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**COMMISSION STAFF WORKING DOCUMENT**

**Assessment of the draft National Energy and Climate Plan of Portugal**

*Accompanying the document*

**Commission Recommendation**

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

{C(2019) 4422 final}

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# 1. SUMMARY

## Main observations<sup>1</sup>

- ✓ The Portuguese draft integrated National Energy and Climate Plan (NECP) has been developed in coherence with the draft Roadmap for Carbon Neutrality 2050. As such, the draft NECP is in line with the Portuguese vision for a carbon-neutral society, based on a circular economy, which retains resources at its highest economic value, creates jobs, wealth and well-being.
- ✓ Portugal's target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS), is -17 % compared to 2005, as set in the Effort Sharing Regulation (ESR)<sup>2</sup>. Portugal is expected to meet this target with a comfortable margin with a continuation of current policies. It also plans further measures in the building, transport and agriculture sectors. There is less clarity how the corresponding no-debit commitment (i.e. emissions do not exceed removals) for Land Use, Land Use Change and Forestry (LULUCF)<sup>3</sup> will be achieved. If cost-efficient domestic overachievements of the non-ETS targets will be used for possible transfers to other Member States, then also jobs and growth will benefit from it.
- ✓ The **renewable energy** contribution proposed in the draft plan is 47 % of the national gross final consumption of energy in 2030. This is significantly above the 42 % renewable share in 2030 that results from the formula in Annex II of the Governance Regulation. The draft plan does not include specific reference points<sup>4</sup> in 2022, 2025 and 2027, and instead provides ranges. The lower values of the proposed range do not meet the levels required for such reference points. The policies and measures that support such contribution should be more detailed in order to demonstrate consistency with the proposed level of ambition. The final plan would benefit from elaborating further on the policies and measures allowing the achievement of the contribution and on other relevant sectorial measures.
- ✓ Regarding **energy efficiency**, the proposed contribution is modest for primary and very low for final energy consumption, in view of the collective effort to reach the Union's 2030 energy efficiency targets. Reviewing of the energy efficiency contribution would also require adequate policies and measures delivering additional energy savings. There is still a wide margin to improve energy efficiency in the buildings and transport sectors.
- ✓ There is a clear objective of reducing energy import dependency to 65 % by 2030, which is quite ambitious, in light of the fact that Portugal has at present an import dependence of 80 %. However, this level of ambition is realistic given the envisaged deployment of renewable

<sup>1</sup> In addition to the notified draft NECP this assessment also considers informal bilateral exchanges, which are part of the iterative process established under the Governance Regulation.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> Pursuant to Article 4(a)(2) of Regulation 2018/1999.

energy. The final plan would benefit from including policies and measures for the energy security of the autonomous regions of Azores and Madeira, in particular how these islands could increase energy self-sufficiency through deployment of clean technologies.

- ✓ The draft plan mentions interconnections as key issue to attain the proposed objectives, targets and contributions, notably for the national renewable energy contribution. The draft plan indicates that Portugal intends to achieve the 15 % **interconnection level** by 2030. Specific objectives on improving (electricity and gas) market integration and system flexibility (demand response, storage, and distributed generation) would support the case for further expansion of energy infrastructure. On **energy poverty**, an important issue in Portugal, the draft plan mentions that measures will be implemented by 2021, which include a definition of energy poverty and collecting information to allow monitoring of the number of households in energy poverty, but these elements and supporting policies and measures would need to be included already in the final plan.
- ✓ The priority areas for **research and innovation** are broadly identified in the draft plan (renewable energy, energy efficiency, smart grids, sustainable mobility, electricity, natural gas and interconnections). Specific objectives supported by policies are needed to complement the already identified priority areas.
- ✓ Regarding **investment needs** more information needs to be included in the final plan and articulated with the national investment plan<sup>5</sup> thereby taking full advantage of the role NECPs can play in providing clarity and certainty to investors and attract additional funding for the clean energy transition. Portugal expects to continue to make use of relevant Union funds to finance the transition, which needs to be complemented with private investment.
- ✓ There is potential to intensify the good **regional cooperation** already taking place with France and Spain in the energy security and internal market areas, as well as increased cooperation in the areas of renewable energy and energy efficiency.
- ✓ As regards interactions with **air quality** and air emissions policy, the draft plan mentions some elements of consistency with the National Air Pollution Control Program. However, the final plan would benefit from strengthening this analysis, including from a quantitative perspective.
- ✓ The final plan would benefit from providing additional details on **socially just and fair transition** aspects. They should be integrated throughout by considering social and employment impacts, e.g. shifts in sectors/industries and skills impacts, distributional effects and revenue recycling. The draft plan mentions the question of skills and training, but would benefit from providing more details on these aspects.
- ✓ A list of all **energy subsidies** and actions undertaken and planned to phase them out, in particular for fossil fuels, need to be included in the final plan.
- ✓ The adequate and coherent alignment of national climate and energy objectives for 2030 (and 2040) with the recently adopted Carbon Neutrality target for 2050 is a **good practice**; similarly, the Portuguese draft plan presents well the interaction between climate and circular economy objectives.

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<sup>5</sup> <https://www.portugal2030.pt/sobre-pni2030/>.

## Preparation and submission of the draft plan

Portugal notified its draft National Energy and Climate Plan (NECP) to the European Commission on 31 December 2018. The draft NECP was developed under the responsibility of the Ministry of Environment and Energy Transition, with the support of the Directorate General for Energy and Geology and the Portuguese Environment Agency.

The **public consultation** on the draft plan will be held in the course of 2019. The government is holding a roadshow to present across the country both the Draft National Energy and Climate Plan (PNEC 2030) and the Roadmap for Carbon Neutrality (RNC 2050). Stakeholders have already been involved in the preparation of the draft, in particular for the definition of scenarios and underlying assumptions. Several technical workshops with experts and public workshops were held in order to discuss the targets of the 2050 roadmap and 2030 draft plan. The autonomous regions of Madeira and the Azores were consulted as well as the association of local authorities. The public consultation on the 2030 targets ended in February 2019.

Portugal promoted numerous interactions with **neighbouring Member States** for the preparation of the draft NECP. The topic of greater trans-border relevance is the interconnections in Southwest Europe. Recent bilateral exchanges with Spain in a Summit in Valladolid focused on interconnections, MIBEL and strategies to comply with the Paris Agreement. The Iberian Working Group on Renewable Energies is one of the key for a where joint work in relation to energy transition is being conducted.

## Overview of the key objectives, targets and contributions

The following table presents an overview of Portugal's objectives, targets and contributions under the Governance Regulation<sup>6</sup>, as presented in the Portuguese draft NECP:

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<sup>6</sup> 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) (%)	-14	+1	-17	As in ESR. Total GHG 2030 -45 to -55 % to 2005
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	28.1	31	47	Above 42 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	22.8 16.6	22.5 17.4	20.2 17.7	Modest Very low
	Level of electricity interconnectivity (%)	9	21	15	N/A

Sources: EU Commission, ENERGY STATISTICS, Energy datasheets: EU28 countries; SWD (2018)453; The European Semester by country<sup>7</sup>; COM/2017/718; Portuguese 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 plan mentions the **Effort Sharing Regulation (ESR)**<sup>8</sup> target of -17 % emissions by 2030 compared to 2005. Based on projections submitted under the Monitoring Mechanism Regulation (MMR) in 2017 (since no projections on Effort Sharing Regulation emissions are available), and assuming that the LULUCF commitment is met, Portugal could overachieve its 2030 ESR target by 7 percentage points. Emission projections with existing policies and planned policies provided in the draft plan for key relevant sectors such as transport, residential and services and agriculture indicate even higher emission reductions. The draft plan does not explain whether Portugal intends to use cost-efficient overachievements for possible transfers to other Member States.

<sup>7</sup> [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](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).

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

The draft plan includes new national economy-wide emission reduction targets that have been adopted, consistent with Portugal's recent national commitment to achieve carbon neutrality in 2050 (RNC2050), namely an increase of the ambition of the 2030 total GHG target from a -30 to -40 % range to a -45 to -55 % range, compared to 2005. The target range for 2040 is -65 to -75 %. However these national targets exclude the LULUCF sector.

Policies and measures in the **transport sector** aim to achieve significant GHG emission reductions. A broad overview is provided on measures to support electromobility e.g. via a full exemption from the registration tax and from the annual circulation tax for electric vehicles as well as support for the development of a charging network. The plan should also outline support measures to other alternative fuels. In the context of the 2050 decarbonisation plan, the transport sector indicates an emission reduction of 53 % by 2030 compared to 2005, but does not explain the expected impact of specific measures. Also further details on the measures for **agriculture and LULUCF** sectors would benefit the final plan. With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by Portugal as required by Article 8(3) of the LULUCF Regulation<sup>9</sup>, the Commission has put forward substantial technical recommendations requesting action on a range of issues, detailed in SWD(2019)213.

The draft NECP describes the national **adaptation** strategy, objectives and current policy framework and refers to an action programme to be adopted early 2019 for the period 2020-2030.

### Renewable energy

The **renewable energy** contribution proposed in the draft plan is 47 % of the national gross final energy consumption in 2030. The overall contribution of 47 % is significantly above the 42 % renewable share in 2030 that results from the formula in Annex II of the Governance Regulation. This ambitious contribution will facilitate the achievement of the EU 2030 target and the national vision for reaching the carbon neutrality objective by 2050. In order for it to be feasible it needs to be accompanied also by ambitious policies and measures.

The **indicative trajectory** to reach the 47 % contribution in 2030 is provided. The draft plan does not include specific reference points in 2022, 2025 and 2027, and instead provides ranges. The indicative trajectory between 2021 and 2030 needs to achieve the reference points of 18 % of the 2030 contribution by 2022, 43 % by 2025 and 65 % by 2027. The lower values of the proposed range do not meet such reference points.

**Renewable electricity** generation is projected to reach an ambitious share of 80 % in 2030, with solar playing a key role (up to 9.9 GW in 2030 compared to 1.9 GW in 2020), followed closely by wind and hydro with storage (for which the combined capacity will be around 18 GW in 2030). As a result the objective is to accelerate the production of electricity from renewable energy and shut down coal-fired power stations by 2030. In this context the draft plan could further detail how it will address the simplification and optimisation of the framework related to licensing and permitting using one-stop-shops. This is a pivotal area to attract the required investment for the renewable energy sector.

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

The use of **renewable energy in the heating and cooling** sector is projected to reach 38 % by 2030, which represents only an increase of 4 percentage points from the 34 % renewable share expected in 2020. The role of waste heat and cold was not included. The envisaged increased share of 4 percentage points falls short of the indicative 1.3 percentage points increase as an annual average calculated for the periods of 2021 to 2025 and 2026 to 2030 that Member States should endeavour to achieve by 2030. Biomass accounts for the largest share of renewable energy in heating and cooling in 2030 (48 %). It is followed by heat from cogeneration using renewable fuels with 32 %, heat pumps with 11 % and bio-methane with 4 %. In this regard, the final plan would benefit from a detailed account of the trajectories of renewable technologies, which do not seem to match with the trajectories indicated for the total share of renewable heating and cooling and the corresponding specific measures to achieve the goals. The draft plan indicates that with the exception of new high-density housing estates, or proximity to services buildings which already have cogeneration there is limited potential for district heating (and cooling) networks.

The draft plan includes the objective to reach 20 % share of **renewable energy in transport** by 2030 which is said to be supported by an increase of the use of renewable electricity and to a lesser extent hydrogen. In order to deliver this ambitious objective policies and measures would need to be more detailed on, for example, how the share of advanced biofuels and biogas presented will be ensured. Further details including the contributions of all eligible fuels as well as the limits for conventional fuels produced from food and feed crops, applicable multipliers and the sub target for advanced biofuels for the 2030, transport target as requested in Articles 25-27 of Directive 2018/2001<sup>10</sup> would benefit for the final plan.

Policies and measures to promote **renewable energy communities and self-consumption**, by facilitating access to finance, providing regulatory and capacity-building support to public authorities could be further developed. Similarly, more details on the promotion of renewable power purchase agreements will be welcomed in the final NECP.

### **Dimension energy efficiency**

The 2030 contribution is set at 20.2 Mtoe for primary energy consumption (PEC) and at 17.7 Mtoe for final energy consumption (FEC). The PEC contribution would mean a reduction compared to the 2017 data and the 2020 target level, but the magnitude of these reductions is rather modest. Conversely, the FEC contribution would mean an increase compared to the two reference levels and represents very low ambition taking into account the level of efforts needed at the EU level. Additionally, the Portuguese contribution level for PEC in 2030 is below the projections for 2030 under the with existing measures (WEM) scenario, while the FEC contribution is above the 2030 WEM projections. Consequently, the methodology used for setting the energy efficiency contributions probably needs to be revisited and more clarity about the underlying assumptions for the scenarios is needed.

No new policies or measures going beyond those announced in the 2017 National Energy Efficiency Action Plan have been presented. The draft plan also lacks information on the scale and timeline of the policies and measures continued after 2020. The final plan would also benefit from also covering measures that contribute towards more efficient organisation of the mobility

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<sup>10</sup> 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.

system and thus towards improved energy efficiency and emissions reductions (e.g. incentivising multimodality and modal shift, intelligent transport systems, digitalisation and automation). Whereas the plan mentions the objectives to reinforce the capacity of the electric vehicle charging infrastructure, to promote vehicle sharing services with focus on electric mobility and to promote modal shift, it does not describe in detail the concrete measures to achieve these objectives.

In general, the draft plan includes the list of actions to promote energy efficiency (e.g. review of legal framework on the management and efficiency of energy consumption and reinforcement of monitoring systems, ensure improvement in the efficiency of energy consumption in the different sectors of the national economy, etc.) but not detailed information on the measures needed to achieve the proposed contributions.

### **Dimension energy security**

The draft plan includes an objective to reduce energy import dependency to 65 % by 2030, when currently the energy import dependency stands at around 80 %. The draft plan contains detailed information on security of supply, focusing in particular on the import dependency for oil, coal, gas and electricity, and describes domestic resources. Portugal has a diversified portfolio of suppliers, which is to be maintained or expanded. The increase in recent years of underground storage capacity at Carriço and the tanks at the Sines LNG Terminal have also contributed to the diversification of sources supplying natural gas to Portugal. In the case of electricity security of supply, the diversification of external origins is more limited for geographical reasons. Therefore, the focus is mainly on the diversification of endogenous renewable energy production. However, high importance is also given to imports with emphasis on reinforcing interconnections with Spain and also through the interconnection with Morocco, which will allow improved balancing in the national electricity system and consequently, better supply security. The final plan needs to go beyond the existing policies and measures and include the objectives and planned policies and measures beyond 2020. Additionally, the draft plan seems to consider only the security of supply issues for continental Portugal and not the Autonomous Regions (Azores and Madeira), which will need to also be addressed in the final plan, in particular how these islands could increase energy self-sufficiency through deployment of renewable technologies.

### **Dimension internal energy market**

The draft plan discusses the list of Projects of Common Interest (PCIs) in electricity and gas for Portugal for the period 2021-2030. The draft plan also includes a level of 15 % for the development of interconnections in the electricity sector by 2030. Information on the additional indicators and minimum thresholds for interconnections, laid out in the regulation, needs to be included in the final plan so the urgency of the action needed is fully characterised.

The energy transition in Portugal relies heavily on the electrification of the economy and therefore the electricity sector needs to be decarbonised and capable of dealing with intermittent and decentralised renewable energy production. This requires taking to another level electricity infrastructure development and electricity market integration. Therefore, the final plan needs to include specific objectives to improve market integration, which complement and reinforce the ambition to increase interconnections within the Iberian Peninsula, included on the draft plan.

Similarly for natural gas, the final plan is an opportunity to further develop on how the national gas infrastructure, in particular the LNG reception capacity at the Sines Terminal, can strengthen

Portugal's role as an 'entry point' for natural gas in the European internal market. The point raised in the draft plan regarding green shipping could also be further developed also in the context of decarbonisation of maritime transport.

Portugal refers to Eurostat statistics, which suggest that **energy poverty** is an issue in the country because a significant number of the population is unable to keep their homes adequately warm (and cool). The draft plan mentions that early measures will be implemented by 2021, which include a definition of energy poverty and collecting information to allow monitoring of the number of households in energy poverty. However, these elements, and concrete urgent actions, to tackle energy poverty, would need to be included already in the final plan.

In the final plan the internal market dimension should be extended beyond continental Portugal and include the autonomous regions of Azores and Madeira.

### **Dimension research, innovation and competitiveness**

The draft plan identifies the research domains that could receive attention: renewable energy, energy efficiency, smart grids, sustainable mobility, electricity, natural gas and interconnections. However, the main industrial sectors such as Paper (29 % of industrial greenhouse gas emissions) or chemicals and plastics (11 %) are not part of these research domains, and do not have specific strategies to pave the way towards decarbonisation. The draft plan does not clearly identify research and innovation objectives to be achieved by 2030 at national level. Regarding competitiveness, Portugal mentions relevant activities such as supporting the establishment of technological pilots or supporting the creation of industrial clusters in new areas of technological development. The draft plan provides further details on the underlying objectives, without however quantifying these objectives or providing a timeline for their implementation. More information on policies and measures to achieve national objectives or funding targets would enrich the final plan.

The NECP would benefit from presenting a comprehensive analysis on where the low-carbon technologies sector, including for decarbonising energy and carbon-intensive industrial sectors, is currently positioned in the global market, highlighting areas of competitive strengths 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.

The draft NECP refers to the **Strategic Energy Technology (SET) Plan**, but does not provide any information as to how the national energy and climate targets for the period 2021-2030 are to be aligned with the agreed SET Plan targets.

## **3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS**

Portugal has a coherent set of medium and long term emission reduction targets. To achieve decarbonisation it plans to electrify the economy. Therefore the electricity sector needs to be further developed through new renewable electricity capacity, in particular solar, wind and hydro. These developments have strong implications for the internal market dimension and will require further storage capacities. This is recognised in the draft plan, by proposing increased new hydro pump storage installations and the use of new technologies such as batteries, hydrogen and power to gas.

The role of **interconnectivity** in delivering the ambitious renewable energy targets is discussed, as well as its importance in the development of the internal market and especially for energy security. The specific objectives on the internal market and security of supply dimensions need to present a vision on how the attainment of the interconnection level contributes to the expansion of renewable energy and to further participation of Iberian energy companies in the EU electricity market.

The final plan would benefit from also covering measures that contribute towards more efficient organisation of the mobility system and thus towards improved energy efficiency and emissions reductions (e.g. incentivising multimodality and modal shift, intelligent transport systems, digitalisation and automation).

Coal will gradually be phased out and the decommissioning of the coal power plant is expected until 2030. Natural gas will play an important role in this transition, and additional natural gas storage capacity and infrastructure (e.g. LNG Terminal in Sines) have been developed to increase the energy security. This could also be linked to the energy efficiency principle, which in the draft plan is presented as one of the eight objectives established by the draft plan for the 2030 horizon. The important planning, policies and measures and investment decisions concerning, in particular, energy infrastructure, but also policies and measures in the area of energy security and internal energy market should consider if energy efficiency measures are economical and cost-efficient. The final plan needs to explore these synergies and translate them into specific objectives.

The draft plan mentions that better forest management practices would enhance the forest sink and increase its resilience to adverse effects of climate change such as forest fires and land degradation. However, consideration of climate risks is not part of the energy security dimension, even though work is ongoing under the national adaptation strategy on adaptation in the energy sector.

The draft plan makes several references to the significant contribution of **circular economy** to greenhouse gas emissions reductions, jobs, health and growth. It mentions some waste measures but not the national action plan for circular economy published in 2017. The final plan should refer to this action plan.

Measures to reinforce the use of **bioenergy** and the announced new hydro power plants with storage capacity and reversibility (pumping) would benefit from an assessment of their impact in terms of sustainable biomass supply potential and/or biodiversity implications.

As regards interactions with **air quality** and air emissions policy, the draft plan mentions some elements of consistency with the National Air Pollution Control Programme. However, this part of the analysis would benefit from being strengthened, including from a quantitative perspective.

The final plan would benefit from providing additional details on **socially just transition** aspects. They should be integrated throughout by considering social and employment impacts, e.g. shifts in sectors/industries and skills impacts, distributional effects and revenue recycling. The draft plan mentions the question of skills and training, but would benefit from providing more details on these aspects.

The draft plan mentions that **investment needs** are presented in the national investment plan for investments for 2030, which is under development. This national programme on investment identifies large priority projects (budget over EUR 75 million) on several areas, including

climate, energy and transport. The programme is a good example on how to showcase investment projects to international investors. The version available for public consultation includes an overview of the main targets and objectives for the energy and transport sectors, specific projects and investment needs. The relevant elements of this national programme would substantiate the policies and measures included in the final plan. An important public funding source to support for the transition to a low-carbon economy is the Environment Fund (EF) which finances climate policy, including energy efficiency measures and the promotion of renewable energies and may also constitute the national contribution in projects to be submitted to EU funding. A significant part of the budget for this fund comes from EU ETS auctioning revenues. Some investment needs could partly be covered by cohesion policy funding, notably in line with the investment guidance for 2021-2027 of the 2019 European Country Semester Report for Portugal and with any other relevant legislation.

#### Links with the European Semester

- Identifying financing needs and securing the necessary funding will be key to deliver on energy and climate objectives. The Commission addressed this question as part of the 2019 European Semester process.
- Based on the 2019 Country Report for Portugal, published on 27 February 2019<sup>11</sup>, the European Commission's recommendation for a Council recommendation for Portugal issued on 5 June 2019<sup>12</sup>, in the context of the European Semester, highlights in particular the need to invest in "railway transport and port infrastructure, low carbon and energy transition and extending energy interconnections".
- When preparing its overview of investment needs and related sources of finance for the final plan, Portugal should take into account these recommendations and links to the European Semester.

The draft plan includes two measures to gradually reduce tax exemptions granted to coal used to produce electricity, which contributes to phase out energy subsidies, particularly for fossil fuels. It would be beneficial if the final plan would provide more information on energy subsidies, based on internationally used definitions for subsidies and the energy prices and costs report by the European Commission<sup>13</sup>.

## 4. REGIONAL COOPERATION

In terms of cooperation with other Member States, the draft plan mentions the meetings of the high-level group on interconnections for South West Europe with Spain and France. The Luso-Spanish Summit in Valladolid is also mentioned as an important step to further advance on several issues relevant for the final NECP: electricity interconnections, MIBEL and strategies to comply with the Paris Agreement. Since 2006 Portugal and Spain are cooperating towards a further integrated Iberian gas market (MIBGAS). Several additional declarations were signed in 2015 and 2018 between Portugal, Spain, France and the European Commission with the aim to create the necessary infrastructure to operate the cross-border interconnections of the gas and

<sup>11</sup> SWD(2019) 1021 final: Country Report Portugal 2019.

<sup>12</sup> COM(2019) 522 final: Recommendation for a Council Recommendation on the 2019 National Reform Programme of Portugal and delivering a Council opinion on the 2019 Stability Programme of Portugal.

<sup>13</sup> Commission Staff Working Document Accompanying the Document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Energy prices and costs in Europe, COM(2019) 1.

electricity grid. Both the Governments of Portugal and Spain expressed the importance of energy security and the necessity to create cross-border and cross regional interconnections to integrate the Iberian Peninsula with the rest of the European market. Furthermore, in the Lisbon Declaration of July 2018 Portugal, Spain and France agreed to coordinate the elaboration of their draft national strategies and share their energy supply hypotheses. They also agreed to work together with the European Commission's technical support, on accelerating energy transition by considering cross-border auctions on renewable energy production and developing green bonds to finance green investments. Regional cooperation has a key role in assessing regional system adequacy as foreseen in the Electricity regulation<sup>14</sup>. This will become even more important in the light of increasing share of renewable energy and corresponding need for system flexibility.

In the draft plan Portugal shows interest to further explore the potential of regional auctions and plans to launch a process of consultations with a view to establishing common criteria for the award of green certificates. The Commission is willing to support Portugal if it intends to make use of the cooperation mechanisms at European and international levels. In this context, Portugal might find useful to consider the new window under the Connecting Europe Facility for the period 2021-2027 which will support Member States in the planning and development of cross border renewable energy investments. The draft plan mentions the develop and participate on innovative financing mechanism for renewable energy, so Portugal might be interested in using the Financing Mechanism (under development) provided in the Governance Regulation, either as a contributing member or host member.

Finally, the draft plan also mentions the Euro-Mediterranean cooperation on energy with a view to developing interconnections and exploring the potential of renewable energy production and the improvement of energy efficiency for the benefit of the EU and its Southern-and Eastern-Mediterranean neighbours.

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. Although Portugal is a signatory to the political declaration for this initiative, it has not mentioned this in the draft NECP. Portugal could consider doing so in its final plan, and enhance 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.

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<sup>14</sup> Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.

## 5. COMPLETENESS OF THE DRAFT PLAN

### Information provided

The **greenhouse gas emission** elements of the **decarbonisation dimension** of the draft plan are only partially presented. Information on the estimated ESR<sup>15</sup> trajectory in 2021-2030 is missing and the accounting rules to operationalise the no debit commitment as set out in the LULUCF Regulation<sup>16</sup> are not used.

The draft plan provides an overview of national objectives and trajectories, for **renewable energy**, including at sectorial level. For the national objectives and trajectories the contribution is presented in shares but should additionally be presented in absolute values of ktoes in gross final energy consumption. The trajectories of bioenergy demand, their disaggregation between heat, electricity and transport, and on biomass supply (by feedstock and by origin and distinguishing between domestic production and imports), trajectories for forest biomass, and the assessment of the source and impact of forest biomass on the LULUCF sink are missing. Planned capacities are described but are not split between new capacities and repowering. The description of the policies and measures supporting the renewable energy contribution needs to be further developed.

On the **energy efficiency** dimension, the contributions for both primary and energy consumption in 2030 are presented. The details on the indicative trajectory post-2021, methodology and conversion factors are missing. The basic elements of the long-term renovation strategy required under Article 2a of the revised Energy Performance of Buildings Directive<sup>17</sup> are not provided because these have not yet been defined. The energy efficiency first principle is mentioned as one of the eight key strategic priorities of the draft plan for 2030, but a brief description of how it was included across dimensions will be needed for the final plan. Contribution or targets for heating and cooling as well as for Article 5 of the Energy Efficiency Directive<sup>18</sup> are not indicated. In general, the description of policies and measures needs to be further developed. On the positive side, the information in relation to cost-optimal minimum requirements for new and existing buildings subject to major renovations for all types of buildings has been provided and the target for Article 7 of the Energy Efficiency Directive<sup>19</sup> is also included in the draft plan.

There are several **energy security** related objectives, such as: increase interconnections, increase renewable energy use, increase energy storage capacity, decrease external energy dependence, improve regional cooperation in the natural gas sector and implementation of the new Risk Preparedness Regulation<sup>20</sup>. However, the details of the implementing measures are missing, as

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<sup>15</sup> Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

<sup>16</sup> Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

<sup>17</sup> Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings as amended by Directive (EU) 2018/844.

<sup>18</sup> 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.

<sup>19</sup> 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.

<sup>20</sup> Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC.

well as their impact in the future energy mix, emerging risks (e.g. cybersecurity) and protection of critical energy infrastructures.

On the **internal market** dimension, the draft plan contains limited information on the functioning of the national retail and wholesale gas/electricity markets. Additional information on market functioning, market integration, system flexibility and objectives for energy poverty are required for the final plan, as well as objectives and strategies to further develop competition in the market. On electricity interconnectivity, Portugal aims to reach the 15 % interconnection level by 2030, but the final NECP would benefit from also addressing the urgency indicators set in the Annex 1 of the Governance Regulation. On electricity wholesale market information is missing on measures aiming at increasing tradeable capacity at interconnectors, at allowing real time price signals and non-discriminatory participation of renewable energy producers. Similarly, information is also missing concerning market integration in the gas sector, in particular relevant data related to the gas wholesale market, including information on measures taken to complete the Iberian gas market in MIBGAS. Regarding the retail markets, the final NECP will need provide a quantitative overview of the development of the different sources of flexibility that is needed to integrate the rising share of renewable energy into the electricity system. It should specify where Portugal sees the potential to increase system flexibility. The final NECP is also incomplete regarding smart metering issues for electricity, in particular, specific quantitative targets, objectives, timelines and policy measures are missing, including the planning for the revision of the national assessment for a large-scale rollout. Regarding gas, there is no reference to gas smart metering issues.

The draft plan is missing national objectives on **research and innovation** to be achieved by 2030. The draft plan does not include objectives related to deployment. Nevertheless, the draft plan includes a number of general objectives related to **competitiveness**, but the details on supporting policies and measures are not included.

### **Robustness of the Portuguese draft National Energy and Climate Plan**

The required elements of the **analytical basis** are present in the draft plan. Details on projections for with existing measures (WEM) and with additional measures (WAM) scenarios are reported in the main document. Elements of the impact assessment of planned measures are present. The draft plan makes extensive use of official data from national sources and from Eurostat. When no official data are available other sources are used, like the Electricity National Network for energy interconnections and trade or the Portuguese Environment Agency for carbon emissions.

The **WEM and WAM projections** largely cover the five dimensions of the Energy Union. Additional information would be desirable on the following variables: (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, (iv) non-GHG air pollutants, (v) imports of electricity and (vi) investments needs.

The projections are presented in a largely **transparent** way. Most of the key assumptions, parameters and results are presented in detail, notably the contributions on renewable energy, energy efficiency and the GHG emission reduction target. The projections could be enriched by describing key parameters on households, transport, heating and cooling degree days. Overall, assumptions are well motivated and sources quoted.

The **impact assessment** of policies and measures in the draft plan currently focuses on air pollutant and GHG emissions. Impacts of planned policies and measures in other Member States could be further developed. The final plan should complete the assessment of macroeconomic and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects. Finally, since it is not entirely clear how the policies and measures described in section 3 relate to the WEM and WAM projections, further details in this regard would be helpful (e.g. by using the voluntary policies and measures template).

Modelling work was carried out with a suit of models (TIMES-PT and LEAP) covering the main variables. Nevertheless, a more detailed description of the modelling approach including a discussion of uncertainties would enrich Portugal's draft plan. Key model parameters, like renewable energy shares for the base year, are well aligned with EUROSTAT figures. Two points could be clarified: (i) whether GDP and population figures for the base year 2015 are also aligned, and (ii) why a deviation from EUROSTAT can be observed for total final energy consumption. Lastly, the draft plan follows its own fuel and emission price assumptions.