



Brussels, 18.12.2023  
SWD(2023) 913 final

**COMMISSION STAFF WORKING DOCUMENT**

**Assessment of the draft updated National Energy and Climate Plan of Spain**

*Accompanying the document*

**COMMISSION RECOMMENDATION**

**on the draft updated integrated national energy and climate plan of Spain covering the period 2021-2030 and on the consistency of Spain's measures with the Union's climate-neutrality objective and with ensuring progress on adaptation**

{C(2023) 9603 final}

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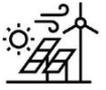
# 1 SUMMARY

## 1.1 Overview of key objectives, targets and contributions in the draft updated plan

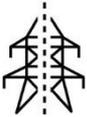
The European Green Deal, the fast-evolving geopolitical context and the energy crisis have led the EU and its Member States to accelerate the energy transition, and to set more ambitious energy and climate objectives, including objectives diversify energy supplies. These developments are reflected in the legislative framework adopted under both the Fit for 55 package and the REPowerEU Plan.

Spain’s draft updated national energy and climate plan (“the draft updated NECP” or “the plan”), submitted on 28 June 2023, partially takes into account this new geopolitical and legislative framework.

Table 1: Summary of key objectives, targets and contributions of Spain’s draft updated NECP

		2020	Progress based on latest available data	2030 national targets and contributions	Assessment of 2030 ambition level
	Binding target for greenhouse gas (GHG) emissions compared with 2005 under the Effort Sharing Regulation (ESR) (%)		2021: -19.4% 2022: -19.7% <sup>1</sup>	-37.7%	NECP: -44.7%
	Binding target for net GHG gas removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -44.52 Mt CO <sub>2</sub> eq. in 2021 and reported approximated net removals of -44.50 Mt CO <sub>2</sub> eq. in 2022	-5.309 Mkt CO <sub>2</sub> eq. (additional removal target)  -43.635 Mt CO <sub>2</sub> eq. (total net removals)	Insufficient ambition, not projecting to reach the targets
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	21.2% (SHARES) 20% (target)	20.7%	47.9%	ES contribution of 47.9% is above the 43% required according to the formula set out in Annex II of the Governance Regulation.
	National contribution for energy efficiency:				

<sup>1</sup> The ESR emissions for 2021 are based on final inventory data and for 2022 on approximated inventory data. However, the final ESR emissions for 2021 and 2022 will only be established in 2027 after a comprehensive review.

	Primary energy consumption	123.40 Mtoe	112.14 Mtoe	96,700 ktoe	ES primary energy consumption contribution is 96,700 ktoe. EED recast Annex I formula results: 81,782 ktoe
	Final energy consumption	86.30 Mtoe	80.33 Mtoe	70,200 ktoe	ES final energy consumption contribution is 70,200. EED recast Annex I formula results: 65,382 ktoe
	Level of electricity interconnectivity (%)	6.5%	4.4%	15% <sup>2</sup>	

Source: Eurostat; Spain's draft updated national energy and climate plan

## 1.2 Summary of the main observations<sup>3</sup>

Spain's draft updated NECP refers to the revised energy and climate targets recently agreed under the **Fit for 55** package and the **REPowerEU Plan**. The plan is for the most part ambitious, comprehensive and detailed as to the measures in place to achieve a good number of their objectives.

Regarding the **reduction of greenhouse gas emissions under the Effort Sharing Regulation**, the plan provides emission projections to demonstrate that with the additional policies and measures put forward in the draft updated NECP, Spain is on track to meet its national greenhouse gas target of -37.7% in 2030 compared to 2005 levels. According to Spain's projections, they would overachieve the target by 7 percentage points.

On **LULUCF**, the draft projections in the plan indicate that Spain will fall short of the 2030 ambition, highlighting the need for enhanced climate action. The draft does not clearly set out a pathway to increase the land sector's contribution to the EU's overall enhanced climate target. Despite identifying several relevant policies and measures, Spain does not propose any additional ones. The draft does not provide a clear implementation timeframe nor quantification of the impacts of specific policies and measures. It also lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

On **Carbon Capture Utilisation and Storage (CCUS)**, the plan does not identify annual CO<sub>2</sub> emissions that can be captured, nor geological CO<sub>2</sub> storage capacity. No details on CO<sub>2</sub> transport are provided.

<sup>2</sup> Calculated by the European Commission based on the ENTSO-E data (Winter Outlook 2022-2023). The 2030 level represents the general interconnectivity target of 15%. The level of ambition cannot be assessed, because the actual 2030 interconnectivity levels will depend on the implementation of the planned interconnectors and changes in the generation capacity. The 2020 figure covers also interconnectors with the neighbouring countries outside the EU.

<sup>3</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.

The draft updated plan reflects progress towards **international commitments** under the Paris Agreement. Spain commits to phase out coal in power generation by 2025 and phasing out of fossil fuel subsidies is presented, even though without mentioning a timeline.

As far as **adaptation to climate change** is concerned, adaptation policies and measures, to support Spain's achievement of national objectives, targets and contributions under the Energy Union, are not properly described in terms of their scope, timing and expected impacts. There is no reference to innovative approaches such insurance policies (except for a reference to insurance for petroleum products and gas), and fiscal measures to address the climate protection gap.

For **renewable energy**, the draft updated plan includes a contribution to the EU's overall target of 47.9% in Spain's gross final energy consumption by 2030. This is above the share of 43% resulting from the formula in Annex II of the Regulation (EU) 2018/1999 on the Governance Regulation of the Energy Union and Climate Action ('Governance Regulation'). Overall, the draft updated plan includes indicative trajectories for renewables in the electricity, transport and heating and cooling sectors as per Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources as amended by Directive (EU) 2023/2413 ("revised REDII"), including the renewable energy sources share in industry and buildings, and sectoral targets for renewable fuels of non-biological origin (RFNBO).

The plan also provides sufficiently detailed policies and measures to support the achievement of the proposed objectives and contributions for renewable energy and, for most of them, it provides references to legal acts, scope, timeframes, and expected budgetary impacts. The draft updated plan contains 107 policies and measures, out of which 29 are presented as additional to the 2020 final NECP.

The updated 2030 **energy efficiency** targets are higher than the 2030 targets previously reported by Spain in the final 2020 NECP, but do not reflect the new ambition set by the Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 ('EED recast'). Nevertheless, it is positively noted that Spain's draft updated NECP takes the new EED recast provisions into account, mostly in the adoption of the cumulative energy savings obligation requirement for 2021-2030, in the energy audit obligation and in the public sector targets.

In relation to **buildings**, the draft updated NECP does not provide an updated ambition of the 2020 long-term renovation strategy (LTRS). Spain does not provide an updated LTRS document and the general objective for 2050 mentioned in the draft updated NECP is vague.

On the **energy security dimension**, the draft updated plan convincingly sets out targets and measures to strengthen the security of gas, electricity and oil supply. The ambitious targets for renewable gases production (both hydrogen and biomethane) and for power storage are particularly welcome, as is the projected decrease in Spain's oil and gas needs. However, the draft updated plan does not convincingly demonstrate how the emergency measures adopted in the aftermath of Russia's full-scale invasion of Ukraine, in particular in relation to gas demand reduction, are integrated into the mid-term planning towards 2030.

For the **internal energy market**, the draft updated NECP identifies key infrastructure projects and sets out a comprehensive set of measures to mobilise the market bringing the benefits of renewables and low carbon technologies to the consumers. The plan also includes clear objectives and measures to accelerate the investment in storage and demand response.

The draft updated plan sets out some specific objectives and structural measures to be taken for the reduction of **energy poverty** as per Spain's National Energy Poverty Strategy. However, it lacks a clear target to reduce energy poverty and a concrete timetable to develop the specific measures that have been announced as well as the link between energy efficiency and social policies and measures.

For the **research, innovation, competitiveness and skills dimension**, Spain has set four focus areas in the energy sector. Some of these are aligned with the Strategic Energy Technology (SET) Plan. The majority of the concrete measures to implement energy research and innovation (R&I) policies are not quantified. The draft updated NECP does not set out concrete ambitions for R&I in clean energy technologies for 2030 and 2050. Spain has defined as national objectives to support research, innovation and investments in manufacturing and scaling-up of commercially available clean energy technologies, equipment and components in order to maintain and further support the participation of Spanish companies in the global market. However, it does not provide enough information on the necessary investments related to it, in particular for the manufacturing of key components and equipment and on how to ensure the resilience of its supply chains to reach energy and climate targets. The draft updated plan mentions the digitalisation of the energy system and market as one of the main strategic objectives; however, it does not provide information on the necessary investments related to it. The plan identifies skills shortages for the development of strategic sectors.

**Just transition is partially addressed in the draft updated NECP.** The plan lacks information on social, employment and skills impacts, including distributional impacts, of the climate and energy transition. Moreover, it does not elaborate in detail on the measure addressing access and preservation of employment and education and training more broadly in the context of the transition. However, it does describe a number of strategic policies instruments which aim to address negative impacts of the transition such as the national Just Transition Strategy and the existing tripartite agreements. In addition, the draft updated NECP does not explain the resources specifically devoted to supporting the just transition. Finally, while the plan does not provide sufficient information for the preparation of the Social Climate Plan and how the consistency of the two plans would be ensured, it gives some elements on the implementation of the Social Climate Fund.

**As regards its alignment with other planning tools**, the draft updated NECP covers the implementation of the measures included in the **Recovery and Resilience plan** ("RRP") and in the new REPowerEU chapter. The draft updated NECP does not specifically refer to the 2023 European Semester **Country Specific Recommendation**. Nevertheless, it is clear from the draft updated plan how the measures provided therein contribute to addressing those recommendations.

The plan includes an assessment of the **investment needs** in order to implement the planned policies and measures for some of the five dimensions. However, the plan does not include information on how to mobilise public and private investment. Funding sources and estimates of the financial needs are only occasionally provided, and do not always

distinguish national, EU and private funding sources. The plan's **analytical base** is based on a rather comprehensive and robust quantitative analysis, which includes both bottom-up and top-down tools.

## **2 PREPARATION AND SUBMISSION OF THE DRAFT UPDATED PLAN**

### **2.1 Process and structure**

The Spanish draft updated NECP was notified to the Commission on 28 June 2023.

The plan is well developed and follows the structure provided by the Annex I template. It covers all five dimensions and includes objectives, targets or contributions for each of them, backed by policies and measures and underpinned by an analytical basis, including an impact assessment.

The plan also provides evidence that, in line with the whole of government approach, Spain has reached out to and worked with relevant authorities to update the plan, taking into account synergies and trade-offs between different portfolios. The draft updated NECP refers to cities and local governments as agents supporting the transition, and it specifically refers to some autonomous communities and local authorities that have put in place ambitious energy and climate plans in line with the national division of competences. The draft updated NECP recognises the need to cooperate with local authorities but does not elaborate on their role and how they contribute to achieving the national climate targets. It is also not clear whether the regional authorities were consulted and how their views were taken into account.

As regards multilevel governance, Spain has established a multilevel energy and climate dialogue in the format of the Citizens' Climate Assembly (2021). The draft updated plan indicates that the government took into account the objectives and recommendations made by this forum, but it is unclear what parts of it were considered, and how, for the drafting of the plan. The role of regional and local authorities in the implementation of relevant policies and measures is not fully leveraged, especially since Spain has a large community of local and regional authorities involved in the Covenant of Mayors for Climate and Energy, covering more than 88% of the country population in 2023.

### **2.2 Public consultation**

Spain has conducted a large consultation process and has gathered feedback from a wide range of stakeholders, including associations, enterprises, public and academic sectors. The drafting process gave space to citizens and also considered coordination among stakeholders, public administrations at different levels and other interested parties. Rural areas with fewer than 5000 inhabitants were also considered in the process.

Spain put in place adequate communication channels to reach the public and ensure their participation in the NECP updating process. The public consultation was hosted on the website of the Ministry of Ecological Transition and the Demographic Challenge. The time frame for the public to prepare and participate effectively seems sufficient, given that the consultation process took place in several stages (a preliminary written stage consultation in August and September 2022 with over 2000 contributions received, and then a participatory stage with discussion and dialogue forums in April and May 2023).

However, the plan is unclear on how Social Partners were consulted during the drafting process, which hinders the assessment on the fulfilment of a “whole-of-society” approach, as stated in the Council Recommendation on ensuring a fair transition towards climate. Moreover, the plan does not provide information on how the results of the consultations were considered, nor does it contain a clear and detailed summary of the public’s views. The results of both consultations appear to be still being processed, while another round of consultations (a hearing and public information) was launched on the day of submission of the draft updated NECP to the Commission in order to gather input, comments and proposals for the final NECP.

A **Strategic Environmental Assessment** of the draft updated NECP is under development. The necessary information is provided on the plan’s key objectives, targets and contributions. The general public and stakeholders were informed of the regulatory context for the review, and of the decision-making procedure followed for the update.

### **2.3 Regional consultations for preparing the draft updated plan**

The draft updated NECP indicates that some consultations have taken place with France and Portugal. It is unclear how these consultations have contributed to the development of the plan, however.

## **3 ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND ADEQUACY OF SUPPORTING POLICIES AND MEASURES**

### **3.1 Decarbonisation dimension**

#### *3.1.1 Greenhouse gas emissions, removals and storage*

The draft updated plan fully embeds the new and revised climate targets included in the ESR and LULUCF Regulation, as part of the Fit for 55 legislative package.

The draft updated plan confirms Spain’s commitment to achieve climate neutrality by 2050. It outlines objectives and measures to fulfil ambitious targets for 2030 as well as the goal to reach climate neutrality by 2050, in line with the national long-term strategies and with the EU climate-neutrality objective set out in the European Climate Law. However, the GHG emission projections in the draft plan extend to 2030 only and are not updated from those submitted in March 2023. Projections submitted in March 2023 under Art. 18 of the Governance Regulation show net GHG emissions (including LULUCF and excluding international aviation) of 209 million tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub> eq.) by 2050 considering existing measures and of 141 million tonnes of CO<sub>2</sub> equivalent with additional measures. This is equivalent to projected reductions by 2050, compared to 1990, of 18% and 44%, respectively.

Despite the commitment to achieve climate neutrality by 2050, the information provided in the draft updated plan does not allow for a full assessment as to whether Spain’s progress is consistent with the achievement of the EU climate-neutrality objective. However, based on all the available information, progress by Spain is likely to be consistent with the achievement of the EU climate-neutrality objective.

The **Effort Sharing Regulation (ESR)** sets Spain’s 2030 ESR emissions reduction target to -37.7% by 2030, compared to 2005 levels. The plan projects emissions from the effort sharing sectors to be below their 2030 target with additional planned measures (-44.7%), i.e., the WAM scenario, which is an overachievement of the target by 7 percentage points, highlighting a strong ambition. In 2021, Spain’s ESR emissions were below the Annual Emission Allocation (AEA) by 6 Mt CO<sub>2</sub> eq.

No ESR 2030 with existing measures (WEM) scenario projection was provided in the plan but as part of the latest data that had to be reported by Member States by 15 March 2023 under the Governance Regulation, Spain provided an ESR 2030 WEM of -29% and WAM of -44.7%.

Member States have flexibilities under the ESR to comply with their targets. No specific use of ESR flexibilities is mentioned by Spain. To assess whether Member States comply, the use of saved AEAs from previous years is taken into account.

Table 2: ESR target and projections in Spain’s draft updated NECP

<b>ESR target and projections<sup>4</sup></b>					
	<b>2030 target*</b>	<b>2021 performance (inventory data) *</b>	<b>2022 performance (approximated data) *</b>	<b>2030 WEM projection*</b>	<b>2030 WAM projection*</b>
<b>Spain</b>	-37.7%	-19.4%	-19.7%	-	-44.7%
<b>EU</b>	-40%	-14.5%	-16.9%	-27%	-32%

\*Compared to the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126.

The draft updated plan does not fully reflect the increased ambition of the new **LULUCF Regulation** and, in particular, the 2030 national target that requires Spain to deliver an additional -5,309 kt CO<sub>2</sub> eq. of net removals to reach a total value of -43,635 kt CO<sub>2</sub> eq. of net removals in 2030. According to the submitted projections, Spain will only achieve around -34,000 kt CO<sub>2</sub> eq. by 2030 compared with 2005 levels, thus falling short by around 10,000 kt CO<sub>2</sub> eq. compared to the 2030 value and highlighting the need for more ambitious climate action. In this regard, the plan mentions that, in the absence of additional measures and on the basis of currently available data, the deficit on the cumulative carbon budget would be around 30 Mt CO<sub>2</sub> eq. for the whole 2023-2030 period.

The plan therefore does not set a sufficient pathway to increase the contribution of land sector to the overall EU’s enhanced climate target and to the national target. Removals from Spain’s LULUCF sector in 2030 are projected to be below their 2030 target. This highlights the need for appropriate levels of climate action.

The draft updated NECP integrates mitigation, adaptation, and nature restoration measures, which address forest and agricultural sinks, biodiversity, or water availability. However,

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<sup>4</sup> The comparison between the ESR target and emission projections does not take into account the flexibilities available for Member States under the ESR to comply with their 2030 targets. The ESR emissions will be comprehensively reviewed in 2027 (for the years 2021-2025) and 2032 (for the years 2026-2030).

the draft plan does not provide the implementation timeframe, the source of funding and, most importantly, the quantification of the impacts of the planned measures.

The draft updated plan does not provide information on the current status of - and the progress to be made in – ensuring improvements to higher tier levels and geographically explicit datasets for monitoring, reporting and verification, in line with Regulation (EU) 2018/1999.

Overall, the draft updated NECP does not clearly present how its policies and measures for Spain's LULUCF sector will contribute to the long-term transition to climate neutrality by 2050. Spain does not propose any additional measures under the review process for the CAP Strategic Plan, in view of the more ambitious LULUCF and ESR targets.

The draft updated NECP contains objectives, targets, plans and measures related to **transport decarbonisation**, efficiency and digitalisation, including the promotion of active mobility (walking and cycling). The plan relies on the RRP investments and reforms (Components 1 and 6), and the new Alternative Fuels Infrastructure Regulation (AFIR), with updated planning on Hydrogen and new supporting schemes for charging infrastructure, as well as the provision of electricity and decarbonised / low-carbon fuels for low- and zero-emission vehicles. The plan also includes a target of 5.5 million electric vehicles in 2030, accompanied by measures for recharging points and hydrogen refuelling stations.

The updated draft plan contains roadmaps and measures for the production and deployment of sustainable aviation fuels (SAF), to contribute to the ReFuelEU Aviation Regulation, and for the development of zero-emission aircrafts. Spain also presents roadmaps and measures for sustainable maritime fuels, shore-power infrastructure in ports as well as other support action for the introduction of zero-emission technologies and related infrastructure in rail, ports and airports, modal shift towards low-carbon modes (through fiscal measures, as well as improved access to zero- and low-emission mobility, transport and vehicles).

The plan foresees that total gross GHG emissions will decrease from 309.8 Mt CO<sub>2</sub> eq. in 2019 to 194.6 Mt CO<sub>2</sub> eq. in 2030, with a reduction of 32 Mt CO<sub>2</sub> eq. in mobility and transport. This will result from the commitment to public transport and rail, and the support to efficiency and digitalization of transportation, as well as the penetration of electric vehicles and the use of advanced biofuels. The measures are consistent with policies related to CO<sub>2</sub> standards for cars.<sup>5</sup>

For what concerns the **capture and storage of CO<sub>2</sub> (CCS)**, the draft updated plan does not identify any specific project, nor does it report estimates of the annual emissions that could be captured from ETS and non-ETS sources. Similarly, the plan does not provide any concrete estimation of geological CO<sub>2</sub> storage capacity and does not foresee the deployment of dedicated CO<sub>2</sub> transport capacity. CCS is, however, referenced throughout the plan, including as an eligible activity for financing.

The plan pays attention to mitigating **non-CO<sub>2</sub> emissions** in different sectors, such as methane and N<sub>2</sub>O emissions from manure management in agriculture (Measure 1.32),

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<sup>5</sup> An EU-level reduction of CO<sub>2</sub> emission per km by 2030 and per OEM of 55% for cars and 50% for vans; 100% reduction (only Zero-Emission Vehicles - ZEV) by 2035. Measures such as corporate cars incentives and any fiscal incentive for ZEV shall be reported.

methane emissions in waste management (Measure 1.33), N<sub>2</sub>O emissions from agricultural soils (Measure 1.32), and emissions of F-gases from refrigeration and air conditioning (Measure 1.34). In addition, the plan includes relevant measures on the development of biogas and bio-methane (Measure 1.15) and mentions its relevance in different application areas like industry (Measure 1.10), transport (Measure 1.12), and district heating and cooling networks (Measure 2.10 and 2.12).

Spain's plan mentions that the **agriculture and livestock** sector will contribute to an emission reduction in 2030 by around 21% compared to their 2005 levels, which is supported by projections (emissions for the agriculture sector were of 35,897 kt CO<sub>2</sub> eq. and are estimated to reach 28,439 kt CO<sub>2</sub> eq. by 2030). The plan appears to prioritise action to reduce emissions from the agricultural sector. It integrates mitigation measures to reduce GHG emissions in agriculture, livestock and waste management, and takes into account buildings' life cycle analysis. However, the draft plan does not provide information on the implementation timeframe, nor on the sources to fund the planned measures. Moreover, the plan does not pay attention to methane emissions from enteric fermentation in agriculture, which constitutes the largest source of non-CO<sub>2</sub> emissions. This includes particularly enteric fermentation from both cattle and sheep.

The plan includes an assessment of the **impact of policies and measures** taken by Spain to achieve the country's GHG mitigation targets. The plan provides a comprehensive list of policies and measures organised by policy areas. For each measure, the plan also explains the relevance and synergies for the five dimensions of the Energy Union. However, some of them are not described in sufficient detail in terms of their scope, timing and likely impact. Based on the WAM/target scenario presented in the plan, the policies and measures proposed in the plan will not allow Spain to reach all targets set in EU and national legislation, as well as international commitments. The plan also mentions that the measures will contribute to ensuring a fair transition, but the information provided is not sufficient for a proper assessment.

The draft updated plan reflects progress towards **international commitments** under the Paris Agreement. It includes measures to phase out coal power by 2025. The phasing out of fossil fuel subsidies is discussed and several related measures are included, but no timeline is indicated. The plan mentions that the law 7/2021 of 20 May provides that fossil fuel subsidies are still possible when justified by social and economic interests, or when alternatives do not exist.

**On 11 December 2020, Spain submitted to the Commission its national long-term strategy.** The strategy includes the goal of achieving climate neutrality by 2050. The goal is enshrined into law.<sup>6</sup> In March 2023, Spain reported on the progress on its initial NECP, where the climate-neutrality objective was confirmed. This climate-neutrality goal is reiterated in the draft updated NECP.

### *3.1.2 Adaptation*

The draft updated NECP correctly identifies the relevant climate vulnerabilities and risks that may threaten the achievement of national objectives, targets and contributions relating to the Energy Union, in particular its decarbonisation and energy security dimensions. The

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<sup>6</sup> Ley 7/2021, de 20 de mayo

plan also incorporates, for the first time, the specific objectives of the national adaptation plan.

The plan indicates that power generation in Spain will be increasingly impacted by changes in precipitation patterns, reduced flow rates, increased frequency and intensity of droughts and increased water temperatures. Critical infrastructure in coastal areas is exposed to climate change linked coastal phenomena. Indirect channels of impact include changes in energy demand due to climate change. The natural carbon sinks are subject to many intensifying climate-related risks, including increased vulnerability to extreme weather events and wildfires, fast changes in the conditions suitable for given species and ecosystems, and the spread of pests and diseases. These may impact the CO<sub>2</sub> removal and stock capacity of Spain's ecosystems.

The draft updated NECP lists several measures that integrate the climate change adaptation objective across the five dimensions of the Energy Union. However, most of them are not explained in sufficient detail to assess their exact relationship with climate resilience. Moreover, the plan does not always appear to be at the stage of providing already actionable solutions to the identified problems. For instance, while water issues are well defined, only a study is announced on the water-energy nexus. The ambitious plans on renewable hydrogen do not sufficiently consider the risk of water stress and water scarcity. Climate adaptation actions rely strongly on specific environmental impact assessments. Given the importance of desalination of source of source of water supply, the NECP pays too little attention to its carbon and energy performance.

In the 2020 NECP, the promotion of access to knowledge on climate change impacts and adaptation was already mentioned, but the plan did not include specific objectives. The draft updated NECP also refers to the other sectoral and cross-cutting objectives and work areas in the national adaptation plan, in support to the dimensions of the Energy Union. The main objectives in the field of energy relate to improving knowledge of physical climate impacts on energy supply and demand, as well as reducing risks to critical energy infrastructure.

The planned and implemented nature-based solutions are described, together with the expected impacts, in terms of reducing risks for the energy security and contributing to decarbonisation. The proposed measures range from widening riverbeds to green infrastructure projects. The plan also describes actions, such as streamlining adaptation in forest planning instruments, but their timeline is unclear. Insurance policies are not considered (with the exception of a reference to insurance for petroleum products and gas), nor are fiscal measures to address the climate protection gap.

The draft updated NECP is not sufficiently clear on the scale and timing of the implementation of significant adaptation measures.

### *3.1.3 Renewable energy*

**The renewable energy contribution proposed in the updated draft NECP is for renewables to achieve a share of 47.9% of Spain's national gross final consumption of energy in 2030.** This proposal is based on the WAM scenario. Absolute values in terms of energy are also included in the draft updated NECP. This contribution is above the share of 43% resulting from the formula in Annex II of the Governance Regulation. The indicative trajectory to reach the 48% national contribution in 2030 is provided, including

specific reference points for 2022 (a renewables share of 22.4%), 2025 (a renewables share of 32.4%) and 2027 (a renewable share of 38.2%) respectively.<sup>7</sup> The submitted reference point for 2022 reaches the trajectory (22%) calculated in line with the EU 2030 renewable energy target of 32%, which was in force at that time. The reference points for 2025 and 2027 are above the trajectory (30% and 35% respectively) calculated in line with the increased EU 2030 renewable energy target of 42.5%<sup>8</sup>.

**Renewable electricity generation is projected to reach 81% in 2030 of all electricity generated in Spain**, in line with the methodology of the revised REDII, with wind energy becoming the main source of renewable electricity (30.9% share and 62 GW of installed capacity in 2030, including 3 GW of offshore wind), followed by solar photovoltaic (29.2% share and 76 GW of installed capacity in 2030). Bioenergy is expected to represent 2.5% of electricity generation and 1.8 GW of installed capacity in 2030, compared with 1.6% of generation and 616 MW of capacity in 2020. Overall, solar energy generation is planned to increase seven-fold and wind energy generation to double between 2020 and 2030. The updated draft plan does not contain information on the target for innovative renewable energy deployment but does present additional policy measures to deploy such technologies.

**The use of renewable energy in the heating and cooling sector is projected to reach a share of 35% by 2030.** The draft updated NECP includes targets to increase renewable energy in heating and cooling by 1.27% and 2.07% as an annual average, calculated for the periods of 2021 to 2025 and 2026 to 2030 respectively, which is in line with the mandatory increase under the revised REDII. The role of waste heat and cold in accounting for the annual increase in renewable energy in the heating and cooling sector remains unclear. The gross final energy delivery of heat pumps will triple by 2030 compared with 2019 to reach 2.6 Mtoe. However, the electricity needed to run these heat pumps and the projected capacity are not specified. The plan does not include a detailed breakdown of the share of various renewable energy sources in the sector.

The annual increase in the use of renewable energy in the **industry sector** is provided as an average of 5.1% over the 2021-2030 period while the renewable energy share in buildings is expected to reach 73% in 2030. The draft updated NECP contains no information on the role of waste heat and renewable electricity accounting for the calculation and its impacts on setting and achieving targets.

**In the transport sector, the share of renewable energy is projected to reach 25% in 2030 and a reduction of 16.6% in GHG emissions by 2030.** The combined sub-target for RFNBOs and advanced biofuels is set at 11% in 2030. For the transport sub targets, the main measures are the promotion of biofuels and biomethane as well as measures to promote electrification. Consumption of biofuels is incentivised by Royal Decree 376/2022 which sets a general minimum mandatory target for the sale or consumption of biofuels for transport purposes for the period until 2026 (to reach 12% in 2026) as well as mandatory targets for the share of advanced biofuels and biogas (at least 0.2% in 2022, 1%

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<sup>7</sup> Reference points of 18% by 2022, 43% by 2025 and 65% by 2027 pursuant to Article 4(a)(2) of Regulation 2018/1999 pursuant to Article 4(a)(2) of Regulation 2018/1999.

<sup>8</sup> Given that the provisionally agreed RED was not yet in force by the deadline of the submission of the draft NECPs, the value for 2022 has been compared to the trajectory values calculated on the basis of the 2030 EU renewable energy target of 32%. The reference points for 2025 and 2027 are compared to the trajectory calculated on the basis of the increased EU target of 42.5% in line with the revised RED.

in 2025 and 3.5% in 2030). Order TED/1342/2022 introduced a limitation on biofuels produced from food and feed crops, which will be reduced to 2.6% in 2025 (4.0% in 2020). Measures to phase out biofuels with high ILUC-risk are announced but not described in detail.

The development of the **renewable hydrogen** sector and the related infrastructures is addressed in detail. A merged RFNBO and advanced biofuel target is included with a share of 7.2% in 2025 and 11.1% in 2030 (including 1.48% and 5.86% respectively for RFNBOs). Policy measures further focus on the increased use of more efficient transport modes, in particular electrification of public transport, uptake of electric vehicles, renewable hydrogen and sustainable biofuels. The draft updated NECP sets a target of 5.5 million electric vehicles by 2030 and provides policy measures to achieve it including in relation to recharging infrastructure, but those relate to existing measures. The plan presents measures to promote the **localisation of an electric vehicles value chain** in the EU, including measures developed within the framework of the RRP. According to the framework set out in the revised REDII, electrification also benefits from the introduction of a credit mechanism (e-credits) that recognises electricity, as well as other energy alternatives, for the supply of vehicles. Biomethane is to be included in the biofuels promotion mechanism (SICBIOS).

Spain's draft updated NECP states that the country will have hydrogen electrolyzers with a capacity of 11 GW in 2030 and sets out **measures for RFNBO use** in demand sectors mostly in transport and industry. For the industry, a target of 74% RFNBOs as a share of the total use of hydrogen has been set. No information regarding **international partnerships** to facilitate imports of renewable hydrogen has been included. The updated draft NECP contains some information regarding the pathway for oil-based transport fuel substitution through electrification and renewable hydrogen in land transport.

The **policies and measures** to support the achievement of the proposed objectives and contributions for renewable energy contain sufficient details and for most of them provide references to legal acts, scope, timeframe, budget, and expected impacts. The draft plan contains 107 policies and measures, out of which 29 are presented as additional to the previous version of the NECP. In the **electricity sector**, the objective is to accelerate the production of electricity from renewable energy through the use of renewable energy auctions, the promotion of citizen participation in renewable energy projects and a specific support plan to innovative renewable energy technologies, including offshore wind technologies and the deployment of energy storage. For the Guarantees of Origin system, Spain will extend this to renewable gases in order to promote the production and consumption.

When it comes to **joint projects**, Spain has signed a memorandum of understanding with the Netherlands to establish joint projects in the field of renewable hydrogen, as well as an agreement with Portugal for joint projects in the area of batteries.

The draft updated plan contains measures to accelerate **deployment of solar energy** in line with the EU Solar Energy Strategy objectives by simplifying and accelerating permit-granting procedures for solar energy. Promoting individual and **collective self-consumption of renewable energy** (up to 14 GW in accordance with the national strategy to boost self-consumption, increased to 19 GW in the draft updated NECP) and **renewable energy communities** is considered as a means to achieve these objectives. Both measures will be promoted through a direct grants programme of EUR 1.8 billion, with the

promotion of collective self-consumption and measures targeted at vulnerable households. The draft updated plan presents sufficient and well-described measures for promoting individual and collective self-consumption as well as renewable energy communities. The **Energy System Integration Strategy** is one of the pillars of the plan through the uptake of electrification, and the promotion of renewable hydrogen and storage. The draft updated NECP presents measures to encourage demand response, the use of innovative technologies and electricity storage through regulatory changes or financial support. These policies build on the widespread deployment of smart metering systems in Spain and a shift to the digitalisation of the grid, financed in particular through the RRP.

Measures for renewable **heating and cooling** set out in Spain's draft updated NECP include the creation of a specific regulatory framework to facilitate the deployment of heating and cooling networks and specific measures to support it in the commercial and industrial sectors, as well as in public infrastructures, through grants and loans. The draft updated plan does not provide information on the framework to enable sector integration between energy networks.

On **industry**, the updated draft NECP includes measures to promote renewable-based electrification of industrial processes to replace fossil fuels used for industrial heating, financed in particular through the RRP. The updated draft NECP targets an increase in the share of electricity in the industry's final energy consumption from 32% in 2020 to 38% in 2030, while the share of renewable energy would rise from 9.2% to 15.3% over the same period and the share of fossil fuels (coal, natural gas and petroleum products) would drop from 58% in 2030 compared to 44.3% in 2020.

The draft updated NECP includes measures to promote **bioenergy**. These include the dissemination and promotion of high-efficiency and low-emission local heating equipment, specific training for installers and other professionals in the biomass sector, economic support measures for biomass logistics and processing plants and continued support for biomass installations for thermal uses in all potential consumer sectors. However, the plan also underlines the need to preserve the natural heritage and biodiversity. As renewables deployment, and particularly bioenergy, are based on land use planning, Spain is looking for synergies between deployment, biodiversity and carbon sinks. Investments furthering renewable energy deployment include some specific actions support for biogas production and biomass projects. The draft updated NECP does not include an assessment of the domestic supply of **forest biomass** for energy purposes in 2021-2030 under the revised sustainability criteria. The plan also lacks an assessment of the compatibility of the projected use of forest biomass for energy production with Spain's new obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies ensuring such compatibility as required by the revised REDII. The draft updated NECP does not include information on the trajectories of bioenergy supply by feedstock and origin, of bioenergy demand or sustainability.

On **biomethane** the draft updated NECP sets a production target of 20 TWh or 2 bcm by 2030, which is almost double than in the national Biogas Roadmap (2022), as a reply to possible natural gas supply disruptions and directed towards hard-to-electrify sectors. The updated draft NECP underlines the need for renewable energy planning to be compatible with biodiversity and explains the interactions between these two environmental crises (climate change and biodiversity loss). It also announces awareness-raising measures, training and participation actions in rural areas to promote a transition compatible with

climate change and biodiversity policies. Even if the compatibility of bioenergy with the EU acquis is ensured in the draft updated plan, it does not provide additional details, such as on the application of the cascading principle or links and impacts on biodiversity or LULUCF sinks.

The draft plan does not include a **mapping of the areas** necessary to achieve the national contribution to the Union's 2030 renewable energy target or on the designation of renewables acceleration areas and dedicated infrastructure areas. This aspect is limited to a mapping of the areas of high environmental sensitivity for use by local authorities. For the streamlining of administrative procedures and time limits for granting permits, the plan includes a reference to a contact point for renewable energy project promoters. Further measures to streamline administrative procedures include specific measures for renewable energy repowering and district heating. The plan refers to the way offshore renewable development is addressed in the maritime spatial plan. The plan has elaborated on the additional human resources dedicated to permitting. The plan references Royal Decree 6/2022 streamlining procedures concerning renewable energy projects and rules on access and grid connection, and updated Spain's legal framework for permitting wind farms and photovoltaic installations. However, the draft updated NECP does not include any assessment regarding the fulfilment of Article 16 of the revised REDII, which requires Member States to permit new renewable energy projects within 2 years.

### 3.2 Energy efficiency (including buildings) dimension

**Energy savings** are presented as a key pillar of the draft updated NECP, with Spain targeting a reduction in energy consumption of 1.5 Mtoe/year until 2030 compared with the 2017-2019 average.<sup>9</sup> This corresponds to a corrected **national contribution** of 96.7 Mtoe for primary energy consumption (corresponding to 81.8 Mtoe according to the EED recast Annex I formula results) and 70.2 Mtoe for final energy consumption (corresponding to 65.4 Mtoe according to the EED recast Annex I formula results).

Spain's reported 2030 contributions for primary and final energy consumption deviate from the theoretical results stemming from the formula in the EED recast Annex I by 18.2% and 7.4% respectively<sup>10</sup>. The target for 2030 is also lower than the Spanish 2020 energy efficiency target (-21.6% and -18.7%<sup>11</sup> for primary and final energy consumption respectively).

The draft updated NECP also contains detailed information also on the models and methodology used including energy system modelling (TIMES-SINERGIA), economic modelling (DENIO), electricity market and air quality modelling. Due to that, multiple and wider impacts of the overall strategy, including macro-economic impacts (GDP, employment), as well as the impacts on health can be assessed.

The draft updated NECP contains a good description of the target for reducing the total final energy consumption of all **public bodies** and includes sufficient information on the

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<sup>9</sup> The 2017-2019 average has been calculated based on the EED recast FEC definition, and the savings per year have been calculated for the period 2021-2030.

<sup>10</sup> According to Article 4(4) EED recast, a Member State shall ensure that its contribution in Mtoe is not more than 2.5% above what it would have been had it resulted from the EED recast Annex I formula.

<sup>11</sup> The comparison has been done with the 2020 targets as included in the final NECPs 2020 JRC assessments (123.4 Mtoe PEC, 86.3 Mtoe FEC)

planned measures. Spain has opted for the default approach for implementing **Article 5 of the EED (Article 6 of the EED recast)** in line with the 2014-2020 period. Spain also foresees an extension of the 3% annual renovation target to all the public sector and territorial administration buildings due to the requirements in the new EED recast. However, the target on the total floor area to be renovated by 2030 seems to be missing. In line with Article 5 EED recast, the updated draft NECP mentions the obligation to achieve an annual reduction in energy consumption of 1.9% compared to 2021, with the possibility of excluding public transport or gradually including armed forces in these targets and measures for municipalities with less than 50,000 inhabitants and then for municipalities with less than 5,000 inhabitants.

The draft updated NECP provides satisfactory information on what measures will be used to deliver the savings required post-2020 under **Article 7 EED (Article 8 of the EED recast)**. The total 2021-2030 cumulative savings requirement is 53,593 ktoe. The expected contribution of each measure towards the energy savings target is quantified and is expected to be sufficient to meet the cumulative end-use energy savings requirement by 2030. The sum of the cumulative contributions of the 15 sectoral measures under the energy savings obligation is equal to 53,583 ktoe, which will be complemented with horizontal measures. The draft NECP presents in detail the planned measures to achieve the 2030 energy efficiency goals, as well as their expected savings. The new measures adopted after 2020 and the new planned measures to reach the higher 2030 target are well presented in the plan. The plan also includes measures reflecting the ‘**energy efficiency first principle**’.

Four main measures are envisaged regarding energy efficiency: (i) low-emission zones and sustainable urban mobility; (ii) improvements in technology and process management systems in not energy intensive industries; (iii) improvements in industrial technology and process energy intensive management systems; and (iv) energy efficiency in existing buildings in the residential sector. While these measures address all economic sectors, the main focus appears to be on the transport sector, which is expected to bring the largest share of energy savings. One measure is listed under **energy audits** and will target average energy savings of 6.5% by companies. The plan contains information on the number of audits carried out.

The draft updated NECP update does not include an update of the key elements, targets and milestones for 2030, 2040 and 2050 in the **long-term renovation strategy (LTRS)**, which was submitted by 2020. It is indicated that the LTRS is under review, but no timeline is provided. The plan therefore does not foresee an update in the level of ambition of the 2020 LTRS, but it does report four measures on building renovations and their cumulative impact for 2021-2030. These measures include economic, regulatory, information, fiscal and education actions. Their cumulative impact for 2021-2030 is equal to 15,651 ktoe, which corresponds to almost 30% of the total cumulative energy efficiency target. The measures relate to (i) efficiency in residential existing buildings (EUR 3 billion for around 470,000 renovations until 2030); (ii) district heating and cooling networks (new); (iii) efficiency in non-residential buildings (EUR 2.3 billion) and (iv) efficiency in cold generation and air conditioning for non-residential and public buildings (EUR 3.9 billion). However, the measure related to existing buildings presents contradictory information: the total number of renovations is significantly lower than the number set in the 2020 NECP: 477,300 compared to 1,200,000 dwellings renovated up until 2030. Nevertheless, the overall energy impact is higher in the draft updated NECP.

The internal energy market dimension (section 3.4) also targets buildings, but its impact is not included in the building section.

### 3.3 Energy security dimension

Fossil fuels are still the bulk of Spanish energy mix, as they still accounted for 72% of the energy mix in 2021, slightly above the EU average<sup>12</sup>. The draft updated NECP states that this share should slightly decrease to between 68% (WEM scenario) and 65% (WAM scenario) by 2030. In addition, Spain has a high energy **import dependence** which is linked to its high dependence on fossil fuels. Spain's energy import dependency on non-EU countries has remained broadly stable at the relatively high levels of 67% in 2013 and 66% in 2021<sup>13</sup>. The plan aims to reduce Spain's energy dependence by more than doubling domestic production of renewables (from 18,674 ktoe in 2020 to 39,601 ktoe in 2030), and by reducing imports of coal, petroleum products and natural gas (from 3,100, 45,661 and 27,874 ktoe respectively in 2020 to 1,088, 36,985 and 17,958 ktoe respectively in 2030). The plan estimates that this reduction in fossil fuel imports will produce economic savings of EUR 90.7 billion over the decade.

The draft updated NECP adequately highlights the synergies between energy security and the green transition. Since June 2021, the Spanish government has introduced more than 25 measures to strengthen security of supply, among other things. In October 2022, the government also adopted '*Plan + Seguridad Energética*' which introduced 73 additional measures on energy saving, energy efficiency, renewables, self-consumption, consumer protection, strategic autonomy, and solidarity mechanisms with other Member States. It is positively noted that the plan contains detailed measures to reduce the energy dependence of the Balearic and Canary Islands.

**Natural gas** is the second most important energy source in Spain, accounting for 25% of the energy mix and 27% of the electricity mix in 2021<sup>14</sup>. However, reliance on imports from Russia is quite low, accounting for only 9% of national gas needs in 2021<sup>15</sup>, which is well below the EU average. The Spanish gas sector is already quite resilient from a supply security perspective when compared with other Member States, thanks to past investment in LNG terminals and regasification plants, pipelines, and underground storage. Nevertheless, the draft updated plan aims to further increase the supply resilience of the gas sector.

This will mainly be achieved through the promotion of **renewable gases**, with close to 11 GW of electrolysis capacity planned by 2030 to produce renewable hydrogen. The plan also forecasts 20 TWh of biogas consumption in 2030, and the maintenance of minimum safety stocks for gas. It foresees a reduction in the country's natural gas needs from 27,916 ktoe in 2020 to 18,007 ktoe in 2030.

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<sup>12</sup> Eurostat data.

<sup>13</sup> Eurostat data.

<sup>14</sup> Energy mix figures from the [EU energy statistical pocketbook and country datasheets \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1). Import sources and import dependency by Eurostat.

<sup>15</sup> European Commission, [https://economy-finance.ec.europa.eu/system/files/2023-06/ip233\\_en.pdf](https://economy-finance.ec.europa.eu/system/files/2023-06/ip233_en.pdf)

Between August 2022 and August 2023, Spain managed to cut its gas consumption by 10% compared with the average of the previous 5 years<sup>16</sup>. This was slightly below the -15% indicative target and the EU 27 average (-18%). However, the draft updated plan does not demonstrate how the emergency measures adopted in response to the invasion of Ukraine and, in particular, to gas demand reduction are integrated into the medium-term planning towards 2030. Overall, however, the plan convincingly outlines policy targets and measures to further reinforce the country's security of gas supply.

On the **electricity sector**, the draft updated NECP accompanies ambitions in terms of renewable generation in the electricity system (a 81% share by 2030) with concrete measures to ensure security of electricity supply. The draft updated NECP describes the expected changes in the electricity generation mix, including a coal phase-out and a reduction of nuclear energy generation. It also describes how these energy sources are replaced by renewable generation (mainly wind and solar) as well as a back-up with gas during a transitional period and ambitious targets for storage and demand response. The draft updated NECP does not report details on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services.

By 2030, as mentioned in section 3.1.3, Spain expects 19 GW of self-consumption capacity, an increase from the 14 GW stated in its 2030 self-consumption roadmap and has set a target of 22 GW of energy storage by 2030 in its 2021 Energy Storage Strategy (up from 20 GW in the previous version of the plan). These targets are supported by concrete measures such as developing the necessary legal provisions to create an independent aggregator, a regulatory framework for demand response and support for innovative energy storage projects. There are also measures to support new hydro pump storage, such as streamlining administrative procedures for projects using existing dams. The draft updated plan also recognises the need to adapt the electricity grid to a higher penetration of renewable energy through grid investments (these are already planned), digitalisation and updated operational procedures. The draft updated NECP is supported by the assessment of the electricity TSO, confirming the security of electricity supply in different climatic scenarios until 2030.

**Oil and petroleum** products still represented 42% of the Spanish energy mix in 2021<sup>17</sup>. Two thirds of oil and petroleum products are used for transport. The country is almost entirely dependent on crude oil imports because its domestic oil production is marginal. The main oil sources in 2021 were well diversified, with no supplier accounting for more than 20% of imports (the top suppliers were: Nigeria, Mexico and Libya). Security of oil supply is also bolstered by an emergency oil stock and robust oil infrastructure. The goal of reducing primary energy dependence is expected to decrease oil product consumption by 20% between 2020 and 2030. No detailed assessment of the adequacy of the oil infrastructure (oil stocks, refinery, ports, pipeline) is carried out within the context of expected oil demand decline.

The draft updated NECP notes increasing **cybersecurity** threats to the energy sector and a coming update of the 2015 National Strategy on Energy Security. Measures described in

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<sup>16</sup> DG ENER chief economist data, based on ESTAT NRG\_CB\_GASM (sub-series IC\_CAL\_MG subtracted by TOS) in TJ (as of 29 September 2023, 11:00).

<sup>17</sup> Energy mix figures from the EU energy statistical pocketbook and country datasheets ([https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets\\_en](https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en)). Import sources and import dependency by Eurostat.

the plan in this area include adding cyber risks to the national legislation on security of supply of electricity and hydrocarbons, carrying out exercises and promoting certification systems.

The inclusion of measures to strengthen strategic **autonomy in industrial value chains** is welcome. In particular, the Roadmap for the Sustainable Management of Mineral Raw Materials deploys a comprehensive set of measures to transform Spain's critical raw materials industry. These include boosting the recycling of critical raw materials, improving the Mines Regulatory Framework in terms of sustainability and compliance and drawing up of a list of critical raw materials necessary for the energy and the digital transitions.

It is also welcome that the draft updated plan reflects awareness of **climate change impacts** on the energy system and includes some concrete steps such as a study on water-energy links. Few of the listed measures are sufficiently detailed, however.

The draft updated NECP briefly describes the **measures in the event of security of supply crisis** for natural gas that are detailed in the Emergency Plan submitted to the Commission in 2019 and which were being revised at the moment of the drafting of the plan. Spain has, in this regard, recently submitted the updated versions of its Preventive Action Plan and Emergency Plan, as well as its national risk assessment and the common risk assessment for the Norway risk group, as well as for the Algeria risk group, which it coordinated.

### **3.4 Internal energy market dimension**

In the context of measures to increase **electricity interconnection** and market integration, the draft updated NECP identifies the main infrastructure projects, (namely the planned and ongoing electricity Projects of Common Interest "PCIs" which are included in the 5<sup>th</sup> PCI list). The plan identifies some relevant bilateral cooperation forums but does not make reference to the relevant steering and monitoring role of the High-Level Group for interconnections in South-West Europe.

Overall, Spain's plan attaches importance to renewable energy generation and demand management and storage, seeking **flexibility** to contribute to an optimal integration of renewables in the electricity sector. In this sense, the plan proposes to develop the role of aggregator and demand side response, in order to boost the participation of different actors in key system services (Ref to Royal Decree Law 17/2022). The plan also includes measures to digitalise the grids and facilitate the participation of new flexibility services. As regards the increase of the renewable energy target and the need to enable consumers to rapidly reap the benefits of it, the plan provides comprehensive policies and measures to incentivize demand response. However, the plan would benefit from clearly summarising the main targets in the chapter 2 on national objective and targets, as well as from including monitoring indicators to quantify the progress made towards those targets.

The role of citizens in the energy transition is detailed, with self-consumption and energy communities set to be reinforced in order to contribute to the "democratisation of energy" (Ref Royal Decree 244/2019, future Royal Decree regulating energy communities and Royal Decree 477/2021). The right to access energy is also established as a fundamental pillar, and the plan refers in this regard to the potential for energy renovation of buildings and self-consumption to mitigate situations of vulnerability and energy poverty.

The above measures are complemented by the **National Strategy against Energy Poverty**, which was adopted by the Council of Ministers (5 April 2019) and by programmes to improve communication of information and consumer campaigns and to accelerate the deployment of electricity storage. This strategy, in line with the approach and methodology of the European Observatory on Energy Poverty, is the instrument to tackle energy poverty from a holistic, medium- and long-term perspective.

Spain operates a highly protective system that includes a comprehensive national strategy against **energy poverty**. The strategy defines energy poverty and vulnerable consumers and selects four official indicators of the Energy Poverty Observatory. The strategy also sets a target for each of the energy poverty indicators: reduce energy poverty by at least 25% by 2025, and to try to go further still and reach 50% of its current values.

Despite the energy poverty strategy's ambition, the plan does not assess the **number of households in energy poverty** pursuant to Article 3 of the Governance Regulation. Furthermore, there is no reference to national objectives and no concrete timetable to develop the specific measures announced. Overall, the description of the current situation concerning energy poverty is not sufficiently detailed.

The draft updated NECP also includes an extensive set of measures. Over the last 2 years of the strategy's implementation period, a 2023-2024 operational plan is foreseen to relaunch and reinforce measures included in the strategy. The strategy's assessment will be a key element for the drafting of a new national energy poverty strategy to be in place from 2025 onward. mechanisms to protect electricity and gas consumers (measures 4.7 and 4.10 for electricity and gas respectively). The plan cross-references the strategy in other measures that directly contribute to energy poverty direction, notably measures 2.8 and 2.9 on energy efficiency, building renovation and the renewal of residential equipment. Spain has supplemented protective measures that often go hand in hand with elements of empowerment by gender-specific measures in the plan in order to, among other aims, improve knowledge of the energy sector from a gender perspective and make progress in implementing the energy and climate gender equality axes and other measures included across policy frameworks.

There are also measures from the energy efficiency dimension. These include measures to help fight energy poverty, such as energy efficiency in existing buildings in the residential sector and communication and information on energy efficiency. However, synergies with measures to develop demand response and, accelerate building renovation and energy savings in a targeted manner so as to have direct effects on household energy poverty and empower vulnerable consumers, is not sufficiently explored.

Moreover, the draft updated NECP includes an assessment of the wider benefits of the additional measures. This is an important way to consider energy poverty because the strategy's impact (cost and benefits) is assessed on households differentiated by income.

### **3.5 Research, innovation, competitiveness and skills dimension**

#### *3.5.1 Research and innovation*

Spain's draft updated NECP does not report on the **national target** and spending for research and innovation (R&I) in specific clean energy technologies. However, the plan provides a target for public R&I spending to reach 1.25% of GDP by 2030, with the overall objective to reach total investment (public plus private) of 3% of GDP by 2030.

Apart from this general target, the plan does not provide more specific plans to increase annual spending on R&I related to clean energy and climate, nor does it report on the related spending objectives by 2030 and 2050. Therefore, it is not possible to assess if the future funding will be sufficient to achieve the national objectives related to the Energy Union, notably those under the Strategic Energy Technology (SET) Plan.

The Spanish Strategy for Science, Technology and Innovation (EECTI 2021-2027), is the strategic planning instrument in the field of R&D&I. The strategy is further developed in the State Plans for Scientific and Technical Research and Innovation, PEICTI 2021-2023.

The **R&I objectives for energy** are defined according to the following four areas: 1) development of renewable energy technologies (onshore and offshore wind, PV, CSP, bioenergy, ocean energy, geothermal energy and alternative renewable fuels), energy efficiency and energy vectors like hydrogen; 2) digitalisation of the energy system and market in order to increase its efficiency and competitiveness; 3) better coordination of supply and demand in the international context to ensure security of supply; and 4) socio-technological impulses to reduce consumption.

The energy efficiency and renewable energy technology objectives are defined in line with the priorities of the SET Plan (energy efficiency in buildings - action 5; energy efficiency in industry - action 6; renewables (PV, CSP, bioenergy, onshore and offshore wind, geothermal, ocean) – actions 1,2 and 8). Other priorities are related to increasing the flexibility and optimisation of the energy system (from generation and storage to the whole system), nuclear energy (safe operation of fission (action 10) and further research for fusion), sustainable transport, renewable fuels (advanced biofuels, renewable hydrogen and biomethane - action 8), new services and technologies for consumers, smart cities and communities (action 3). Spain contributes to most of the 10 SET Plan actions. However, it is not clear where the focus for R&I priority funding is set.

The draft updated NECP does not quantify the concrete measures to implement R&I policies related to energy, but it does mention complementary plans in collaboration with the autonomous communities, such as the Renewable Energy and Hydrogen Plan, with total investments of EUR 92 million.

The draft updated NECP includes some references to the EU Innovation Fund (in particular under measures 5.14 and 5.17), but it does not estimate the potential impacts of the projects related to, for example, hydrogen, biofuels and bio-refineries, cement and lime, and chemicals.

Good **regional cooperation** is already taking place between Spain and the other EU Member States, particularly within the framework of the Clean Energy Transition (CET) partnership and Driving Urban Transition (DUT) partnerships, co-financed by Horizon Europe. Other forums for R&I cooperation where Spain intends to take an active role are the SET Plan Implementation Working Groups (IWGs), the Horizon Europe Missions, and Mission Innovation (clean hydrogen, future green energy and urban transition) at international level. The draft updated plan explains the potential for regional cooperation in energy storage R&I with Portugal, under the Iberian Energy Storage Research Centre.

Spain contributes substantially to R&D&I activities for fusion energy, including in the context of the International Thermonuclear Experimental Reactor (ITER), the Broader Approach agreement, and the International Fusion Materials Irradiation Facility-Demo Oriented Neutron Source (IFMIF-DONES) facility to be constructed in Granada.

### 3.5.2 Competitiveness

Spain has defined **national objectives** to support research, innovation, and investments in manufacturing and scaling-up commercially available clean energy technologies, equipment, and components in order to maintain and further support the participation of Spanish companies in the global market. Spain has abundant renewable energy sources: it has one of the largest solar resource in the EU and one of the best wind resources. It is therefore well positioned on the energy transition value chain and has strong R&I capacities. The plan does not, however, provide more details on this objective. Overall, it does not set concrete targets for Spain's competitiveness. The plan does not provide enough information on the necessary investments for the manufacturing of key components and equipment and on how Spain will ensure the resilience of its supply chains to reach energy and climate targets.

The draft updated NECP integrates the notions of recyclability and circularity and the need to reduce dependency. It also effectively diversifies the sourcing of imported raw materials and components required to manufacture clean energy technologies. Moreover, one of the main purposes of decarbonising the industry is to maintain and reinforce its global competitiveness.

The draft updated NECP does not provide information or investments related to the Digitalisation of Energy System EU Action Plan in order to make its energy system more digital. However, the plan does mention the digitalisation of the energy system and market as one of its main strategic objectives in order to enhance its efficiency and competitiveness.

### 3.5.3 Skills

The draft updated NECP identifies skill shortages for the development of strategic sectors. In order to tackle these, Spain is putting forward policies and measures to support the development of skills related to demand management (domotics, inmotics, IoT, big data, two-way charging digitalisation of systems, and smart meters) for architects, installers and constructors. Spain has identified 40 occupational categories to be created or reoriented towards the energy transition pathway. The draft updated NECP does not provide more detailed information on skill gaps and measures or investments to overcome them to boost the EU's competitiveness in clean energy technologies, equipment and components (skills development required for the clean energy transition, connecting for instance with relevant European Year of Skills initiatives, Pact for Skills large scale partnerships, New Innovation Agenda, European Social Fund +).

## 4 JUST TRANSITION

Just transition is partially addressed in the draft updated NECP. The plan lacks comprehensive and granular analysis of social employment, social and skills impacts, including distributional impacts, of the climate and energy transition. Although the does not provide an adequate analytical basis for the implementation of the Social Climate Plan, it shows good awareness of the instrument and its related challenges and objectives, as discussed in section 7.

There is a national strategy to accompany the transition from a social and territorial point of view aiming to mitigate the negative effects in coal mining regions or linked to closure of thermal plants by supporting structural transformation and social well-being. It is updated every five years and implemented via Just Transition Agreements - a co-governance tool with regional and local authorities which also allows for wide public participation. In addition, a national body responsible for coordinating and implementing the relevant measures has been established. Moreover, the draft updated NECP refers to the Framework Agreement for a Just Transition of Coal Mining and the Sustainable Development of Mining Areas for the period 2019-2027, and the Agreement for a just energy transition linked to shut-down of thermal power plants. Although links with the Territorial Just Transition Plan are explained only superficially, just transition measures are strengthened with the inclusion of new measures financed by the Just Transition Fund (JTF).

However, measures to address **access and preservation of quality employment, access to quality, affordable and inclusive education, training and life-long learning** are not well explained (information is missing on timing and expected impact) in the draft updated plan. In addition, it is not clear how Spain will ensure coordination with the regions and the social partners on these issues, especially when it comes to active labour market policies. In contrast, the plan's gender mainstreaming across areas is particularly commendable as part of efforts to support the gender equality dimension of the just transition. Emphasis is placed on consumer empowerment by promoting mechanisms for action at municipal level, i.e., establishing mechanisms to promote diversity and the existence of participatory citizen projects.

Finally, the plan does not explain how the various available funds will be used to support the just transition.

## 5 REGIONAL COOPERATION

In the context of measures to increase electricity interconnection and market integration, the draft updated NECP identifies the relevant main infrastructure projects, namely the planned and ongoing electricity interconnection PCI projects (included in the 5th PCI list). While it identifies certain bilateral cooperation forums, the plan does not refer to the relevant steering and monitoring role of the High-Level Group for interconnections in South-West Europe.<sup>18</sup> For instance, there is no mention of cooperation in the framework of an extended configuration of the High-Level Group for Interconnection in South-West Europe on the establishment of non-binding agreements on goals for offshore renewable generation in 2050 with intermediate steps in 2040 and 2030, in accordance with Article 14(1) of the TEN-E Regulation (EU) 2022/869. Plans and measures in view of the development of the hydrogen sector and the related infrastructures are addressed.

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<sup>18</sup> Four high level groups have been set up by the European Commission to provide strategic steering and policy guidance on regulatory and infrastructure development and to monitor progress of projects of common interest in priority regions. They include: The North Seas Energy Cooperation (NSEC); Interconnections for South-West Europe; Baltic Energy Market Interconnection Plan (BEMIP); Central and South Eastern Europe energy connectivity (CESEC).

The draft updated plan does not include measures or initiatives under some of the available cooperation mechanisms in the area of renewables, including in the margins of the regional forums, such as the high-level political groups.

It is noted that Spain has not yet signed any solidarity arrangement with its neighbours yet out of the two it needs to sign (with France and Portugal). The draft updated plan does not refer to any progress in this regard.

## **6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE PLAN**

The draft updated plan reflects key **synergies within and between the 5 dimensions** of the Energy Union, including the impact of increasing flexibility and demand response measures on the penetration of renewable energy, as well as on the integration of the internal energy market. Similarly, the interaction of key objectives of diversification of energy sources is directly related to the deployment of renewable sources. The plan provides comprehensive information on measures to enhance the security of energy supply and diversification of energy sources. Information is provided on laws and measures to ensure the resilience of the critical infrastructure (mainly against cyber attacks), as well as to ensure the supply of critical raw materials. This lays the foundations for the transformation of the mineral raw materials industry in the circular economy context.

The draft updated NECP states that short-term and long-term actions will be realised in coherence with each other. The nature of the NECP has facilitated anticipation and coherence of policies and investment decisions.

## **7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS**

**Spain formally submitted a modified RRP and REPowerEU chapter on 6 June 2023. It was endorsed by the European Commission on 2 October and approved by the Council on 17 October.** The draft updated NECP of Spain explicitly mentions the REPowerEU Chapter and the amended RRP on several occasions. In particular, the fiche presented at the end of the document provides further detail on the contribution of this chapter and the overall amended RRP to work to achieve the NECP targets.

The draft updated NECP is consistent with the national RRP. Reforms and investments included in the national RRP are identified throughout the document, associated with each of the individual measures proposed by the plan.

However, the plan lacks granularity and details at certain points. For instance, the decision to prioritise biogas in the draft updated NECP is related to support provided in the RRP. However, the RRP provides support to sustainable biogas in the context of a just transition component but gives it limited priority. Several milestones and targets as well as support from the RRF itself are mentioned, but the plan does not provide enough evidence on the most relevant of these (i.e., milestone 29 of the RRP referred to the 510,000 residential dwelling renovation actions in at least 355,000 unique dwellings).

The draft updated plan addresses superficially the links with the adopted **Territorial Just Transition Plan (TJTP)** and how the TJTP fits into the NECP objectives and investment needs. The draft updated NECP mentions the interactions and co-benefits between energy and climate and clean air objectives. As part of the projections provided under the plan,

there are projections for the main air pollutants for which Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants sets emission reduction commitments.

The draft updated NECP establishes a link between the plan and the **national air pollution control programme (NAPCP)** as well as air quality plans. While it is stated that the NECP's objectives and measures are in line with the NAPCP and other air plans, the draft plan lacks transparency on how exactly alignment between the different plans and programmes is ensured.

The draft updated plan provides an inadequate analytical basis for the preparation of the **Social Climate Plan (SCP)**. It dedicates a specific section to the SCP in which a broad timeline for future action is laid out; however, more detailed information is missing on the number of households in transport poverty, and on the methodology and indicators to identify the future recipients of the Social Climate Fund (SCF), taking into account the distributional effects arising from the future ETS2. Moreover, it lacks details on the methodology and the future planning of the assessment of the impacts of the new ETS2. The current draft shows how the SCP will build on the NECP update by listing a number of measures that could be transferred for financing under the Social Climate Fund (SCF) but does not mention how the consistency of the two plans will be ensured.

In the draft updated plan, Spain does not provide the quantification of the climate impacts of measures currently included in the CAP Strategic Plan (CSP), thus the plan does not explain whether the CSP is in line with the new LULUCF and ESR targets and whether additional measures are necessary.

The draft updated NECP addresses the **2022 and 2023 country-specific recommendations** to enhance diversification and reduce dependency on fossil fuels by taking specific actions such as shortening and simplifying permitting procedures to accelerate the deployment of renewables and pursuing efforts on energy efficiency including on manufacturing processes and decarbonisation of industry.

## **8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS**

### **8.1 Investment needs**

The draft updated plan includes information on the expected investment needs to implement the planned policies and measures for each of the five dimensions. It states the total investment needed for the implementation of all the NECP measures for all five dimensions (EUR 294 billion for 2021-2030). 40% are related to renewables, 29% of them correspond to energy efficiency and energy saving investments and 8% and 12% relate to networks and electrification. It estimates that 85% of the total investments will come from the private sector, 4% through national funding, and 11% from EU funding, notably through RRF funding. Other EU sources of finance, such as Cohesion Policy, are not mentioned. The volume of private investments of the specific measures that will be mobilised are mentioned. However, the plan does not explain in sufficient details how Spain plans to mobilise the necessary level of private funding, estimated at 85% of the total. This is particularly relevant for those measures where the final beneficiaries are citizens or small enterprises.

The draft updated NECP focuses on programmes to mobilise funding already identified in the RRP. In particular, PERTEs have been established as the main instrument to bring together public and private initiatives in RRPs. The particular modalities through which these are funded by the EU to Spain (grants or loans) are mentioned. The plan clearly explains how Spain intends, in turn, to use those funds to mobilise public and private investments. The following financial mechanisms are mentioned: the ECO-INCENTIVE programme, RRF loans, RRF grants, the PERTE programme, PRTR component 2 ‘implementation of the Spanish urban agenda: urban regeneration and renovation plan’, and Renove plans.

The National Energy Efficiency Fund (NEEF) is included as a separate measure in the energy efficiency dimension. The plan mentions that the purpose of NEEF is to provide economic, financial, technical assistance, training, information and other measures to increase energy efficiency in the various energy-consuming sectors, so that they contribute to achieving the national energy saving objective set out in the national energy efficiency obligation scheme. The NEEF articulates efficiency measures through calls for support programmes. It is primarily funded by the general state budget and will receive contributions from European Structural and Investment Funds, and 2021-2027 ERDF funds. However, the plan does not provide the amount allocated to this fund, nor additional information on where the different contributions come from.

The lack of information on financial needs per policy and measure does not allow to understand how investment needs are estimated.

## **8.2 Funding sources**

The draft updated NECP only occasionally outlines the sources of financing used to implement the planned key policies and measures (only the descriptions of 22 out of 107 measures have a dedicated section on financial needs and public support). The funding sources mentioned stem from Spain’s public budget (national, regional and municipal level, as well as revenues from the Energy Savings Certificate System), EU funding programmes (RRF, ERDF, CEF, JTF, SCF) and the private sector.

The draft updated NECP did not provide information on the sources of financing of each policy and measure, including information on the public and private part, the lifetime of the measure, the share coming from the EU budget, explicitly specifying the RRF contribution.

## **9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP**

Overall, the draft updated NECP is based on robust **quantitative analyses**, including both bottom-up tools (TIMES soft-linked with a power dispatch model from REE) and top-down tools (DENIO econometric input-output model), which are well documented. However, projections and impact assessments are mostly discussed for just one scenario, and it is not always clear whether they refer to a WEM or WAM scenario. The projections cover the period until 2030. The analysis is based on the parameters recommended by the Commission (for population, although the Ageing Report is quoted, the figures in Table A.3 in 2030 are lower than those in the report). Key energy indicators (e.g., final energy consumption, gross inland consumption and renewable energy shares) show slight

differences with official statistics. Data sources (e.g., techno-economic parameters in Table A.7) are reliable and in line with other relevant analytical tools but are not always well documented. Moreover, it is not clear whether the same assumptions have been used for both WEM and WAM scenarios. The new ETS for buildings, road transport and additional sectors (ETS 2) has not been considered in projection scenarios.

Overall, the analysis appears well suited to assess the expected impact of the plan and the most important policies and measures introduced, but the plan is not very transparent in terms of the results of the analysis and the impact of the assumptions taken. While a discussion on the expected impact (e.g., on GHG emissions and energy consumption) of each policy is missing, the plan assesses the cumulative impact of the measures included in the WAM scenario on the relevant sectors of the economy, including industry, the energy system and transport. The plan provides a short discussion of the sensitivity analysis, but it only focuses on international fuel prices.

The plan includes quantitative analyses of the expected impacts of policies on macroeconomic and socioeconomic indicators and on public health, while environmental impacts are not discussed.

The **macro-assessment** is based on an input-output model and only captures the impact of larger investments. These types of models assume fixed technical relationships, prices, and wages over time, making them less suitable for assessing important feedback effects in the economy, such as those on consumption and government budgetary items. In this context, the accuracy of the projections decreases with the length of the period considered, as the structure of the economy evolves in response to the policy. The plan claims that investments would boost GDP by 2.5% by 2030, and support employment. However, there is no quantification of financing the costs of the measures to be paid by firms, households, and the government. The different transmission channels are presented in a very concise way, including for very relevant variables such as energy prices. Moreover, some channels are not duly considered, such as the effects on competitiveness or the potential economic and fiscal benefits from the expected improvement of public health, which is assessed separately in the document.

The regional dimension is also missing from the analysis. The plan does not analyse the specific transition patterns of regional economic activities, such as tourism, which will be increasingly exposed to adverse effects from climate change. The impact on public finances is estimated in terms of additional revenues and expenditure, but the financing of increased investment spending is not assessed and remains unclear. There is also no reference to the effect on public debt and its medium- to long-term sustainability.

The draft updated plan mentions the interactions and co-benefits between energy, climate and clean air objectives. The plan also presents projections for the main air pollutants for which Directive 2016/2284 sets emission reduction commitments.