ECCO

THE ITALIAN CLIMATE CHANGE THINK TANK

NATIONAL ENERGY AND CLIMATE PLAN (NECP) PROGRESS REPORT

REPORT
OCTOBER 2024

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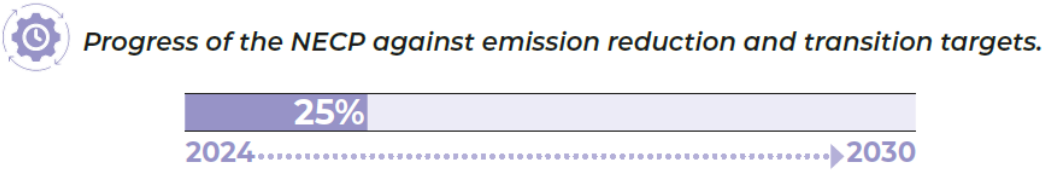
INTRODUCTION



Each year, before the climate negotiations commence, UNEP publishes the Emissions Gap Report (EGR). This report outlines the gap that exists between the estimated level of global emissions based on the current national commitments made in relation to the Paris Agreement (Nationally Determined Contributions, or NDCs) and the level required to achieve the goal of limiting global warming to 1.5°C. Each edition examines ways to close the emissions gap, addressing specific issues of interest and relevance to the negotiations. This year, the report focuses on the need and options to accelerate climate action in light of the forthcoming submissions from countries of their new national commitments for 2035 and 2040, which are due next year.

The key message from the EGR 2024 is: "Ambition means nothing without action." The report highlights that global emissions are still on the rise and have even surpassed pre-COVID levels, outlining a worrying scenario in which climate action during the 2030-2035 period will be crucial if the target of keeping the average global temperature rise to below 1.5°C, compared to pre-industrial levels, is to remain a viable possibility. On the one hand, this implies that the new NDCs need to be particularly ambitious but, more importantly, they must also be backed up by well-defined implementation strategies, and that these strategies must already be in place for the current 2030 commitments.

What about Italy?

As a party to the Paris Agreement and as a member of the European Union, Italy's national contribution is linked with that of other member states and, together, they are legally obliged to achieve a 55% reduction in net emissions, compared to 1990 levels, by 2030.

The National Energy and Climate Plan (NECP) provides a national framework for countries to implement their emissions reduction commitments. The most recent version, relating to the 2030 objective, was submitted by Italy before the deadline, together with a small number of other countries, to the European Commission in July 2024.

Unfortunately, this plan, as highlighted in ECCO's analysis of the NECP, openly falls short of some of the objectives set by the Fit for 55 proposals. The plan aims to reduce emissions, compared to 1990 levels, by 40% in the Effort Sharing sectors by 2030, rather than the 43.7% target, without specifying any measures or mechanisms to close this gap. The cumulative shortfall, with respect to the objectives, is estimated at **around 100 $MtCO_2eq$**. Based on some of

the most recent projections regarding the costs of CO_2, this emissions gap translates to an estimated monetary value of approximately €15 billion[1].

As we highlighted here, the plan published in June 2024 had significant shortcomings in its implementation framework.

In the context of assessing the current situation in terms of global emissions and the recommendations on the need to start from the implementation of the current objectives, we would like to take the opportunity to update that assessment and take stock of where we are compared to where we should be, also taking into consideration the latest regulatory developments.

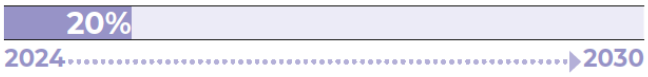
It is worth noting that in Italy, in the Effort Sharing sectors, emissions decreased between 2021 and 2022 from 280 $MtCO_2eq$ to 271 $MtCO_2eq$. However, these emissions still exceeded the target by 2.8 $MtCO_2eq$. In the ETS sectors, for the same period, emissions increased from 131 $MtCO_2eq$ to 136 $MtCO_2eq$, with a 9 $MtCO_2eq$ rise in the energy sector, driven by the increased use of coal in thermoelectric power plants.
Renewable energy is continuing to gain ground in the electricity sector, with an additional 5.8 GW in 2023 and a further 4.8 GW in the first eight months of 2024. However, it appears that a significant push will be required if the target of 70 GW of additional capacity by 2030 is to be met.

Some modest steps forward have been made in the industrial and buildings sectors, although they still remain relatively insignificant. However, the transport sector is on a negative trend, with emissions once again on the rise, increasing by 6.7% in 2022 compared to the previous year.

Finally, despite a significant reduction in gas consumption since 2021 (down by approximately 20%), the latest infrastructure plans continue to base their analysis on the demand for gas outlined by the NECP, which still closely mirrors the current levels (61.5 billion cubic metres compared to 59 billion cubic metres, 5 billion of which is from biomethane).

[1] Estimate based on the projections in table 93 of the plan (assuming a shortfall of 10 $MtCO_2eq$ per year from 2025 to 2030) and Bloomberg's CO_2 prices for 2030 https://about.bnef.com/blog/global-carbon-market-outlook-2024/#:~:text=Meanwhile%2C%20carbon%20prices%20in%20the,set%20of%20low%2Dcarbon%20technologies

CLIMATE GOVERNANCE



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ A structured governance ▪ An implementation NECP ▪ A system for monitoring, assessment, and the possibility to modify policies ▪ A multi-level dialogue between institutions and those involved in implementation ▪ Political will to continue on the path towards decarbonisation	😐 Long-term strategy update 😐 Government initiatives based on input from Parliament ☹ Adoption of climate legislation ☹ CITE or CIPESS resolution for NECP approval ☹ NECP Technical Committee ☹ Multi-level dialogue established ☹ Strategic Environmental Assessment	😐 Structural Budget Plan 😐 Environmental Decree Law ☹ Decree Law on Suitable Areas	😐 The Structural Budget Plan does not create the adequate fiscal space to enable a inancial strategy for climate policies to be established ☹ The Decree Law on Suitable Areas has made it possible for Sardinia to establish a bill that would classify 99% of its territory as unsuitable for new renewable energy facilities

The term "climate governance" refers to the regulatory framework that enables the establishment of climate mitigation and adaptation objectives, as well as the means to achieve them. In the absence of such a framework, which could be established, for example, via a "Climate Law", climate governance must rely on all the available legislative tools, guiding principles and structural reforms that, if well organised and coherent, can facilitate the implementation of national climate policies. Climate governance therefore encompasses measures to simplify the authorisation processes for renewable energy projects or to incentivise their development, measures to promote the increased use of electric vehicles and the wider availability of charging stations, and measures to improve the energy efficiency and emissions performance of our homes. It also includes industrial policies aimed at redirecting national production towards transition technologies or supporting their competitiveness during this process. This broad and complex regulatory framework needs a starting frame of reference, and in this regard the role of the National Energy and Climate Plan (NECP) is crucial.

The NECP should:

- provide a coherent legislative and regulatory framework that effectively translates the objectives into emissions reduction policies, it must be economically efficient and proportional in terms of the socio-economic consequences it may cause. To have any legal force, the NECP should be approved as primary legislation or, at the very least, as an implementing act passed through a resolution of the *Comitato Interministeriale per la Transizione Ecologica* (CITE - Interministerial Committee for Ecological Transition) or the *Comitato Interministeriale per la Programmazione Economica e lo Sviluppo Sostenibile* (CIPESS - Interministerial Committee for Economic Planning and Sustainable Development). However, to date, there have been no new Interministerial Committee resolutions on the NECP, nor any other provisions for its approval and implementation.
- Establishing a body and system to monitor, assess and review the policies to ensure they align with the objectives is equally crucial. An *Osservatorio PNIEC* (NECP Technical Committee) has been outlined in the plan, but it has not yet been formally established.

One positive development is the announced update to Italy's Long-Term Strategy[2] (LTS), which is planned for 2025. Although the details of the strategy are not yet known, it will inevitably have to build upon the NECP and address its shortcomings.

With respect to any parliamentary discussions on the plan, although there have been no developments following the submission of the NECP to the European Commission in July and specific motions to Parliament in June, it is worth highlighting that, at the end of July, a parliamentary question was raised in the Italian Senate urging the Government to adopt a systems-based approach for both the NECP and the *Piano Nazionale di Adattamento ai Cambiamenti Climatici* (PNACC - National Climate Change Adaptation Plan). In response to this question, the Minister said that "*among other things, our aim is to build an* ***organisational framework centred around a national governance system*** *that can ensure, based on the sharing of knowledge, greater coherence and* ***synergy across a range of multilevel actions*** *(...)*".

The Strategic Environmental Assessment (SEA) of the NECP is still ongoing, meaning that the final version of the plan has not been able to take into account the conclusions and recommendations from the procedure, including those arising from the public consultation which was conducted as part of this process.

Looking at the instruments that may be relevant for climate policy, it is important to consider the *Piano Strutturale di Bilancio* (PSB - Structural Budget Plan). This medium to long-term economic governance plan could have created the necessary fiscal space aimed at establishing a financing strategy for climate policies, but it has failed to do so. In fact, the plan even failed to identify the complementary roles that public and private finance could play in mobilising the investments that are estimated to be required for the transition, investments which, in addition to the decarbonisation process, should also be directed towards supporting the country's economic development strategy.

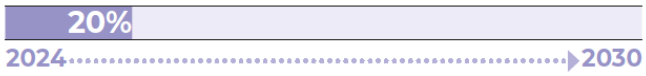
Of the key regulations that are relevant to this analysis, it is worth highlighting the *DL ambiente* (Environmental Decree Law), which stipulates that the priority energy projects should be those which both contribute to the achievement of the national decarbonisation targets and are economically viable. It is also worth noting that almost all of the measures set out in the latest Environmental Decree Law are aimed at emissions mitigation or adapting to the impacts of climate change. However, there is still a reluctance to prioritise this issue as part of the country's political and economic agenda, and while this is the case, significant barriers will remain for organically and practically integrating the climate factor into the country's objectives for growth.

Indeed, this lack of prioritisation leads to potential delays and inefficiencies in climate action, a clear example of which is the recent moratorium on renewables in Sardinia. The *Decreto sulle aree idonee* (Decree Law on Suitable Areas), was intended by the legislator to be a planning tool for the installation of new renewable energy facilities. However, it also grants considerable discretion to the Regional Authorities in identifying suitable areas for installing such facilities. As a result, given the strong opposition there is to developing new wind farms in Sardinia, the

[2] Under the EU Governance Regulation, Member States can even update their Long-Term Strategies every five years, outlining their path to achieving climate neutrality by 2050.

Regional Government passed a resolution for an 18-month moratorium on the construction of new wind and solar facilities. The Government has launched a constitutional court challenge against the resolution, and the regulatory developments that will follow as a result are yet to be assessed. To avoid such issues arising across the entire country, a more stable regulatory framework is required, one that addresses structural problems in a more coherent manner.

FINANCING THE TRANSITION



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ A strategy for financing and implementing climate policies and the national public spending plan	Identification of investment volumes and their annual update Identification of measures to incentivise private finance Modifications to the SACE and CDP guidelines Plan to gradually phase out the EHS, with an assessment of their socio-economic impacts Review of investment policies and the exclusion of SACE and CDP investments in fossil fuel projects	Presentation of a detailed financing strategy for each policy	In the Structural Budget Plan 2025-2029, climate is recognised as one of the factors for economic policy decision-making, but there is no financing strategy that underlines the reciprocal role played by public and private finance

As things currently stand, a financial strategy has still not been established for funding and implementing the policies set out in the NECP. As part of the strategic foresights outlined in the *Piano Strutturale di Bilancio 2025-2029* (Structural Budget Plan 2025-2029), the climate is recognised as one of the factors likely to have the greatest impact on economic policy decisions, however, despite this, there is no evidence that a clear funding strategy has been developed. More importantly, there is also no evidence that the necessary sources of public and private finance needed for implementing the NECP measures have been identified.

According to Government estimates, achieving the objectives set out in NECP 2024 will require over €174 billion in additional cumulative investment between 2024 and 2030, a 27% increase compared to the scenario on which the current legislation is based. These figures are more consistent with those calculated by ECCO. According to the Government, and as underlined by several studies, the majority of this investment will need to come from the private sector. However, the level of investment required cannot be mobilised without a concrete, independent financial strategy that fosters an enabling regulatory environment, allowing public finance to leverage private investment. Such a strategy should outline each individual measure in detail, specifying the sources and financial instruments, the amount to be met by public funding, and, most importantly, concrete tools for incentivising private sector participation.

This would require, for both public and private investments in Italy, a coordinated, multi-sectoral approach. Clear mechanisms should be put in place to monitor these investments and ensure they are directed appropriately, encouraging transition plans at all levels, from public institutions to banks, and from investment funds to companies. This complete coherence and transparency is crucial for accessing private sources of finance, it is widely understood that private investments are unlikely to materialise without a clear, specific and consistent framework. As things currently stand, the latest version of the NECP merely describes the regulatory context, both European and national, it does not provide a clear plan for how these regulations might translate into concrete actions. This is one of the plan's primary weaknesses,

because without any operational and strategic guidelines it becomes very difficult to mobilise the necessary resources.

Continuing with the theme of private finance, in 2022, the Italian Ministry of Economy and Finance established a *Tavolo di Coordinamento sulla Finanza Sostenibile* (Sustainable Finance Coordination Committee), involving several ministries and regulatory authorities. The aim of this initiative is to mobilise private sources of finance through the capital markets to support the transition, but until now the working groups have mainly focused on analysing environmental and climate risks for businesses and households, without defining any concrete mitigation and adaptation actions.

Given the need to mobilise private finance, the *Piano Strutturale di Bilancio* underlines the crucial role that national guarantee schemes and blending facilities can play to support private investments. However, neither the NECP nor the *Piano Strutturale di Bilancio* currently provide sufficient guidance on the role that national development banks, such as CDP, SACE and Invitalia, should play. Although in 2023, CIPESS began a process of revising SACE's guidelines with a view to aligning them with the sustainable development goals and the EU taxonomy, this process is still ongoing. The revisions to the current guidelines include aligning SACE with the sustainable development goals and EU taxonomy, strengthening the "green guarantee", and developing criteria for identifying green investments. Completing this process to update SACE's guidelines is crucial if SACE is to become a mandated green financial institution, and similar initiatives should also be conducted for CDP and Invitalia, so as to transform them into genuine Green Banks.

Furthermore, the 2024 Budget Law introduced a new guarantee instrument called *Archimede*, managed and administered by SACE which is authorised to issue, to medium and large enterprises, and until 31 December 2029, guarantees for investments in infrastructure, including social infrastructure, in local public services and the industrial sector, as well as investments in transition processes towards a clean and circular economy, sustainable mobility, climate change adaptation and mitigation, sustainability and environmental or climate resilience, and industrial, technological and digital innovation.

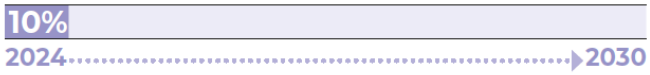
However, this instrument still lacks a precise set of conditions and clear incentives for projects geared towards achieving the net-zero objective. Most notably, there isn't a clear policy of excluding any funding for projects linked to fossil fuels.

Finally, despite the international commitments it has made since 2009, including at the most recent G7 summit, Italy has made limited progress in phasing out fossil fuel subsidies (Environmentally Harmful Subsidies - EHS). In addition to the reform process launched by CITE in 2021, which resulted in five fossil fuel subsidies being withdrawn for an annual saving of €105.9 million, the tax reform enabling law, which came into force in August 2023 (Law No. 111/2023), established principles for reviewing and revising the available tax breaks, including abolishing the EHS. In 2023, following recommendations from the European Council in relation to the NRRP and REPowerEU plan, a reform process was established to reduce the EHS: 18 subsidies have been reviewed so far, all of which are outlined in the NECP. Given the scale of public debt in Italy, it is vital to reconcile the country's economic and financial plans with its energy and climate objectives. Regarding the NRRP and REPowerEU, a reform process aimed at reducing the EHS has so far reviewed 18 subsidies, all of which are outlined in the NECP. Given

the scale of public debt in Italy, it is vital to reconcile the country's economic and financial plans with its energy and climate objectives.

Neither the latest version of the NECP nor the recent *Piano Strutturale di Bilancio* offer a clear roadmap for phasing out the EHS, a process which should start with prioritising those subsidies which represent the greatest impediment to decarbonisation, which should assess their socio-economic impact, and which should be able to redirect the financial savings obtained towards the energy and industrial transition process.

SOCIO-ECONOMIC SUSTAINABILITY OF THE TRANSITION PROCESS



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ Institutional initiatives to assess the socio-economic sustainability of climate policies and measures ▪ Monitoring and evaluation of the transition's social and employment impacts over time ▪ Analysis of the economic-employment effects of the transition (Just Transition)	☹ Alignment of public spending with socio-economic and climate objectives ☹ Alignment of taxation with socio-economic and climate objectives ☹ Assessment of the transition's distributive impacts and their mitigation 😐 Identification of indicators to characterise energy poverty	☹ Review of construction incentives to address the regressiveness of those currently available ☹ Development of Social Climate Plans ☹ Development of Just Transition Territorial Plans ☹ Development of a plan to ensure a just transition for workers	☹ The failure to transfer parafiscal taxes into standard taxation prevents an assessment of the final cost of energy from a competitiveness and social sustainability perspective ☹ Parliamentary discussion on employment and Stellantis: the majority motion passed on 25 September mandates the Government to slow the transition, particularly in the automotive sector, without an evaluation of its medium-term impacts

Ensuring that the transition process is socially sustainable requires a consistent political vision, one that establishes policies and measures aimed at addressing the specific needs of individuals. The plan should ensure that climate policies and measures are devised in such a way to ensure that resources are directed towards achieving this vision and meeting these needs. However, as things currently stand, no institutional initiatives have yet been established to achieve this objective, nor to put some substance on the requirements that emerged during the thematic discussions held as part of the plan's review process: for example, the need to set up monitoring and evaluation processes for the transition's social and employment impacts over time, the need for consistency in analysing the economic-employment effects of the transition, and the need to introduce a just transition dimension to the national climate governance framework. Although the plan has highlighted the necessity, which various parties strongly suggested during the discussions, to address the socio-economic aspects of the transition in an integrated and systematic way, with a working group specifically dedicated to employment and social issues, this has not yet been transformed into a concrete set of measures and objectives. The thematic meetings covering the employment and social aspects of the transition, including those focused on the development of Social Climate Plans, were expected to continue, but no initiatives have yet been undertaken in this regard so far. A good example is the work to review the incentives aimed at improving the energy efficiency of buildings. Such work is necessary to bring the incentives more into line with the objectives of the EPBD (Energy Performance of Buildings Directive), as well as to address their regressiveness, since those offered thus far have disproportionately benefited higher income groups. Establishing a system of controls and conditions for steering public spending towards social and climate objectives should be absolutely fundamental, including in those sectors that are key to the transition, however, no decisive steps have yet been taken in this direction.

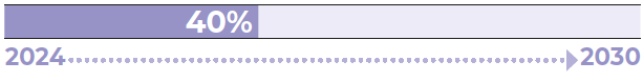
The *Piano Strutturale di Bilancio 2025-2029*, which identifies climate as one of the key drivers, also fails to bridge these significant gaps, and there is no overall consistency in public spending or taxation in relation to the socio-economic and climate objectives. Basically, at the moment not even the *Piano Strutturale di Bilancio* includes any provisions for funding aimed at ensuring the transition process is socially sustainability. Furthermore, this plan could have provided an estimate for the costs of addressing the distributive impacts of the transition,

particularly for tackling the inconsistencies and resource needs that may result from the introduction of ETS2.

In the latest version of the NECP, energy poverty is given considerable attention, underlining its importance and the political will that exists to address it. However, as was noted by the *Servizio di Studi Dipartimento Attività Produttive della Camera dei Deputati* (Studies Unit - Manufacturing Activities Department of the Chamber of Deputies) last August, the plan has not yet formally adopted any indicators to capture the multidimensional nature of this issue in Italy, and no initiatives have been established to do so. The Social Climate Plans (SCPs) need to be submitted by the end of June 2025, but first it is essential to clearly define the issue at the national level and, consequently, develop indicators that reflect its particular characteristics. It is also necessary to begin a similar process for tackling transport poverty, another cornerstone of the Social Climate Fund, and to identify vulnerable micro-enterprises that could be affected by the implementation of ETS2. Finally, considering that Italy is one of the three largest beneficiaries of the Social Climate Fund, it is necessary to identify an official body responsible for analysing, drafting, implementing, and monitoring the SCP, as well as for overseeing the process of consultation and dialogue that should take place during all of the above-mentioned phases.

With respect to the impact on employment, it is worth noting the parliamentary debate in relation to the Stellantis crisis and measures to assist with the recovery of its Italian production facilities, but nothing has been done to address the more general lack of coherence in the approach for ensuring a just transition for workers. Similarly, the implementation of the *Piani Territoriali di Giusta Transizione* (Just Transition Territorial Plans) for Taranto and Sulcis seems to have made little progress to date. Following the closure of the *Agenzia per la Coesione* territoriale (Territorial Cohesion Agency), the supervisory authority now responsible for the plans, and which was established in May 2024, is the *Ufficio per le politiche territoriali e la cooperazione territoriale* (Territorial Policies and Territorial Cooperation Office), a department within the Prime Minister's Office. Italy has been allocated €1.211 billion, but the programme is due to conclude in 2027, and it is difficult to understand how, or even if, these funds have been spent so far.

RENEWABLES



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ NECP target for renewable energy growth: 70 GW between 2023 and 2030	😡 NECP not fully aligned with the G7 target to phase out fossil fuels from the electricity system by 2035 😡 Energy sector emissions in 2022 increased by 9 $MTCO_2eq$ compared to 2021, driven by an increased use of coal 🙂 In relation to the 70 GW target, Italy has installed 10.6 GW in two years. In 2023, renewables grew by 5.8 GW, another 4.8 GW were added in the first eight months of 2024 🙂 Authorisations for new renewable facilities: - in 2023, 6.3 GW, including 1.5 GW of wind power - in 2024, authorisations continued to grow – between January and May, facilities for 3 GW gained authorisation, but only 0.3 GW were for wind power	😡 Implementation of the EU's REDIII regulations 😡 Renewable Energy Consolidating Act 😡 Decree Law on Suitable Areas 😡 Agriculture Decree Law 😡 FER X Decree 😐 MACSE auction mechanism for electrochemical energy storage 😐 FER 2 Decree 😊 Energy Release Mechanism 😊 Support for SMEs to self-generate from renewable sources	😡 The Law on Suitable Areas passed in Sardinia risks blocking the development of renewables in the region and across the country, which, according to the burden-sharing mechanism, should install around 6 GW of renewables by 2030 😡 Preliminary estimates suggest that 99% of the territory could be classified as unsuitable for the installation of new facilities

The NECP's objectives, as derived from the Renewable Energy Directive (RED III), for the share of energy from renewable energy sources, are as follows:

- 39.4% of total gross final consumption
- 34.2% of total gross final consumption in transport
- 35.9% of total gross final consumption in heating and cooling
- 63.4% of total final consumption in the electricity sector.

However, regarding the penetration of renewables within the electricity system, a key enabler for the transition of the economic and industrial system, the plan is not oriented towards a scenario whereby fossil fuels are phased out from the power system by 2035, a commitment that was made by all the G7 countries[3], including Italy. The NECP sets out a plan to increase renewable energy generation capacity by 70 GW by 2030, from 61 GW in 2022 to 131 GW by 2030. The plan is for 16.3 GW to come from new wind farms, including 2.1 GW offshore, and 54.2 GW from new solar power facilities.

If we look at 2023, we can see that renewables grew by 5.8 GW, and another 4.8 GW were added in the first eight months of 2024.

[3] This commitment was confirmed as part of the Venaria Charter signed at the Italian G7 summit https://www.mase.gov.it/sites/default/files/G7%20Climate%20Energy%20Environment%20Ministerial%20Communique%CC%80_eng.pdf

In 2023, renewable energy facilities to produce a total capacity of 6.3 GW were authorised, including 1.5 GW from wind power. This trend continued in 2024, with facilities for a total capacity of 3 GW gaining the requisite authorisations between January and May, although only 0.3 GW were for wind power. There is a significant imbalance technologically - between solar and wind - as well as territorially, with Sicily and Apulia being the regions where the majority of the facilities are located. Despite this continued growth in authorisations, the European Commission decided to open an infringement procedure against Italy for failing to implement the provisions of RED III relating to the simplification and acceleration of the authorisation procedures.

Furthermore, the *Testo Unico sulle Rinnovabili* (Renewable Energy Consolidating Act) is still under review in Parliament, with its draft still containing several critical issues, while the Government has published the *Decreto-Legge sulle Aree Idonee* (Decree Law on Suitable Areas), granting significant discretion to the Regional Authorities who, in the coming months, will need to classify their territories into areas suitable and unsuitable for renewable energy development. In particular, the Law on Suitable Areas that was passed in Sardinia, shortly after the decree was published, risks blocking renewable energy development in the region which, according to the burden-sharing agreement, is expected to install approximately 6 GW of new capacity by 2030. Preliminary estimates suggest that 99% of the Sardinian territory could be classified as unsuitable for new renewable energy facilities. Continuing with regulatory developments, the *Decreto-Legge Agricoltura* (Agriculture Decree Law) also significantly limits renewable energy development in agricultural areas.

The phasing-out of coal-fired electricity generation is set for 2025 on Italy's mainland, whilst in Sardinia it has been postponed until 2028, as that is when the Tyrrhenian Link is expected to become fully operational.

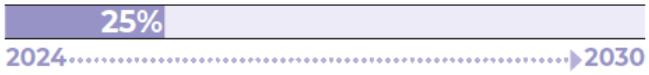
During the energy crisis of 2022, energy sector emissions increased by 9 $MtCO_2eq$ compared to 2021, largely due to a greater reliance on coal-fired electricity generation in response to the 2021-2022 gas crisis. Subsequently, coal-fired electricity generation declined again in 2023, recording a 42% drop compared to 2022 and accounting for 4.6% of the electricity produced. This downward trend continued into the first eight months of 2024, during which time coal-fired electricity generation accounted for just 1.3% of total net production (a 76% drop compared to the same period in 2023).

To enable the infrastructure development required for the power grid and storage systems, which are necessary to guarantee the flexibility, security and adequacy of the system as the use of renewables becomes more prevalent, the NECP cites that which Terna, the transmission grid operator, stipulates in its development plan: 11 GW of utility-scale storage and 4 GW of distributed storage by 2030. It is worth noting that ARERA has approved the MACSE auction mechanism for electrochemical energy storage (Terna's mechanism for procuring electricity storage capacity). Finally, the plan also provides 2030 forecasts for the heating and cooling sector, with a growth in final consumption of 3.2 Mtoe from biomethane, 0.6 Mtoe from bioenergy (solid biomass, biogas, and bioliquids), 2.2 Mtoe from ambient heat (i.e., heat pumps), and 0.4 Mtoe from solar, geothermal, and hydrogen.

In terms of further regulatory developments, the Energy Release mechanism aimed at supporting renewable energy development for energy-intensive companies is being launched. Additionally, the FER 2 Decree has been published to support more innovative renewable

technologies such as offshore wind, for which developers will be able to bid for tariffs for projects with a capacity as high as 3.8 GW, while the FER X Decree, aimed at promoting traditional renewables through auction mechanisms, is still under discussion.

ELECTRIFICATION OF CONSUMPTION



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ For the major energy consuming sectors (excluding heavy industry), Italy's reduction target is 245.6 $MtCO_2$ by 2030 (compared to 2005 levels)	The NECP target does not align with the 43.7% reduction target (compared to 2005 levels) assigned to Italy, which should deliver a reduction of 193.6 $MtCO_2eq$ by 2030, leaving the country exposed to possible infringement procedures and associated fines In the ESR sectors, emissions decreased between 2021 and 2022, dropping from 280 $MtCO_2eq$ to 271 $MtCO_2eq$. Emissions exceeded the annual target by 2.8 $MtCO_2eq$ Emissions in the transport sector increased from 102.5 $MtCO_2eq$ in 2021 to 109.4 $MtCO_2eq$ in 2022 The share of electricity in final energy consumption in 2022 was 50.6% for the services sector, 39% for industry, just 2.1% for transport, and 18% for the residential sector, with no significant increases Emissions in the buildings sector decreased from 82 $MtCO_2eq$ to 73 $MtCO_2eq$ due to mild temperatures and possible behavioural changes driven by gas prices	Revision of the Conto Termico Transition 5.0 Debate on updating the white certificates Discussions around the need to reduce electricity bills gained little traction	Poorly targeted subsidies that support both electrification and fossil fuels Bill subsidies that increase the fiscal imbalance between electricity and gas, thus discouraging measures to save energy or improve efficiency, have not been extended

Although electrification is widely recognised as a potential key strategy for achieving decarbonisation, the NECP does not include a specific objective for the electrification of consumption in the buildings, transport and industrial sectors. Different metrics are used to define the national targets for 2040 in the various sectors, making the overall objective, and the strategy for achieving it, somewhat unclear. In fact, all the plan does is set out a national emissions reduction target of 40.6% (compared to 2005 levels) by 2030 for sectors covered by the Effort Sharing Regulation (ESR), and a 66% reduction for sectors within the European Emissions Trading System (EU ETS). However, this NECP target of 40.6% is not consistent with the EU target, which is to reduce emissions by 43.7% compared to 2005 levels. As of 2022, the emissions reduction level for the ESR sectors stood at 20.1% compared to 2005, whilst for the ETS sectors it was 42%.

In Italy, the share of electricity in final consumption has been steadily increasing since 1990, reaching an average of 22.3% in 2022, although there are major differences across the various sectors. The highest share of electricity in final consumption is found in the services sector, with a figure of over 50%. The year-on-year increases seen in the industrial sector have remained fairly stable since 1990, reaching 39% of final consumption in 2022. The sectors that have shown no significant increases are the buildings and transport sectors,

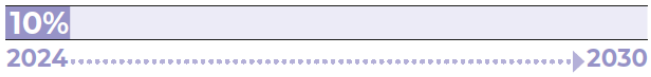
with electricity accounting for 18.5% and 2.1% of final consumption respectively, there is therefore plenty of untapped potential in both these areas.

Of the key policies that have been developed to facilitate achieving the NECP's objectives, one that is viewed particularly positively is the updated *Transizione 5.0* (Transition 5.0) initiative, which is aimed at supporting the electrification process. This measure assists companies with the purchase of innovative technologies, including technologies to self-generate energy from renewable sources. Since it is funded through the NRRP, this initiative is subject to the DNSH (Do No Significant Harm) principle, meaning it cannot be used to support the purchase of fossil fuel technologies. This measure came into force in August 2024 and will provide support, through tax credits, for costs incurred during 2024 and 2025.

The *Conto Termico*, established by the Ministerial Decree of 16 February 2016, incentivises energy efficiency and the generation of thermal energy from renewable sources for systems under 2MW. The scheme is managed by the electricity supplier (GSE - Gestore dei Servizi Elettrici), the total amount of money available is €900 million, and it can be used to cover 40-65% of the costs incurred up to a maximum of €5,000. The beneficiaries may include public administrative bodies, businesses or private individuals. The *Conto Termico* initiative is currently in the process of being updated, with the Government planning to add a range of new eligible projects, such as solar facilities with storage systems and heat pumps to replace existing heating systems. The revised *Conto Termico* is scheduled to be published in 2025. This measure is not subject to the DNSH principle, therefore whilst it can be used to support projects to increase electrification, it can also support the installation of hybrid or gas-fuelled heat pumps. The debate on updating the white certificates scheme continues, not with the intention of extending its areas of application or making it more effective in the sectors where it is already being applied (industrial, tertiary, transport), but to explore the possibility of extending it to the residential sector and using it to replace tax incentives.

Finally, discussions have begun regarding the need to reduce electricity bills by transferring some of the government obligation charges to other methods of taxation. However, this proposal is not gaining much traction and is not aligned with the broader debate on reforming tariff structures, which would include harmonising taxes and parafiscal taxes with electricity and gas tariffs. Subsidies remain poorly targeted, as they support both electrification and fossil fuels, and subsidies for bills that widened the fiscal imbalance between electricity and gas, and therefore did not encourage measures to save energy or improve efficiency, have not been extended.

PHASING OUT GAS – PLANNING THE TRANSITION



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ Strategy for phasing out gas, with a clear approach and intermediate milestones	● 2023: national gas consumption was 61.7 bcm. Reduction of 10% on 2022, stabilising in 2024 ● NECP forecasts natural gas demand of 54 bcm by 2030 ● NECP forecasts biomethane demand of 5 bcm by 2030. In 2023, the demand was 0.26 bcm ● Implementation of the EU's methane emissions reduction regulation	● Process to double the transport capacity from Azerbaijan through the TAP pipeline ● Construction of the Adriatic Pipeline ● Authorisation process for relocating the Piombino offshore regasification terminal to Vado Ligure	● The analysis by Terna and Snam has been updated, with estimated demand ranging between 54 and 61 bcm in 2030, between 45 and 56 bcm in 2035, and between 35 and 49 bcm in 2040 ● The infrastructures considered in these scenarios suggest a likely overestimation of gas investment needs

Italy has not yet established a strategy for gradually phasing out natural gas, despite it clearly being a prerequisite for achieving climate neutrality by 2050. In 2023, national natural gas consumption declined by 10% compared to 2022, totalling 61.5 bcm. The largest decrease was seen in the thermoelectric power sector, down 16%; followed by the distribution network (buildings and SMEs) which fell by 7%, and the industrial sector with a 4% reduction (Snam data). In 2024, however, this decline seems to have slowed, with the demand for gas falling by just 2% over the first eight months compared to the same period in 2023. Gas consumption actually increased by 2% in the industrial sector, whilst it continued to fall in the thermoelectric power and buildings sectors, by 5% and 2% respectively. Indeed, the latest analysis conducted jointly by Terna and Snam shows that, depending on the scenario, the demand for natural gas will be between 54 and 61 bcm in 2030, between 45 and 56 bcm in 2035, and between 35 and 49 bcm in 2040. In line with the NECP, the Terna-Snam scenario for 2030 forecasts an overall demand for gas of 59 bcm, with a split between natural gas and biomethane of 54 bcm and 5 bcm respectively. However, this reduction is rather modest and is not consistent with the broader aim to progressively phase out fossil fuels. This becomes particularly evident when comparing current consumption with the NECP projection (61.5 bcm versus the 59 bcm NECP forecast for 2030) and considering the significant reductions that have been seen in recent years (20% between 2021 and 2023). From a regulatory standpoint, it is worth noting that the application of the EU regulation on methane emission reductions is still in its early stages, with the measures and actions to be undertaken during the implementation phase still undefined.

In terms of gas infrastructure, the Piombino terminal, authorised until 2026, has effectively replaced the regasification terminal in Livorno, which is under maintenance until next autumn, while the Adriatic pipeline is still under construction and the process of doubling the transport capacity from Azerbaijan through the TAP is ongoing. Given the projected decline in the demand for gas and Italy's climate targets, these developments in Italy's gas infrastructure seem somewhat redundant. Moreover, with this infrastructure, it is likely that there is currently an overestimation in the investments required for gas.

In recent years, imports of Russian gas through Tarvisio have never fully stopped, indeed, they have actually started increasing again in 2024 (up by 50% between January and July 2024), although they are still significantly down compared to the pre-crisis levels. Finally, in line with

the NECP objectives, the demand for biomethane is expected to reach 5 bcm by 2030, compared to 0.26 bcm in 2023.

INDUSTRY, INNOVATION, WORK

ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ Decarbonisation plan for industry, detailed for each individual sector ▪ Financial tools to manage the social implications of the transition, the impacts on employment, and the need for training ▪ Replace fossil fuels through electrification, use of hydrogen, biomethane, and CCS for process emissions in hard-to-abate sectors	😐 Emissions for 2022 in the manufacturing and construction sectors decreased by around 4 $MtCO_2eq$ compared to 2021, but it is unclear whether this reduction was structural 🔴 In the ESR sectors, emissions fell from 280 $MtCO_2eq$ in 2021 to 271 MtCO2eq 2022, but still exceeded the targets by 2.8 $MtCO_2eq$ 🔴 Over the 2021-2022 period, total industrial emissions increased from 131 to 136 $MtCO_2eq$, with a 9 $MtCO_2eq$ rise in the energy sector	😊 Energy Decree Law 😊 Support for SMEs to self-generate from renewable sources 😊 Transition 5.0 😐 Implementation decree for ETS and ETS2 published, but 50% of the auction proceeds are allocated to the government securities amortisation fund 😐 White certificates 😊 Conto Termico also open to industry 😐 Conversion of the primary steel production plant to a DRI plant postponed, and maintenance started on blast furnaces 1 and 2 at the Acciaierie d'Italia plant in Taranto (formerly ILVA), currently under extraordinary administration 😐 Consultation process for Italy's industrial strategy (Green Paper)	😐 Acquisition process for the Acciaierie d'Italia group (formerly ILVA) ongoing

In reconciling the climate objectives with the challenges they pose for the competitiveness of the manufacturing sector, the NECP should have addressed the issue of how to decarbonise manufacturing companies, by focusing on the particular characteristics of the different manufacturing sectors, with the objectives and policies accompanied by financial instruments for managing the social implications of the transition, its impact on employment, and the need for training. Instead, it sets out a framework that's incomplete, focusing primarily on strategies aimed at sectors covered by the EU ETS directive, i.e., energy-intensive companies and hard-to-abate sectors. No specific measures have been identified for sectors which, from 2027, will still be subject to carbon pricing mechanisms. In relation to the strategies for industrial decarbonisation that are identified, the NECP attaches no priorities to the various solutions, approaches such as electrification, efficiency, hydrogen use, biomethane and CCS are just mentioned in generic terms. In particular, the NECP provides forecasts for industrial sector consumption of biomethane and hydrogen in 2030, estimating 3.2 Mtoe and 330 ktoe respectively.

Emissions from the manufacturing and construction sectors decreased by 4 $MtCO_2eq$ between 2021 and 2022. However, there are no indications as to how much of this decrease is structural, as it seems to coincide with the gas price crisis, particularly when a comparison is made with the 2019 emissions levels (50.0 $MtCO_2eq$ in 2019 vs. 51.3 $MtCO_2eq$ in 2022).

In terms of regulatory developments, the ongoing consultation process on Italy's industrial strategy, published by the Ministry of Made in Italy, will define both the short-term (up to 2030) and the medium to long-term (2050) strategies, focussed on potential measures and policies to underpin the country's industrial development, particularly in the context of the digital, ecological and geopolitical transitions that are currently under way.

The NECP references the plans to decarbonise the Taranto steelworks (formerly Ilva) and turn it into a Direct Reduced Iron (DRI) plant.

The acquisition process for the Ilva plant in Taranto is already under way. Given the need to carry out essential maintenance work on blast furnaces 1 and 2, and therefore ensure the safety of workers, the extraordinary administration decided to postpone the work to start building the DRI plant. A memorandum of understanding has been signed between Acciaieria d'Italia's extraordinary administration and DRI D'Italia to build a plant with the capacity to produce 2.5 million tonnes of DRI per year at the Taranto site. The timeline for its completion has not yet been disclosed.

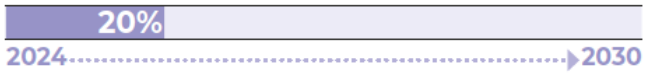
The acquisition process should be completed by the end of March 2025, and the proposals will then be assessed according to criteria such as the industrial plans, occupational health and safety, and decarbonisation strategies.

The following regulatory measures and incentive mechanisms may be useful for supporting an overall industrial decarbonisation strategy:

- To promote the use of renewable energy by businesses, the Government has established a set of measures to support investments in self-generated renewable energy. Through the "Support for SMEs in Self-Generation from Renewable Sources" financial initiative, €320 million has been allocated to help SMEs produce energy from renewable sources, either for direct use or for storage. For energy-intensive businesses participating in the EU ETS, the Government has devised a support measure, established by Decree Law No. 181 of 9 December 2023 (*Decreto Energia* - Energy Decree), which facilitates investments in self-generation energy systems.
- With respect to incentives, it is worth noting that the *Conto Termico* is in the process of being updated, a measure that's designed to incentivise the self-generation of heat from renewable sources and which will also be extended to industry.
- Measures to support businesses in improving their energy efficiency, such as white certificates, can also support efficiency improvements derived from fossil fuel-based technologies, such as high-efficiency boilers. Therefore, whilst they can support technologies for electrifying industrial heating systems, they are not entirely aimed at steering businesses towards decarbonising their activities.

Finally, it is important to underline the fact that, from 2027, the EU ETS will also include business energy suppliers that are not currently subject to the scheme. The aim of this measure is to promote the decarbonisation of companies. However, if it is not well-calibrated, including in relation to its impact on energy prices, it could lead to disproportionate effects that neither the Social Climate Fund nor a prudent use of auction revenues will be able to effectively offset. In this regard, it remains both problematic and contrary to EU law that, in the recently published decree to implement the latest version of the ETS directive, 50% of the auction revenues are still allocated to the government securities amortisation fund.

TRANSITION TECHNOLOGIES



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ Develop the following technological areas and lines of action by 2030: - electricity storage (batteries); - renewable sources (solar, geothermal, other onshore and offshore renewables); - hydrogen; - renewable fuels other than hydrogen; - nuclear; - carbon capture, utilisation and storage (CCUS); - grid technologies and digitalisation; - critical raw materials and advanced materials for enabling the energy transition and their related supply chains	NECP forecasts biomethane demand of 5 bcm in 2030. In 2023, the demand was 0.26 bcm Estimated total hydrogen consumption: 721 ktoe by 2030. The MASE tender for electrolyser production assigned just €9 million of the €100 million available Eni outlined the CO_2 storage potential without defining the priority users, usage costs, security and maintenance risks, or the public/private responsibilities for managing the sites	Support for the transition, net-zero technologies, competitiveness and resilience of strategic supply chains Strengthening the IPCEI fund for microelectronics, batteries, hydrogen, and digital infrastructure Consultation process for Italy's industrial strategy (Green Paper), which recognises the importance of developing green tech supply chains MASE platform on sustainable nuclear energy and commitment to developing a draft enabling law for the production of nuclear energy from new technologies Establishment of a CCS committee within MASE Development of the Terna auction mechanism for procuring electricity storage capacity (MACSE) FER X Decree still under discussion	CCS facility in Ravenna now operational, but no information available on the CCS system costs

The NECP could have clearly identified which technologies might be suitable and effective for enabling the transition process, and could also have outlined the criteria for their prioritisation. Indeed, having conducted an assessment of their cost effectiveness, public spending should be primarily directed towards those technologies that are best suited to meeting the decarbonisation objectives, whilst also ensuring that a broad range of solutions are made available over time. In fact, a coherent public investment framework could help guide private investments towards long-term solutions. The plan confirms that, by 2030, Italy is committed to developing the following technological areas and lines of action:

- Electricity storage (innovative storage systems)
- Renewable sources (solar, geothermal, other onshore and offshore renewables)
- Hydrogen
- Renewable fuels other than hydrogen
- Nuclear
- Carbon capture, utilisation and storage (CCUS)
- Grid technologies and digitalisation
- Critical raw materials and advanced materials for enabling the energy transition and their related national supply chains.

Several funds have already been allocated as part of the NRRP to support the development and installation of transition technologies.

The measure to support the ecological transition, net-zero technologies, and the competitiveness and resilience of strategic supply chains has been in operation since June 2024. Managed and administered by Invitalia, and with a total available fund of €2.5 billion, this measure provides grants and subsidised loans for the development of net-zero technologies (€2 billion) and for supporting the competitiveness and resilience of the strategic supply chains (€0.5 billion). The financing will be managed through development contracts for projects costing more than €20 million and through the industrial transition fund for projects between €3 and €20 million. While on the subject of financial mechanisms, it is worth underlining that the recent enhancements to the IPCEI funding for microelectronics, batteries, hydrogen and digital infrastructures is also a very welcome development. Once applied, these instruments will make an important contribution to accelerating the development of innovative transition technologies. The projects eligible for funding include those aimed at developing or strengthening supply chains for producing essential transition technologies such as batteries, solar panels, wind turbines, heat pumps, electrolysers and CCUS equipment. Since it is a mechanism that forms part of the NRRP, the funds will remain available until 2026.

Turning our attention to specific technologies, it is worth noting that the NECP forecasts that demand for biomethane will be 5 bcm in 2030, while the demand in 2023 stood at just 0.26 bcm, this may therefore present a critical issue in terms of achieving the proposed objectives.

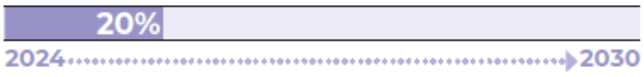
With respect to hydrogen, the NECP estimates a total consumption of approximately 721 ktoe by 2030, but the MASE (Ministry of the Environment and Energy Security) tender for electrolyser production assigned just €9 million of the €100 million available. Most of the projects in Italy are focused on building electrolysers.

To oversee matters in relation to CO_2 storage (CCS), a dedicated committee has been established within MASE. The NECP includes estimates, provided by Eni, regarding the potential for CO_2 storage in Italy. Currently, these estimates are provided without any clear indications regarding the priority users, usage costs, security and maintenance risks, or the public/private responsibilities for managing the storage sites. The plan does provide an indication of the potential CO_2 storage volumes: 645 Mt offshore and 104 Mt onshore. Additionally, several studies are under way to assess how much CO_2 may be stored in saline aquifers. Furthermore, the first capture phase to be undertaken by the CO_2 storage facility in Ravenna is under way, which is expected to capture and store 25 kton of CO_2 per year emitted by Eni's natural gas treatment plant in Casalborsetti. The second phase of the project, which will repurpose depleted natural gas fields in the Adriatic Sea, is scheduled to begin in 2027 and will have an injection capacity of 4 Mt per year by 2030 before increasing to over 16 Mt per year thereafter. The project is a joint venture between Snam and Eni, but the financial details and the expected cost of the CO_2 capture and storage services have not been made public. This project may provide at least a temporary solution for decarbonising hard-to-abate companies; however, the high costs associated with CCS may require state incentives which may eventually be passed on to consumers. In addition to devising strategies to develop CCS facilities, the Government should also focus its decarbonisation efforts on developing technologies that are low-risk, scalable and more affordable.

Furthermore, the Government has committed to developing nuclear energy, for which MASE has established a national platform to support the development of sustainable nuclear energy. A draft enabling law for the production of nuclear energy from new technologies is expected by the end of the year. Indeed, the NECP lists nuclear energy as having a potential role to play in the country's long-term strategy to achieve net-zero by 2050. It is expected to complement the generation of electricity from renewable sources with fission plants becoming operational from 2035, and fusion plants expected to be online by 2050. With such technologies being so costly and slow to bring to fruition, priority should be given to developing and enabling decarbonisation technologies that are low-risk, scalable and more affordable.

With respect to policies for promoting renewable energy, it is worth noting that Terna is currently developing an auction mechanism for procuring electricity storage capacity (MACSE), the aim of which is to support the market for developing energy storage systems. However, the FER X Decree, aimed at promoting renewables through auction mechanisms, still remains under discussion.

THE BUILDING SECTOR



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ In the buildings sector, the NECP targets a 41.6% reduction in emissions by 2030 compared to 2005 ▪ The EU's Energy Efficiency Directive (EED) objectives: reduce final energy consumption from 112 Mtoe/year in 2022 to 102 Mtoe/year in 2030, with 4 Mtoe/year coming from the buildings sector ▪ EPBD targets for residential buildings: -16% of average energy consumption by 2030, -20-22% by 2035	🔴 Along with other non-ETS sectors, the NECP target for the buildings sector does not align with the EU target of a 43.7% reduction, leaving the country exposed to possible infringement procedures and associated fines 🟢 Emissions reduced by 11% in 2022 compared to 2021 (from 82 to 73 $MtCO_2$) 🟢 Reduction of 14% in natural gas consumed between 2021 and 2022 🟡 The Superbonus scheme generated additional savings of 0.58 Mtoe/year, but there were no significant reductions in emissions 🟡 Conto Termico: in 2022, requests and incentives decreased compared to previous years (-12% compared to 2021) Installation of renewable heating/cooling systems (biomass, solar, and heat pumps) remained stable, accounting for 74% of the total incentives 🟡 The Government's Structural Budget Plan indicates that between 5.4 and 6 bcm must be upgraded annually, with an annual saving of around 72 ktoe 🔴 Carbon savings achieved through construction related tax incentives amounted to 1.36 Mtoe/year in 2022 (+147% compared to 2021) 🔴 According to reports from UNFCCC, the combined effect of the NRRP measures (Superbonus) resulted in a sector emissions reduction of only 1% 🔴 Sales of heat pumps decreased by 44.1% in 2023 compared to the previous year	🔴 Use of white certificates for the residential sector to (partially) replace tax incentives. Unsuitable for implementing the EU's emissions reduction regulations In 2022: savings of 0.16 Mtoe, against the NECP target of 5 Mtoe by 2030 for tax incentives 🟡 A policy framework to achieve the set objectives without clearly specifying which measures and instruments will be used 🔴 Energy efficiency improvements for lower income households or a strategy for upgrading social housing 🟡 Implementation decree for ETS and ETS2 published, but 50% of the auction proceeds are allocated to the government securities amortisation fund	🟡 Constant changes and uncertainty surrounding the establishment and evolution of construction related tax incentives (Bonus Casa, Ecobonus, and Superbonus) have actually led to a slowdown in energy efficiency upgrades, heat pump installations, and the development of distributed photovoltaic systems in the buildings sector, demonstrating a clear need for a stable and secure incentive framework over the medium-term

For the buildings sector, the NECP has set a national target of reducing emissions of 41.6%[4] (compared to 2005 levels). The buildings sector is included in the Effort Sharing Regulation (ESR). In total, the emissions covered by the ESR account for approximately 60% of total domestic EU emissions across various sectors, including buildings and transport. As previously highlighted, according to the NECP scenario, the ESR sectors will collectively fail to achieve the 43.7% emissions reductions target (compared to 2005) set by the EU Regulation, leaving an emissions gap of 11 $MtCO_2$ in 2030. This shortfall has also existed in previous years. Conversely, the NECP is in line with the European Energy Efficiency Directive (EED) and forecasts a reduction in final energy consumption from 112 Mtoe/year in 2022 to 102 Mtoe/year by 2030, with 4 Mtoe/year of this reduction coming from the buildings sector.

Across Italy, the building stock, consisting of over 12 million buildings covering a total area of more than 3 billion square metres, is old and energy inefficient. More than 60% of residential buildings are over 45 years old, and over 50% fall into energy classes F or G. Up until 2010, energy consumption in the residential sector had steadily increased, but since then it has contracted, falling by an average annual rate of 0.9%, largely thanks to improvements in energy efficiency driven by both regulatory and financial/fiscal measures. However, this decrease has been cancelled out by an increase in consumption in the services sector, which saw an average annual growth of 2.5% between 1990 and 2021.

It is worth underlining that a decade of tax incentives aimed at building and energy efficiency upgrades has enabled the buildings sector to meet the energy efficiency targets set by previous versions of the EED and NECP. For example, in 2022, construction related tax incentives achieved carbon savings of 1.36 Mtoe/year (an increase of 147% on 2021), and the Superbonus alone generated additional savings of 0.58 Mtoe/year. Analysing the data more closely, in 2022, works carried out under the Superbonus scheme (total investment of €61.7 billion) involved the building envelope (62%), the heating system (18%) and the photovoltaic system (17%). Hybrid heating systems accounted for 43% of the investment in plant and equipment, whilst 20% was for condensing boilers. The remaining amount was invested in heat pumps.

Despite these developments, the sector has not significantly reduced greenhouse gas emissions, which have remained largely stable at approximately 80 $MtCO_2eq$ over the period from 2015 to 2021. This is because there has been little progress towards electrifying consumption with a continued reliance on natural gas as the primary source of energy, particularly in the residential sector, where electricity still accounts for less than 20% of the total energy consumed. On this point, the fact that the NECP does not establish a strategy for moving buildings sector energy consumption (primarily residential heating) away from fossil fuels towards electricity is a critical issue, particularly since, as a result, it does not prioritise the contribution this sector could make towards reducing the demand for natural gas. However, it is worth noting that buildings sector emissions fell by almost 11% in 2022 compared to 2021 (from 82 to 73 $MtCO_2$), but this was probably due to the reduction in gas consumption, which fell by 14% over the same period, resulting from energy saving measures undertaken in response to the 2021-2022 energy crisis. Indeed, an analysis of heat pump sales shows that after major growth in 2021 and 2022, they fell away significantly in 2023, decreasing by 44.1% compared to the previous year. This slowdown was particularly evident in the residential sector, mainly due to a watering down of building incentives and uncertainty surrounding fiscal

[4] From ECCO analysis of NECP data for the buildings sector

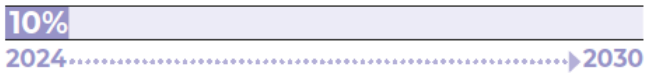
mechanisms in the short and medium term. Similarly, in 2022, the *Conto Termico* saw a decline in both requests and incentives compared to previous years (down 12% compared to 2021). Work to install renewable heating/cooling systems (biomass, solar, and heat pumps) remained stable, accounting for 74% of the total incentives. The remaining 26% of the incentives were directed towards energy efficiency projects carried out on public administration buildings.

Regarding the above-mentioned *Piano Strutturale di Bilancio*, it is worth mentioning that in order to comply with the EED provisions for the public sector, the Government plans to upgrade between 5.4 and 6 billion square metres of public administration property annually, bringing about an annual saving of approximately 72 ktoe. It also plans to create a white certificates market for the residential sector, as a (partial) replacement for tax incentives, so as to reduce the impact on the public purse. However, this approach may lead to a number of issues. Firstly, white certificates are a more complex mechanism than tax incentives, they are also generally only used as a last resort and are relatively unknown in the residential sector. In 2022, they generated savings of 0.16 Mtoe, against a target of 5 Mtoe by 2030 as established by the NECP for tax incentives.

Regarding work to be carried out on public sector properties, the Government has committed to establishing a policy framework for achieving the set objectives, but it hasn't specified which measures or instruments will be used. Furthermore, there is still nothing concrete regarding the implementation of energy efficiency improvements for lower income households, nor is there a strategy for upgrading social housing, actions which would go a long way towards tackling the issue of energy poverty. In this regard, the implementation of ETS2, which will create a mechanism similar to the EU Emissions Trading Scheme (ETS) for the buildings and transport sectors, could be a positive development. However, 50% of the auction proceeds are still allocated to the government securities amortisation fund.

In conclusion, the constant changes and uncertainty surrounding the establishment and evolution of construction related tax incentives (Bonus Casa, Ecobonus, and Superbonus) have actually led to a slowdown in energy efficiency upgrades, heat pump installations, and the development of distributed photovoltaic systems in the buildings sector, demonstrating a clear need for a stable and secure incentive framework for the medium term.

THE TRANSPORT SECTOR



ITALY'S OBJECTIVES	CURRENT SITUATION	POLICY ASSESSMENT	EXAMPLES
▪ Transport sector target for 2030: 72 $MtCO_2eq$, with energy consumption of 33.1 Mtoe ▪ Targets for private road vehicles: 4.3 million battery electric vehicles (BEVs) and 2.3 million plug-in hybrid electric vehicles (PHEVs)	Along with other non-ETS sectors, the NECP target for the transport sector does not align with the EU target of a 43.7% reduction, leaving the country exposed to possible infringement procedures and associated fines CO_2eq emissions increased between 2021 and 2022 from 102.5 $MtCO_2eq$ to 109.4 $MtCO_2eq$ (+6.7%) Renewable energy consumption compared to the EU target: in 2022, the development trajectory for FER-T consumption was at just 26% of the target (1.86 vs 7.3 Mtoe), mostly down to liquid biofuels. Biomethane consumption remains limited Road vehicle numbers compared to the EU average: 40 million vehicles, 684 cars per 1,000 residents, the EU average is 560 Number of BEVs compared to the NECP targets: 261,000 vehicles (+41,000 compared to 31 December 2023) Number of electric charging stations nationwide: 57,000	Management of the €950 million allocated by the latest DPCM for the automotive sector Review of environmentally harmful subsidies for fuels Strengthening of electric vehicle charging infrastructure Biofuels targets Achievement of biomethane consumption targets Review of the fringe benefits for long-term car rentals to incentivise the take up of electric vehicles	The position taken by the Government in relation to reviewing the CO_2 emissions standards regulation for cars does not align with the decarbonisation objectives for passenger vehicles and does not support the sector's transition to electric technologies, exposing the country to the risk of becoming less competitive internationally. The demand for biomethane consumption certificates remains below expectations. Estimated installed production capacity is around 570 million cubic metres per year, one-tenth of the overall target set by the NECP

The transport sector is included in the Effort Sharing Regulation (ESR). However, as has already been highlighted for other sectors, according to the policy scenario, the ESR sectors will collectively fail to meet the 2030 emissions reduction target set by the European Regulation of 43.7% (compared to 2005 levels). In 2022, the transport sector's CO_2 emissions totalled 110 $MtCO_2eq$, a significant increase on 2021 (6.7%). This represents a 14% reduction compared to 2005 (the 2030 target is 43.7 $MtCO_2eq$).

For the transport sector, the NECP sets a 2030 emissions target of 72 $MtCO_2eq$ (-43.7% on 2005 levels, higher than the average ESR target), with energy consumption at 33.1 Mtoe. However, the plan does not break down the targets by mode of transport (air, sea, road, rail). To meet these ESR targets, the plan foresees renewable energy consumption (FER-T) of 7.25 Mtoe, 64.6% of which will be liquid biofuels (4.687 Mtoe, mostly biodiesel), 12.1% biomethane (0.877 Mtoe), 5.4% renewable fuels of non-biological origin (RFNBOs, 0.391 Mtoe), and 18.4% from renewable electricity (1.332 Mtoe). With respect to the liquid biofuels, first-generation biofuels will account for approximately 0.977 Mtoe (21%) of consumption, with 3.71 Mtoe coming from second-generation biofuels (79%), 93% of which is expected to be for road transport. Between the previous and current versions of the plan, the target for biomethane has been reduced by 1.24 Mtoe. In terms of the calculation methods (multipliers) set out by Directive (EU) 2023/2413 (RED

III), the FER-T renewable energy consumption target in the NECP is 34.2%, compared to the European minimum target of 29%.

If we consider how things stand currently, the transport sector's renewable energy consumption in 2022 stood at 1.86 Mtoe, 1.388 Mtoe (75% of the total) of which came from liquid biofuels (97.5% of which was biodiesel). Biomethane consumption was 0.185 Mtoe (10% of the total), while the quantity of electricity consumed was 0.287 Mtoe (15%). No other types of renewable fuels were consumed. In terms of the calculation methods (with multipliers) set out by Directive (EU) 2023/2413 (RED III), the contribution of these sources to total consumption was 8%, compared to a target of 34.2% by 2030.

So, in 2022, the development trajectory for FER-T consumption was at just 26% of the target (1.86 vs 7.25 Mtoe), mostly down to liquid biofuels, with just a small contribution from biomethane. In general, the biofuels target appears achievable considering the potential production capacity that Eni suggests is possible from the conversion of biorefineries. Consumption in 2022 was 1.3 Mtoe, against a target of 4.6 Mtoe for 2030, 3.7 Mtoe of which is sustainable (after double counting). Eni's development plans in the sector provide a degree of confidence that this target will be achieved. As highlighted by recent investigations conducted by the European Commission, there is a certain level of fraud risk relating to certifications of origin for the waste materials destined for biofuel production, particularly in relation to used cooking oils imported from Asia, therefore it would be wise to significantly strengthen the monitoring and control systems in place for verifying the origin and type of these sources of biomass. With respect to purchasing biomass from arable farms in Africa, potentially using funds from the *Piano Mattei* (Mattei Plan), an independent assessment of its sustainability, particularly with respect to the ILUC (Indirect Land Use Change), would be prudent.

The NECP targets for private road vehicles are 4.3 million battery electric vehicles (BEVs) and 2.3 million plug-in hybrid electric vehicles (PHEVs) by 2030. However, the plan does not provide estimates for reductions in existing vehicles, to be achieved through the implementation of the planned sustainable transport policies, nor does it mention the contribution these policies might make to reducing emissions in this sector.

Currently, the number of vehicles on Italy's roads stands at approximately 40 million, mostly petrol and diesel vehicles, and the national car ownership rate is the highest in Europe, at 682 cars per 1,000 residents, compared to the European average of 560 (Eurostat data for 2022). As of September 2024, the number of BEVs on the road in Italy stood at 261,000 (a 41,000 increase on December 2023), still a long way short of the NECP target. In terms of new car registrations, the market share for BEVs is 3.94%, far short of the double-digit figures being recorded in France and Germany. Of these new BEV registrations, 53.5% are purchased by private individuals, with the remainder sold through other channels (corporate fleets, rental cars, dealer self-registered vehicles). To facilitate the take up of electric vehicles, establishing a comprehensive network of charging stations across the country is absolutely crucial. As of June 2024, a total of 57,000 charging points had been installed nationwide, mainly Fast AC (up to 22 kW) and mostly located in the northern regions and in Lazio. The charging infrastructure in the regions of Valle D'Aosta, Umbria, Molise, Basilicata, and Calabria, in particular, is still not yet well-established.

With respect to EU regulations, the position taken by the Government in relation to reviewing the CO_2 emissions standards regulation for cars does not align with the decarbonisation

objectives for passenger vehicles and does not support the sector's transition to electric technologies within the timeframes set by international competition. An early review of the regulation, to revisit the 2025 objectives together with the target for all newly registered cars to be zero-emission vehicles (BEVs) by 2035, would not allow for the establishment of a coherent European industrial strategy for the automotive sector.

The risk is that there will be a significant loss of competitiveness for the automotive sector in Italy and Europe.

In terms of public funding and incentives, the incentive decree DPCM 20 May 2024 has been introduced and modifies the previously available incentives, thus providing demand-side support for the automotive industry. Of the €950 million allocated, 50% has gone towards funding non-plug-in hybrid cars with an upper CO_2 emissions limit of 135 gCO_2/km, 40 gCO_2/km above the average objective set for vehicles on the road between 2021 and 2025 (95 gCO_2/km). To meet the NECP's objectives and boost national car production, all resources need to be directed towards ensuring all vehicles on the roads are electric. The incentive scheme for BEVs provided for by the DPCM 20 May decree could be further refined to introduce a social leasing scheme.

Additional measures to facilitate electrification could come from a review of the fringe benefits available for corporate fleets and long-term rentals; a number of gradual, low-cost intervention options have been presented to the ministry, and these would help stimulate the demand for electric vehicles without significantly impacting the public finances. This segment represents around 40% of the overall market. To achieve the NECP's targets, the 2025 Budget Law needs to consider introducing a bonus scheme to encourage the purchase of electric vehicles, and the tax enabling law should provide the necessary regulatory structure.

Another measure that could encourage the take-up of electric vehicles is revising the Environmentally Harmful Subsidies for fuels (thus providing increased revenue from the higher diesel duties). If this were included as part of the 2025 Budget Law, the extra revenue raised could be directed towards supporting the transition towards electric mobility as well as the transformation of the automotive industry towards electric technologies. Through the tax enabling law, this revenue could also be directed towards addressing the anomalies that currently exist in terms of the taxes and parafiscal taxes on electric vehicle charging, particularly in relation to those applied to fossil fuels.

Regarding the expansion of electric charging infrastructure, which is critical for achieving the NECP's electric mobility targets, the MASE (Ministry of the Environment and Energy Security) issued a decree on 18 March 2024 to install 13,775 fast charging stations in towns and cities and 7,500 ultra-fast charging stations along motorways and main roads. The cost of installing this infrastructure is estimated at €700 million, and is to be funded by the EU under Mission 2, Component 2, Investment 4.3 of the NRRP. The public call for proposals was published on 14 October 2024. The contracts for these projects should be awarded by the end of the year. The process has suffered a number of significant delays, potentially impeding the growth that was forecast for the electric vehicle market.

Finally, the biomethane decree also provides funding for the sector, with a total of €1.7 billion being made available. In 2023, the demand for consumption certificates fell short of expectations (350 million cubic metres/year against the 1 billion cubic metres that was

designated). Currently, the installed production capacity is estimated at around 570 million cubic metres/year, approximately half of the NECP's consumption target for transport, and around 10% of the overall target for all sectors. The potential production capacity for biomethane is approximately 8 billion cubic metres per year (around 6.5 Mtoe), if the NECP's biomethane consumption targets are to be achieved then the current incentive framework must be reviewed to take this potential into consideration.

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