by the producer fuelled by biomethane) or for a new plant. In this case (T2), the incentive is added to the incentive forms already

available (Certificate of Consumption - CIC but of a lower value than that foreseen in the case of biomethane advanced by the Ministerial Decree of 2 March 2018). Depending on the technology and size of the plant, the average costs for the purchase of equipment (assembly, piping and civil works excluded) and the management of a plant can vary considerably. Therefore, especially in small plants, financial support is very often necessary.

For the purpose (T5) of replacing obsolete and low-efficiency diesel-fuelled vehicles with biomethane-fuelled ones, the strategy will involve both the self-consumption of biomethane producing farms and farms which want to scrap a diesel tractor. Estimates for the replacement of an agricultural tractor with a power of about 130 kW show a unit cost of 25-30% higher than a comparable diesel one: about 120 k€ each. These actions would be supported by a contribution equal to 40-50% (depending on the different conditions) to make the purchase advantageous compared to a similar diesel one. As a result of this project, a positive effect on the national mechanical industry, which is potentially the world leader in the production of bio-methane agricultural tractors, will be generated.

Milestones and targets

- T1: By Q2 2026, conversion of at least 70% of the 800 existing Biogas plants (for an overall number of 560 biomethane plants), characterized by electric power generation between 0.6-1MW; considering a possible increasing in production capacity in 50%
- T2: By Q2 2026, production of o,7 bcm/y (billion cubic metres/year) of biomethane from new plants built by single or consortium farms
- T3: By Q2 2026, optimization of soil tillage and organic fertilization through the purchase of equipment for minimum tillage and for digestate distribution
- T4: By Q2 2026, creation of centralized poles for the enhancement of digestate
- T5: By Q2 2026, conversion process of the existing agricultural vehicle fleet, with the distribution of 250 mechanical vehicles powered by biomethane
- T6: By Q2 2026, efficiency interventions to recover the heat from biogas plant, characterized by sizes that do not allow conversion to biomethane

Target population: Municipalities, DSOs, biogas power producers and different industrial sectors. In particular, the project will to be focused on the transport and agricultural sectors and will enhance the industrial and agricultural sectors (such as the animal husbandry and dairy sector), both excellence of "Made in Italy".

Timeline: The implementation period is estimated to be 5 years (2021-2026).

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b) Other circular economy projects

In progress ...(Projects to be defined)

Investment 2.3: Ecological transition in the South of Italy

In progress ...(Projects to be defined)

There are no costs related to the RRF. An amount of € 0.80 billion is expected from REACT-EU.

The intervention provides essential investments for the ecological transition of the southern marginal areas and in particular for the smaller islands, also in order to transform the latter into "100% green" territories as practical examples of ecological development models and real attractors green investments, as well as to support the development of the environmental economic zones located in Southern Italy.

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4. Green and digital dimensions of the component

a) Green Transition:

b) Digital Transition:

Table 1. Green and digital impact

Short title	Green objectives				Digital objectives	Transition challenges	
	Climate	Environmental	Intervention field	DNSH		Green	Digital
	Tag	Tag					
Reform 1.1: Define the national strategy for the Circular Economy							
Reform 1.2: Regulate the organization and functioning of the traceability system, simplifying and making administrative processes more timely and homogeneous							
Investment 1: Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors	*40%*	*40%*	*047*	*yes*	0	yes	no
Investment 2: Agri-solar Park	*100%*	*40%*	*029*	yes	0	yes	no
Investment 3: Logistics plan for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sector sectors	*40%*	*40%*	*026*	*yes*	0	yes	no
Investment 4: New plants and revamping of existing waste treatment plants	*40%*	*100%*	*042*	to be defined	0	yes	no
Investment 5: Circular Economy Projects	*100%*	*40%*	*032*	to be defined	0	yes	no
Investment 6: Ecological transition in the South of Italy	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined

5. Milestones, targets and timeline

Table 2. Milestones and targets

Related reform or investment	Milestone or target name & number	Qualitative indicators (for milestones)	Quantitative indicators (for target)			Timeline for completion (indicate the quarter and the year)	Data source /Methodology	Responsibility for reporting and implementation	Description and clear definition of each milestone and target	Assumptions/ risks	Verification mechanism
			Unit of measure	Baseline	Goal						
Component M2C1											
Reform 1.1: Define the national strategy for the Circular Economy	Promote the ecological transition and the implementation of the European action plan for the circular economy. Ensure infrastructure planning	Adoption of the reform	Number	0	1	2021	Ministry of the Environment Ministry of the Economic Development	Ministry of the Environment Ministry of the Economic Development	Define the National strategy for the circular economy: 1. Establish, monitor and periodically update national objectives for the transition to an economic and environmental model based on the efficient use and management of resources and on the extension of the products and materials life in all stages of the value chain (design, production, distribution, consumption and end of life management), in urban and industrial areas and throughout the territory. 2. Identify the strategy to improve the reduction of the use of non-renewable raw materials, the waste production prevention, the reuse and recycling of waste, through the introduction of traceability systems for material flows.		Plan implementation monitoring / Plan preparation
Reform 1.2: Regulate the organization and functioning of the traceability system, simplifying and making administrative processes more timely and homogeneous	Stimulate the use of the system for the complete traceability of waste, from production to final management, by the subjects joining the System on a voluntary basis. Guarantee the traceability of material flows and their quality to the advantage of the development of circular supply chains and to combat environmental dumping.	Adoption of the reform	Number	0	1	Q2 2021	Ministry of the Environment	Ministry of the Environment	Define specific legislation in order to: 1. Regulate the organization and functioning of the traceability system allowing dialogue with the public and private users management systems through specific interfaces, favoring administrative simplification, guaranteeing a preliminary period of experimentation and the costs sustainability borne by system components. 2. Promote the digitization of business systems 3. Guarantee the traceability of material flows and their quality to the advantage of the development of circular supply chains and to combat environmental dumping.	Use of the electronic register by each of the bodies managing waste	Dialogue with operators Experimentation phase
Investment 1: Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Agri-food sector**	Milestone 1.A Milestone 1.B Milestone 1.C Target 1.A - Number of new supply chain contracts signed Target 1.B - Progress of new investment projects (green + circular economy)	M1.A Identification of intervention priorities M1.B Issue of the call for proposals for the selection of investment programs M1.C Approval of the final rankings of public tenders for the aid granting	T1.A Number T1.B %	T1.A 0 T1.B 0%	T1.A 35 T1.B 100%	M1.A Q2 2021 M1.B Q4 2021 M1.C Q3 2023 T1.A Q3 2024 T1.B Q3 2026	M1.A Administration Internal monitoring M1.B Tender publication M1.C Rankings approval T1.A Internal Department monitoring T1.B Controls: Work progress status (SAL) transmitted by beneficiariesand approved by the Administration	Department of Competition Policies, Agri-food Quality, Equestrian and Fisheries	M1.A Priority strategic lines identification for the investment framework M1.B The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. M1.C The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. T1.A The target quantitatively measures the sector's response to the measure. T1.B The target quantitatively measures the state of implementation of the projects proposed and financed under the supply chain contracts	It is necessary to boost the diffusion of information concerning the programme, supporting the access to the incentive tool. It is necessary to provide support to the management authorities in order to hit targets and deadlines.	Internal Department monitoring Work progress status (SAL) monitoring of beneficiaries
Investment 1: Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Fishing sector**	Milestone 2.A Milestone 2.B Milestone 2.C Target 2.A - Number of new supply chain contracts signed Target 2.B - Progress of new investment projects (green + circular economy)	M2.A Identification of intervention priorities M2.B Issue of the call for proposals for the selection of investment programs M2.C Approval of the final rankings of public tenders for the aid granting	T2.A Number T2.B %	T2.A 0 T2.B 0%	T2.A 20 T2.B 100%	M2.A Q2 2021 M2.B Q4 2021 M2.C Q3 2023 T2.A Q3 2024 T2.B Q3 2026	M2.A Administration Internal monitoring M2.B Tender publication M2.C Rankings approval T2.A Internal Department monitoring T2.B Controls: Work progress status (SAL) transmitted by beneficiariesand approved by the Administration	Department of Competition Policies, Agri-food Quality, Equestrian and Fisheries	M2.A Priority strategic lines identification for the investment framework M2.B The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. M2.C The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. T2.A The target quantitatively measures the sector's response to the measure. T2.B The target quantitatively measures the state of implementation of the projects proposed and financed under the supply chain contracts	It is necessary to boost the diffusion of information concerning the programme, supporting the access to the incentive tool. It is necessary to provide support to the management authorities in order to hit targets and deadlines.	Definition of a technical document of investment priorities Internal Department monitoring Work progress status (SAL) monitoring of beneficiaries
Investment 1: Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Forestry sector**	Milestone 3.A Milestone 3.B Milestone 3.C Target 3.A - Number of new supply chain contracts signed Target 3.B - Progress of new investment projects (green + circular economy)	M3.A Identification of intervention priorities M3.B Issue of the call for proposals for the selection of investment programs M3.C Approval of the final rankings of public tenders for the aid granting	T3.A Number T3.B %	T3.A 0 T3.B 0%	T3.A 20 T3.B 100%	M3.A Q2 2021 M3.B Q4 2021 M3.C Q3 2023 T3.A Q3 2024 T3.B Q3 2026	M3.A Administration Internal monitoring M3.B Tender publication M3.C Rankings approval T3.A Internal Department monitoring T3.B Controls: Work progress status (SAL) transmitted by beneficiariesand approved by the Administration	Directorate General of Mountain Economy and Forestry	M3.A Priority strategic lines identification for the investment framework M3.B The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. M3.C The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. T3.A The target quantitatively measures the sector's response to the measure. T3.B The target quantitatively measures the state of implementation of the projects proposed and financed under the supply chain contracts	It is necessary to boost the diffusion of information concerning the programme, supporting the access to the incentive tool. It is necessary to provide support to the management authorities in order to hit targets and deadlines.	Definition of a technical document of investment priorities Internal Department monitoring Work progress status (SAL) monitoring of beneficiaries
Investment 1: Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Floriculture and plant nursery sector**	Milestone 4.A Milestone 4.B Milestone 4.C Target 4.A - Number of new supply chain contracts signed Target 4.B - Progress of new investment projects (green + circular economy) Target 4.C - Value of the new concessions for the payment of the green bonus	M4.A Identification of intervention priorities M4.B Issue of the call for proposals for the selection of investment programs M4.C Approval of the final rankings of public tenders for the aid granting	T4.A Number T4.B % T4.C €/MLN	T4.A 0 T4.B 0% T4.C 0	T4.A 20 T4.B 100% 440	M4.A Q2 2021 M4.B Q4 2021 M4.C Q3 2023 T4.A Q3 2024 T4.B Q3 2026 T4.C Q1 2024	T4.A Department Internal monitoring T4.B Controls: Work progress status (SAL) transmitted by beneficiariesand approved by the Administration T4.C Adminstration Internal monitoring	Department of Competition Policies, Agri-food Quality, Equestrian and Fisheries T4.A/T4.B Directorate General of Mountain Economy and Forestry T4.C Department of Competition Policies, Agri-food Quality, Equestrin and Fisheries	M4.A Priority strategic lines identification for the investment framework M4.B The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. M4.C The milestone verifies the conclusion of the procedures for defining the legal and technical framework and the subsequent selection of beneficiaries. T4.A The target quantitatively measures the sector's response to the measure. T4.B The target quantitatively measures the state of implementation of the projects proposed and financed under the supply chain contracts	It is necessary to boost the diffusion of information concerning the programme, supporting the access to the incentive tool. It is necessary to provide support to the management authorities in order to hit targets and deadlines.	Definition of a technical document of investment priorities Publication on the Ministry website Rankings publication Internal management monitoring Work progress status (SAL) monitoring of beneficiaries Internal monitoring
Investment 2: Agri-solar Park	M1: implementation of the procedure for submitting applications M2: start of the procedure for submitting applications T1: Roof surfaces covered with photovoltaic panels under the PNRR T2: Cumulative quantification of the energy produced: kilowatts produced by the photovoltaic panels installed as part of the PNRR (Gigawatt hours in full operation) T3: Increase of solar energy determined by the PNRR compared to the baseline (total solar energy produced in Italy)	M1 Procedure adoption M2 Start of the procedure	T1 Roofs Square meters T2 Gigawatt hours T3 %	T1 0 T2 0 T3 0% (24.000 Gigawatt hours)	T1 13.250.000 sqm T2 1.300-1.400 GWh T3 5%	M1 Q3 2021 M2 Q4 2021 T1 Q4 2026 T2 Q4 2026 T3 Q4 2026	Estimated areas on the number of existing animals (Source: BDN Teramo) andminimum area availability per animal, reduced by 50% for double auifer. The maximum potential area obtained was further reduced by 50%.	Two procedures under evaluation: National Institute for the Insurance against Accidents at Work - INAIL (ISI call); Ministry of Economic Development (Sabatini call).	T1: cumulative surface area of the roofs of productive buildings in the primary sector, renovated and covered with photovoltaic panels T2: cumulative quantification of the kilowatts produced by the installed photovoltaic panels T3: cumulative quantification of the energy contribution determined by the photovoltaic panels installed and calculation of the percentage increase determined on the current baseline		
Investment 3: Logistics plan for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sector sectors	M1: Identification of intervention priorities M2: Elaboration of the intervention measure and levels of aid and publication of expressions of interest M3: Start of the investment measure M4: Aid Granting with approval of the rankings of public tenders T1: Total number of interventions		T1 Number of interventions	0	60	M1 Q4 2020 M2 Q1 2021 M3 Q4 2021 M4 Q4 2022 T1 Q4 2026					
Investment 4: New plants and revamping of existing plants	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined
Investment 5. Circular economy projects: Development of biomethane according to criteria promoting circular economy	T1. Conversion of at least 70% of existing Biogas plants (800), characterized by electric power generation between 0.6-1MW; considering a possible increasing in production capacity in 50%.	n/a	Number of biomethane plants (new plants and converted biogas) (Plants/year)	0	560 (38) (73) (177) (230) (42)	Q2 2026 (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q2 2026)	MISE, GSE	MISE, MIPAAF	The target is the production of 1.8 bcm of biomethane from the total reconversion of 70% of existing plants of size between 0.6 and 1 MW of electrical nominal power. The construction of structures for the management of biomass and digestate is compulsorily included in the reconversion works of existing plants. Environmental impacts obtained from the implementation of the investment: - Reduction of emissions by approximately 5.0 million tons of CO2 eq. (in particular, methane and nitrous oxide) and 32,000 tons of ammonia from the agricultural sector (-15% CO2eq emissions; -9% NH3 emissions in 2018), reduction in the use of natural resources per unit of product, production of biogenic-based renewable gas (biomethane) to replace 3 million tons of oil equivalent (toe) from fossil fuels. - Further reduction of CO2 emissions, equal to approximately 10 million tons, deriving from the non-use of fossil fuels in the overall energy sector deriving from the replacement of		
	T2. Production of biomethane from new plants built by single or consortium farms.	n/a	Billions of cubic meters of biomethane produced per year (bcm / y) (additional production/year)	0	0.7 (0.014) (0.147) (0.154) (0.175) (0.175) (0.035)	Q2 2026 (Q4 2021) (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q2 2026)	MISE, GSE	MISE, MIPAAF	The target is the production of 0.7 bcm of biomethane from new plants to the aim to reach the overall target of 2.5 bcm of biomethane for industrial use. It is estimated that around 175 new plants of 500 m3 / h of biomethane will be built. If the percentage of conversion of existing plants is higher than assumed, the resources to devote to this objective will be reduced.	The estimate of the percentages of plants that could adhere to the measure, despite being hypothesized according to prudential criteria (70% of biogas switch to biomethane at the expiry of the electricity incentive) is by its nature subject to possible variations depending on a multitude of factors. The planned interventions must be accompanied by a new national legislation which, in line with the PNIEC provisions, provides a system of obligation to use renewable gas for importers and producers of fossil natural gas with payment of the CIC value by the latter for 10 years. The clarity of the Community legislation on material that can be used in the digester (for example of the by-products of agricultural, livestock and agro-food activities), as well as of the concept of second crop and interlayer crops, appear crucial for the intervention development	
	T3. Optimization of soil tillage and organic fertilization through the purchase of equipment for minimum tillage and for digestate distribution.	n/a	Number of equipment sold (eq. per year)	0	800 (6) (100) (133) (231) (277) (53)	Q4 2026 (Q4 2021) (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q4 2026)	Source: CIB-GSE, 100% of the biogas plants currently in operation in Italy were considered for the estimate of the feasible interventions	MIPAAF,MISE	Intervention complementary to the conversion of plants and to the creation of new biomethane plants. The action consisting in the purchase of equipment (agricultural tractors) for the adoption of optimal techniques of soil processing (minimum tillage, strip tillage, seeding on no-till soil) and distribution of the digestate in the field with low emissivity and high efficiency equipment (low-level distribution, immediate burial, umbilical systems, advanced fertigation systems in surface or buried hose with microfiltered digestate)		The financing process will be monitored by the Managing authority every six months, with the consequent possibility of changing the allocation of resources in case of non-compliance aspects with the signed regulation. The project is based on the framework of the Ministerial Decree of 02/03/2018 and will exploit its control (GSE) and verification mechanisms (the bio Committee + GSE Committee)
	T4. Creation of centralized poles for the enhancement of digestate.	n/a	Total number of centralized poles created (centralized poles per year)	0	30 (6) (6) (6) (6) (6)	Q2 2026 (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q2 2026)	Source: CIB-MIPAAF A sufficient number of poles has been hypothesized to treat the digestate generated by 40% of the plants located in the areas Nitrate Vulnerable	MIPAAF,MISE	Creation of centers for the enhancement of digestate as it is or of solid and liquid fractions after mechanical separation with production of fertilizers of organic origin with standardized qualitative characteristics (1 center every 7 plants approximately)		
	T5. Conversion process of the existing agricultural vehicle fleet, with the distribution of mechanical vehicles powered by biomethane.	n/a	Total number of agricultural veicles replaced (vehicle per year)	0	250 (15) (50) (50) (50) (50) (35)	Q2 2026 (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q2 2026)	Estimate of the potential of new biomethane / methane powered vehicles avaiable on the market	MIPAAF, MISE	The measure intends to stimulate the market for innovative biomethane powered vehicles, as it is a small reality compared to the traditional vehicle market (18,000 new annual registrations of conventional tractors) On an environmental level, the conversion process of 300 (50 per year) mechanical vehicles fueled by diesel with vehicles fueled by biomethane involves a reduction of approximately 7,500 tons of CO2eq. over the useful life of the vehicles (approximately 1 ton / year for each vehicle replaced)	This measure will have to be accompanied by an industrial development that is able to guarantee a production of vehicles adequate to meet the required demand	
	T6. Efficiency interventions to recover the heat from biogas for business processes.	n/a	Total number of interventions (Interventions per year)	0	150 (12) (25) (38) (38) (25) (12)	Q2 2026 (Q4 2021) (Q4 2022) (Q4 2023) (Q4 2024) (Q4 2025) (Q2 2026)	Source: CIB-GSE To estimate the number of feasible interventions, the number of biogas plants currently in operation with power up to 600 kWel was taken into consideration	MISE, GSE	This intervention finances the implementation of existing plants, characterized by sizes that do not allow conversion to biomethane, through the construction of heat recovery and emission abatement systems (digestate storage coverage, digestate distribution equipment)		
Investment 6: Ecological transition in the South of Italy	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined

6. Financing and costs

Table 3. Estimated cost of the plan

Component (name)	Investment/Reform (short description or cross-reference)	Relevant tme period	Total estimated costs for which funding from the RRF is requested (mn/EUR)	If available: Total estimated cost by year (mn/EUR)							Funding from other sources (as requested by Art. 8 in the Regulation)				COFOG level 2 category / or type of revenue (if relevant, e.g. tax expenditure)
											from other EU programmes		*from the national budget*	*Other sources (please specify)*	
				2020	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*mn.bn nat. currency*	*specify the EU programmes and breakdown by programme if relevant (e.g. regional operational programme)*			
Green enterprises and circular economy	**Reform 1.1:** Define the national strategy for the Circular Economy	2020-2021	-	0	0	0	0	0	0	0					
Green enterprises and circular economy	**Reform 1.2:** Regulate the organization and functioning of the traceability system, simplifying and making administrative processes more timely and homogeneous	2020-2021	-	0	0	0	0	0	0	0					
Green enterprises and circular economy	**Investment 1:** Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Agri-food sector**	2021-2025	2,500	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined					
Green enterprises and circular economy	**Investment 1:** Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Fishing sector**	2021-2025		to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined					Agriculture, forestry, fishing and hunting
Green enterprises and circular economy	**Investment 1:** Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Forestry sector**			to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined					
Green enterprises and circular economy	**Investment 1:** Supply chain and district contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors - **Support for the Floriculture and plant nursery sector**	2020-2025		to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined					Economic Affairs - Agriculture, forestry, fishing and hunting
Green enterprises and circular economy	**Investment 2:** Agri-solar Park	2021-2025		to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined		To be defined with the regional managing authorities under the European Structural Investment Funds	ISI Call (National Institute for the Insurance against Accidents at Work - INAIL)		
Green enterprises and circular economy	**Investment 3:** Logistics plan for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sector sectors	2021-2025		to be defined	to be defined	to be defined	to be defined	to be defined	to be defined	to be defined					
Green enterprises and circular economy	**Investment 4:** New plants and revamping of existing plants		1,500												
Green enterprises and circular economy	**Investment 5:** Circular Economy Projects	2021-2026	1,923	-	18	246	324	550	653	133	300	REACT-EU			04.3
Green enterprises and circular economy	**Investment 6:** Ecological transition in the South of Italy		0								800	REACT-EU			

2 M2C2 - Renewable energy, hydrogen and local sustainable mobility

1. Description of the component

Summary box

Policy area: Energy policy, climate policy, sustainable local transportation, industrial policy

Objectives: The overall objective of this component is **to achieve the strategic goals established in The European Green Deal strategy (COM/2019/640 final) and in the Italian National Energy and Climate Plan in force**, leveraging reforms and investments in two main sectors (energy, transportation) which are responsible, when combined, of around the 50% of the total GHG emissions in Italy.

Reforms, duly transposing all EU Directives in the two domains, create the proper regulatory framework to pursue climate objectives while investments, stimulated by additional resources coming from the Recovery and Resilience Facility, provide a direct stimulus to the economy, by greening the industrial system and promoting new low carbon technologies go-to-market.

Twin transition: Altogether, the measures proposed in this component address priorities identified in the 2021 Annual Sustainable Growth Strategy (COM/2020/575 final), primarily to the:

a) Green transition by:

- accelerating the reduction of emission through **fast deployment of renewable energy and hydrogen** and

- **investing in sustainable mobility** through renewal of public transport fleet with zero- and low-emission vehicles, and investment in the development of mass transit systems.

b) Digital transition, with reference to more advanced and resilient energy infrastructures which generate a demand for digital technologies, their design, adoption and use.

Jobs and growth: All the actions foreseen in this component of the National Recovery and Resilience Plan are aimed at stimulating job creation and growth.

The renewable energy and hydrogen component provides investments in research and development (R&D), in innovative low carbon technologies production plants and, last but not least, in new renewable energy generation innovative plants, with a significant contribution to reinforcing competitiveness of companies and labour skills and to maintaining technology leadership.

Reforms and investments:

Reform 1.1: 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 support schemes.

Reform 1.2: New legislation providing a quota obligation system to use renewable gas for importers and producers of natural gas.

Reform 1.3: Smarter procedures for project evaluation in the local public transport systems sector with fixed installations and in the rapid mass transport sector.

Reform 1.4: 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).

Outcome 1: Development and support for the supply chain of renewables

Investment 1.1: Renewable Energy Sources (RES);
a) Support for the development of the authorization of projects such as 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;
b) Support to the development of innovative integrated offshore renewable plants;
c) Promotion of RES for collective and individual self-consumption.

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

Investment 1.3: Projects at local level (Municipalities)

Investment 1.4: Reinforcement and digitalisation of power grid infrastructure
a) Installation of thermal energy storage systems;
b) Interventions for "smarter" electricity distribution networks (Smart Grid);
c) Interventions to increase the resilience of the distribution network;
d) Installation of integrated EV charging stations

Outcome 2: Promotion of clean hydrogen production and use.

Investment 2.1: Production of Hydrogen in brownfield sites.

Investment 2.2: Production of Electrolysers and Development of an Italian Hydrogen Supply Chain.

Investment 2.3: Hydrogen Use in Hard-to-abate industry.

Investment 2.4: Hydrogen Use in Heavy Goods Transport on Wheel.

Investment 2.5: Hydrogen Use in Railway Mobility.

Investment 2.6: Hydrogen Research & Development.

Investment 2.7: Hydrogen Combustion Technology Development for green power generation.

Outcome 3: Promote the use of alternative fuels and smart mobility

Investment 3.1: Investment in soft mobility (National cycle path Plan).

Investment 3.2: Green local public transport and Rapid Mass Transport:
3.2.1. Strengthening of the green transport industry, the related national supply chains and smart mobility
3.2.2. Renewal of the regional public transport bus fleet with clean fuels vehicles
3.2.3. Renewal of the regional public transport railway fleet with clean fuels trains
3.2.4. Renewal of the regional public transport naval fleet with clean fuels naval units
3.2.5. Digitalisation of local public transport
3.2.6. Development of Rapid Mass Transport systems
3.2.7. Sustainable mobility: *"Affrettati lentamente"*

Estimated costs:

EUR 17,530 million to be covered by RRF

M2C2 – Renewable energy, hydrogen and local sustainable mobility					
	Resources (euro/mld)				
	Existing	New	Total	REACT-EU	TOTAL NGEU
	(a)	(b)	(c) = (a)+(b)	(d)	(e) = (c) + (d)
1. Production and distribution of renewable energy and support to the supply chain	**-**	**7.98**	**7.98**	**0.69**	**8.66**
- Renewable Energy Sources (RES)	-	*4.00*	*4.00*	-	*4.00*
- Supply chain for RES technology production	-	*0.36*	*0.36*	-	*0.36*
- Reinforcement and digitalisation of power grid infrastructures	-	*2.72*	*2.72*	*0.18*	*2.90*
- Municipalities'projects in line with the National Energy and Climate Plan (NECP)	-	*0.90*	*0.90*	*0.51*	*1.41*
2. Support to the hydrogen supply chain and transition towards green steel through DRI (direct reduced iron)	**-**	**2.00**	**2.00**	**-**	**2.00**
3. Sustainable local transport, cycling paths and rolling stock renewal	**2.95**	**4.60**	**7.55**	**-**	**7.55**
TOTAL	**2.95**	**14.58**	**17.53**	**0.69**	**18.22**

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

2. Main challenges and objectives

a) Main challenges

Between 2005 and 2018, greenhouse gases (GHG) emissions in Italy, in sectors not covered by the ETS legislation, have decreased by 18% and emissions per capita are at a level below the European average. The Integrated National Energy and Climate Plan (NECP) provides that greenhouse gas emissions are reduced by 43% for the ETS sectors compared to 2005, and by 33% for sectors not covered by the ETS regulation, by 2030. The new European Climate Law provides for an even more ambitious target of reducing emissions, which according to the recent Commission Communication should be at EU level of 55% to 2030 compared to 1990 levels. The new EU target will have to be translated into new national targets for Member States and the NECP will be revised accordingly.

The NECP in force foresees an increase of the share of energy produced from renewable sources to 30% of the gross final consumption to 2030 (against a objective of 32% foreseen by the European targets), and to 22% of the gross final consumption of energy in the transports. The plan also provides for an increase in electricity storage capacity (39 Gwh, of which 24 to be connected to the grid and 15 to be coupled to the distributed generation).

Thus, energy and climate goals, made more ambitious by the recent Commission's commitments, are going to require an extraordinary effort in terms of public and private

financial resources, policy makers' work to provide reinforced measures, simplification of authorisation processes, industry players commitment on R&D and implementation streams, fast tracking new technologies.

A comparable effort is expected in the transport sector, where decarbonisation is crucial in order to achieve these objectives effectively, given that transport is responsible for 30% of the total national greenhouse gas emissions. To consider that almost 95% of these emissions is due to road transport while 45% of the existing car fleet (and in particular 59% of the public vehicle fleet) is made up of vehicles with standards not exceeding Euro 3.

Also due to the persistence of other types of pollutant emissions from road vehicles, it is estimated that about 2 million inhabitants in Italy live in areas where the minimum European air quality standards are not respected.

In this regard, three infringement procedures are currently open with regard to the exceedance of the PM10 limit values in Italy between 2008 and 2012 in 19 zones and agglomerations and with regard to the exceedance of the limit values for nitrogen dioxide (NO2) between 2012 and 2014 in 15 zones and agglomerations. Many of the exceedances covered by these infringement procedures, however, affect most of the areas located in the regions of the Po Basin.

In this context, the role of hydrogen deserves a specific focus. Its prominent role was set forth in July 2020 in the EU Hydrogen Strategy, projecting a growth from the current <2% in the energy mix to 13-14% by 2050, with an underlying electrolyser capacity of 500 GW. Member states are in the process of adopting the EU strategic direction: some of them (such as France, Germany, Portugal, Spain and the Netherlands) have already established 2030 or 2050 targets (even above the EU direction) and identified main use cases in the most relevant sectors, e.g. industry and transport.

In Italy, the NECP outlines the role of hydrogen in achieving sustainability targets and identifies the potential application of H_2 in a number of energy sectors: for example, the transport sector, with fuel cell trucks and trains (outlining a 1% penetration target in renewable fuels transport), and the management of electricity overgeneration, with H_2 storage applications (e.g. power-to-gas).

In this Recovery and Resilience Plan, consistently, a number of interventions have been planned to enact the EU Hydrogen strategy, taking into account the need for 1) creating a strong supply chain (production, storage, distribution) 2) building industrial capacity to produce hydrogen generation technology 3) fostering hydrogen use in large emitting industries and in heavy transport.

b) Objectives

In line with the European Flagship 'Power Up' (COM(2020) 575), the 'Energy Transition

and Sustainable Mobility' component identified a sub-action "Investments for NECP implementation" with the following objectives:

1. **Increase the share of energy produced by Renewable Energy Sources (RES)** and, more specifically:
   a. to promote the strengthening of the supply chains for the production of innovative and highly efficient technologies in the renewable sector;
   b. supporting the creation of a pipeline of new greenfield renewable projects with the outcome of the authorization procedures in a certain time;
   c. promote the collective self-production of renewable electricity;
   d. facilitate the transition from biogas for electrical use to biomethane for transport.
2. **Promote the production and use of hydrogen as an energy carrier of the future**, by nominating Italy as a state-of-the-art country both in the development of innovative technologies and related infrastructures, promoting the establishment of a sector chain.
3. **Ensure the resilience of the electricity grid** to encourage increased penetration of energy from renewable sources through:
   a. the development of storage capacity and the dissemination of new technologies (e.g. smart grids);
   b. the greater ability to resist adverse weather phenomena, avoiding prolonged interruptions of the electrical service.
4. **Promote the use of alternative fuels** and **smart mobility** by supporting the production chain of smart & green mobility and the renewal of fleets by replacing the most polluting vehicles with zero and low emissions vehicles.
5. **Encourage the reduction of the use of polluting modes of transport** through:
   a. the transfer to the collective mobility system ("shift"), in particular by enhancing mass rapid transport systems in order to improve their transport quality and capacity;
   b. a greater development of "gentle" mobility, thus reducing the use of individual journeys by road ("avoid").

Overall, actions in this component are aimed at achieving the following NECP's targets:

- For **energy-related** actions: additional installed capacity from renewable energy sources of 11,2-15 GW by 2025 resulting in CO2 reduction of 2-3 Mton/year till 2025.
- For **sustainable mobility** actions: CO2 reduction of almost 1 Mton/year till 2025 mainly attributed to developments in shared/public mobility and the gradual roll-out of vehicles characterised by reduced energy consumption and very low or zero CO2 emissions, as well as the gradual and natural renewal of the vehicle fleet.

3. Description of the reforms and investments of the component

REFORMS.

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

Challenges:

The national energy policy targets for 2030 set by the National Integrated Energy and Climate Plan ("NECP 2030") require the installation of new capacity from RES of about 40 GW, of which about 30 GW from photovoltaic systems. In this domain, among others, policies shall support the creation of a steady pipeline of new greenfield renewable projects through proper stimulus and with fast and certain authorisation procedures.

The main challenges to be tackled to this purpose can be identified in the following:

1. **Timing of the authorization process is not foreseeable and uneven on the national territory.** In order to encourage investments in new renewable capacity and to allow the decarbonisation of the generation under safe conditions, it is necessary to develop a homogeneous and rapid authorization framework that allows the development of projects at certain times.
2. **Limited private investment and fragmentation of renewable capacity in small plants.** Need to extend the mechanism of RES auctions planned to date to support the development of power generation plants from renewable sources in line with the ambitious objectives of the NECP on the development of renewable energy in Italy limiting land consumption for other uses.
3. **Absence of adequate remuneration mechanisms for the development of storage capacity, in the scenario of strong increase of generation from renewable sources.** In order to develop the development of such RES capacities and to ensure network stability, it is necessary to introduce new remuneration mechanisms that allow for a reasonable return on investments and increase the interest of investors (not network operators) towards capacity for accumulations and other systems useful for the stability of the network.
4. **Limited dissemination of the Public Private Partnership Instrument to support investment contributing to achieve the NECP in 2030**. In order to increase such investment, it is necessary to promote the dissemination of the Public Private Partnership in all sectors, including through the temporary use of a majority of public contributions to support such initiatives.

In this context, some critical issues arise:

- There are no guidelines for the authorisation of the construction and operation of installations for the production of electricity from renewable sources, of particular relevance, in the offshore sector. Given the peculiarities of the offshore sector and the growing interest of the market and the Italian and European legislator, it is suggested to consider the adoption of guidelines also for the offshore sector on the basis of what has been done for onshore installations in relation to the procedure referred to in Article 12 of Legislative Decree no. 387/2003
- Rationalisation and simplification of Environmental Impact Assessment procedures. This is already partly addressed by Article 50 of Legislative Decree no. 76 of 16 July 2020 (i.e. Decree of simplifications) and can find full application with the publication of the relevant implementing decrees, thus helping to create the conditions for obtaining permissions in time for compliance with the deadlines set out in the Recovery and Resilience Facility.

Objectives:

In order to overcome such barriers and to support for the creation of a pipeline of new renewable greenfield projects, this Reform action mainly pursues the following objectives:

- To approve changes in law for simplified authorization processes for photovoltaic and onshore and offshore wind farms
- To modify the current RES support mechanisms in order:
  a. to extend the area of eligibility of current incentives, including new offshore installations and repowering of existing plants;
  b. to extend the grants availability period.

Implementation:

The implementation process will involve the Ministry of Economic Development as process owner, together with the Ministry of Environment which, in cooperation, shall set the following new regulations:

1. The reform of RES supporting mechanism, also completing the transposition process of the RED II Directive;
2. The reform of authorisation processes, mainly related to environmental impact evaluation and related tasks.

According to the reform plan designed by the responsible authorities, the first proposal draft of the reform is due by the first quarter of 2021. Such draft will be submitted to a public consultation to, then, proceed to the approval, which is planned to happen by mid-year 2021.

The implementation process will proceed with the design of the auction procedures under the new regulation, targeting the successful completion of auctions awarding up to 6 GW

by the end of 2023.

Therefore, this Reform does not undermine recourse to competitive bidding processes for the award of investment and/or operating aid, in particular for large-scale projects.

In parallel, simplification measures are expected to generate small-medium scale RES plants growth which is expected to add from 10,5 to 15 GW of additional capacity. This activity is planned to be implemented in order to reach the following intermediate targets:

- 0,5-1 GW in 2022
- 1,1-2 GW in 2023
- 2,2-3 GW in 2024
- 3,2-4 GW in 2025
- 4,2-5 GW in 2026

To this purpose, Reform 1 package is linked to Investment 1, as described in the related paragraph.

Target population: The reform process will involve:

- on the public side, national and regional administrations
- on the private side, renewable power producers, renewable energy production project promoters, infrastructure project developers, related investors.

Timeline: The implementation period, as detailed by the above description, is estimated to be 6 year.

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

Challenges:

Biomethane is strategic for decarbonisation and the circular economy, maximising energy recovery from organic agricultural and agro-industrial waste. In fact, agriculture is responsible for about 9% of Italy's GHG emissions and animal husbandry has an important part of this responsibility (in particular CH4, N2O emissions). Anaerobic digestion applied to manure is indicated as a solution to improve the situation (ISPRA, 2020) without reducing the stock of livestock.

The development of biomethane production from manure, complying with the Do-No-Significant-Harm principle, is particularly interesting in order to make agricultural activity more sustainable and at the same time to produce an advanced biofuel, valid for both point-to-point uses at the place of production and for networking, through existing network infrastructures. If channelled into the gas network, biomethane can contribute

to the achievement of the European targets by 2030, with an overall saving of greenhouse gases compared to the fossil methane life cycle between 80 and 85%.

Italy has a leadership in the production of biogas both in terms of volumes and production sustainability that seem to encourage further investment. The technical potential of biomethane that can be produced in Italy is considerable, with estimates varying according to the raw materials that can be used and the final use consistent with RED II, but still in billions of cubic metres.

The potential contribution of biomethane to the Country's economic growth is also significant. Being a resource obtainable from a plurality of productive processes and from various fields makes the development of a specialised supply chain possible, with positive repercussions on the economic system under the profile of the technological innovation in the manufacturing fields, agriculture and urban public services.

In addition to reducing CO2 emissions from fossil fuel consumption, biomethane-related investments will help reduce emissions of CH4 and ammonia related to the storage and distribution of manure through their use for anaerobic digestion and the equipment of covered storage facilities and "precise" systems of distribution of organic fertiliser (effluent as such or digestate), to reduce N2O, CH4 and nitrate emissions, through the development of agronomic techniques that allow for increased soil coverage, the reduction of nutrient intake through mineral fertilisers, as well as the increase in soil organic matter resulting from increased photosynthetic activity, carbon recycling and nutrients.

Objectives:

To this extent, the Reform contributes to achieving the Green transition objectives, also complying with the NECP by:

- replacing fossil fuels with biogas;
- reducing GHG emissions (in particular, methane and nitrous oxide) and ammonia from agriculture
- encouraging the use of renewable gas distributed through existing networks;
- encouraging the conversion of diesel-fuelled mechanical vehicles with biomethane-fuelled vehicles by improving efficiency and emissions.

As well, biomethane production policies and related investments contribute to reducing the use of natural resources per unit of product and increasing soil fertility minimising the use of chemical fertilisers, in line with the objectives outlined in the "Farm to Fork" strategy.

From an economic perspective, this measure contributes to employment creation in short and strongly integrated supply chains in different territories, allowing the mitigation of the economic and social impacts of the crisis also in rural areas.

As a reference, between 2012 and 2017, biogas plants-related investments reached 3.1 billion euro and generated around 100.000 AWU (estimate including direct, permanent and temporary employment, as well as indirect considering also the induced generated by the entire chain).

[Source: Statistical reports/ activities of the GSE 2013-2018, paragraph 11.2].

Implementation:

The Reform proposal provides for the promotion of an additional production of biomethane compared to biomethane used in transport, encouraged under the Ministerial Decree of 2 March 2018 (which is expected to be confirmed for a further period of time and whose incentive target of about 1 billion m3 remains confirmed).

Change in law for a simplified authorization process and modification of the current grants mechanism in order (i) to widen the eligibility perimeter and (i) to extend the grants availability period are foreseen.

Aid is to be granted within the limits and intensity of the aid provided for in the European framework for the necessary investment (40%) for the partial or total conversion of an existing biogas plant (efficiency of biomass management infrastructure + upgrading system + costs of connection to the network + purchase of agricultural machinery for the use of the producer powered by biomethane) or for a new plant, plus an incentive (in the form of a Certificate of Release for Consumption - CIC but of lower value than that provided in the case of biomethane advanced by the DM 2 March 2018) on the actual production of biomethane for a period of 10 years and the recognition of the Guarantee of Origin (GO) to the producer for the same period.

Cost assessment of projects submitted to the foreseen support plan will be carried out leveraging available benchmarks. Depending on the different technological processes used, the average costs for the purchase of equipment (fittings, piping and civil works excluded) and the management of a small-to-medium size upgrading system can vary considerably. Below is a summary of the average purchase and management costs for small-medium size upgrading plants, representative of the case of Italy:

- "The chain of biomethane: tools, mechanisms of operation and opportunities" (Assolombarda, Research no. 1 of 2020) reports data related to two sizes of capacity plant, suitable to represent the small-medium range of potential applications with a production of 1.10 million Nm3 of biomethane per year. For a plant with a capacity of 1 million Nm3/year, the estimated total investment costs (Capex) is about 1-1,5 million €/ per million m3 capacity. Increasing capacity to 10 million Nm3/year the Capex drops to about 0.5 - 0.75 million €/ per million m3 capacity. The investment cost of the anaerobic treatment section can double or triple in the case of sludge, while it reaches a value even quadruple for FORSU.

The input matrix (sewage sludge, FORSU, livestock waste or agricultural waste) plays an important role in this assessment (think of the methane content in biogas)although substantial differences are to be related more to the stage of anaerobic digestion than to the removal of carbon dioxide.

- Operating costs for a capacity of 1 million Nm3/year are estimated between 120,000 and 150,000 € and for a capacity of 10 million Nm3/year in the range between 800,000 and one million euro. They include the costs of ordinary, extraordinary maintenance, reagents and those of electricity, referring to an operation not less than 8000 hours per year.
- These references appear to be usable for the evaluations of this project, also in view of the fact that the proposal only provides for the use of input matrices represented by livestock waste and agricultural and agro-industrial waste; it is not planned to use sewage sludge.

Target population: Farmers, renewable power producers, heat operators and district heating system owners, installers, renewable energy production project promoters, infrastructure project developers, investors in agricultural activities.

Timeline: The implementation period is estimated to be X years.

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

Challenges:

The amendment made by the Simplifications Decree - which, up to the 31st of December 2021, attributes to the Superior Council of Public Works the responsibility of expressing an opinion on both the technical-economic feasibility of the project in the local public transport systems and on the final design leads to a duplication of activities. leads to a duplication of activities.The examination of technical-economic feasibility of projects (including choosing alternatives, transport analyses, cost-benefit analyses, etc.) is also carried out by the General Directorate for Fixed Transport Systems and Local Public Transport for financing the interventions, according to procedures, put in place in agreement with the Cabinet Office and the Technical Mission Structure and shared by the MEF, which since 2018 are used for the allocation of resources for rapid mass transport in the Investment Fund (Notice n. 1 and n. 2 for the presentation of applications in the sector of rapid mass transport).

The duplication of activities concerning the evaluation of sectoral projects, causes inevitable assessment discrepancies by the various bodies involved and the consequent need for reiterated assessment of one body on the changes proposed by the other body and the other way round. This leads to lengthy procedures with consequent delays in the activation of the works, as already noted by some Local Authorities benefiting from state

resources in the sector.

Moreover, other types of procedures can be simplified. The Covid-19 pandemic has generated multiple impacts for the transport and infrastructure sector, especially for the transport supply chain and the realization of public work. In some cases, the pandemic has caused a slowdown of the work and a consequent crisis of the suppliers and economic operators.

In this context, it is necessary to support the entire supply chain by guaranteeing immediate adequate liquidity to beneficiaries to boost the sector by speeding up the procedure for payment of grants by using a digitalised system to verify the progressive execution of interventions eligible for funding.

Objectives:

The reform aims at making the procedures aforementioned more efficient by eliminating duplication of competences within the same Administration and accelerating the payment processes and timing of interventions in the public transport systems.

Implementation:

For what concern the duplication of responsibility for project evaluation in the local public transport systems. A dedicated regulation will provide concrete responsibility allocations and project approval roadmap in line with the objectives of the Simplification Decree.

For what concern the simplification of the payment procedure, the measure consists in preparing, for each of the interventions eligible for a grant, a data form that must be filled in by the Single Proceedings Manager and the Manager of the beneficiary body, for the progressive disbursement of the grant.

The form in question will show the details of the invoices relating to the progress of the work with an indication of the items in the Economic Framework to which they refer to. After entering the data in the digital system, the Directorate General proceeds directly with the contribution payment, without any further preliminary analysis.

A second-level check by the Ministry will take place at an intermediate and final stages of the intervention: only a defined sample of payments will be analyzed.

The reform in question will be supported by the implementation of an IT Platform. To this extent, the MIT's Directorate General of Local Public Transport has already started, as part of its activities, to revise the Platform of the Observatory on the Policies of Public Transport. According to this review, it is understood that it is possible to implement an additional IT package on the existing platform in order to have a dedicated service for managing the payment procedures. The adoption of such IT package to support the reform will result in significant time savings since the MIT will be allowed to check the accounting documentation concerning any ongoing projects well in advance the beneficiary