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Assessment of the draft National Energy and Climate Plan of Italy

Accompanying the document

Commission Recommendation

**on the draft integrated National Energy and Climate Plan of Italy covering the period
2021-2030**

{C(2019) 4412 final}

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1. SUMMARY

Main observations¹

- ✓ The Italian draft integrated National Energy and Climate Plan (NECP) largely builds on the 2017 Italian Energy Strategy and is intended to implement a vision of broad economic transformation, in which decarbonisation, energy efficiency and renewables priorities contribute to the objectives of a more environmentally friendly economy. The draft NECP includes a number of targets for several dimensions of the Energy Union and the results are very ambitious under several aspects. Achieving the proposed targets and results will require a robust and comprehensive set of policies and measures as well as close monitoring and follow-up. Overall, the Italian draft NECP is well developed and broadly meets the requirements set by the Regulation. An extensive list of 101 policies and measures cover most of the dimensions, even though it focuses mostly on existing measures, and should provide more clarity on expected developments and budgetary details.
- ✓ Italy's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS), is -33 % compared to 2005, as set in the Effort Sharing Regulation (ESR)². Based on the information provided, the planned policies and measures would be sufficient for Italy to meet this target, with a particularly important contribution coming from the transport and building sectors. The draft NECP would benefit from including indication of how Italy intends to achieve the Land Use, Land Use Change and Forestry (LULUCF)³ 'no-debit' commitment (i.e. emissions do not exceed removals) and its intended use of flexibilities in accordance with the accounting rules set out in the LULUCF Regulation. The objective of gradually phasing out coal for electricity generation by 2025 could be further substantiated with a detailed action plan.
- ✓ The proposed contribution expressed as 30 % share of **energy from renewable sources** in gross final consumption of energy in 2030, is slightly above the share that results from the formula in Annex II of the Governance Regulation. Italy is also setting a target of 6 million electric cars by 2030. Both renewables and electro mobility would benefit from more backing with sufficiently detailed measures on how to ensure they will be achieved. This is particularly true as regards renewable energy deployment in the electricity and heating sectors, where revised support measures are still pending. The final plan would thus benefit from elaborating further on the policies and measures allowing the achievement of the contributions and on other relevant sectorial measures.

¹ In addition to the notified draft NECP, the presentation by the Italian Authorities of the NECP to the Commission and Member States on 29-30 January 2019 was also considered in the assessment, as well as informal bilateral exchanges, which are part of the iterative process established under the Governance regulation. Italy has, however, not used any of the voluntary templates to notify the policies and measures.

² Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

³ Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU.

- ✓ The proposed contribution towards the 2030 collective EU **energy efficiency** target, appears to be of sufficient ambition. The planned policies rely on instruments already partly existing, which have the potential to be stepped up and completed. Those will also necessitate close monitoring over time as to ensure they will deliver the expected savings.
- ✓ As regards **energy security**, Italy is planning to reduce import dependence via the increase of renewable sources and energy efficiency efforts. The further diversification of sources of supply and the promotion of a more secure, flexible and resilient gas sector are other important objectives. The centrality of gas in the future energy mix seems, however, to be in contradiction with the stated decarbonisation objectives. Moreover, the draft NECP lacks measurable indicators in a 2030 perspective and remains unclear on future development of some key natural gas infrastructures.
- ✓ Within the **internal market** dimension, increased flexibility of the system, market coupling and the reduction of the electricity prices differential with the rest of Europe seem to be the core objectives. The draft plan does not however include benchmarks to measure and deliver these objectives. Interactions of stated objectives with the functioning of the market also remain to be further explored. Impacts of the renewable support schemes or the Italian Capacity Remuneration Mechanism (CRM) in terms of electricity prices are not illustrated. Finally, the draft plan does not yet include the level of electricity **interconnectivity** aimed for in 2030. On energy poverty, a dedicated assessment has been carried out, and the draft NECP details available policies, including on energy efficiency. Nevertheless, the final plan would benefit from the addition of specific measurable targets, and details on the financial resources for the implementation of the described policies.
- ✓ The **research, innovation and competitiveness** section mentions some encouraging developments, including the planned increase in the allocation of public resources and the preparation of a new 2019-2021 three-year plan, setting out new research objectives in line with the SET Plan and the participation in Mission Innovation. The final NECP could provide more clarity, in particular regarding specific research and innovation objectives and a description of policies and measures until 2030.
- ✓ Further work on synergies between different dimensions and policies could be expected. The final NECP would benefit from more clarity on the analytical and policy assumptions and on the methodology used and from more complete information on expenditures and funding sources.
- ✓ Regarding **investment needs**, Italy has provided a large amount of information, including the incremental annual investments for 2017-2030 across different sectors and their expected macro-economic impacts. Therefore, the draft plan takes advantage of the role NECPs can play in providing clarity to investors and attract additional investments in the clean energy transition. The presented assessment of expenditure and funding sources at national, regional or Union level is still partial.
- ✓ There is significant potential for further **regional cooperation** both at bilateral level and within high-level groups. Italy could further explore the cross-border potential of a coordinated energy and climate policy notably in the Adriatic with the aim of reducing the region's carbon footprint and implementing an ecosystem approach. In this regard, an assessment of the macro-regional aspects would further enrich the analysis and provide solid basis for regional cooperation in the future.

- ✓ The draft plan qualitatively mentions the interactions with **air quality and air emissions policy**, in particular in the context of domestic heating and agricultural emissions, with synergies between air and climate measures explicitly mentioned. However, this part of the analysis would benefit from more quantitative information.
- ✓ On a **socially just and fair energy transition**, the final plan should better integrate the social effects of decarbonisation. This includes possible shifts in sectors/industries and their impacts, also in terms of employment, income distribution and energy poverty. More details would in particular be useful on skills and training.
- ✓ A **good practice** from Italy is the detailed analysis of energy subsidies albeit no concrete actions are expected to reduce fossil fuels subsidies. A list of actions undertaken and planned to phase-out energy subsidies, in particular for fossil fuels, needs to be included in the final plan.

Preparation and submission of the draft plan




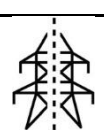
The Italian Draft National Energy and Climate Plan (NECP) was officially notified to the European Commission on 8 January 2019. Its preparation required the close cooperation of several Ministries and Authorities, notably the Ministry of Economic Development, the Ministry of the Environment and Land and Sea Protection, and the Ministry of Infrastructure and Transport.

The draft plan does not yet include the outcomes of the **public consultation** and regional cooperation processes, which is in line with the provision of the Governance Regulation. The draft plan specifies that both process will start in 2019. For the public consultation, the establishment of a dedicated website is announced. Description and results of the consultation are expected in the final NECP. A strategic environmental assessment is scheduled for the final NECP. In the first months of 2019, the draft NECP was discussed in the Central and South-Eastern Europe Gas Connectivity (CESEC) High-Level Group.

Overview of the key objectives, targets and contributions

The following table presents an overview of Italy's objectives, targets and contributions under the Governance Regulation⁴:

⁴ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-20	-13	-33	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	18.3	17	30	Slightly above 29 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	148.9 115.2	158 124	125 103.8	Sufficient Sufficient
	Level of electricity interconnectivity (%)	8	10	25-35 ⁵	N/A

Sources: EU Commission, *ENERGY STATISTICS*, *Energy datasheets: EU28 countries*; SWD(2018)453; European Semester by country⁶; COM/2017/718; Italian draft NECP.

2. ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND ADEQUACY OF SUPPORTING POLICIES AND MEASURES

Dimension decarbonisation

Greenhouse gas emissions and removals

The draft NECP provides Italy's -33 % non-ETS target under the Effort Sharing Regulation in estimated absolute numbers for 2025 (243 Mt CO₂eq) and 2030 (221 Mt CO₂eq)⁷. It also estimates the cumulative additional reduction effort in relation to the existing policies and measures projection (142 Mt CO₂eq) from 2021 to 2030. On the basis of information in the draft NECP, with planned policies and measures, Italy would achieve 34.6 % reductions in the ESR sectors in 2030 compared to 2005. The draft NECP describes the flexibilities available for

⁵ Projection included in Italy's draft NECP.

⁶ https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-your-country_en.

⁷ It would be useful to clarify in the final plan if the 2005 emission estimate of 330.5 Mt used for the calculation represents an update of the 2005 base year data of 334.5 Mt under the Effort Sharing Decision (SWD(2018)453 final, Table 4).

Member States for compliance under ESR⁸, without indicating the intention to use such flexibilities.

For transport, a good overview is provided on existing measures supporting the uptake of alternative fuels. The fact that the draft plan identifies decarbonisation measures covering alternative fuels, infrastructure development, urban mobility and public transport promotion, fleet renewal and encouraging modal shifting is welcome. Electromobility is supported via regulatory and economic instruments. Almost 6 million electrically powered vehicles are expected to be in circulation by 2030, of which around 1.6 million battery electric vehicles. However, further explanations on how additional policies for all alternative fuels would contribute to the objectives or how they were accounted for would be welcome in the final NECP.

The draft NECP includes GHG projections for **agriculture** indicating a stable trend with existing and planned policies. Planned policies in the agricultural sector refer to the future Common Agricultural Policy but do not describe what specific measures Italy intends to put in place to decrease emissions.

The policies and measures related to **LULUCF** aim at improving monitoring and policy design in the forestry sector, but there is no mention of any specific measure aimed at maintaining and enhancing carbon sinks. The draft NECP does not provide accounted projections for the LULUCF sector. Thus it is not possible to assess whether the LULUCF no-debit commitment will be achieved. With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by Italy as required by Article 8(3) of the LULUCF Regulation⁹, the Commission has put forward minor technical recommendations requesting action on a limited number of issues, detailed in SWD (2019) 213.

The draft NECP includes the objective of gradually **phasing out of coal for electricity generation by 2025** in favor of an electricity mix based on a growing renewable energy share and, for the remainder, gas. However, this objective is not backed with a detailed and concrete action plan to implement it. The draft NECP refers to “full decarbonisation by 2050” as an objective for Italy, but it is not clear whether this is in the context of the energy sector or the whole economy.

Finally, the draft NECP identifies the objectives of Italy’s National **Adaptation** Strategy and refers to the ongoing preparation of the National Adaptation Plan. Specific measures to achieve the overall objectives of the National Adaptation Strategies are not presented.

Renewable energy

The **renewable energy contribution** proposed in the draft NECP is a share of 30 % of the national gross final consumption of energy in 2030. This contribution is slightly above the share of 29 % resulting from the formula in Annex II of the Governance Regulation.¹⁰

The indicative trajectory to reach the 30 % contribution in 2030 is provided, including specific reference points for 2022 (renewables share of 21 %), 2025 (24 %) and 2027 (26 %). These reference points are above the trajectory indicated in the Governance Regulation. Renewable

⁸ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

⁹ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

¹⁰ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

electricity generation is projected to reach 55.4 % in 2030, with solar power becoming the main source of renewable electricity (40 % share and 50GW of installed capacity), ahead of the current main source which is hydropower (26 % share and 19.2 GW of installed capacity). The wind power capacity and electricity share will be roughly doubled by 2030 compared to 2017 (respectively 21 % and 18.4 GW, of which 0.9 GW offshore).

The use of **renewable energy in the heating and cooling sector** is projected to reach a share of 33.1 % by 2030. However, the NECP is missing a clear description of how Italy intends to increase renewable energy in heating and cooling and in district heating and cooling by an indicative 1.3 and 1 percentage points as an annual average calculated for the periods of 2021 to 2025 and 2026 to 2030 respectively. The role of waste heat and cold remains unclear. Bioenergy will remain dominant with 7.2 Mtoe in 2030, although it is projected to grow by only 0.8 % compared to 2016 due to air quality concerns (chiefly associated to the existing stock of inefficient wood boilers and stoves). Heat pumps will see their gross final consumption doubled by 2030, with respect to 2017, reaching 5.6 Mtoe. The projected increase in heating from renewable energy is due mainly to the planned renovation of the existing building stock (resulting in significant energy efficiency gains).

In the **transport sector**, the share of renewable energy is projected to reach 21.6 % by 2030. The main measures are the promotion of biomethane, and the introduction of mandatory quota for the consumption of conventional and advanced biofuels by 2030. Other measures aim for increased energy efficiency and an increase of renewable electricity use in road and rail. Multipliers are included in the calculation of this trajectory as requested in Articles 25-27 of Directive 2018/2001¹¹. However, the draft plan lacks details when it comes to limitation of the contribution of conventional biofuels, in accordance with Article 27 of the Directive 2018/2001/EC¹² on renewable energy and the related Delegated Regulation¹³. Related to transport, the draft NECP sets a target of 6 million electric cars by 2030. However, the draft plan does not clearly indicate how this could be achieved. Extensive details about measures related to electro-mobility (both relating to vehicles and to charging infrastructure) are included in the draft NECP, however, those relate mostly to existing measures.

The **policies and measures** to support the achievement of the proposed objectives and contributions for renewable energy lack sufficient details. For example, in the electricity sector the objective is to accelerate the production of electricity from renewable energy through the use of reverse auctions and the promotion of long-term Power Purchase Agreements. However, the decree introducing a revised support scheme for renewable electricity production (and renewable heating and cooling) has been pending for a long time, creating significant uncertainty for investment prospects. Further, a tender calendar providing targeted capacities for the 2021-2030 period would add to the completeness of the draft plan. Finally, the final plan could better describe measures for promoting repowering. Self-consumption of renewable energy (up to 1 MW) is considered as a means to achieve the objectives and will be promoted through the exemption from network and system charges for self-consumed electricity, the revision of the existing net-metering scheme, minimum renewable energy quota for new and renovated buildings, simplified administrative procedures for small-scale energy plants, and through specific premium tariffs when needed. In line with this, measures to promote local energy

¹¹ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

¹² Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources.

¹³ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

communities, self-consumption and administrative simplification should be further described. Their compatibility with state aid rules should also be ensured.

Measures for **renewable heating and cooling** include the continuation of tax credits for energy-efficient renovation of buildings (i.e. facilitating the fitting of renewable energy installations), white certificates and mandatory integration of energy from renewable sources in buildings. However, a calendar underpinning the annual increase of renewable heating and cooling for the 2021-2030 period would add to the completeness of the final plan.

Dimension energy efficiency

Energy savings are presented as a pillar of the draft plan, with Italy targeting to reduce energy consumption by 10 Mtoe/year until 2030. This equals to a corrected national contribution of 125 Mtoe primary and 103.8 Mtoe final energy consumption¹⁴. The target is set at a level which would require the country to decrease its consumption by 16.1 % from their primary energy consumption in 2017 and by 9.9 % for final energy. Consequently, the target for 2030 is also set at a lower level as compared to the Italian 2020 energy efficiency target (-20.9 % and -16.3 % for primary and final energy consumption respectively). Overall, the contributions of Italy seem to be of sufficient ambition considering the need to increase efforts at the EU level to collectively reach the Union's 2030 energy efficient targets. The preliminary calculations to identify the goal of cumulative savings to be achieved under Art. 7¹⁵ are provided with a clear formulation. Other key energy efficiency objectives relate to the savings to be achieved in the building sector.

The draft NECP presents in detail the planned measures to achieve the 2030 energy efficiency goals, as well as their expected savings (except for transport, where policy impact is not provided). There is no indication of new measures to be adopted after 2020, as the draft NECP envisages a continuation of the existing framework, with adaptations and upgrades to be made following the evolution of market conditions or other factors. There are four main measures envisaged, addressing mainly the building (residential and services) and the industrial sector¹⁶. The draft NECP also includes measures, that contribute towards more efficient organisation of the mobility system and thus towards improved energy efficiency and emissions reductions (e.g. reduce transport demand, incentivising modal shift and multimodality, digitalisation and automation). More details on how related policies would be further developed are welcome. There is potential to increase the efficiency of power generation, and the supply of energy, targets the development of district heating and cooling and combined heat and power (CHP). The largest impacts are attributed to the tax deduction mechanism for building renovation (18 Mtoe) and to the Energy Efficiency Obligation Scheme (15 Mtoe). In light of the key role of such instruments in delivering the necessary energy savings, close and timely monitoring of their implementation will be crucial. Given the significant contribution of a cost-effective transformation of existing buildings into nearly zero-energy buildings to the Union's energy efficiency target, realistic and ambitious measures and policies for the implementation of a coherent long-term renovation strategy remain to be developed.

¹⁴ After clarifications with the Italian authorities the value for primary energy consumption has been corrected from the one in the draft NECP as Italy had included also fuels used for non-energy purposes.

¹⁵ Directive 2012/27/EU on energy efficiency.

¹⁶ Those are: Fiscal incentives for energy efficiency and refurbishment of building; White certificates (EEOs), possibly to be expanded to the residential and transport sector; the Italian government aid which funds efficient renewable heating sources (*Conto Termico*) and the National Fund for Energy Efficiency.

Dimension energy security

On **energy security**, the scenarios envisage reducing the level of dependency from third countries for primary from 77.5 % in 2016 to 63 % in 2030, and various projects and policies are described in support to this trend. Italy is planning to accompany the envisaged phase-out of coal-fired thermoelectric plants by 2025 by reducing import dependency via the increase of renewable sources and energy efficiency efforts, diversifying sources of supply and promoting a more secure, flexible and resilient gas sector. The result is consistent with latest trends that saw net import dependency in Italy decreasing, notably due to an increase in indigenous renewable energy production. The draft NECP recognises that in terms of primary energy mix, natural gas will remain the main source in 2030 with a demand of 49 Mtoe projected for 2030¹⁷. This is at least partly explained by the complete phase-out of coal, but might require additional new gas-fired capacity to compensate for the removal of coal from the mix. The expected role of gas in the future energy mix poses some challenges in terms of both energy security¹⁸ and competitiveness since the Italian gas market is still not fully integrated and experiences gas trade prices that are higher than those at the main European hubs. For the gas sector, the draft NECP also stresses the importance of increasing diversification of sources of supply by optimising use of existing infrastructure and development of the LNG market¹⁹. However, no specific Key Performance Indicators are developed for the gas sector and, while three main projects are identified to bring higher diversification of gas supply, the prospects for the development of new natural gas import infrastructure remain uncertain. For the electricity sector, only some specific infrastructure objectives and some broad management and organisational objectives are mentioned. As Italy is still very dependent from electricity imports, the analysis of the electricity sector will be completed only when the assessment of the potential electricity trade from and to neighbours is incorporated. As far as policies and measures are concerned, these generally seem to be consistent with above stated objectives but the timeline of most of such measures (notably supply and demand) and their expected impact and contribution remain unclear. Several projects aimed to improve the electricity network are provided but additional information on the quantification of generation and supply adequacy would be important to provide context for the stated objectives and targets. Linked to energy security, the draft NECP recognises the use of demand response and storage facilities to improve the flexibility and security of the system.

Dimension internal energy market

While not including a **clear target for the level of electricity interconnectivity**, the draft NECP introduces a broad reference to the priorities as identified by the national Transmission System Operator's development plans. The planned high capacity from non-programmable renewable sources scheduled for 2030 (50 GW of photovoltaic only), coupled with the particular geographical formation of the country renders the interconnectivity challenge particularly

¹⁷ According to the draft NECP, in terms of primary energy mix, natural gas will remain the main source in 2030 with a demand of 49 Mtoe projected for 2030, and a peak for inland consumption in 2025 caused by the elimination of coal from the electricity generation mix.

¹⁸ Notably due to the specific situation of the Swiss Transitgas pipeline.

¹⁹ As to diversify the sources of gas supply, the Italian Draft NECP notably focus on optimizing the use of LNG import capacity in pre-existing terminals to promote Italy's participation in the Mediterranean and global LNG market, and in the opening up of the southern corridor by way of the TAP (Trans Adriatic Pipeline). According to the Draft NECP, the latter shall be operational by 2020, enabling the import of approximately 8.8 billion m3 of Azerbaijani gas per year to Italy, with a potential growth in capacity of more than 10 billion m3 per year.

important for Italy²⁰. In this perspective, the draft NECP presents several planned or on ongoing projects of common interest which will impact on this objective²¹. These interconnection projects will contribute to the achievement of the target of 10 % by 2020. This value is projected to increase to a range of 25 % - 35 % in 2030. The development of interconnection capacity with North Africa is identified as being of strategic relevance. More detailed information remains to be provided on policy direction and infrastructure investments to meet the interconnection objectives as well as to reinforce the transmission and distribution grids. Given the gradual ageing of the natural gas transport infrastructure, the constant need to modernise the national gas network is mentioned. The draft NECP also refers to their role for the integration of more variable renewable energy as well as to transport a natural gas/hydrogen mixtures and biomethane.

As regards the other aspects of the **internal energy market dimension**, the reduction of the electricity prices differential with the rest of Europe and the increased flexibility of the system are core objectives. The draft plan lacks however additional information on measureable benchmarks on how these objectives will be measured and assessed over time and concrete policies and measures as to enforce it.

Regarding **retail markets** the draft NECP clarifies the timeline for the phasing out of the regulated energy tariff (*maggior tutela*), planned for July 2020. No further objectives are included in a 2030 perspective. The draft NECP is very light on the policies to increase competition in the market, improve retail market functioning, and consumers' benefits from smart meters. These elements should be further developed.

On **energy poverty**, a dedicated assessment has been carried out, and Italy represents a good practice when it comes to detailing in the draft NECP available policies, including on energy efficiency²². However, specific objectives (e.g. measurable targets) in order to improve the situation remain to be fixed, along with details on the financial resources for the implementation of the described policies. As result the draft NECPs stresses that only minor achievements are to be expected by 2030²³.

Dimension research, innovation and competitiveness

As regards **the research, innovation and competitiveness dimension**, the Italian draft plan focuses on development of product and process technologies that are essential for the energy transition and support the introduction of organisational and management technologies, systems and models for energy transition and security. For instance, Italy has the intention to maintain its leading role in smart grids and indicates willingness to look into alternative fuels, advanced energy materials, zero emission heating and cooling, hydrogen and sector coupling²⁴. These

²⁰ Interconnection capacity is currently primarily located at the country's northern border (4 lines with France, 12 with Switzerland, 2 with Austria, 2 with Slovenia).

²¹ Those relate, for example, to the interconnection projects between Italy-France and Italy-Montenegro.

²² Those concern the creation of a National Observatory on Energy Poverty, the revision of existing instruments, especially the electricity and gas bonuses and the establishment of a programme to improve the efficiency of social housing.

²³ The draft NECP assumes that the incidence trend for energy poverty should remain essentially unchanged at a range between 7 % and 8 %, with a decrease of approximately 1percentage point compared to 2016 (which translates to a decrease of approximately 230 000 households in energy poverty compared to 2016).

²⁴ The draft NECP notably encourages research into the potential benefits of integration of the electricity and gas systems through the development of pilot power-to-gas, power-to-hydrogen and gas-to-power projects.

objectives to be achieved by 2030 are broadly aligned with the EU Strategic Energy Technology (SET) Plan²⁵. However, the SET Plan implementation priorities are not clearly reflected in the draft NECP. An objective of doubling the budget for public research in the field of clean energy to EUR 444 million from 2021 is mentioned, however this should be put in a 2030 perspective and sources of financing should be clarified. In addition, Italian auctioning revenues from the ETS are entirely committed by law to supporting experimental development of low-carbon solutions, including first of a kind demonstration projects.

The NECP would benefit from presenting a more comprehensive analysis on where the low-carbon technologies sector, including for decarbonizing energy and carbon-intensive industrial sectors, is currently positioned in the global market, highlighting areas of competitive advantage and potential challenges. Measurable objectives for the future should be defined on that basis, together with policies and measures to achieve them, making appropriate links to enterprise and industrial policy.

3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

The policies presented in the draft NECP seem generally in line with the set objectives. However, the **interactions between dimensions** have been only partially addressed. For example, it is mentioned that energy efficiency and renewable will positively impact on energy security. Main negative interactions identified concern the production of bio-generated heat to reduce GHG and the intention to set tougher emission requirement for heat installations. The increase in renewable energy generation will also impact the level of electricity interconnection. Still, a considerable number of interactions are still missing and interaction between single policies and measures are not described. Moreover, Italy has not provided information on how positive interactions may be maximised or negative ones mitigated.

On **decarbonisation**, the draft NECP states the need to ensure that decarbonisation measures do not harm the environment. The draft announces a Strategic Environmental Assessment, to tackle the trade-offs between energy and climate policies on one hand, and the protection of landscape, **biodiversity**, air quality or water on the other.

Consistent with Italy's National Adaptation Strategy, It also details how the energy sector could be affected by climate change and includes the measures that could be taken to address such risks. However, the expected development in terms of gas generation and gas infrastructure seem incompatible with the stated long term goals. Ongoing actions to align the Italian Capacity Remuneration Mechanism (CRM) with most recent legislation in terms of emission performance are not sufficiently detailed. The inclusion of a 'Catalogue of environmentally harmful and environmentally beneficial subsidies' represent a European best practice. The final NECP would benefit from including concrete steps to reduce energy subsidies to fossils fuels in line with the stated decarbonisation goals.

The **energy efficiency dimension** is currently the one that best explores the existing interlinkages with other dimensions. Those interlinkages are well reflected in the exposed scenarios, thanks to a detailed assessment of the savings to be expected in each sector. Nevertheless, several interactions are still missing or could be further quantified. For example, while the *Conto Termico* is likely to contribute both to the energy efficiency dimension but also to the renewable

²⁵ <https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan>.

energy share in the heating and cooling sector, its impact is not quantified but only acknowledged in theoretical terms. Similarly, GHG reductions are not estimated.

The **energy efficiency first principle** remains to be further developed in the final plan. For instance, there is no description of measures to utilise energy efficiency potentials of gas and electricity infrastructure.

In the **internal market section**, measures such as self-generation and consumption, renewable Power Purchase Agreements (PPAs) and new cooperation framework between TSO and DSO are described, but their impact on the market is unclear. The role of the Italian Capacity Remuneration Mechanism (CRM) is not explored, notably as regards its impacts in terms on prices. Sector coupling potential between renewable energy and gas sector is only partially explored.

The role of the **circular economy** is mentioned, but with a low level of detail on specific policies. The final plan could include concrete information regarding actions (e.g. regarding re-use, repair and recycling, including plastics reduction and recycling).

The draft plan qualitatively mentions the interactions with **air quality and air emissions policy**, in particular in the context of domestic heating and agricultural emissions, with synergies between air and climate measures explicitly mentioned. However, this part of the analysis would benefit from more quantitative information.

Regarding **investment needs**, Italy has provided a large amount of information on the expected incremental investment needs across sectors and their macro-economic impacts. The final NECP could benefit from more clarity on the assumptions and methodology used. There is a partial assessment of expenditure and funding sources, but the information is not comprehensive enough to allow for an assessment of the overall investment needs and to analyse the investment gap. The provided voluntary template for policies and measures would be helpful to better highlight where and how the investments will be split. A tabular summary for key policies including a visualisation of interactions would significantly improve the final plan. Some investment needs could partly be covered by EU funds such as cohesion policy funding, notably in line with the investment guidance for 2021-2027 of the 2019 European Country Semester Report for Italy and with other relevant legislation.

On a **socially just and fair energy transition**, this should be better integrated throughout the Plan, by analysing the social effects of decarbonisation. This includes possible shifts in sectors/industries and their impacts, also in terms of employment, income distribution and energy poverty. More details would in particular be useful on skills and training. The description and projection of energy prices development should be further developed, in particular regarding electricity and gas prices projections and a breakdown of current price elements.

Links with the European Semester

Identifying financing needs and securing the necessary funding will be key to deliver on Italy's energy and climate objectives. The Commission had addressed this question as part of the 2019 European Semester process. Based on the 2019 Country Report for Italy, published on 27 February 2019²⁶, the 2019 European Semester country-specific recommendations to Italy issued on 5 June 2019²⁷ highlight the need to invest in the 'quality of infrastructure (also covering

²⁶ SWD(2019) 1000 final.

²⁷ COM(2019) 501 final.

energy-related aspects)’. When preparing its overview of investment needs and related sources of finance for the final plan, Italy should take into account these recommendations and links to the European Semester.

On **energy subsidies**, the draft plan contains a comprehensive description and financial quantification of the energy subsidies granted in Italy, including fossil fuels subsidies. The draft plan identifies specific subsidies that could be reduced as well as those with a positive impact on the environment. The general principles and horizon for applying measures to phase out fossil fuels subsidies is indicated in the draft NECP, although the concrete measures and their timeline are not.

4. REGIONAL COOPERATION

The quality of the final Italian NECP would benefit from the big untapped potential from increased regional cooperation, notably related to generation adequacy, electricity market integration and infrastructure developments, bearing in mind the expected evolution of the electricity system (higher shares of renewable energy, increased need for flexibility) and possible shifts in the energy mix.

Regional cooperation on infrastructure development is necessary to optimise the identification of regional infrastructure priorities and to coordinate cross-border investments. In this context, the draft NECP identifies as a potential topic of discussion the additional use of the national network of gas pipelines and gas infrastructure to exploit the potential of hydrogen as well as the optimisation of resources for developing the LNG system for heavy-duty road and maritime transport.

In May 2017, the Clean Energy for EU Islands Initiative was launched, aiming at accelerating the clean energy transition by helping islands reduce their dependency on energy imports and making better use of locally available renewable energy sources. It also provides a forum for exchange of best practices and aims to promote modern and innovative energy systems and reduce greenhouse gas emissions on islands. Based on its pilot projects in small islands²⁸, Italy could consider enhancing cooperation with other Member States and island regions facing similar challenges and opportunities, including in areas such as interconnection, clean transport, system integration of local renewable production, specific demand response opportunities, for example from desalination plants or cooling loads, and the cost-effective deployment of energy storage systems.

Italy could further explore the cross-border potential of a coordinated energy and climate policy notably in the Adriatic with the aim of reducing the region’s carbon footprint and implementing an ecosystem approach. In this regard, an assessment of the macro-regional aspects would further enrich the analysis and provide solid basis for regional cooperation in the future.

Italy is expected to further harness the potential of deeper Mediterranean cooperation, notably in the context of the existing EuroMed platforms.

Regional cooperation is expected to be further explored notably at bilateral level with neighbouring EU Member States, Switzerland, within the Central and South-Eastern Europe Gas Connectivity (CESEC) High-Level Group and with the Contracting Parties of the Energy Community.

²⁸ In this respect, the draft NECP illustrates interesting test projects in smaller islands to promote higher levels of penetration of renewable energy and higher electrification.

5. COMPLETENESS OF THE DRAFT PLAN

Information provided

The draft NECP is consistent with the structure of Annex I²⁹. National contributions for 2030 are present when it comes to GHG emission reduction in the non-ETS sectors, renewable energy and energy efficiency. An overview table summarizes well the key objectives. However, many policies and measures underpinning the targets and objectives do not provide sufficient details, and often there is no clear distinction between existing and planned measures.

The **decarbonisation dimension** of Italy's draft NECP is mostly complete with respect to the required information. However, it does not apply the accounting rules as set out in the LULUCF Regulation³⁰, which are necessary to assess whether Italy would achieve its LULUCF commitment; nor does it describe the intended use of flexibilities between the ESR and LULUCF sectors.

Concerning **renewable energy**, the draft NECP provides an overview of national objectives and trajectories, including at sectorial level. For the national objectives and trajectories, the contribution is presented in shares but also in absolute values of Ktoe in gross final energy consumption. Little explanation is given on how the overall contribution was set. Planned capacities are generally described but are not split between new capacities and repowering. Further details are also needed on the trajectories on biomass supply by feedstock and origin (distinguishing between domestic production and imports), trajectories for forest biomass, assessment of its source and impact on the LULUCF sink.

On **energy efficiency**, the legal status of the energy efficiency target is not specified. The draft NECP lacks a clear indication of the policies and measures that have been implemented/assumed in both scenarios. Energy efficiency policies and measures are described in a comprehensive and detailed way³¹, and include some new measures that would complement the already existing framework (especially in relation to transport). The draft NECP, however, lacks sufficient details on the timetable for the implementation and duration of both existing and additional measures. The expected inclusion of the Annex on Art 7 EED³² in the final NECP will further provide clarity of policies and measures. Information on long-term renovation strategies is included, but further details are necessary. While there is mention of a savings target for 2030, 2040 and 2050, there are no measurable progress indicators other than the energy savings achieved. Moreover, wider benefits of building policies are not described.

On **energy security**, Italy provides information under all headings of the individual sub-points of Annex I of the energy security dimension. However, clear, measureable and forward-looking objectives are missing. The draft NECP lacks additional and more detailed targets with specific timelines both for gas and oil sectors³³. The final NECP would benefit from further analysis on future electricity generation adequacy in light of the set renewable contribution for 2030 and the

²⁹ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

³⁰ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

³¹ The description includes both the present situation and plans for further developments / adaptations. Measures are not only those already in force (especially linked to the implementation of Article 7 of the Energy Efficiency Directive).

³² Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency as amended by Directive (EU) 2018/2002.

³³ The draft NECP envisages in particular that, by 2030 oil products would still represent 31 % of total domestic energy demand, particularly in the transport and petrochemical sectors.

planned phasing out of fossil fuels. An assessment and quantification of the potential electricity trade from and to neighbouring countries are missing. Policies and measures addressing the energy security challenges in the oil and gas sectors are also currently missing. The role of the Italian Capacity Remuneration Mechanism (CRM) is only marginally explored. While projections are provided for energy security in the WEM scenario, the impacts of the specific policies are not described.

The **internal market dimension** lacks clear, measureable and forward-looking objectives. The draft NECP contains limited information on core quantitative parameters on the functioning of the national retail and wholesale gas and electricity markets. Verifiable targets and corresponding measures have the potential of greatly improve the timely monitoring of the implementation of the draft NECP. Additional information on the aspects listed under market integration is required under the Governance Regulation. For electricity and gas, information is missing on expected action to increase competition on the wholesale and retail markets. While the draft NECP includes some general references regarding flexibility in the system, it does not set specific objectives for aggregation and demand response, dynamic pricing, smart grids and policies to achieve those objectives in a specific timeframe.

On infrastructures, a clear level of the electricity interconnectivity aimed for in 2030 is missing as well as a clear strategy for its implementation, as required by the Governance Regulation. The projection and estimates on how the interconnectivity value will evolve are unclear. Information on policy direction and infrastructure investments to meet the interconnection targets as well as to reinforce the transmission and distribution grids in order to support the envisaged phase-out of coal-fired thermoelectric plants as well as the integration of new renewable energy could be further explored in the final plan. The implementation of some key infrastructure projects remains unclear³⁴. Information on supporting socioeconomic and environmental cost-benefit analysis for new interconnectors, as required by the Governance Regulation, is generally missing.

As regards **research, innovation and competitiveness**, the draft NECP gives an overall objective of doubling the budget for public research by 2021, but is unclear as regards the 2030 horizon. While a broad description of national objectives to be achieved by 2030 has been provided, these are not always sufficiently specific, measureable and time-bound to enable the determination of their level of ambition or the monitoring of their achievement. Policies and measures are not clearly described and it remains unclear which of the listed objectives they pursue. The draft NECP does not specify the funding target associated to each identified objective. With a view towards 2050, the draft NECP sets out some potential domains that could receive attention, but does not provide concrete objectives to be achieved. As regards **competitiveness**, a general challenge has been identified without specifying concrete objectives.

Robustness of the Italian draft National Energy and Climate Plan

The draft plan addresses the required elements of the **analytical basis**. It reports both with existing measures (WEM) and with additional measures (WAM) projections³⁵ in the main document. The draft plan relies mainly on data from the national statistical institute (ISTAT).

³⁴ For instance, while the EastMed project is mentioned as important to provide further diversification of the current routes from 2025 onwards, the draft NECP also puts into question its realisation.

³⁵ Those are the BASE scenario which models the future situation under existing policies and measures and the PNEC scenario which models the future situation under additional policies and measures and it is used to inform the targets for the Italian draft NECP.

The **WEM** and **WAM** projections cover the five dimensions of the Energy Union. Additional information would be desirable on some variables, such as: (i) the differentiation of sectoral GHG emissions per IPCC gas, (ii) the differentiation of sectoral GHG emissions between those covered by the EU ETS and those falling under the Effort Sharing Regulation, (iii) GHG emissions from international aviation, and (iv) non-GHG air pollutants.

The model based projections are presented in a **transparent** way. Key parameters have been provided, including the sources. Technology cost and detailed model descriptions are provided in references.

The draft NECP also includes most of the required elements of the **impact assessment** (IA) of planned policies and measures. An update is announced for the final NECP which should complete the assessment of macroeconomic impacts³⁶ and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects. The transparency of the impact assessment could be further enhanced if the draft NECP would explicitly state which of the policies and measures are taken into account in the modelling of the WEM and WAM scenarios.

Key macroeconomic parameters as well as the renewable energy shares are aligned with EUROSTAT figures for the base year 2017. The draft plan follows its own assumptions for international fuel and EU ETS carbon prices.

Furthermore, based on the information provided in the draft NECP, in particular due to the largely aggregate quantification of policies, the **robustness of the impact assessment** of planned policies cannot be fully evaluated. In this respect, the use of the voluntary templates for policies and measures and parameters and variables provided by the Commission for the final NECP has the potential to greatly improve transparency and comparability.

³⁶ In this context, the macro-economic impacts of the proposed policies and measures would be made more transparent if the information provided for the results of the different models used to assess their macroeconomic impact could allow for a consistent comparison.