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Progress Check: Italy's final energy and climate plan under review

LIFE PlanUp

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The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the European Commission.

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Executive summary

As part of the European Union's 2030 climate and energy package, EU member states are required to develop national energy and climate plans (NECPs) to define and to report on their 2030 climate and energy objectives.

After the publication of the European Commission's (EC) recommendations on the draft NECPs, Italy submitted its final plan in January 2020.

Divided into two main sections, this briefing first provides an overview of the updated Italian plan and then assesses whether it has taken into consideration the EC recommendations and whether it is generally more ambitious than currently implemented legislation, especially in the transport, buildings and agriculture sectors.

The final version of the Italian NECP remains largely unchanged compared to the draft. The European Commission's recommendations, which were already quite positive on Italy's plan, have mostly been disregarded. The targets on emissions reduction, renewable energy and energy efficiency were also left unchanged, showing no extra effort from the Italian government.

With regard to public participation, there is still room for improvement. The set-up of a multi-level dialogue would be beneficial to improve the plan itself and cohesion and support for it, in particular for future updates.

The Italian NECP includes some new but mostly already implemented policies, the ambition of which varies depending on the sector. Agriculture remains the most problematic sector, with very few measures aimed at reducing greenhouse gas emissions from the sector.

The transport measures analysed in this report show the importance of tackling transport emissions and the crucial role that boosting the uptake of electric mobility and increasing railway transport play in reducing GHG emissions and increasing energy efficiency. However, Italy also plans to rely heavily on unsustainable biofuels as well as on fossil fuels, which negatively counterbalance more climate-friendly measures.

The building sector is meant to heavily contribute to reaching higher energy efficiency and increased renewable energy targets. Italy is familiar with incentive schemes to support deep renovations and energy efficiency interventions. However, more consistency and better alignment among the

different programmes, as well as more regular and long-term funding, would be beneficial and yield more positive results in the long run.

If the plan's more positive elements are to be maintained and implemented, it will be crucial to keep political commitment, to detail investment plans for each policy and measure and to ensure consistency between them. In order to ensure popular support, the Italian government must do better at involving all relevant stakeholders in the decision-making. Finally, the energy and climate plan can and should be a key tool for a green recovery that will help Italy emerge from the Covid-19 pandemic stronger, more resilient and more sustainable.

Overview of the plan

The Italian final National Energy and Climate Plan (NECP) was submitted to the European Commission on the 21st of January 2020, with a slight delay compared to the required deadline.

The final NECP maintains the decarbonisation targets as outlined in the draft plan, namely a reduction of 43% of emissions in sectors covered by the EU Emissions Trading System (EU ETS) and a 33% reduction for sectors covered by the Effort Sharing Regulation (ESR).

On paper, these targets comply with the mandatory reductions dictated by European directives. However, they differ from the projected cuts in emissions that, according to the plan, Italy can achieve if all measures included in the NECP are implemented and they yield the expected results. In this scenario, Italy expects to reduce emissions by 34.6% in ESR sectors and 55.9% in ETS sectors.

While this technically shows more ambition than the minimum required by EU law, it represents neither a firm commitment nor an improvement compared to the draft plan.

Moreover, an overall and economy-wide national target is not included in the final plan.

The target set for energy efficiency remains unchanged in the final NECP. Italy still aims to achieve a 43% reduction of primary energy consumption and a 39.7% reduction of final energy consumption by 2030. Based on 2007 Primes projections, this objective concretely translates into a mere 7% improvement of energy efficiency, thereby failing to exploit the great potential to reduce energy consumption both in the building and industrial sectors. This shows a serious lack of ambition when it comes to energy efficiency.

Italy plans to achieve a 30% gross final energy consumption in renewable energy. This target has not changed compared to the one set in the draft NECP, and considering the enormous richness of the country’s renewable energy resources, it is not ambitious. The energy transition in the Italian NECP still relies heavily on fossil gas.

	2030
Reduction in greenhouse gas (GHG) emissions in the ESR sectors (Effort Sharing Regulation) compared to 2005	33%
Share of renewables in energy (final consumption)	30%
Improvement in energy efficiency (final energy consumption)	39.7%
Share of renewable energy in electricity generation	55%
Yearly growth in renewable energy in heating and cooling	33.9%

Share of renewable energy in transport	22%
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Source : Own elaboration based on IT NECP, 2020

The Italian NECP mentions the option of using the Land Use and Land Use Change (LULUCF) flexibility but remains unclear as to whether this option will be effectively used. Under the Effort Sharing Regulation, Italy is allowed to make use of 11.5 Mt of CO₂eq emission credits from the land use and forestry sector to contribute to reaching its 2030 emission reduction target. The plan includes a table reporting each LULUCF category's contribution to the emission reduction target. It is, therefore, safe to assume that the land use and forestry sectors are envisaged to make a substantial contribution to Italy's emission cuts in the next decade. This is problematic, because there is a need to have more sustainable lands and forests in addition to, not instead of, the actions taken in other parts of the economy.

However, the LULUCF contribution to emission reduction reported in the table included in the final plan are different from those reported in the draft NECP. Namely, the estimates of emission reductions for the land use and forestry sectors have been reduced by almost half. For example, while in the draft plan the LULUCF sector was foreseen to contribute -39 699 Kt CO₂ eq in sinks by 2025, the final plan envisages a reduction of only -22,767 Kt CO₂ eq.

This revision may indicate that Italy has decreased its reliance on the land use and forestry sectors to achieve its decarbonisation targets. However, both the draft and the final plan fail to clearly exclude credits from LULUCF to be used to contribute to the 2030 target.

The Italian government also keeps postponing the phase-out of fossil fuel subsidies. The NECP only foresees the rationalisation of environmentally harmful subsidies but it entirely lacks a roadmap for their phase-out. The only concrete measure that is mentioned in the plan in this respect is the 2020 Budget Law. The law aims to restructure and increase taxation on electricity production and implement specific tax rates which will be determined on the basis of emissions of greenhouse gases and particulate matter. The plan estimates a total of 13.1 billion EUR paid in subsidies in 2017, which were allocated to three lists of subsidies:

1. Priority list - for a total of 3.2 billion EUR
2. Secondary list - for a total of 7.4 billion EUR
3. List to be reviewed at international level - for a total of 2.5 billion EUR

However, this data is underestimated. As shown in the latest ¹report published by Italian NGO Legambiente, in 2018 direct and indirect subsidies to fossil fuels amounted to 18.8 billion EUR. These are resources that the State could and should redirect towards accelerating the transition to a zero-emissions and sustainable economy.

The Italian government did not integrate in the final plan many of the recommendations provided by the European Commission on the draft NECP. On the contrary, for example, with regards to the use of fossil gas as substitute to coal, the NECP foresees an added capacity of 3 GW.

Public participation

The Italian government carried out a fairly extensive public consultation on the draft plan between 20 March and 5 May 2019. Feedback and comments from a variety of stakeholders, such as citizens, companies, trade unions, NGOs, local and regional authorities and financial institutions, were collected through a structured questionnaire published online. In addition to the online portal, the government carried out thematic workshops with selected experts on specific issues and held discussions with local and regional authorities (e.g. autonomous communities).

The questionnaire was answered by 207 people: 92 private citizens, and 115 associations, companies and NGOs. Most of the feedback received through the online portal centered around three main themes: 1) renewable energy sources for industrial installations, including security of supply and infrastructure; 2) renewable energy used for heating and cooling, and 3) energy efficiency. Agriculture was completely missing from the questionnaire. This shows, once again, the fact that the role of agriculture emissions is

¹

http://www.comunirinnovabili.it/wp-content/uploads/2019/07/Stop-Sussidi-alle-Fonti-Fossili_20191.pdf

disregarded, and the sector is not properly addressed within the NECP, as required by the Effort Sharing Regulation.

This consultation, together with the results of the thematic workshops, expert groups and discussions with local and regional authorities, were used to inform the final NECP. Before the publication of the final plan, Italy also conducted a strategic environmental assessment in order to analyse the environmental impact of the policies and measures outlined in the plan.

A multi-level stakeholder dialogue, like the one recommended in the Governance Regulation as a forum where diverse stakeholders can come together and discuss climate and energy policies including those presented in the NECP, was not set up.

The PlanUp project had organised a first dialogue to kick-start this process in March 2020 but, due to the Covid-19 pandemic, the event was postponed to autumn 2020.

Implementation of policy measures in the transport, buildings and agricultural sectors

This section examines both selected existing measures in the target sectors and measures foreseen in the national energy and climate plan.

Transport

The Italian NECP foresees a reduction in emissions in the transport sector from 100 Mt CO₂eq. in 2020 to 79 Mt by 2030. This objective will be mainly achieved through an incremental substitution of the national vehicle fleet, the development of shared mobility and wider public transport network, and an increased uptake of low-emissions vehicles and electric cars.

With regard to renewable energy policy in the transport sector, the Italian

NECP specifically refers to the objectives set in the Renewable Energy Directive (RED II), which foresees a target for renewables in the transport sector (RES-T) of **14%** by 2030. This target is divided into sub-categories with specific mandatory contributions :

- **Advanced fuels**, which include advanced biofuels, renewable electricity, renewable fuels of non-biological origin, should count for **at least 7%** of the total energy consumed in transport.
- Of the 7%, at **least 3.5%** must be **advanced biofuels**. Advanced biofuels can be double-counted.
- The share of “first generation” biofuels based on food and feed crops is instead limited and fixed to the member state’s share of these biofuels in the year 2020. If this share is below 7% - or countries decide to use less -, the 14% RES-T target mentioned above can be reduced. As an example, if a country has planned to use a maximum of 3% of food and feed biofuels, the RES-T can be brought down to 10% (3% food and feed biofuels + 7% binding advanced fuels).

The Italian final NECP set a 22% renewable energy target for the transport sector. This makes it not only a higher share than what is required by the RED II but it is also “fake” as it is calculated with multiplying factors that include double counting where it should not be applied. A higher target also risks an overreliance on unsustainable fuels, therefore it is important that all fuels are subject to robust sustainability criteria.

Renewable energy in transport - a closer look

Biofuels are listed in the NECP as one of the key measures to increase the share of renewables in the transport sector.

First generation biofuels

In Italy, food and feed based biofuels (first-generation) currently account for 85% of renewables in the transport sector. The majority of these biofuels are derived from palm oil and its derivatives.

In the final NECP, the use of first generation biofuels is set to increase up to 0.71 Mtoe (equal to 3% of RES-Transport) by 2030, in particular palm oil and derivatives, which are at high risk of indirect land use change (ILUC) and produce three times as much CO₂ as diesel. This is diametrically opposed to what the REDII sets (and very negative for climate change and environmental impacts): firstly, because food and feed based biofuels must be frozen at 2020 level and thus should not be increased; and secondly, because palm oil biodiesel, as per REDII, will be gradually phased-out until it cannot be counted in the RES-Transport targets.

Moreover, first-generation biofuels generate CO₂ emissions. The estimated CO₂ emissions depend on the production, transport and composition of biofuels. According to the NECP, palm oil and its derivatives will be the main component of biofuels, which is foreseen to increase the overall CO₂ emissions. Indeed, palm oil generates three times as many emissions as fossil diesel. Based on 2017 consumption of palm oil and derivatives², it is possible to assume that the use of biofuels in Italy will increase direct and indirect CO₂ emissions by 3.6 MtCO₂eq.

As explained above, biofuels derived from food and feed generate CO₂ emissions and are harmful for the environment. Therefore, Italy should focus on phasing out the support to unsustainable biofuels, such as those made with palm oil, soy and other feedstocks, as of 2021.

Moreover, the use of biofuels at high risk of ILUC and competing for land otherwise used for food agriculture and food production, such as palm oil, is in clear breach of the RED II and other EU regulations, as well as increasing direct and indirect CO₂ emissions.

Advanced biofuels

Advanced biofuels are set to account for 8% of biofuels used by 2030, and will be pushed through incentive schemes such as those already in place to support biomethane and other biofuels. This objective is far higher than the 3.5% required by the RED II Directive and risks overreliance on unsustainable feedstocks for biofuels and biomethane. Italy should make sure that advanced

² Data taken from GES report on "Energy in the transport sector 2017":

https://www.gse.it/documenti_site/Documenti%20GSE/Rapporti%20statistici/Energia%20nei%20Trasporti%202017.pdf

biofuels put in the market go through robust sustainability assessment.

The targets for each type of advanced biofuel should also be reviewed in the NECP. For example, the share of advanced biomethane, which should account for 793 Mteq, is likely overestimated. The share of advanced bioethanol made from cellulosic feedstock is instead underestimated and should be increased from 264 Mteq to 500 Mteq.

The fact that the final NECP includes different targets for different types of biofuels represents a great improvement. However, certain targets are not yet well defined, in particular when it comes to the end use of biofuels. Ideally, the plan should include targets for advanced biofuels that are sensible and aligned with the resources available in the country.

Gas - non-renewable fuel still present in the plan

On the contrary, the NECP also foresees an increase in methane consumption in road and maritime transport (both CNG and LNG). This is incentivised by keeping taxes on methane to almost zero, like those on advanced biofuels. This increase will likely have unquantifiable consequences on greenhouse gas emissions, given the fact that both in road and maritime transport methane emissions are the same or higher than diesel and naphtha.

Measures addressing biomethane and advanced fuels aimed to be used in transport where electrification is more difficult, such as heavy-duty, maritime and aviation, are included in the final NECP. However, the right fuels should be addressed to the right transport modes. These are often not precise or based on the wrong assumptions.

The decision to exempt fossil methane from taxation makes this polluting fossil gas less expensive than electricity and advanced biofuels and therefore more competitive.

Recommendations to improve the measure

With a more accurate assessment of the real impacts of biofuels on CO₂ emissions and proper calculation of multipliers, Italy could achieve more ambitious goals and better climate protection.

In order to do so, the final NECP should review the current proposal to include the following milestones:

- 4% share of advanced biofuels in 2017 (already achieved but overcalculated)
- 8% in 2025
- 10.9% in 2030

A proper assessment of the impact of these shares of advanced biofuels on land use and CO₂ emissions would result in the following:

- + 3.6Mteq/year by 2017 (this impact has already been quantified)
- - 3Mteq/year by 2025 thereby representing a reduction of CO₂ emissions
- - 9Mteq/year by 2030

This scenario presents a bigger and more positive impact of advanced biofuels on the climate as well as a share of these fuels that remains well within the requirements of the Renewable Energy Directive.

Renewable electricity in road transport and railways

The NECP foresees a 6% renewable energy target in road transport. This will be attained through several actions:

- Uptake of six million electric vehicles and hybrid vehicles by 2030, four million of which fully electric
- Mandatory quotas of electric vehicles in public transport
- Increase of renewable energy in the railway sector, maritime and freight transport to 2% of the overall RES target, prioritising shipping, passenger

and freight transport

- Increase in the use of hydrogen in transport, in particular for direct application in cars, buses, heavy duty vehicles, trains (where electrification is not possible) and ships. Other kinds of transport would instead benefit from blending hydrogen in the existing methane pipelines
- Increase in the uptake of shared mobility and a shift from road to rail for freight transport.

Despite the huge potential of rail transport and the great benefits that its electrification would bring to the climate, the NECP underestimates its capacity, in particular with regard to freight transport.

In the last few years, Italy reached an historical low in rail transport of goods, which in 2009 accounted only for 70 million tons of goods. Recently, this trend has been changing but the pace at which railway transport is picking up again is far too slow. According to Fercargo, between 2018 and 2019, freight transport on rail registered a meagre 8% increase.

With regard to the electrification of road transport, the NECP foresees a target of six million electric cars circulating in Italy by 2030. This target is grossly inadequate compared to the potential and the need to cut down transport emissions. Moreover, out of the 6 millions, only 4 million will be full electric, while the remaining 2 million will instead be plug-in hybrids.

Recommendations to improve the measure

In order to concretely boost the uptake of electric vehicles and full electrification of railway transport, the NECP should include more ambitious targets and measures.

With regard to electric cars, the 2030 target should be the roll-out of 6 million fully electric vehicles. This would indeed increase the renewable energy share in transport to at least 1 Mteq.

To create the right incentives for the uptake of electric cars, the plan

should also include the following measures:

- Bonus scheme of 2,000 EUR for scrapping old cars - this scheme would benefit all individuals selling their old cars regardless of whether they buy a new one. This would contribute to both phasing out polluting cars and reducing the number of cars circulating in the country
- Eco-tax on diesel, petrol and gas vehicles to incentivise the purchase of electric vehicles - like in many other European countries, a taxation scheme that incentivises the uptake of electric cars should also have a social and redistributive effect whereby low-income benefit from a lower price
- Support scheme for employees and their families to incentivise the use of public transport, car sharing and corporate sharing of company cars
- Internalisation of comparative indirect costs of long-distance road transport, such as infrastructure use, air pollution, CO2 emissions, safety, etc. in the price of goods.

With regard to railway transport, the final NECP foresees to achieve 150 Mteq a year of electricity consumed for freight transport on rail by 2030.

Considering the great potential for expanding freight transport on rail, this target is far from ambitious. By 2030 electricity consumption for railway transport should account for 600 Mteq, which is four times higher than the share included in the NECP. In terms of quantity, this would mean reaching 300 millions tons of goods transported on rail per year. This objective would bring the percentage of freight transported by rail to 35% of land transport, which is more in line with the European average.

Buildings

According to the Italian NECP, the building sector is supposed to achieve an overall emission reduction of 35 MtCO₂, decreasing from 87Mt today to 52Mt.

This will be achieved mainly through deep renovations and requalification of buildings, the application of highly performing technologies and uptake of renewable energy sources (RES).

Renewable energy sources in heating and cooling will play a major role and are planned to account for 33.9% of the 111Mteq of gross final energy consumption in the building sector.

This objective was defined according to a trajectory based on the achievement of the energy efficiency requirements set in article 7 of the EU Energy Efficiency Directive, which mandates a minimum final energy consumption reduction target of 0.8% a year between 2021 and 2030. The basis for calculation of the reduction target is the final energy consumption of a three year period (2016-2018).

Energy efficiency interventions and a phase-out of oil boilers are identified as priorities in the building sector, and by 2030 they are set to yield a 5.7 Mteq reduction of energy consumption compared to the BASE scenario. The residential sector will be responsible for a 3.3 Mteq out of the 5.7, while the tertiary sector will contribute the remaining 2.4 Mteq, in particular through deep renovations and the installation of heat pumps and more efficient appliances.

Ecobonus and tax rebates for deep renovations

Increasing the efficiency of deep renovations is one of the main measures included in the Italian NECP.

According to the plan, today's deep renovation rate of Italy's building stock can be estimated through data collected on the access to tax rebates on energy efficiency interventions (Ecobonus scheme). This data shows that more than 1,700,000 renovation projects were carried out between 2014 and 2018, 334,000 of which only in 2018. Among these, 140,000 requests were for the replacement of doors and windows, 90,000 for the replacement of the heating system, and over 70,000 for the installation of sun shades.

In 2018, most energy savings were achieved through the replacement of doors and windows and the insulation of floors and roofs, as well as through the

replacement of heating systems. The estimated yearly deep renovations rate is 0.26%.

The final NECP is set to increase the yearly renovation rate to 0.7% for the 2021-2030 period. This translates into a renovation of 34,000 buildings a year.

Tax rebates for building renovation projects were introduced in Italy in 1997. The so-called “Ecobonus” which provides incentives up to 50% of the cost for deep renovations and energy efficiency projects was introduced in 2006, and the first incentives were granted in 2007.

A large majority of the population has benefited from tax rebates for renovation projects of buildings. The data collected between 2007 and 2019 on building renovation shows that over that period, four million requests were filed for a total value of 41.7 billion euros, of which 24.1 billion were given back in rebates.

Tax rebates for energy efficiency are still in force and included in the final NECP.

Throughout the years, incentives for the renovation of the building stock and improvement of energy efficiency have been progressively increased. In the last few years these have been raised to range between 50% and 85%.

Following the Covid-19 pandemic, the Italian government has again modified the Ecobonus scheme. This now foresees a 110% rebate for building renovations. However, because the Italian NECP was published before the outbreak of the health emergency, this update is not reflected in the final plan.

The Ecobonus measure is in line with European directives on energy efficiency and building renovations, in particular Directive 2012/27/EU. The transposition of this directive into Italian law should have ensured the implementation of a consistent framework linking regulatory and financial incentives to promote energy efficiency projects. Instead, one of the main shortcomings of the measures related to building renovations and energy efficiency - including for the Ecobonus scheme - is the existing inconsistency and fragmentation of incentives and resources among stakeholders and different schemes. This

issue needs to be addressed through simplification of the system and merging of different schemes where sensible and feasible.

Ecobonus incentives are usually financed through substantial annual economic resources. However, for such large amounts and long projects, multi-annual budgets would be better to guarantee the renovation of the entire national building stock. Indeed, only the Ecobonus for the renovation of condominiums has been allocated resources for four years. Other ecobonus schemes are instead usually planned year by year.

Recommendations to improve the measure

The main problem of the Ecobonus scheme, for condominiums and single unit houses, is the efficiency of the measures. Often, households invest in projects with low energy savings return, such as the replacement of windows and doors alone without implementing any other modification to the heating system or the thermal structure of the building.

In order to solve this issue, the award of incentives should be preceded by a thorough analysis of the efficiency of the projects, and should be dedicated exclusively to renewable energy applications. Nowadays instead, even the latest 110% “superbonus” incentive can be used to invest in heating systems fuelled by fossil fuels like gas.

Moreover, in view of the necessity to boost the deep renovation of the building stock, better guarantees about the timings of renovation works and temporary accommodations should be provided to households to make these interventions more popular.

Non-repayable grants to municipalities

Under this measure, municipalities receive a lump sum to invest in energy efficiency projects and in sustainable development projects.

The grants are allocated to municipalities according to the number of inhabitants registered at the municipality by 1 January 2018:

- 50,000 euros to municipalities with 5,000 inhabitants or less;
- 70,000 euros to municipalities with 5,001 to 10,000 inhabitants;
- 90,000 euros to municipalities with 10,001 to 20,000 inhabitants;
- 130,000 euros to municipalities with 20,001 to 50,000 inhabitants;
- 170,000 euros to municipalities with 50,001 to 100,000 inhabitants;
- 210,000 euros to municipalities with 100,001 to 250,000 inhabitants;
- 250,000 euros to municipalities with more than 250,000 inhabitants.

The money can be used for renovation of public buildings aimed at increasing energy efficiency, including public lighting, energy savings works in public buildings, and installation of renewable energy sources. The grants can also be spent on projects for the sustainable development of the municipality, including for sustainable mobility, implementation of measures to ensure safety of schools and public buildings, and for the elimination of architectural barriers.

Grants to municipalities were established via a decree in April 2019. The decree sets the maximum amount that can be spent a year on the grants at 500 million euros. This sum could be taken from the share of the EU Cohesion and Development Fund dedicated to energy efficiency and sustainable development projects.

Grants are assigned to municipalities based on the size of the population as reported on 1 January 2018.

Non-repayable grants to municipalities are included in the final NECP. Moreover, the NECP includes a new decree that was adopted in 2020, which authorises a multiannual financing programme. The resources of this programme are shared among municipalities with less than 1,000 inhabitants that receive all the same amount in grants.

While a step in the right direction, the non-repayable grants present a few inherent problems.

Despite being assigned according to the size of the municipalities, the grants are too small and inadequate to meet the renovation needs of each

municipality. Moreover, they cannot be cumulative over time, which means that public administrations always have only small sums that they end up spending on single buildings or single small projects each year.

Another issue with this scheme is the fact that, even though municipalities can benefit from other incentives in addition to non-repayable grants - such as Conto Termico (a scheme supporting the production of thermal energy from renewables, as well as small-scale interventions of energy efficiency for private subjects and the Public Administration) or ecobonus for renovation of public buildings - these are not accessible directly by citizens and private companies. Citizens and private companies can make official requests for renovation projects but have to submit them to the public administration and wait for their decision. This process works smoothly only in municipalities that have personnel specifically trained to deal with building related projects, which is often not the case. Indeed, many public bodies often lament the lack of resources to hire new and trained personnel to follow renovation projects.

Recommendations to improve the measure

Projects for the renovation of public buildings are extremely important to achieve deep energy efficiency gains and cuts in carbon emissions.

The plethora of different schemes that exist in Italy and are included in the final NECP should provide a big push in the right direction. However, a more thorough analysis of the objectives, the activities and the effectiveness of the projects that are financed through these schemes should be carried out, including for projects targeting public buildings.

Moreover, all schemes should be better integrated and interconnected. This would result in greater efficiency and better spending of public money. For example, Ecobonus, Conto Termico and non-repayable grants, are all schemes that finance the same kind of projects. However, projects funded through these different schemes often fail to reap synergies between them and obtain more energy savings.

Moreover, all schemes are not exclusively geared towards financing renewable energy projects. Indeed, all the above-mentioned schemes can be equally used to finance an oil boiler or a geothermal pump.

The NECP should rectify this and exclude all funding to projects based on fossil fuel sources.

Agriculture

In the agriculture sector, the Italian NECP foresees a 3Mt CO₂eq reduction in emissions, from 41Mt to 38Mt CO₂eq by 2030.

Agricultural emissions are determined by livestock herd size and composition, manure management, mineral fertiliser management, the size of cultivated area, crops cultivated and arable management practices.

According to the NECP, agriculture is responsible for 9% of greenhouse gas emissions in Italy, namely methane and nitrous oxide. In addition, ammonia emissions causing lethal air pollution is driven by suboptimal manure management and the use of fertilisers. Nitrous oxide emissions are mainly the result of natural soil processes related to the overuse of fertilisers and most methane emissions derive from enteric fermentation in the digestion systems of ruminants (cattle, sheep and goats) and from manure.

Livestock production accounts for 50% of total agriculture emissions in Italy, due to the methane produced by the ruminant animals and by manure.

The NECP includes two measures aimed at tackling GHG emissions from agriculture.

Programme to improve air quality in Padania through regional cooperation and joint actions and measures

The programme has been in force since 2017 and aims to identify joint actions to tackle emissions, including greenhouse gas emissions, and dust. In this

programme, participating regions must plan and carry out measures aimed at reducing GHG emissions within their strategies to improve air quality. Such measures can include covering manure containers, applying best practices when spreading manure and covering fertilised land, when considered technically feasible and economically viable.

The regions involved in the programme are those with the most intensive agriculture production, such as Piedmont, Lombardy, Emilia-Romagna and Veneto. Each region has developed its own regional plan to carry out the joint and agreed measures.

The programme includes specific milestones. For example, within six months from joining the programme, a region is forbidden from installing low-performing generators (3 stars) and from continuing to use very low-performing generators (2 stars). Although this technically does address GHG emissions, such measure does not contribute to the reduction of agricultural emissions, as fuel combustion in agriculture is not counted under this category in the EU.

The programme for the improvement of air quality is maintained in the final NECP as one of the main measures to both tackle GHG emissions and improve the air quality in the Padania region.

Moreover, the NECP integrates the programme with a new analysis on the role of biogas from agriculture. The analysis provides guidance on livestock manure management and how to use digestate, which is particularly relevant in areas vulnerable to nitrates and affected by air quality problems due to second-hand pollutants stemming from ammonia released in the atmosphere from agriculture. However, this analysis does not include any recommendations on specific actions for the regions.

The programme is financed by the State and receives around 2 million euros a year.

Recommendations to improve the measure

The programme for air quality improvement needs to be fully aligned with the Common Agriculture Policy (CAP), in particular with climate and environmental objectives, and ensure that proper financial resources are channeled to farmers.

Concrete and ambitious targets and impact indicators for the reduction of the greenhouse gas and air pollutant methane and related air pollutants as ammonia should be established, monitored and evaluated as one key parameter for financial support under the programme.

The programme also needs to define specific objectives with regard to reduction and redistribution of animal rearing and diversification of crops, which need to be transposed and implemented through robust agricultural planning, including with an ad hoc revision of the rural development plan.

This would ensure an effective monitoring of agriculture practices aimed at reducing ammonia emissions and promote good practices that support farming and animal rearing with low environmental impact.

Common Agricultural Policy

The importance of the CAP for the agriculture sector can hardly be overestimated. However, since the next CAP is still under negotiation in the Parliament, the NECP does not contain further details nor revision of existing measures.

The Common Agricultural Policy (CAP) 2021-2027 (which will most likely be delayed with two years due to prolonged negotiations in Parliament and other challenges) outlines measures and financial instruments for the development of the agriculture sector in the EU. Compared to the previous CAP (2014-2020), the Commission presents the new CAP proposal as oriented more towards climate and environmental protection. This is manifested for example in the revision of the conditionality (a set of minimum requirements for

environmental good practices that farmers have to comply with to receive direct payments) and the introduction of 'eco-schemes' obliging member states to offer various additional environmental programmes which are voluntary for the farmers. However, the CAP proposal has been heavily criticised by scientists, think tanks, civil society and the European Court of Auditors for falling far short of the changes needed and is likely to be watered down further during negotiations with the Council and Parliament.

Some of the measures that will be implemented and financed by funds allocated through the CAP are for example fertiliser management, strategies for optimised animal feed, manure stocking and spreading techniques with lower emissions. Some of these measures will be compulsory and others voluntary.

Recommendations to improve the measure

One way to reduce greenhouse gas emissions from agriculture would be to increase the amount of land under organic farming. Organic farming relies less on chemical fertilisers which can lead to a reduction of nitrous oxide emissions and often counts on smaller livestock herds which can reduce methane emissions.

It is therefore crucial to finalise the financial scheme included in the first pillar of the EU Common Agricultural Policy (CAP) that is aimed at supporting farmers that have already converted to organic farming, and the financial incentives included in the second pillar that are aimed to support and encourage new conversions to organic farming.

The overall goal would be the conversion of at least 40% of the total cultivated land in Italy to organic farming by 2030, which would translate into additional 250,000 hectares of land converted to organic farming yearly.

The implementation of organic farming practices, if done properly, is hugely beneficial to the soil, climate and the environment. In addition to the more conservative agronomic practices that are a

staple of organic farming, this type of farming yields more positive outcomes linked to cultivation methods.

The expansion of organic farming, as mentioned above, would yield additional emissions reductions that could be as high as 2MtCO₂/year by 2030. The emission reduction would also be flanked by improvements on biodiversity, nature conservation, as well as more added value for products produced with organic farming which in turn would also improve the reputation of Italian products on the market.

Conclusions and next steps

The final Italian NECP is overall not very ambitious. It foresees a 37% emissions reduction by 2030, which is lower than the European target, and translates into total emissions of 328MtCO₂eq.

Yet, the next decade will be crucial to stop the climate crisis. According to the Emissions Gap Report of the United Nations, between 2020 and 2030 GHG emissions should be reduced 7.6% yearly in order to limit the temperature increase to 1.5°C.

For Italy to do its fair share to achieve this rate of annual emission reduction would require a drastic change in the country's yearly emission reductions, which in the NECP is estimated to be 1.7%.

The Italian NECP keeps pushing fossil gas as transition fuel, foreseeing 3GW of additional capacity and making the closure of coal power plants dependent on the development of new gas plants and related infrastructure. The plan even includes the possibility to postpone the deadline for coal phase-out beyond 2025.

Moreover, the final NECP includes a strong downward revision of CO₂ absorption from land and forests. In December 2018, the draft plan foresaw 41.535 KtCO₂eq to be absorbed by forests and land. This number has been

almost halved in the final plan to 23.429 ktCO₂eq. While no reason is given for this, the only plausible explanation is that the plan had to comply with the LULUCF no-debit rule and the restriction on accounting on forest and land absorption which is set to 11,5 MtCO₂eq between 2021 and 2030. This correction represents a more realistic accounting of emissions that Italy will need to cut without relying on sinks. However, the plan fails to properly indicate how the emissions that will not be counted as absorbed by land and forests are going to be tackled. No specific strategy on this is included in the NECP; only some references to other pieces of legislation are loosely mentioned.

Finally, the Italian government still doesn't commit to phasing out fossil fuel subsidies. The NECP foresees a "rationalisation" of environmentally harmful subsidies but lacks a clear roadmap for their phase-out. The plan estimates that the government paid a total of 13.1 billion EUR in fossil fuel subsidies in 2017. While the number itself is an underestimation, as shown by a report by Legambiente, these resources should be better spent to accelerate the transition to a carbon-free and sustainable society.

The targets and measures currently included in the final NECP put Italy on a pathway to reach a 64% emissions reduction by 2050, which is far from the European objective to achieve climate neutrality by mid-century.

A reassessment of the plan, especially in view of the increased mid-term EU climate target, is required. Environment Minister Costa, in a Parliament hearing in February 2020 committed to reviewing the NECP after the European Commission's adoption of the new 2030 climate targets. This is an opportunity not to be missed. The national energy and climate plan can and should be a key tool to guide Italy towards a climate-friendly future. It is the only way to ensure the long-term safety and prosperity for Italian people in the post-Covid world.



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