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Accompanying the document

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions

EU-wide assessment of the final updated national energy and climate plans Delivering the Union's 2030 energy and climate objectives

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Introduction

This Staff Working Document provides a detailed assessment of how the final updated National Energy and Climate Plans (NECP) addressed the Commission recommendations on the draft updated plans.[1]

The document includes the assessment of 23 plans as Belgium, Estonia and Poland had not submitted their final plan when the document was finalised. Slovakia submitted their final updated plan too close to the publication date for the assessment to be included. The assessment of these final plans will be published in a separate document.

This assessment does not entail an approval by the Commission of the list of projects mentioned in the final NECPs.

[1] The draft NECPs, and the related Commission assessments and recommendations are available at this dedicated page: National energy and climate plans.

Bulgaria

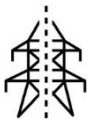
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Bulgaria's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +9.9% 2023: +4.9%[2]	-10%	NECP: -11.06%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -9.54 Mt CO_2 eq.	-1.16 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: A gap of 1.45Mt CO_2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	23.3% (SHARES) 16% (target)	2023: 22.5%	34.96%	Bulgaria's contribution of at least 34.96% is above the 33% required under the formula set out in Annex II to the Governance Regulation[3]
	National contribution for energy efficiency:				
	Primary energy consumption	16.90 Mtoe	2023: 16.58 Mtoe	13.19 Mtoe	BG primary energy consumption contribution

[2] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[3] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					of 13.19 Mtoe is in line with the EED recast Annex I formula results: 13.71 Mtoe (Reference Scenario) or 14.20 Mtoe (Updated Reference Scenario).
	Final energy consumption	8.6 Mtoe	2023: 9.59 Mtoe	8.82 Mtoe	BG final energy consumption contribution of 8.82 Mtoe is not in line with the national contribution of 8.42 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[4]	11.3%	2024: 16.8%	15%	BG surpassess the EU-wide interconnectivity target.

Source: Eurostat; Bulgaria's final updated national energy and climate plan.

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In April 2024, the Commission published a thorough assessment of Bulgaria's draft updated NECP and provided recommendations[5] for the preparation of the final updated NECP. Bulgaria submitted its final updated NECP on 14 January 2025, over six months after the deadline of 30 June 2024.[6]

2.1 DECARBONISATION

Based on the projections provided in the NECP, Bulgaria expects to decrease total GHG emissions (including LULUCF) by 78.2% in 2030 and by 92% in 2040 compared to 1990 and

[4] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[5] SWD(2024) 125 final, and Commission Recommendation of 26 April 2024, C/2024/2905.
[6] Article 14(2) of Governance Regulation.

reaching net zero in 2050. Bulgaria's NECP includes a commitment to climate neutrality by 2050.

2.1.1 Effort Sharing Regulation

Bulgaria has addressed recommendation 1. The final NECP provides sufficient information on how Bulgaria will meet its ESR target of 10% by 2030 compared to 2005.

The plan provides updated projections that mark an improvement compared to the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 11.06% in 2030 compared to 2005, overachieving by 1.06 percentage points the national ESR target. In 2023, GHG emissions from ESR sectors represented 52% of the total in Bulgaria and are expected to be 47.8% in 2030[7].

The final plan complemented the information on the policies and measures provided in the draft but could still benefit from a clearer description of their scope, timeline and expected greenhouse gas reduction impacts.

For what concerns **transport**, while the plan does not provide projections per sector under the ESR, Bulgaria expects the rate of emissions reductions in total transport to accelerate substantially, driven by for instance EV deployment low emission zones, biofuels deployment and hydrogen fuels. While several transport policies (both existing and planned) are outlined in the plan, the concrete plans for implementation and/or scale up are not always clear and robust implementation and monitoring will be key. The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WAM scenario projections account for the effect of ETS2, however they do not clearly consider the impact of ETS2 in achieving the ESR target.

The plan does not provide sufficient detail in the projections on **agriculture**. The sector is described as the largest source of non-CO2 emissions, especially N2O from agricultural soils, although **waste** is also an important contributor. The plan outlines several relevant policies and measures for both sectors, but the lack of quantification of their impact makes it challenging to evaluate their effectiveness.

2.1.2 LULUCF

Bulgaria has partially addressed recommendation 3. The LULUCF sector in Bulgaria generates net removals, absorbing roughly 16% of the total GHG emissions in 2022. Bulgaria has to improve its net removals by -1.163 Mt CO2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. However, according to the latest reported 2022 figures, Bulgaria's performance has worsened by 0.28 Mt CO2eq in comparison to the reference period. Moreover, taking into account its projections for 2030, Bulgaria will still have a gap of 1.45Mt CO2eq in 2030. The plan indicates additional policies for the LULUCF sector compared to the baseline scenario, but these are not sufficient to achieve the LULUCF target.

The plan provides some information on how public funding (CAP, State aid) is used to reach the LULUCF target. The plan lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal

[7] Total GHG excluding LULUCF. Source: EEA. The plan does not include disaggregated information on emissions from the ESR part of transport and buildings.

estimates. Overall, based on the available information, Bulgaria does not design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

2.1.3 Carbon Capture and Storage

Bulgaria has partially addressed recommendation 2. The plan provides some information on Carbon Capture Utilisation and Storage projects. One of the projects is expected to capture 800 kt annually by 2028. Yet, the plan does not contain a comprehensive CCUS strategy and does not provide estimates for potential storage capacity, set annual injection capacity targets, or outline key national legislative proposals related to CCUS.

2.1.4 Adaptation

Bulgaria has partially addressed recommendation 4. The plan refers to the 2019 National Strategy for Adaptation and its Action Plan up to 2030, to respond to the recommendation and acknowledging the importance of integrating adaptation planning. However, the plan lacks, for most parts, adaptation policies and measures in the relevant Energy Union dimensions. The plan contains an overall **analysis of climate vulnerabilities and risks** through reference to a 2023 study by the National Institute of Meteorology and Hydrology. However, it is short of quantifiable assessment of impacts.

The plan **does not set out significant additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union It also does not outline the link to the specific Energy Union objectives and policies, that adaptation policies and measures are meant to support. The impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

2.1.5 Fossil Fuels

Bulgaria has not addressed recommendation 18. The plan includes a commitment to phase down fossil fuels for energy use by 2038. This is mentioned only as part of broader decarbonisation strategies without indicating specific actions or providing quantitative information on build in alternative renewable capacities. Moreover, the plan does not sufficiently explain the alignment between the NECP and TJTPs for Stara Zagora, Kyustendil, and Pernik, nor the intermediate milestones in the timeline for the updated coal phase-out commitments.

The plan states that Bulgaria does not provide fossil fuels subsidies, and hence does not include a timeline for their phase out[8].

2.2 RENEWABLES

Bulgaria has partially addressed recommendation 5. Indicative trajectories for the deployment of renewable energy technologies over the 2020-2030 period are provided with the outlook until 2050. Bulgaria sets a specific target of 6.2% for deployment of innovative renewable energy technologies by 2030. The plan also contains a specific target of 42.04% for renewable fuels of non-biological origin (RFNBOs) for industry by 2030. However, the plan does not include a specific target on the share of renewable energy to reach the indicative 1.6%

[8] The Commission 2024 study and Report on Energy subsidies in the EU identifies the existence of fossil fuel subsidies.

target for industry by 2030. Neither does the plan provide an indicative share of renewables for district heating and cooling over the period 2021-2030.

Bulgaria has partially addressed recommendation 6 and 8. The final plan provides no further information on the uptake of power purchase agreements. For renewable energy deployment in the heating and cooling sector, Bulgaria indicates that the share of renewables will reach 44.01% in 2030, with the aim to promote innovative geothermal and solar technologies, and the use of waste heat and cold. The plan projects that the share of renewable energy in transport will increase to 29.93% by 2030, which will include a contribution of renewable fuels of non-biological origin. As regards the obligation of fuel suppliers in transport, the plan refers to specific obligations on fuel and energy suppliers for a range of renewable fuels without providing further details and does not mention specific measures for promoting renewable fuels of non-biological origin in industry. Geothermal energy will be promoted via the deployment of heat pumps.

While the use of biomass will remain the largest share of renewables in heating and cooling in 2030, it would have to comply with the stricter sustainability requirements in line with Directive (EU) 2018/2001 (the 'revised RED II')[9] and its share gradually will decrease over the next decades. No additional detail has been provided in the final plan on the specific measures, except the aim to develop a vision for the development of the heat market and access of small producers to district heating networks.

Measures to further accelerate permitting procedures and define renewables accelerated areas are mentioned in the context of implementing the requirements of the revised RED II. A plan for the identification of priority areas (Renewables Accelerated Areas) for the development of wind power generation sites is currently under development. The plan does not contain details on procedural steps leading to the adoption of measures aimed at implementing provisions of the revised RED II.

Bulgaria has partially addressed recommendation 7. The updated plan provides the estimated trajectories for biomass demand by sector and biomass use by origin. But it does not assess the domestic supply of forest biomass for energy purposes in 2021-2030 nor the compatibility of the projected use of forest biomass for energy production with Bulgaria's obligations under the revised LULUCF Regulation. Bulgaria does not provide measures to support sustainable biogas and biomethane production, resulting in reduction of current biogas production in 2030 target.

2.3 ENERGY EFFICIENCY DIMENSION

Bulgaria has not addressed recommendation 9. Bulgaria does not include the amount of energy consumption reduction per year to be achieved by all public bodies as required by Article 5 of Directive (EU) 2023/1791 ('EED recast')[10]. Bulgaria does not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly - nor the

[9] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

[10] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

corresponding yearly energy savings to be achieved and it also does not specify if it opted for an alternative or default approach. Bulgaria sets out some policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings, including the introduction of building information modelling at national level.

Bulgaria has partially addressed recommendation 10. Bulgaria sets out policies and measures to achieve the national contributions on energy efficiency, but it does not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures, except for those measures contributing to the energy savings obligation under Article 8 of EED Recast. Considering the latter provision, Bulgaria also includes the amount of cumulative energy savings of 6.2 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030 and includes an explanation on how the annual savings rate and the calculation baseline were established. Bulgaria does not quantify the savings from those energy efficiency measures targeting energy poverty.

Bulgaria specifies robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Bulgaria specifies existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as Energy Performance Contracts - ESCOs). Bulgaria establishes a National Energy Efficiency Fund and details its role, as defined in Article 30 of EED Recast, in helping deliver the energy efficiency national contributions to the EU target, by including the use of financial instruments within the Fund.

Bulgaria has partially addressed recommendation 11. The plan does not raise the ambition of the 2020 long-term renovation strategy (LTRS) but recalls some of its key elements, such as the energy savings, renovated area and CO_2 savings milestones for 2030, 2040 and 2050. The plan describes additional measures and initiatives relating to building renovations, which were not identified in the 2020 NECP.

The plan includes sufficient information on related measures for buildings in terms of funding and costs but only includes partial information on energy and emission savings. The plan includes specific information on policies and measures addressing deep renovation (with a specific focus on vulnerable consumers) and decarbonisation of heating or installation of renewables in buildings but not on worst performing buildings.

2.4 ENERGY SECURITY DIMENSION

Bulgaria has partially addressed recommendation 12. The final plan does not further explain how Bulgaria will diversify its gas supply and does not concretely explain how Bulgaria intends to continue encouraging gas demand reduction towards 2030. It does however provide a forecast for the future role of natural gas. In the WAM scenario, primary energy production from natural gas is expected to marginally decrease first, from 169 GWh in 2022 to 164 GWh in 2030, and then much more quickly, to 50 GWh in 2040 and 8 GWh in 2050. In the WEM scenario, however, primary energy production from natural gas increases to 190 GWh by 2030, and then decreases to 168 GWh by 2040.

The final plan does not contain any additional information on storage targets, only a few additional projects.

The plan does not assess the adequacy of the oil infrastructure (pipelines, refineries, and oil storage) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

It also does not address the imperative of climate adaptation on the energy system, with no new measures.

The plan describes measures to diversify the supply of nuclear fuel but does not provide information on spare parts and services. It mentions small modular reactors and implementing good practices in radioactive waste management and spent nuclear fuel management, without giving further details.

2.5 INTERNAL ENERGY MARKET DIMENSION

Bulgaria has partially addressed recommendation 13. The plan elaborates on the quantification of flexibility needs although not in a structured way, nor does it set specific demand response targets beyond measures enabling participation of demand response. The plan does however provide clear targets to improve the flexibility of the energy system. Bulgaria notably aims to increase flexibility by enabling a non-discriminatory participation of new flexibility services, demand response aggregation, intraday and day-ahead markets, and expanded interconnectors.

The final plan does not provide information on specific measures aimed at energy system integration to facilitate system integration of renewable electricity in accordance with Article 20a of the revised RED II.

The plan defines forward-looking objectives and targets concerning market integration. Bulgaria is actively participating in cross-border market coupling initiatives, including SIDC for intraday trading and SDAC for day-ahead markets. The plan also outlines projects for integration with Serbia, North Macedonia, and Greece. There are plans to fully liberalise the market by 2025 and steps are being taken on different measures relevant to retail markets such as dynamic electricity pricing, aggregator participation, and local energy communities. When introduced, the removal of public supplier quotas and price caps for balancing electricity will further contribute to develop competitive wholesale markets and to phase out measures interfering with market signals, ultimately aligning with EU market rules.

Bulgaria has partially addressed recommendation 14. The updated NECP contains a description on the adopted legal definition of energy poverty (i.e. modification to the Energy Act) along with reference to current measures. Moreover, the role and the tasks of the energy poverty observatory are better described. The plan also provides more explanations on energy efficiency measures. Some estimates of the total number of poor individuals has been improved, but an official system to identify and monitor those in energy poverty has not been developed yet. However, this could be elaborated further to include an energy poverty reduction target and indicative timelines for the implementation of support schemes and the identification mechanism itself. In terms of financing the following is indicated: EU Social Climate Fund, other financial instruments with an EU funding source and the national budget. This could be explained more concretely as well.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Bulgaria has partially addressed recommendation 15. The plan includes a partially comprehensive approach referring to the decarbonisation of the sectors of the economy, however it does not include targets to support research, innovation and competitiveness in clean energy technologies. In terms of share of GDP public spending, the pathway towards 2030 and beyond is not established. Instead, Bulgaria refers to numerous mid-term European funding programmes (2021-2027) as the main source of funding supporting energy transition and clean technologies investments.

The plan includes some measures to promote the development of net-zero projects including those relevant for energy intensive industries, for example in the area of hydrogen and low carbon gasses, the National Roadmap for hydrogen (which was adopted in 2023) and the act on AttractInvestBG for facilitating investments through industrial parks. The plan refers in a general way to the simplified permitting procedures for manufacturing, and more specifically to projects having the status of the Projects of Common Interest (PCI, TEN-E). The plan includes information on policies and measures for the development of clean energy and digital-related skills.

It partly addresses the supply chains of key net-zero components and equipment, through the investments in the industrial parks, such as for the electricity sector, and hydrogen.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Bulgaria has not addressed recommendation 16. The plan does not provide an estimate of the total investment needs. It focuses mainly on investments in new renewable energy sources, electricity, and heat production. Though this assessment is based on a sound methodology, relying primarily on a top-down approach, investment needs in other sectors are not fully described. The proportion of public investment is unclear, and the tools to mobilise private investment are not described. The plan includes a list of EU financial sources but does not consider national and regional public sources. The types of financial instruments are not detailed.

Bulgaria does not provide a robust macroeconomic impact assessment. It presents different policy scenarios and assesses their impact on carbon intensity, energy prices, and investment. However, the plan does not establish a direct and quantifiable link between specific policy measures and their macroeconomic impact and has limitations concerning the model-based analysis of GDP and employment. The impacts on health and environment are described qualitatively.

2.8 JUST TRANSITION

Bulgaria has partially addressed recommendation 20. The plan provides information on the impact of the transition to climate neutrality on employment (with quantitative information on jobs in the construction sector) and skills but does not sufficiently address the impact on the most vulnerable households. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund (JTF) and

the Modernisation Fund. The analysis focuses on the JTF and the Territorial Just Transition Plans.

The coal phase-down deadline in the TJTPs (Stara Zagora, Kyustendil, and Pernik) is aligned with the final updated NECP, but the latter does not clarify concrete actions to respect this timeline.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not fully explain how the policy framework identified in the NECP will contribute to the preparation of Bulgaria's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Bulgaria has partially addressed recommendation 21. Bulgaria organised public consultations on the draft NECP, mainly organised through the official websites. The Bulgarian authorities responsible for the NECP also participated to various conferences, meetings, roundtables, and stakeholder fora. The public consultation started on 22 December 2023 and lasted a month. This was rather close to date of the submission of the draft plan (February 2024), which might have limited the ability to fully take stakeholder input into account early in the process.

The plan includes a summary of the outcome of the consultations but does not describe how the final plan integrates the inputs suggested from stakeholders. The plan indicates that an extensive consultation process on the final NECP is expected to be launched after the submission of the final updated NECP. The final plan is subject to strategic environmental assessment.

2.10 REGIONAL COOPERATION

Bulgaria has partially addressed recommendation 22. The plan includes a comprehensive list of electricity, gas, and renewable energy-related regional initiatives under the CESEC High-Level Group, aiming at increasing Bulgaria's engagement with neighbouring Member States and Energy Community Contracting Parties, thus enhancing Bulgaria's security of supply, market integration and integration of renewable energy. While detailed information on several regional initiatives within CESEC is provided, the plan does not mention the key CESEC priority of gas quality harmonisation, which is essential for unblocking the full potential of the Trans-Balkan pipeline in reverse flow. This infrastructure route, that connects Greece through Bulgaria, Romania and Ukraine with the CEE gas markets, has been significantly underutilised due to different gas quality parameters across borders. The final plan does not describe how Bulgaria plans to establish a framework for cooperation with other Member States by 2025, in line with Article 9 of the revised RED II.

The plan does not refer to any progress nor efforts for the signature of the two bilateral solidarity agreements for the security of gas supply with Bulgaria's neighbours (Romania and Greece).

2.11 ANALYTICAL BASIS

Bulgaria has addressed recommendation 19. The plan provides both With Existing Measures and With Additional Measures scenarios with projections until 2050.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Bulgaria has partially addressed recommendation 17. The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP)[11] that contribute to implementing the objectives, targets, and contributions of the Energy Union. The final updated NECP still does not refer to Investment 8 (C4.I8): National infrastructure for storage of electricity from renewables (RESTORE), which would enable the installation and commissioning of a national infrastructure of grid-scale electricity storage facilities with at least 3000 MWh of usable energy capacity under the RRP. Some reforms addressed in the final NECP have not been adequately recognized as part of the RRP, such as the reform of the Act on Energy from Renewable Sources.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Bulgaria to ensure a timely and complete implementation of the final updated NECP. Bulgaria is invited to pay particular attention to following main elements:

- Monitor the impact of policies to decarbonise **transport**, including planned measures to support the uptake of electric vehicles and the construction of recharging infrastructure, to enable modal shift and low emission zones.
- On **LULUCF**, increase monitoring and enforcement of sustainable forest management practices, consider additional measures including afforestation, agroforestry, and improve the targeting and the commitments of existing interventions such as those under the CAP.
- On **adaptation,** assess quantitatively the relevant climate vulnerabilities and risks for the national objectives, targets, and contributions and the policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies, that adaptation policies and measures are meant to support.
- On **fossil fuels**, enable the gradual phase-out of solid fossil fuels in view of the 2038 deadline set by the plan. Identify fossil fuel subsidies and outline a roadmap for their phase-out.
- On **industry**, put in place robust measures to decarbonise industry, including by reducing energy consumption, as the share of energy consumed by industry is projected to decrease less than in other sectors. Develop a framework **to support the uptake of renewable hydrogen and CCUS**.

[11] Bulgaria does not have a REPowerEU chapter as of May 2025.

- Commit public and private R&I funding to the clean energy transition and innovative technologies and industries. Foster additional synergies in the SET-Plan, including on institutional capacity building and synergies with European funding programmes.
- On r**enewable energy,** identify renewable **acceleration areas** for simplified permitting procedures and outline a comprehensive plan to increase renewables uptake in district **heating and cooling.** Commit to the plan to upgrade the electricity grid to integrate increased shares of renewable energy. Put in place a framework to enable renewables **power purchase agreements** to provide certainty to all market actors.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030.
- On **buildings**, ramp up the pace and depth of renovation in overall building stock and assess market barriers to speed up the implementation of the measures put forward.
- On the **flexibility on the electricity market**, boost competition on the electricity market and enable the rapid deployment of non-fossil flexibility to further increase system flexibility.
- **On nuclear energy**, continue efforts to diversify nuclear fuel supplies and to ensure its long-term supply of spare parts and maintenance services.
- Adopt a more comprehensive **just transition strategy** that addresses the impact on vulnerable households and allocates sufficient funding.
- **On regional cooperation,** streamline cooperation on the gas quality harmonisation in CESEC which is essential for unblocking the Trans-Balkan pipeline and enhancing Bulgaria's and regional security of supply.

Czechia

1 Overview of key objectives, targets and contributions in the final NECP

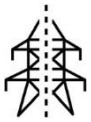
Table 1: Summary of key objectives, targets and contributions of Czechia's final updated NECP

		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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -6.7%% 2023: -5.7%[12]	-26%	NECP: -35.8% [13]
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net emissions of 11.268 Mt CO_2 eq.	-0.83Mt CO_2 eq. (additional removal target)	Insufficient ambition, projected gap of 0.25Mt CO2eq
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	17.3% (SHARES) 13% (target)	2023: 18.5%	30.1%	Czechia's contribution of 30.1% is below the 33% required according to the formula set out in Annex II of the Governance Regulation[14]
	National contribution for energy efficiency:				
	Primary energy consumption	~~44.3~~ 41.4Mtoe	2023: 35.49 Mtoe	29.19 Mtoe	CZ primary energy consumption contribution of 29.19 Mtoe is in line with the EED recast Annex I formula results: 28.81 Mtoe (Reference Scenario) or 29.18 Mtoe (Updated

[12] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[13] The emissions reductions by 2030 are measured against the 2005 emission level as set out in Commission Implementing Decision (EU) 2020/2126 of 16 December 2020. For Czechia this number is 64.965295 $MtCO_2$ eq. in 2005.

[14] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation')

					Reference Scenario)
	Final energy consumption	25.3 Mtoe	2023: 22.61 Mtoe	20.35 Mtoe	CZ final energy consumption contribution of 20.35 Mtoe is in line with the national contribution of 20.35 Mtoe submitted by the European Commission.
	Level of electricity interconnectivity (%)	27.5%	2024: 27.0%	15%[15]	CZ has surpassed the EU-wide interconnectivity target.

Source: Eurostat; Czechia's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Czechia's draft updated NECP and provided recommendations[16] for the preparation of the final updated NECP. Chechia submitted its final updated NECP on 20 December 2024, almost six months after the deadline of 30 June 2024.[17]

2.1 DECARBONISATION

Czechia expects to decrease total GHG emissions (including LULUCF) by 68% by 2030, 86% by 2040 and 96% by 2050 compared to 1990.

2.1.1 Effort Sharing Regulation

Czechia has addressed recommendation 1. The final plan provides sufficient details on how Czechia will meet its ESR target of -26% by 2030 compared to 2005. The plan provides updated projections showing that the existing and planned policies and measures will lead to a decrease of 35.8% of ESR emissions in 2030 compared to 2005, overachieving the national ESR target by 9.8 percentage points. In 2023, GHG emissions from ESR sectors represented 56.7% of the total in Czechia (will be 64.3% in 2030)[18], with transport and buildings projected

[15] Calculated by the European Commission based on the ETNSO-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.

[16] SWD (2023) 926 final, and Commission Recommendation of 18 December 2023, C/2023/9616. The recommendation from 18 December 2023 was supplemented with a revised recommendation regarding ESR adopted in February 2024, C/2024/1175.

[17] Article 14(2) of Governance Regulation.

[18] Total GHG excluding LULUCF. Source: Commission calculations based on the Czech final updated NECP

to represent the largest shares.[19] The with additional measures (WAM) projected value for ESR in 2030 is roughly 12.6% lower than the with existing measures (WEM), hinting that implementing the plan will require a significant effort. Notably the plan recognises the difficulties in reducing emissions in the transport and buildings sectors. The final plan did not complement the information on the policies and measures provided in the draft in terms of scope, timeline and expected impact on GHG emissions.

On **transport**, the WAM projections describe a change of trend in emissions in the period 2025-2030, with an annual percentage decrease of 2.5% following a steady increase of emissions by 0.42% per year in the period 2015-2025.[20] Czechia has indicated a number of existing and planned measures for the transport sector, including further electrification of railways and urban public transport, gradual shift to freight transport from road to rail and/or waterborne transport, tax incentives, use of alternative fuels. However, it is unclear which remain to be implemented, or which will be scaled up to reach the ESR target.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). It is unclear if the WAM scenario projections account for the effect of ETS2. The projections do not quantify the impact of ETS2 in achieving the ESR target.

On **agriculture, the projected non-CO2 emissions** are lower than in the draft plan, despite policies being the same. The main measures mentioned in the plan concern biogas and organic farming, but limited details are provided. The plan does not provide sufficient detail in terms of funding and impacts of measures. The projections reflect a stagnation of emission from agriculture in 2030, indicating a need for targeted policies and actions. The emission savings expected from policies addressing HFCs and other fluorinated gases, including as a result of the newly reinforced Regulation (EU) 2024/573 (F-gas Regulation), remain unclear.

The plan describes various waste management and circular economy strategies, promoting waste reduction, recycling and recovery. However, the plan remains unclear on how to tackle CH4 from landfills, failing to mention effective mitigation solutions such as separate collection, landfill gas capture and anaerobic digestion.

2.1.2 LULUCF

Czechia has partially addressed recommendation 3. The LULUCF sector in Czechia generates net emissions, representing roughly 2.9% of the total GHG emissions in 2022. According to the LULUCF Regulation, Czechia has to enhance its net removals by -0.827 Mt CO_2eq in 2030 as compared to the yearly average in the 2016-2018 reference period. However, according to the latest reported 2022 figures, Czechia's performance has worsened by 14.5 Mt CO_2eq in comparison to the reference period. The gap to comply with the "no-debit" commitment in 2025 is expected to be significant. A considerably smaller gap of 0.25 MT CO_2eq is expected towards reaching the 2030 target. Despite the fact the policies and measures are the same as in draft plan, the updated plan shows a reduced gap towards the 2030 target. The difference is due to more optimistic assumptions on the decline of the bark beetle and

[19] Source: EEA. The plan does not include disaggregated information on emissions from the ESR part of transport and buildings.
[20] Compound annual growth rate.

forest restoration, resulting in more removals. The plan lacks sufficient information to quantify the contribution of policies and measures to the LULUCF target. In view of the persistent gap, Czechia does not design sufficiently effective policies to support the performance of the land sector.

Czechia acknowledges that the level of accuracy of reporting of LULUCF emissions and removals needs to be improved. However, the plan does not provide sufficient information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Czechia **has not addressed recommendation 2** on CCUS. The NECP still does not provide estimates on emissions to capture annually by 2030. Yet, the plan provides CO_2 capture targets from 2035 onwards by source, and indicates Czechia is in the process of preparing a CCUS strategy.

2.1.4 Adaptation

Czechia has partially addressed recommendation 4. The plan refers to the National Adaption Plan for Climate Change, the National Climate Change Adaptation Strategy, and Czechia´s Common Agricultural Policy Strategic Plan 2023-2027 to respond to the recommendation, acknowledging the importance of integrating adaptation planning. The plan partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a partial analysis of **climate vulnerabilities and risks**, especially in the land-use sector and the energy security dimension. The plan identifies several significant risks related to drought and other extreme weather events. The plan also outlines adequate **policies and measures** to address these vulnerabilities and risks but is short of quantifiable assessment of impacts. The plan partially outlines the **links to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support. The formulation of adaptation goals has progressed through inclusion of goals on energy security. However, the impacts and benefits of adaptation policies on other Energy Union dimensions have generally not been quantified. The plan sets out some **additional adaptation-related policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union, such as investments aiming at minimising environmental impacts (e.g. biodiversity loss).

2.1.5 Fossil Fuels

Czechia has not addressed recommendation 19. The plan recognises one fossil fuel subsidy (housing allowance), which Czechia does not plan to phase out, due to its role to encourage environmentally friendly heating methods and provide social support. It also provides a list of subsidies in energy transformation, energy extraction and agriculture which Czechia does not consider fossil fuel subsidies. The plan lacks clear measures and a timeline to phase out fossil fuel subsidies.

2.2 RENEWABLES

Czechia has partially addressed recommendation 5. The final NECP includes a contribution for a renewable energy share of 30.1% in gross final energy consumption for 2030, which is similar to the one submitted in the draft plan and below the level of 33% resulting from the

formula of Annex II of the Governance Regulation. Czechia also provides a reference point for 2025 of around 23% which is in line with the trajectory calculated with the increased EU 2030 renewable energy target of 42.5%. However, no information has been provided on the 2027 reference point.

Czechia has partially addressed recommendation 6. The final NECP includes specific targets, namely the target to contribute to the sub-target for buildings for 2030 (40%), an average increase in heating and cooling of 1.4 pps for the period 2021-2025 and 1.9 pps for 2026-2030, in line with the binding target of Article 23 of Directive (EU) 2018/2001 (the 'revised RED II')[21], but below the level of the indicative top-ups, as well as targets for advanced biofuels and renewable fuels of non-biological origin (RFNBOs) in transport by 2030 (5% and 1% respectively). The final plan however does not include a target for innovative renewable energy technologies by 2030 or an indicative target in district heating and cooling for the period 2021-2030. The plan does not contain a specific target for the renewable energy share in industry.

Czechia has partially addressed recommendation 7. Czechia refers to its plans to designate "renewables acceleration areas", but it does not elaborate further. It also includes information on recent measures to promote self-consumption and energy communities, and information on the New Green Savings 2030 programme which will support the installation of small-scale renewable energy installations for self-consumers and energy communities. Czechia indicates that it plans to support the modernisation of the existing heat systems to make them more efficient, including by introducing new small decentralised renewable heating systems, but no granular information or quantitative data has been provided. Czechia has not provided further information on how it plans to accelerate the deployment of renewables via the uptake of renewable power purchase agreements or guarantees of origin. The plan does not contain specific information on the measures to accelerate deployment of renewables in district heating and cooling, nor on creating an enabling framework for increasing the integration between the electricity and heating and cooling networks.

Czechia has addressed recommendation 8. Czechia includes further measures to promote the sustainable production of biomethane.

Czechia has not addressed recommendation 9. The plan does not contain an expected timeline of the procedural steps leading to the adoption of measures to transpose and implement the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Czechia has partially addressed recommendation 10. Czechia included an amount of energy consumption reduction of 15.2 Mtoe[1] per year to be achieved by all public bodies but without disaggregating it by sector. Czechia reported the corresponding yearly energy savings to be achieved but it did not specify if they opted for the alternative or default approach. Czechia set

[21] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

out policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings.

Czechia has partially addressed recommendation 11. Czechia set out complete policies and measures to achieve the national contributions on energy efficiency. Czechia specified how the energy efficiency first principle will be implemented and mentioned a consortium set up to carry out and monitor its implementation.

Czechia set out complete policies and measures to achieve the required amount of cumulative end-use energy savings by 2030 and it quantified the energy savings from the reported energy efficiency measures to ensure the achievement of the cumulative target[3], including those measures targeting energy poverty.

Czechia specified robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Czechia specified existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as Energy Performance Contractors, ESCOs).

Czechia has addressed recommendation 12. Czechia details the impact in terms of energy savings of each new measures put forward on buildings. The final updated NECP presents an ambitious scenario according to which most buildings (85%) will be deeply renovated from 2025 to 2030. Only buildings where this is not technically possible will receive shallow or medium renovations. In addition, the renovation rate will be approximately doubled, which would mean that every building will be renovated over a period of less than 30 years. This increase in depth and renovation rates is expected to lead to a reduction in energy consumption by 166 PJ (44%) in 2050.

2.4 ENERGY SECURITY DIMENSION

Czechia has partially addressed recommendation 13. Czechia does not further set out how it intends to continue encouraging gas demand reduction towards 2030. It also does not provide exact estimates for the evolution of natural gas consumption, noting only that the share of gas in the energy mix is expected to increase to 21% of primary energy consumption by 2030[22], and then decrease until 7% by 2050[23].

Czechia clarifies that the development and installation of energy storage systems is a priority. In a report on the flexibility of the Czech electricity system, Czechia is analysing the impact of the energy transition on flexibility needs, which will be followed by an action plan, setting priorities for the development of non-fossil flexibility and defining the objective for flexibility of non-fossil sources, including energy storage for the next ten years.

The final updated NECP describes measures taken to ensure security of supply of nuclear materials and fuel but does not provide information on spare parts and maintenance services. The plan includes some information on plans to develop Small Modular Reactors (SMRs) and

[22] Total primary energy consumption in 2030 is expected to be 1 206PJ, according to the plan.
[23] According to Eurostat data, this share was of approximately 15% in 2022, for a total gross inland consumption of around 1 754 PJ:
https://op.europa.eu/en/publication-detail/-/publication/993e1f3f-89d1-11ef-a67d-01aa75ed71a1/language-en

notes that the Atomic Act is being amended to include SMR technology. The first SMR is expected to become operational in the mid-2030s, with the total installed capacity of SMRs reaching up to 3 GW depending on the construction of large reactors. In addition to electricity generation, the use of SMRs is considered for district heating systems.

The final updated NECP does not provide information on measures taken to ensure the long-term management of nuclear waste. This is however covered in the 4th national report submitted in 2024 in accordance with Article 14 of Directive 2011/70/EURATOM[24].

The plan addresses the need to diversify from Russian oil imports however it does not assess the adequacy of the oil infrastructure (pipelines, refineries, and oil storage) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

The final plan refers to the energy system's vulnerabilities identified in the National Climate Change Adaptation Strategy. However, it still does not contain information about the concrete envisaged measures to prepare for it.

2.5 INTERNAL ENERGY MARKET DIMENSION

Czechia has partially addressed recommendation 14. Czechia does not put forward clear objectives and targets for demand response to improve the flexibility of the energy system underpinned by an assessment of the flexibility needs. The plan also does not describe specific measures to facilitate energy system integration in the context of implementing provisions of Article 20a of the revised RED II. However, Czechia is working on a report on flexibility of the Czech electricity system, which examines the assessment of the flexibility needs of the energy system. The report will analyse the impact of phasing out fossil fuels on flexibility needs as well as the potential for flexibility in the period 2025-2030. This report will be followed by an action plan setting priorities for the development of non-fossil flexibility, defining objectives on their development for the next ten years.

Czechia has been taking steps to increase the level of consumer empowerment in the retail market by a legislative anchoring of energy communities, renewable energy communities and active customers. Act 469/2023 Coll., which entered into force on 1 January 2024, introduces a definition of an energy community and a definition of renewable energy communities.

While the NECP underlines that a call has been made under the National Recovery Plan to support the establishment of energy communities and an evaluation of energy community projects is ongoing, the plan contains few details on next steps in terms of developing energy communities and facilitating citizen engagement.

Czechia has partially addressed recommendation 15. While the definition of energy poverty is not yet legally enshrined in Czech law, Czechia took steps to develop the approach to addressing energy poverty. An expert group on energy poverty was set up under the Ministry of Industry and Trade. By end of 2024, this expert group was expected to propose a definition of energy poverty, set appropriate indicators for measuring energy poverty and the related definitions and indicators for vulnerable households. The plan further explains that the expert

[24] Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste.

group will aim to continue to coordinate the state's approach to energy poverty, develop an energy poverty strategy and concrete measures.

Despite the absence of an energy poverty definition, certain customer support systems (such as economic support, protection against disconnection) are in place. The plan explains how the use of affordability and energy efficiency measures already supports vulnerable households and can therefore be considered to some extent as addressing energy poverty. In particular, the New Green Savings Light programme targets the elderly and low-income households and provides funding for instance for insulation of facades, roofs, ceilings, and exchange of windows. Subsidies are also available for low-income households to replace old boilers. In early April 2023, a call was launched with an allocation of CZK 1.7 billion to replace heating systems in low-income households. This is expected to lead in about 15 000 vulnerable households changing the way they heat their homes.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Czechia has partially addressed recommendation 16. The plan includes a comprehensive approach, although it does not include targets to support research, innovation, and competitiveness in clean energy technologies, nor establishes a pathway to 2030 and 2050. Relevant policies and measures include the National Research and Innovation Strategy for Smart Specialisation, the proposal for updating the 2015 State Energy Policy, the updated National Hydrogen Strategy and the THETA 2 programme supporting applied research and innovation in the energy sector. The plan does not set out measures to promote the development of net-zero projects including those relevant for the energy intensive industries. It does not describe how it will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified where needed. The plan does not include information on policies and measures for the development of clean energy-related skills and resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Czechia has not addressed recommendation 17. The plan does not specify measures to mobilise private investments and does not provide robust estimates of the total investment needs nor investment needs per sector. Investment needs and funding sources are not mentioned at the level of the measures. There is only a high-level assessment of funding sources including national and EU sources. Although the plan states that most of the investments should be financed by the private sector, it does not provide a breakdown of investments by public and private sources. The information provided in the plan is not sufficient to estimate whether there is a potential financing gap with respect to the investment needs, or how this would be filled.

Czechia has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. A macro-economic assessment is included in the plan, but the analysis of some key variables is absent. The plan includes quantitative estimates of the impact on some socio-economic variables and selected sectors. However, it does not describe the impact of the planned measures on public finances.

2.8 JUST TRANSITION

Czechia has partially addressed recommendation 20. The plan includes an analysis of the social and economic impacts of the transition, providing a comprehensive understanding of the potential effects on different segments of the population. However, it does not sufficiently address the sectoral employment and skills impacts, except for the coal regions Karlovarský, Ústecký and Moravskoslezský. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the JTF.

The plan does not contain the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Czechia's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Czechia has partially addressed recommendation 21. Czechia organised two rounds of public consultation towards the preparation of the final plan. The first consultation was carried out between 15 May 2023 and 4 June 2023 using a structured online unlimited questionnaire (164 responses were received). The second consultation on the draft update NECP took place between 9 January and 29 February 2024, using a structured online questionnaire (1092 responses received).

The plan includes links to the website of the Ministry of Industry and Trade with a detailed summary and evaluation of both consultations. It does not describe how the final plan integrated input from stakeholders.

2.10 REGIONAL COOPERATION

Czechia did not address recommendation 22. While the plan includes a simple description of how the regional cooperation under the Visegrad group works, it does not specify further how it could be strengthened in the future, nor whether Czechia considers joining other regional structures such as the CESEC High-Level Group. Czechia does not provide further information in its final plan on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II. The plan also did not provide information on signing the four bilateral solidarity arrangements for the security of gas supply with its neighbours (Poland, Slovakia, Germany, Austria).

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework with projections reaching 2050 and an impact assessment of policies and measures. The plan is based on quantitative analysis and the methodologies used for projections and impact assessment are referenced.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Czechia has partially addressed recommendation 8. While improved, the final updated NECP does not sufficiently cover the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions. The final updated NECP does not refer to the two reforms LEX RES II and LEX RES III, which are relevant climate and energy reforms of the RRP and its REPowerEU chapter. Some measures, such as the new act on simplification of permitting procedures (LEX RES I) and Electricity Data center investment, are now mentioned in the NECP, but it is not specified that this reform is financed by the Recovery and Resilience Facility.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages to ensure a timely and complete implementation of the final updated NECP. Czechia should pay particular attention to the elements listed below.

- Implement in a timely manner additional policies towards the **ESR target**, as even though Czechia is expected to meet its target, a significant part of the emissions reduction is driven by measures that are not yet fully implemented. Given the stagnating trend in emissions in waste and transport, closely monitor the implementation of related policies, and design additional ones where needed.
- On **LULUCF**, enforce and improve the targeting of current policies, including agroforestry, organic farming, sustainable management of grassland and afforestation and closely monitor their contribution to the achievement of the target. Adopt additional policies to decrease the LULUCF gap.
- **On adaptation,** assess quantitatively the relevant climate vulnerabilities and risks for the national objectives, targets, contributions, policies and measures in the different Energy Union dimensions. This would enable better outlining and quantifying the link to the specific Energy Union objectives and policies, that adaptation policies and measures are meant to support as well as setting out additional adaptation policies and measures in sufficient detail.
- Develop a roadmap with specific measures to phase out all **fossil fuels subsidies**.
- On **renewable energy** put in place measures to achieve the higher ambition for the deployment of renewables by 2030 that aligns with the EU's collective target for renewable energy. Accelerate deployment of renewables in district heating and cooling, including by creating an enabling framework to integrate electricity and heating and cooling networks. Promote the uptake of renewable power purchase agreements and guarantees of origin.
- On **nuclear energy**, continue efforts to diversify nuclear fuel supplies and to ensure long-term supply of spare parts and maintenance services.
- On **energy efficiency**, further promote the exemplary role of the public sector and to present additional measures to support the achievement of end-use energy savings particularly targeting the industry and transport sectors, where policies to reduce energy consumption appear limited.
- **On energy poverty,** establish the definition of energy poverty in law and create a strategy with specific targets, timelines, and concrete measures to support households affected by

energy poverty. Implement concrete measures including advice and financing towards households in energy poverty.

- On **research, innovation and competitiveness**, continue strengthening support to the development and manufacturing of innovative net-zero technologies.
- Develop a more **comprehensive just transition strategy** that includes training and re-skilling measures and that allocates sufficient funding.

Denmark

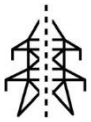
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Denmark's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -23.9% 2023: -24.9%[25]	-50%	NECP: -44.4% However, DK is expected to meet the 2030 target with ESR flexibilities
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of –0,4 Mt CO_2 eq. in 2022	-0,4 Mt CO_2 eq. (additional removal target)	An overachievement of -0.23 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	31.7% (SHARES) 30.0% (target)	2023: 44.4%	58% (for EU 42.5% target)	DK contribution of **58%** is below the **60%** required pursuant the formula of Annex II of the Governance Regulation[26]
	National contribution for energy efficiency:				
	Primary energy consumption	17.5 Mtoe	2023: 15.35 Mtoe	15.35 Mtoe	DK primary energy consumption contribution of 15.35 Mtoe is in line with EED recast Annex I formula results: 15.52 Mtoe (Reference Scenario) or 14.67 Mtoe (Updated

[25] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[26] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Reference Scenario)
	Final energy consumption	15.20 Mtoe	2023: 13.37 Mtoe	13.73 Mtoe	DK final energy consumption contribution of 13.73 Mtoe is in line with the national contribution of 13.73 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[27]	51.0%	2024: 36.0%	15%	DK has surpassed EU-wide interconnectivity target

Source: Eurostat; Denmark's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Denmark's draft updated NECP and provided recommendations[28] for the preparation of the final updated NECP. Denmark submitted its final updated NECP on 28 June 2024, in line with the deadline of 30 June 2024.[29]

2.1 DECARBONISATION

Denmark expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 68% in 2030 compared to 1990. Denmark does not provide emission projections for the With Additional Measures (WAM) scenario for 2040 or 2050.

2.1.1 Effort Sharing Regulation

Denmark has addressed recommendation 1. The final NECP provides sufficient details on how Denmark will meet its ESR target of -50% by 2030 compared to 2005.

The final plan includes updated projections that mark an improvement compared to the draft, showing that Denmark expects to reduce emissions by -44.4% in 2030 compared to 2005, a gap of 5.6 percentage points compared to the 2030 target. The plan does not provide a WAM scenario but explains that Denmark intends to close the gap to the ESR target thanks to additional measures, including an agreed diesel and road tax. Other measures are not outlined in the plan. A decision on the use of ETS and LULUCF flexibilities, or transfers of annual emission allocations is to be taken in 2027 and 2032. In 2023, GHG emissions from ESR

[27] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[28] SWD(2023) 911 final, and Commission Recommendation of 18 December 2023, C/2023/9601.
[29] Article 14(2) of Governance Regulation.

sectors represented 76.4% of the total in Denmark[30] (expected be to 90.8% in 2030)[31], with agriculture projected to represent the largest share (45%).

The final plan partially complemented the information on some of the measures provided in the draft but could still benefit from a clearer description of their scope, timeline and expected greenhouse gas reduction impact. The plan focuses mainly on **transport and agriculture**. For what concerns **transport**, the projections describe a drastic decrease in emissions in the period 2022-2030, with the average percentage decrease per year much larger than in the period 2015-2022 (from -0.55% to -4.66%).[32] Among the measures, Denmark envisaged an increased diesel and road tax, the promotion of electric road transport and the deployment of charging stations.

On **agriculture**, the government set up a 'Green Tripartite' to provide sector specific recommendations. An agreement has been presented to reduce GHG emissions by 70% in 2030. The overall reduction gap compared to Denmark's commitments for 2021-2030 is estimated to reduce to around 0.1 million tonnes of CO_2 eq. in 2030. Measures to reduce emissions under the ESR are being discussed in the Green Tripartite, including the "Expert Group on Green Tax Reform" models for a CO_2 tax on agricultural inputs. The options presented by the Expert Group are estimated to close the remaining gap under the Effort Sharing Regulation.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections account for ETS2 but do not clearly quantify its impact in achieving the ESR target.

2.1.2 LULUCF

Denmark has addressed recommendation 3. GHG emissions from LULUCF represent 1% of the total in Denmark in 2022. The plan includes projections indicating that Denmark will deliver additional - 0.44 Mt CO_2 eq. of net removals, thus meeting its LULUCF target in 2030. The measures proposed within the Tripartite Agreement are commendable, although the effects on the LULUCF target have not been quantified. The plan also clarifies the status and progress in ensuring higher tier levels and geographically explicit datasets, to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Denmark has addressed recommendation 2. Denmark's plans on CCS are comprehensive, including a complete political and regulatory framework and competitive financial incentives for both capture and storage. The plan contains estimates for total CO_2 storage and injection capacity and provides split by biogenic and fossil sources. The estimates for CO_2 to be captured by 2030 are slightly more ambitious than in the draft (15.3 Mt CO_2 in the final compared to 13.7 MtCO_2 in the draft).

2.1.4 Adaptation

Denmark has partially addressed recommendation 4. The plan **refers to** the National Climate Change Adaptation Plan to respond to the recommendation, acknowledging the

[30] Based on EEA data.
[31] Excluding LULUCF.
[32] Compound annual growth rate.

importance of integrating adaptation planning. It also partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a partial **analysis of climate vulnerabilities and risks.** It identifies several significant risks related to energy security. However, it is short of quantifiable assessment of impacts.

The plan partially outlines the **links to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support, particularly for the energy security dimension. Energy infrastructure operators need to regularly prepare climate risk and vulnerability assessments. The plan also envisages a single digital entry point on climate adaptation information as several actors are responsible for planning and implementing related actions. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. Furthermore, the resilience of the energy systems to structural or seasonal water scarcity is not addressed.

The plan sets out some **additional adaptation policies** to support the achievement of national objectives, targets and contributions under the Energy Union. It outlines several measures as part of the 2023 National Climate Change Adaptation Plan to boost coastal protection, flood management, nature-based solutions and infrastructure resilience. The plan includes afforestation measures in the list of measures potentially considered as nature-based solutions. However, the description provides insufficient details to assess their impacts. Investments aimed at minimising environmental impacts, such as biodiversity loss are considered, but information is missing on whether they contribute to climate change adaptation.

2.1.5 Fossil Fuels

Denmark has partially addressed recommendation 19. The plan declares that Denmark does not grant direct subsidies to fossil fuels. The Ministry of Taxation is working on a report on indirect fossil fuel subsidies. The plan does not clearly indicate remaining fossil fuel subsidies nor sets a clear roadmap to phase out[33].

2.2 RENEWABLES

Denmark has partially addressed recommendation 5. The plan indicates that Denmark's share of renewable energy contributing to the EU target of 42.5% has been set at 58% (and 60% for the EU target of 45%), which overall are significantly lower than the projection of 71% for 2030 in the draft updated NECP and lower than the 60% required pursuant the formula of Annex II of the Governance Regulation to be in line with the EU target of 42.5%. The updated trajectory for achieving the national contribution is provided including specific reference values for 2025 (of approx. 37%) and for 2027 (of approx. 45%), which are below the trajectory (43% and 50% respectively) calculated in line with the EU 2030 renewable energy target of 42.5%.

Denmark has partially addressed recommendation 6. Denmark provides estimated trajectories for the deployment of renewable energy technologies. Sector-specific projections,

[33] The Commission 2024 study and Report on Energy subsidies in the EU identifies the existence of fossil fuel subsidies.

including for innovative renewable energy technologies, heating and cooling and renewables in buildings for 2030 are included, but the plan does not refer to these as specific national targets to achieve the sectoral targets of Directive (EU) 2018/2001 (the 'revised RED II')[34]. Denmark indicates that it expects to achieve the binding level for RFNBO in industry by 2030. Denmark confirms that the renewable energy share in heating and cooling is higher than 60% (65% in 2023, expects 80% in 2030) and therefore considers that its annual average increase is considered as fulfilled as described under Article 23(2). The plan indicates that Denmark has not yet taken a political decision on how to meet the fuel specific minimum requirements in 2030. However, Denmark indicates that it will comply with the requirements of the revised RED II including the target for advanced biofuels and RFNBOs of 1% in 2025 with the national CO_2 displacement requirement and by counting biogas injected into the Danish gas system when reporting to Eurostat. The reduction in greenhouse gas intensity in the transport sector is estimated to be 27% in 2030.

Denmark has partially addressed recommendation 7. Denmark generally presents policies and measures enabling the achievement of Denmark's national contribution to the EU's binding renewable energy target. Denmark explains that it cannot provide further details regarding acceleration areas at this stage, as the choice of technologies will depend on the results of the mapping exercise under Article 15b of the revised RED II. Denmark has not provided details on the design of the obligation on fuel suppliers in the transport sector. As regards hydrogen, the plan provides information about the invitation to tender for grants for the production of Power-to-X and don't mention Denmark's plans to establish a hydrogen infrastructure for the transport of hydrogen using pipelines in cooperation with Germany.

Denmark has addressed recommendation 8. The plan provides additional information on domestic supply of biomass per fuel type for 2024-2040 as well as on different types of imported biomass fuels for 2022. It also provides a description of the sustainability requirements for biomass in line with the strengthened sustainability criteria of Article 29 of the revised RED II. In addition, it explains the compatibility of the projected use of forest biomass for energy production with Denmark's obligations under the revised LULUCF Regulation, together with national measures and policies to ensure such compatibility. Finally, Denmark includes further measures to promote the sustainable production of biomethane/biogas.

Denmark has partially addressed recommendation 9 as the plan contains insufficient details on the timeline and procedural steps related to transposition and implementation of the provisions of the revised RED II for most policies and measures.

2.3 ENERGY EFFICIENCY DIMENSION

Denmark has partially addressed recommendation 10. Denmark includes an indicative national contribution of 13.7 Mtoe to the Union's binding final energy consumption target for 2030 and indicative national contribution of 15.4 Mtoe for primary energy consumption in

[34] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

line[35] with Article 4 of Directive (EU) 2023/1791 ('EED recast')[36].Denmark does not include[37] the amount of energy consumption reduction per year to be achieved by all public bodies nor report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly nor the corresponding yearly energy savings to be achieved but opted for the alternative approach. Denmark sets out policies and measures to achieve the energy consumption reduction from public bodies and the renovation of public buildings by applying the measure "Energy Efficiency in Government Institution". This initiative aims to promote energy-saving efforts in all public institutions by setting targets. Denmark includes the amount of cumulative energy savings of 9.22 Mtoe to be achieved over the period from 2021 to 2030 with an explanation on how the annual savings rate and the calculation baseline were established.

Denmark has partially addressed recommendation 11. Denmark set out complete policies and measures to achieve the national contributions on energy efficiency, but it did not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures. Denmark did not specify[38] how the energy efficiency first principle will be implemented and did not mention any measure to implement it or monitor its implementation. Denmark specified robust energy efficiency financing programmes and support schemes and specified existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as On-Bill and On-Tax schemes).

Denmark has partially addressed recommendation 12. Denmark did not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Denmark included intermediate milestones for 2030 and 2040[39]. The milestones for the renovation of buildings did not include non-residential buildings. Denmark included energy savings milestones for the buildings stock.

Denmark included sufficient information on measures related to buildings in terms of funding and costs as well as expected energy savings. Denmark did not include specific information on policies and measures addressing deep renovation and the decarbonisation of heating and the installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Denmark has partially addressed recommendation 13. In the gas sector, the plan does not contain much additional explanation about how concretely Denmark intends to encourage gas demand reduction, nor does it develop detailed policies and measures to reach this objective towards 2030. The plan includes a forecast of the evolution of gross inland gas consumption which is expected to decrease from 3 962 ktoe in 2022 to 3 127 ktoe in 2030 and 1 396 ktoe in 2040, as well as for natural gas production which is expected to increase from 1 244 ktoe in

[35] A WAM scenario is not included.
[36] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[37] Denmark only reported information about the 10% reduction in 2030 compared to 2020 levels to be achieved by Danish ministries.
[38] "Denmark mentioned that it is in the process of clarifying possible implementation models and awaits the Commission's guidance in this respect"
[39] They are mentioned as non-binding milestones

2022 to 3 127 in 2030 and 1 396 in 2040 (WEM scenario). The confirmed objective to have Danish biogas production corresponding to 100% of total Danish gas consumption by 2030 is positively noted.

For electricity, electricity storage comprises the main investment in innovative renewable energy sources alongside large heat pumps and Power-to-X plants. The plan maintains that there are no concrete targets for storage capacity but notes an ongoing assessment of the use of storage solutions for security of electricity supply in the future. The plan clarifies that the Electricity Market Regulation will establish targets for non-fossil flexibility, including energy storage, once necessary flexibility requirements are determined.

In the oil sector, the plan contains forecasts on oil consumption until 2050. However, it does not sufficiently describe the measures taken to assess the adequacy of the oil infrastructure in the long run (refineries, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

2.5 INTERNAL ENERGY MARKET DIMENSION

Denmark has addressed recommendation 14. The plan does not yet set a target for flexibility and demand-side response, as this requirement only becomes mandatory in accordance with the timeline for the submission of the national report on flexibility needs. Denmark is making progress in the promotion of flexibility sources and commits to set a national target by 2027 based on flexibility needs. The plan also outlines specific planned measures to facilitate system integration of renewable energy in accordance with Article 20a of the revised RED II.

Denmark has partially addressed recommendation 15. The updated sections on energy poverty describe the work done to address energy poverty and gives a good overview of measures currently in place to protect and support both vulnerable consumers and energy poor households in Denmark. The updated document includes an assessment of the households affected by energy poverty including a description of the methodology for measuring energy poverty and provides an indicative number of affected households. Denmark considers that energy poverty is well addressed withing social protection policy which includes direct income support as well as structural measures. Denmark does not set a specific target for reducing energy poverty, as their methodology indicates no significant number of households in energy poverty. However, the plan's assessment of number of households in energy poverty is significantly lower than indicated by data on energy poverty from EUROSTAT.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Denmark has partially addressed recommendation 16. The plan includes national objectives in research, innovation, and competitiveness to deploy clean technologies, establishing a pathway for 2030 with a view to support the decarbonization of industry and promote the transition of businesses towards a net zero and circular economy. Significant policies and measures include increased investment in Carbon Capture and Storage and Use and hydrogen technologies, such as PtX and electrolysers and components throughout the full innovation value chain from research, development, maturation, and deployment. The plan refers to measures in the National Strategy for Green Research and Development to promote

the development of net-zero projects including those relevant for the energy intensive industries.

The plan provides measures for the digitalisation of the energy system, promoting flexibility solutions in electricity via data, sector coupling and a strategy (2022-2025) for cyber and information security in the electricity, gas, and district heating sectors.

The plan refers to development of skills but does not convincingly prevent a potential green skills gap, expecting measures and investments to bridge potential skills gaps and boost entrepreneurship for the energy transition to be supported from the Cohesion Policy Funds.

The plan does not contain clear national competitiveness targets or measures to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment. It includes measures for regional cooperation in this area and international cooperation is also addressed. The plan refers to circular economy measures in policies and research in a general way, without providing more detailed actions.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Denmark partially addressed recommendation 17. The plan does not provide comprehensive and consistent estimates of the public and private investment needs in aggregate and by sector. The plan provides information on agreed government funding, separating national and Union sources, and for some measures estimated private funding. However, the plan does not outline how the planned measures will mobilise private investments. The information provided in the plan is not sufficient to estimate a potential financing gap with respect to investment needs, and to assess how this would be filled. Moreover, the plan lacks a sufficiently developed and robust macroeconomic impact assessment.

2.8 JUST TRANSITION

Denmark has partially addressed recommendation 20. The final updated NECP provides limited additional information on the analysis of the social, employment and skills impacts of the transition, and other distributional impacts on vulnerable groups as part of the overall macro-economic assessment of the plan. The plan relies on an environmental and climate model (the Gron Model) that assess how future economic activities will affect the environment. The plan does not include social, re- and up-skilling objectives nor policies for a just transition.

The plan provides limited information on the impact of the transition to climate neutrality on employment, mainly focusing on the results of the Gron Model. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for ERDF and JTF. The analysis focuses on the JTF and the Territorial Just Transition Plan.

The plan does not include the analytical basis needed for the preparation of the Social Climate Plan (SCP), such as information on the estimated impact of ETS2 and the identification of vulnerable groups, apart from the analysis of energy poverty. Denmark explains how they intend to prepare the SCP with the support of the Technical Support Instrument. However, the plan does not explain how the policy framework identified in the NECP will contribute to the preparation of the SCP, nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Denmark has partially addressed recommendation 21. The plan generally describes the fora and the ways in which stakeholders were consulted on energy and climate policy, although not always referring specifically to the process of preparing the NECP. Denmark organised public consultations for both the draft and final updated plans for periods of 3 and 4 weeks, respectively. These consultations were mainly organised through an online portal, but they started very close to the submission date, which limited the possibilities to fully take stakeholder input into account early in the process. The plan includes a summary of the outcome of the consultations and describes how the final plan integrates the inputs and changes suggested from stakeholders, including why certain inputs were excluded.

2.10 REGIONAL COOPERATION

Denmark has addressed recommendation 22. It has engaged in regional cooperation by being an active member of NSEC and BEMIP, and the plan indicates the work carried out in this context. Denmark is also working on concrete cross-border projects with neighbouring Member States. The plan refers to ongoing negotiations with Poland to sign the last required bilateral solidarity agreement for the supply of gas.

2.11 ANALYTICAL BASIS

Denmark has not addressed recommendation 18. The final plan includes updated projections compared with the draft updated NECP but still does not provide projections under the WAM scenario.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

Denmark should swiftly proceed with implementing its final national energy and climate plan. Denmark is invited to pay particular attention to the following main elements:

- Monitor the impacts of the policies included in the plan on emission reductions under the ESR, especially for those not yet included in modelling scenarios. Implement the Green Denmark Agreement and quantify its contribution to the **ESR and LULUCF targets**.
- Address gaps in **freight transport and modal switch to rail**, as Denmark's rail share of 9.2% and the electrification of the railway network are below the EU average. Keep momentum in the uptake of electric vehicles and promote electrification of demand.
- On **adaptation**, consider using the recently adopted Climate Adaptation Plan and related developments to integrate their priorities in the implementation of the NECP.

- Clarify **fossil fuel subsidies** and set a roadmap and specific measures for their gradual phase-out.
- As regards **renewable energy**, put in place measures to achieve the higher ambition for renewables by 2030 that aligns with the EU's collective target for renewable energy and develop a comprehensive plan for promoting the use of renewable energy in the industry sector and to further increase system flexibility, and facilitate the uptake of power purchase agreements with specific design measures.
- On **energy efficiency**, develop a clear investment plan that anticipates the investment needs for energy efficiency measures, including the private/public split. Consider further measures addressing SMEs and smaller enterprises, as only 1.6% of planned energy savings from alternative measures under Article 8 EED recast are expected to come from the industry sector, mainly targeting large enterprises.
- Denmark is encouraged to refer to Commission Recommendation (EU) 2023/2407 of 20 October 2023 on **energy poverty** for a careful balance of indicators to not overlook any vulnerable groups.
- Regarding the **internal energy market**, establish a national target for flexibility and demand-side response, grounded in a thorough assessment of flexibility needs.
- Address potential **green skills gaps** by investing in education and training programs that foster the development of skills required for the climate and energy transition. Include upskilling and reskilling in a **comprehensive just transition strategy** which allocates sufficient resources.

Germany

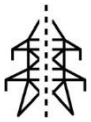
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Germany's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -18.5% 2023: -20.9%[40]	-50%	NECP: -40.8%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -4.4 Mt CO_2 eq. in 2022	-3.75 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: a gap of 6.6 Mt CO2 eq
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	19.9% (SHARES) 18% (target)	2023: 21.6%	41% gross final consumption of energy	DE contribution of 41% is in line with the constribution according to the formula set out in Annex II of the Governance Regulation[41].
	National contribution for energy efficiency:				
	Primary energy consumption	276.6 Mtoe	2023: 238.93 Mtoe	193.64 Mtoe	DE primary energy consumption contribution of 193.64 Mtoe is in line with the EED recast Annex I formula results: 194.23 Mtoe (Reference Scenario) or 191.06 Mtoe (Updated Reference Scenario).

[40] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[41] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation')

	Final energy consumption	194.3 Mtoe	2023: 187.0 Mtoe	155.55 Mtoe	DE final energy consumption contribution of 155.55 Mtoe is in line with the national contribution of 155.53 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[42]	11.4%	2024: 10.6%	15%	DE is below the EU-wide interconnectivity target.

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

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Germany's draft updated NECP and provided recommendations[43] for the preparation of the final updated NECP. Germany submitted its final updated NECP on 28 August 2024, two months after the deadline of 30 June 2024.[44]

2.1 DECARBONISATION

Germany confirms its commitment to decreasing total GHG emissions (including LULUCF and excluding international aviation) by at least 65% in 2030 and at least 88% by 2040, compared to 1990, as well as its national objective of climate neutrality by 2045.

2.1.1 Effort Sharing Regulation

Germany has partially addressed recommendation 1. The final NECP does not provide sufficient details on how Germany will meet its ESR target of -50% by 2030 compared to 2005.

The plan provides updated projections that mark an improvement compared to the draft plan but showing that the existing and planned policies and measures will lead to a decrease of only 40.8% in 2030 compared to 2005, 9.2 percentage points above the national ESR target. The government is exploring the feasibility of further measures to achieve the target. In 2023, GHG emissions from ESR sectors represented 56.9% of the total (63.3% in 2030)[45], with transport projected to represent the largest share.[46] The 'with additional measures' (WAM) projected

[42] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[43] SWD(2023) 928 final, and Commission Recommendation of 18 December 2023, C/2023/9618.
[44] Article 14(2) of Governance Regulation.
[45] The 2023 emissions are based on 2024 approximated inventory reports (Article 26 of the Governance Regulation).
[46] Based on reporting of greenhouse gas projections (Article 18 of the Governance Regulation).

value in 2030 is only 1.4% lower than the projections under the 'with existing measures' (WEM) scenario, hinting that the plan needs to be complemented with impactful additional measures to reach the target.

The final plan complements the information on the policies and measures provided in the draft but more details on scope, timeline and expected impact on GHG emissions would be useful. The plan focuses on cross-sectoral measures, covering all relevant sectors. On **transport**, Germany provides a comprehensive set of measures based on (modal) shift and technology improvement. However, the specification of new transitory incentives for electric vehicles is still pending and the plan includes measures support to fossil-fuelled commercial vehicles.

On **agriculture**, the plan provides sufficient detail in terms of funding but not on the impacts of measures, and how these contribute to the ESR target. The projections suggest a gradual decrease in emissions, although the pace of reduction appears to be relatively slow.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WEM and WAM scenario projections account for the effect of ETS2, however they do not clearly consider the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

Germany has partially addressed recommendation 3. The LULUCF sector in Germany generates net removals, absorbing roughly 1% of the total GHG emissions in 2022. According to the latest reported 2022 figures, Germany's performance deteriorated by 9.4 Mt CO_2eq in comparison to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, Germany has to enhance its net removals by -3.8 Mt CO2eq in 2030 as compared to the reference period. Taking into account its projections for 2030, Germany will still have a gap of 6.6 Mt CO_2eq in 2030. The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario.

The plan provides sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The final plan does not provide sufficient information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Germany **has not addressed recommendation 2.** Germany's NECP does not identify the amount of CO_2 emissions that could be captured annually by 2030 and does not provide details on how the captured CO_2 will be transported. In addition, Germany's NECP lacks an estimate of the total CO_2 storage capacity in Germany, and targets on annual injection capacity. Yet, the plan adds new actions compared to the draft NECP that are in the process of being implemented to further develop a Carbon Management Strategy.

2.1.4 Adaptation

Germany has partially addressed recommendation 4. The plan refers to the future national adaptation strategy, acknowledging the importance of integrating adaptation planning. It nevertheless lacks adaptation policies and measures for most parts of the relevant Energy Union dimensions. The plan contains a partial **analysis of climate vulnerabilities and risks**.

However, this analysis is restricted to climatic risks for bioenergy and LULUCF and includes no quantification.

The plan partially outlines the **links to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support. It identifies droughts and calamities as threats to bioenergy and LULUCF objectives and refers to planned and implemented nature-based solutions in forestry and urban areas. However, the mentioned impacts and benefits of nature-based solutions have generally not been quantified, and there is no information on other Energy Union objectives and policies that adaptation policies and measures are meant to support. The plan does not set out significant **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. The description of the forestry and urban greening measures provides insufficient details to assess their scope, timing and expected effects on the Energy Union dimensions. Beyond these two sectors, specific descriptions of measures in other areas are missing.

2.1.5 Fossil Fuels

Germany has partially addressed recommendation 19. The plan includes a timeline to phase-down fossil fuels for energy use by 2038 at the latest. It also mentions the need to phase out fossil fuel subsidies, referring to G20 and G7 commitments to eliminate inefficient fossil subsidies by 2025, but does not provide a precise timeline. The plan only states that Germany will conduct more intensive and regular reviews of subsidies, particularly with respect to their climate impact. Moreover, the plan indicates that Germany will establish a unified framework for defining climate-damaging subsidies but does not provide a clear explanation of how this framework will be implemented or what specific measures will be taken to phase out fossil fuel subsidies.

2.2 RENEWABLES

Germany has partially addressed recommendation 5. Germany raised the ambition from 40% in the draft NECP **to a share of renewable energy sources of at least 41%** in line with the formula in Annex II of Governance Regulation, as a contribution to the Union's binding renewable energy target for 2030 laid down in Article 3(1) of Directive (EU) 2018/2001 (the 'revised RED II')[47]. However, the plan does not provide reference points for 2025 and 2027 for this increased contribution. WEM and WAM scenarios with data for 2025 and 2027 are provided but no scenario reaches 41%, the highest being 38.2% (WAM, assuming all consumed hydrogen to be renewable).

Germany has partially addressed recommendation 6. It provides an estimated trajectory for all renewable technologies and a long-term plan for the deployment of renewable energy technologies for key technologies in electricity (PV, onshore, offshore wind, and biomass) over the next 10 years, with an outlook to 2040. The final plan also contains projections for 2030 for large industrial heat pumps (above 500 kW) to reach 2.1 GW electric and 6.3 GW thermal capacity and for district heat pumps (below 500 kW) to reach 57.6 GW thermal capacity.

[47] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

Germany does not include an indicative target for innovative renewable energy technologies by 2030 in line with the revised RED II. However, Germany has set an indicative renewables target for industry, in line with the revised RED II but does not include a binding minimum share of RFNBOs in industry by 2030. Germany has moreover confirmed its transport target of 30%, 1 percentage point higher than the target of the revised RED II (all scenarios are well above than the 30%). Germany has not included a specific target to contribute to the indicative sub-target in buildings for 2030 but a range of 46-50%, stating that they are awaiting a guidance on the calculation method before being able to provide a final indicative target. Germany has confirmed that projections included in the draft plan are contributing to the binding targets in heating and cooling for both 2021-2025 and 2026-2030, and the indicative target to achieve the top-ups of Annex IA of the revised RED II. The indicative contribution including the top-ups is however 0.5 percentage points higher than the confirmed contributions for 2025 and 2030 (i.e. 23.5% instead of 23% and 32.5% instead of 32% for 2025 and 2030 respectively). Germany announced that it will increase the level of ambition for advanced biofuels and renewable fuels of non-biological origin (RFNBOs) in the transport sector in line with the revised targets set out in RED.

Germany has partially addressed recommendation 7. Germany includes in its final NECP some additional information on policies and measures, updating it with additional measures taken since adoption of the draft NECP update. Germany does not detail for which technologies it would designate renewables acceleration areas but mentions several policies and measures that aim at speeding up renewables deployment. In particular for the development of wind energy is raised, e.g. the obligation for the regions to designate a certain percentage of their territory as specific onshore wind areas.

Germany does not describe how it aims to accelerate the deployment of renewables via the uptake of renewable power purchase agreements, guarantees of origin and an enabling framework to promote self-consumption. The final updated plan specifies a detailed list of measures for the acceleration of the deployment of renewables and the phasing out of fossil fuels in the heating and cooling sector but does not detail to what extent the different elements will contribute to the higher renewables share in heating and cooling. The plan includes information on different policies and measures for sector integration, where electrification of transport and heating, combined with a strong increase in storage capacities and digitalisation, will play a decisive role. Germany will update the obligation on fuel suppliers (THG quota) in the transport sector to achieve a sub-target for advanced biofuels and renewable fuels of non-biological origin (RFNBOs) in the transport sector and set out measures for promoting hydrogen in industry.

Germany has partially addressed recommendation 8. The plan lacks details on the procedural steps and timelines for most policies and measures. The plan does not include a full assessment of the domestic supply of **forest biomass for energy purposes** in 2021-2030 in accordance with the strengthened sustainability criteria of the revised RED II nor does it include an assessment of the compatibility of the projected use of forest biomass for energy production with Germany's obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies to ensure such compatibility. In addition, Germany includes specific measures to promote the sustainable production of biomethane/biogas but without stating a clear target.

Germany has not addressed recommendation 9 by providing an expected timeline of the steps leading to the adoption of legislative and non-legislative policies and measures aimed at transposing and implementing the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Germany has partially addressed recommendation 10. The plan includes an indicative national contribution for 2030 of 155.5 Mtoe for final energy consumption in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[48][49] Germany includes the amount of energy consumption reduction per year to be achieved by all public bodies[50] nor report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly - or the corresponding yearly energy savings to be achieved, but it specified that it opted for the alternative approach.

Germany has partially addressed recommendation 11. Germany sets out complete policies and measures to achieve the national contributions on energy efficiency, but it does not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures. Furthermore, it is specified how the energy efficiency first principle will be implemented. The plan sets out some energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Germany specifies existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes sand established a National Energy Efficiency Fund, but it did not detail the role of and provided sufficient information on the fund.

Germany has not addressed recommendation 12. Germany did not update its milestones in comparison with the 2020 Long Term Renovation Strategy 2. The final NECP explains that it does not revise the national LTRS as part of the plan but only provides an update on policy measures. The final updated NECP recalls the intermediate milestone of primary energy consumption to be achieved in 2030, but the milestones for 2040 and 2050 are missing. The building sector is targeted throughout several sections of the NECP, through financing schemes and regulations. Measures on buildings are expected to generate significant energy savings, however the NECP does not sufficiently describe the link between renovation rates and energy savings, nor between measures and financing.

2.4 ENERGY SECURITY DIMENSION

Germany has partially addressed recommendation 13. On **gas**, the final updated plan does not define clear objectives for diversifying energy sources or for further encouraging gas demand reduction towards 2030. The final plan does provide a more ambitious forecast of fossil gas consumption than the draft, with a decrease from 2,813 PJ in 2024 to 2,513 PJ in 2030, 1,143 PJ in 2040 and 868 PJ in 2050.

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[48] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[49] However, the WAM scenario 2030 projection (186.7 Mtoe) is not in line with the target.
[50] An annual consumption reduction target of 2% is given without specifying the savings impact in terms of Mtoe. However, the baseline is equal to 68.9 TWh, so the absolute reduction for the first year could be calculated as equal to 1.4 TWh (120 ktoe).

On **electricity**, the final plan includes additional measures to enhance system flexibility, including smart grids, demand response, and storage strategies, such as the electricity storage strategy introduced in December 2023. However, there are few specific timelines for implementation and cross-border cooperation to address structural grid congestion.

The plan contains projections on oil consumption until 2050. It is positively noted that Germany identifies the need to ensure security of oil supply in the context of electrifying transport. However, the plan does not describe in detail the measures taken to assess the long-term adequacy of the oil infrastructure (refineries, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

The final plan refers to the new federal adaptation law and the development of a new national adaptation strategy. However, it does not clearly put forward policies and measures to integrate the imperative of climate adaptation in the energy system

2.5 INTERNAL ENERGY MARKET DIMENSION

Germany has partially addressed recommendation 14. The plan acknowledges the importance of flexibility of the energy system against the background of an increasing share renewable electricity production, lists existing, planned, and other possible measures as well as reports about an ongoing stakeholder consultation process on the reform of electricity market related national rules. However, the plan does not put forward clear objectives and targets for **demand response** or other options to improve the flexibility of the energy system. Instead, it refers to the planned definition of an indicative national objective for non-fossil flexibility.

As regards **empowering consumers**, the plan provided explanations to the roll out of smart meters and their promotion, including through digital solutions, to advisory services provided to consumers, and description of the protection of consumers. While some information is provided on the regulatory framework for energy communities, further explanations to how to actively empower citizens to participate on the energy market through energy sharing, collective purchasing or self-consumption are missing.

The plan does not include a timetable with appropriate measures to remove structural congestion in the electricity system and to provide efficient dispatch and location signals. Instead, it refers to the action plan notified in 2019 (“Aktionsplan Gebotszone”). Germany also reports that more electricity transmission capacities will be needed, and that more congestion can be expected at least until planned large HVDC transmission lines will be completed, which could indicate that the Action Plan of 2019 may no longer be up to date.

Germany has partially addressed recommendation 15. While there are sufficient explanations as to how the social security systems help affordability (e.g. through improving the housing benefits or improving the legislative environment to prevent disconnections from electricity and gas), the final plan lacks both a thorough assessment of people in energy poverty and a measurable reduction target and to that connected share of savings to be achieved in households affected by energy poverty. Germany has many structural energy efficiency, building renovation, decarbonisation, renewable energy and heating and cooling measures that are implemented in residential buildings and a few of them are specifically addressing vulnerable households (such as the support for the exchange of heating based on income, support for subsidised supplementary loan for restructuring measures in dwellings of people

with taxable household income up to EUR 90,000 per year, the EEG surcharge and targeted advisory and knowledge support to vulnerable people on energy savings or energy efficiency measures and regulates the allocation of CO2 costs between tenants and landlords).

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Germany has partially addressed recommendation 16. The plan includes a comprehensive approach, including targets and measures to support research, innovation and investments in clean energy technologies, the manufacturing of clean energy technologies and equipment, and the digitalisation of the energy value chain. Significant policies and measures, including Germany's 7th Energy Research Programme or specific programmes to support research, innovation and the competitiveness of net-zero technologies (e.g. hydrogen or CCUS) are being presented. The plan includes information about the measures but does not include a specific breakdown of investment in research and innovation (R&I) for the energy sector for 2030 and beyond. Similarly, it presents the implications of the Net-zero Industry Act for Germany but lacks clear competitiveness targets and measures for regional cooperation in this area.

The plan does not provide details on policies and measures for the digitalisation of the energy system. The plan does set out some measures for net-zero projects, but it provides only limited information on projects relevant for energy intensive industries. The plan does not fully describe how the measures will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing and how access to national funding will be simplified where needed. It provides no detailed policies and measures to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment. The plan includes information on measures and investments to bridge potential skills gaps for the energy transition.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Germany partially addressed recommendation 17. The assessment of the overall additional investments needed to reach the energy and climate targets is based on the top-down model used for the WEM and WAM scenarios. The plan discusses financial instruments to mobilise more private capital for the energy transition but does not provide a comprehensive breakdown of investment needs, focusing only on sector-specific studies. The plan does not quantify funding sources and does not link them to specific investment needs. The information provided in the plan is not sufficient to estimate whether there is a potential financing gap, or how this would be filled.

2.8 JUST TRANSITION

Germany has partially addressed recommendation 21. The plan provides some information on the impact of the transition to climate neutrality on employment and skills but does not sufficiently describe the impact on vulnerable households. Moreover, the plan mentions that EUR 40 billion are provided from national funds in support to federal states affected by the coal phase-out. The analysis focuses on the JTF, and the Territorial Just Transition Plan.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups.

While acknowledging the need for coherence, the plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Germany's Social Climate Plan nor how the consistency of the two plans will be ensured. It refers to the existing CO_2 taxation at national level having similar impacts as ETS2, and to the mitigating/social fairness measures in place.

2.9 PUBLIC CONSULTATION

Germany has partially addressed recommendation 22. The plan generally describes the ways in which stakeholders were consulted. However, the process was not specific to the NECP, but rather on the related energy and climate policies and measures. The consultations were organised with targeted stakeholders, through dialogues, roundtables, platforms, and networks.

Only after the submission to the European Commission and the publication of the draft NECP, a limited online consultation was held between 24 January 2024 and 17 March 2024 on the adequacy of objectives and measures. The plan includes a general summary per dimension of the comments received during the consultation on the draft NECP. However, it does not describe how the final plan integrated the inputs and changes suggested from stakeholders.

2.10 REGIONAL COOPERATION

Germany has partially addressed recommendation 23. The plan includes information on several joint projects to produce renewables energy, especially in the offshore wind area. However, the final updated plan does not refer to any progress as regards the signature of the remaining bilateral solidarity agreements for the security of gas supply (Poland, Czechia, France, Luxembourg, Belgium, and the Netherlands), nor does it refer to the signature of an agreement with Italy in March 2024.

2.11 ANALYTICAL BASIS

Germany has addressed recommendation 20. The plan is based on an updated modelling exercise, which now includes a WAM scenario. The methodologies and models used are not described in detail, but the NECP references documents that describe them, with projections reaching 2050. However, some of them are not publicly available yet.

The draft NECP also provides an impact assessment of policies and measures, which includes a macro-economic assessment and partial assessment of social and health impacts.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Germany partially addressed recommendation 18. The final updated covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. The final updated NECP still does not refer to the investments related to the support programme for the development of a climate-friendly timber construction and to the municipal living labs for the energy transition, which are relevant climate and energy reforms and investments of the RRP

and its REPowerEU chapter. The final updated NECP includes the following investments and reforms without linking them to the RRP and the REPowerEU chapter: energy efficiency measures in buildings, investments in efficient heat networks, investments in the promotion of industries involved in hydrogen and fuel cell applications for transport, and reforms promoting the acceleration of wind energy, onshore and offshore.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Germany to ensure a timely and complete implementation of the final updated NECP. Germany is invited pay particular attention to the following elements:

- On **ESR**, closely monitor the impacts of the policies included in the plan and increase efforts to reduce GHG emissions across all effort sharing sectors. Explore possible available flexibilities to ensure compliance with the ESR obligations.
- On **LULUCF**, strengthen measures to enhance removals to meet the 2030 target. Consider scaling up climate-adapted forest management with long-term financial support to drive innovation in carbon sequestration and accelerating reforestation and afforestation with strict monitoring to ensure net carbon gains. Strengthen the cascade use principle to maximise carbon storage in harvested wood products. Ensure bioenergy policies are aligned with sustainability criteria to avoid carbon losses. Expand private financing through carbon credit markets and fully implementing Tier-3 monitoring.
- On **adaptation**, consider using ongoing adaptation policy processes, such as the preparation of the next adaptation strategy, to further assess quantitatively climate vulnerabilities and risks for the achievement of the national objectives, targets and contributions, and the policies and measures in the Energy Union dimensions, That would enable better outlining and quantifying the link to the Energy Union objectives and policies that adaptation policies and measures are meant to support, as well as setting out additional adaptation policies and measures in sufficient detail.
- Map **fossil fuel subsidies**, including those in the transport sector, and develop a roadmap for their phase-out.
- In terms of **renewable energy**, establish reference points for 2025 and 2027 for the share of renewable energy sources and determine an RFNBO target in industry.
- Assess further measures to **decrease energy consumption of transport sector**. Raise ambition of transport policies, e.g. by incentivising use of public transport, incentives for electric vehicles and by significantly improving rail infrastructure.
- On **energy efficiency**, put it place additional financing instruments to support energy efficiency investment needs.
- On **industry**, design actions to reduce energy costs, address structural congestion and assess further measures to decrease energy consumption, such as increasing the use of energy management systems and exploiting heating and cooling potential. Swiftly implement the Carbon Management Strategy for the deployment of CCUS technologies.
- As regards **buildings**, ensure stability of renovation funding programs and further promote the electrification of heating by addressing the unbalanced electricity-to-gas-price ratio.

- Identify people in **energy poverty** through a set of indicators following EU legislation to better direct the structural measures towards vulnerable people and to improve the energy efficiency and decarbonisation of the housing stock for the most vulnerable groups.
- Set a concrete timetable and specific actions to address **structural congestion in the electricity grid.**

Ireland

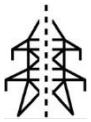
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Ireland's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -3.8% 2023: -10.3%[51]	-42%	NECP: -25.4%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net emissions of 7.34 $MtCO_2$ eq. in 2022,	-0.63 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: a gap of 1.36 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	16.2% (SHARES) 16% (target)	2023: 15.3%	43%	Ireland's contribution of 43% is in line the level required according to the formula set out in Annex II of the Governance Regulation[52]
	National contribution for energy efficiency:				
	Primary energy consumption	13.9 Mtoe	2023: 14.06 Mtoe	11.29 Mtoe	IE primary energy consumption contribution of 11.29 Mtoe is in line with the EED recast Annex I formula results: 11.23 Mtoe (Reference Scenario) or 11.29 Mtoe (Updated Reference Scenario).

[51] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[52] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	11.7 Mtoe	2023: 12.0 Mtoe	10.45 Mtoe	IE final energy consumption contribution of 10.45 Mtoe is in line with the national contribution of 10.45 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[53]	6.6%	2024: 0%	15%	IE is below the EU-wide interconnectivity target.

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

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In February 2024, the Commission published a thorough assessment of Ireland's draft updated NECP and provided recommendations[54] for the preparation of the final updated NECP. Ireland submitted its final updated NECP on 22 July 2024, a few weeks after the deadline of 30 June 2024.[55]

2.1 DECARBONISATION

Ireland expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 20% in 2030, by 33% in 2040 and by 36% in 2050, as compared to 1990. Ireland committed to reach climate-neutrality by 2050 in the Climate Action and Low Carbon Development Act.

2.1.1 Effort Sharing Regulation

Ireland has partially addressed recommendation 1. The plan does not provide sufficient information on how Ireland will work to meet its ESR target of -42% by 2030 compared to 2005.

The plan provides updated projections showing that the existing and planned policies and measures will lead to a decrease of only 25.4% in 2030 compared to 2005, a gap of 16.6 percentage points from the national ESR target. However, the plan explains that some policies are not yet modelled in the projections. In 2023, GHG emissions from ESR sectors in Ireland represented around 78% of the total (expected to be 83% in 2030)[56] , with agriculture projected to represent the largest share. The 'with additional measures' (WAM) value in 2030 is about

[53] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[54] SWD(2024) 42 final, and Commission Recommendation of 23 February 2024, C/2024/1187.
[55] Article 14(2) of Governance Regulation.
[56] The 2023 emissions are based on 2024 approximated inventory reports.

18% lower than the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require a significant effort. Ireland states that ETS and LULUCF flexibilities will not be enough to bridge the gap to target. The final plan complemented the information on the policies and measures provided in the draft but more details on scope, timeline and expected impact on GHG emissions would be useful.

The plan sets out a large array of additional measures in the **agricultural sector**. However, key to delivering is the provision of low emission animal feeds and low emission fertilisers, many of which are still in early development. Moreover, incentives are needed for their uptake. The plan acknowledges the absence of more wide-ranging measures that could deliver substantial emission reductions, such as diversification into less carbon intensive agriculture and a reduction of the large number of (dairy) herds.

On **transport**, the plan sets out measures to have all new cars zero carbon emission or zero emission-capable by 2030, with a longer-term goal to decarbonise the passenger car fleet by 2050.

F-gas emissions are projected to increase from 2030 to 2050 probably due to Ireland's semiconductor sector. This is concerning given their high global warming potential.

Ireland has notified the use of a derogation not to apply the carbon pricing under the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2) until the end of 2030. The plan provides information on the national carbon tax and refers to ETS2. The scenario projections account for the effect of the national carbon tax but do not clearly quantify its impact in achieving the ESR target.

2.1.2 LULUCF

Ireland has partially addressed recommendation 3. The LULUCF sector in Ireland generates emissions, representing 7% of the total GHG emissions in Ireland in 2022. There is a significant overlap between agriculture and the LULUCF sector as the vast majority of land is agricultural land. Thus, land use emissions and removals are strongly influenced by actions undertaken by farmers. According to the LULUCF Regulation, Ireland has to enhance its net removals by -0.63 MtCO2eq in 2030 compared to the yearly average in the 2016-2018 reference period. According to 2022 figures, Ireland has improved its performance by -1.62 MtCO2eq compared to the reference period. Nevertheless, even considering numerous additional measures, Ireland still expects a gap of 1.36 Mt CO2eq in 2030.

The plan clearly acknowledges the need for both public (CAP, State aid) and private finance to achieve Ireland's LULUCF targets and details the financial commitment for individual measures. On agricultural measures, the plan provides specific quantification of how these policies contribute to emission reductions.

However, the plan lacks sufficient information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Ireland has not addressed recommendation 2. The plan does not provide a strategy on CCUS. However, the plan recognises the potential of the technology to support the transition to a low carbon economy. Ireland adopted a 5-year CCS review process, which will inform any decision to commit resources and put regulatory and permitting systems in place.

2.1.4 Adaptation

Ireland has partially addressed recommendation 4. The plan refers to the National Adaptation Framework (NAF), acknowledging the importance of integrating adaptation planning. It is rather comprehensive and embeds adaptation policies and measures in the relevant Energy Union dimensions. However, the plan lacks detail in their scope and timeline needed for an estimation of their impact.

The plan includes a thorough **analysis of climate vulnerabilities**, and identifies several significant risks related to flooding, droughts, winds and storms, and fluctuations in wind and solar energy. However, except for the cost of flood defenses, it is short of quantifiable assessment of impacts. The plan outlines the **links to specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. The plan informs about a new sectoral climate change risk assessment to be finalised in 2025. However, the impacts and benefits of adaptation policies on the Energy Union objectives have generally not been quantified.

The plan does not set out **significant additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union.

2.1.5 Fossil Fuels

Ireland has partially addressed recommendation 19. The plan indicates that peat and coal are expected to no longer be part of the electricity generation mix post 2025. Ireland has also committed to explore the potential for carbon capture and storage (CCS) technology at the Money Point power plant.

The plan describes different types of fossil fuel subsidies but lacks detailed measures and a timeline for phasing them out. Moreover, Ireland carried out a review of the main existing fossil fuel tax subsidies, mainly the diesel excise gap, and a diesel rebate scheme, and identified options for their phase-out

2.2 RENEWABLES

Ireland addressed recommendation 5. Ireland raised its contribution of renewable energy in final energy consumption from 31.4% in the draft NECP to 43% for 2030 based on the WAM scenario. The increased contribution corresponds to the level calculated in line with the formula of Annex II of the Governance Regulation. The final NECP also includes an updated indicative trajectory to reach the 43% in 2030 including the specific reference points for 2025 (20.3) and for 2027 (25.9); however, those values are below the trajectory calculated in line with the increased EU renewable energy target of 42.5% (28% and 33% respectively). Ireland explains that it is mainly due to the longer timeframe needed for building large wind energy and district heating projects which will be operational by the end of this decade[57].

Ireland partially addressed recommendation 6. The final NECP includes projections and trajectories for renewable technologies and trajectories for renewables in heating and cooling, industry, and transport for 2030. However, it does not include a specific target for buildings,

[57] The RES share is projected to increase steeply from 34.9% in 2029 to 42.7% in 2030 due to the large RES projects becoming operational.

district heating and cooling, a minimum level of RFNBO for industry in 2030. As regards innovative renewable energy sources, Ireland does not set a specific target in its plan but states that this challenge will be addressed through different policy instruments. The heating and cooling target is above the binding level of Directive (EU) 2018/2001 (the 'revised RED II')[58]. The NECP indicates that the transport target will be met with an energy-based obligation that includes a minimum share for advanced biofuels. A minimum share for RFNBOs in transport will be set via national legislation.

Ireland has partially addressed recommendations 7 and 9. The final NECP provides some additional information on policies and measures to achieve Ireland's national contribution to the Union's renewable energy target. It describes in detail the progress made on the acceleration of permitting. However, it does not describe how Ireland plans to designate "renewable acceleration areas". It gives indications on how Ireland aims to increase the integration between electricity and heat but insufficiently describes plans to recover and use waste heat. The final NECP lacks details on the procedural steps and timelines for most policies and measures.

Ireland has addressed recommendation 8. The final NECP provides estimated trajectories for biomass supply by feedstock for both domestic production and imports as well as for bioenergy demand by feedstock. It includes national measures to ensure the compatibility of forest biomass use with the RED sustainability criteria and with Ireland's obligations under the revised LULUCF Regulation. Ireland also provides explanations on how to ensure the compatibility of afforestation measures, the projected increase of use of solid biomass for energy, LULUCF sinks and biodiversity. Finally, Ireland includes further measures to promote the sustainable production of biogas/biomethane and digestate.

2.3 ENERGY EFFICIENCY DIMENSION

Ireland has partially addressed recommendation 10. Ireland includes an indicative national contribution of 10.45 Mtoe to the Union's binding final energy consumption target and 11.29 Mtoe to the Union's indicative primary energy consumption target and for 2030 in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[59]. However, Ireland does not include the amount of energy consumption reduction per year to be achieved by all public bodies as required by Article 5 of EED Recast. Ireland does not include the amount of cumulative energy savings to be achieved over the period from 1 January 2021 to 31 December 2030 as required by Article 8 of EED Recast.

Ireland has partially addressed recommendation 11. Ireland sets out complete policies and measures to achieve the national contributions on energy efficiency, but it does not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures. Ireland explained how the energy efficiency first principle will be implemented and specified robust energy efficiency financing programmes and support schemes. Ireland reports existing policy measures to promote the uptake of energy efficiency lending products and

[58] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

[59] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

innovative financing schemes (such Energy Performance Contractors and ESCOs). Ireland established a National Energy Efficiency Fund and partially details its role and provided sufficient information on it, by including the use of financial instruments within the Fund.

Ireland has partially addressed recommendation 12. Ireland does not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Also, an intermediate milestone for 2040 is missing. The milestones for the renovation of buildings include non-residential buildings, in addition to residential buildings. Ireland does not include sufficient information on measures related to buildings in terms of energy savings but included sufficient information in terms of funding and costs. The plan includes specific information on policies and measures addressing deep renovation, with a specific focus on worst-performing buildings and vulnerable consumers, as well as decarbonisation of heating and installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Ireland has partially addressed recommendation 13. The final plan does not further explain envisaged measures to diversify gas supply and to continue encouraging gas demand reduction towards 2030. The plan only refers to the general objectives of reducing *'natural gas demand and develop renewable, indigenous gas supply and renewable gas-compatible storage*', and to the creation of a Strategic Gas Emergency Reserve as well as to the signature of a Memorandum of Understanding with the British Government to strengthen existing arrangements in the event of a gas supply shock. The plan contains a forecast for gas production, which should move from a maximum daily supply of 38.7 GWh/d today to 14.2 GWh/d in 2030/31, which is slightly lower than in the draft plan. Contrary to the draft, the final plan also contains a forecast for the evolution of natural gas consumption, which should decrease from 4 294 ktoe in 2021 to 2 447 ktoe in 2030 and 1 014 ktoe in 2050 (WAM scenario).

The final plan adds more details on measures related to electricity security of supply, referring to the Energy Security Package with several relevant actions. On storage, the plan sets an objective of additional 1.7 GW of long-duration energy storage by 2030. This is to allow for additional RES connection to the grid and the management of energy constraints. This contribution is stated to be needed to reach the objectives of 80% of electricity generation by RES and reduction of GHG emissions by 51% in 2030.

The plan contains forecasts on oil consumption until 2050. The plan also describes the measures being investigated to ensure the adequacy of oil infrastructure in the long run (refineries, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

While the final plan explicitly recognises the importance of climate change for energy security, it does not clearly put forward policies and measures to integrate the imperative of climate adaptation in the energy system.

2.5 INTERNAL ENERGY MARKET DIMENSION

Ireland has partially addressed recommendation 14. The plan has provided an overview of an ongoing Demand Strategy with a focus on large energy users but has not provided clear targets to improve the flexibility from all potential sources of the energy system.

The plan does not elaborate on the quantification of flexibility needs and does not set clear targets and objectives for demand response, storage, and flexibility. The plan does not include sufficient details on policies and measures that enable a non-discriminatory participation of new flexibility services. In relation to non-discriminatory participation in all markets in all timeframes, the plan states that demand side units receive different treatment in the capacity market as they do not receive offsetting energy payments. The plan states that an enduring solution to this issue is being implemented. However, there are no details of this enduring solution for energy payments nor timelines for the implementation of the solution. Furthermore**,** the NECP does not provide information on how Ireland intends to facilitate system integration of renewable energy in accordance with the revised RED II.

The plan also outlines a measure to empower consumers in the retail market, such as the Small-Scale Renewable Electricity Support scheme (SRESS) or the VAT reduction on domestic solar panels, although few concrete measures are outlined.

Ireland partially addressed recommendation 15. The plan does not provide a concrete target for reduction of energy poverty as energy poverty is defined under the social policy. Ireland intends to combat energy poverty through measures for increased energy efficiency but does not specifically indicate a measurable reduction target for people in energy poverty as required by Governance Regulation or under the Energy Efficiency Obligations Scheme (EEOS). The NECP refers to the ongoing work to split between the EEOS and alternative measures hinting towards additional measures being designed but does not elaborate further.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Ireland has partially addressed recommendation 16. The plan includes national objectives in research, innovation, and competitiveness to deploy clean technologies, establishing a pathway for 2030 to support the decarbonisation of industry and promote the transition of businesses towards a net zero and circular economy. Public investment in R&D was at 1.3% of Gross National Product in 2022 (all sectors) and Ireland has a target of 2.5% of Gross National Income by 2030.

The plan also puts forward policies and measures to promote the development of net-zero projects, including those relevant for energy intensive industries, for example in the offshore wind sector. The plan refers to the simplification of the permitting procedures as a general challenge (Competitiveness Challenge 2023 Report) but does not describe measures for a predictable and simplified regulatory framework for manufacturing of clean energy technologies, nor how access to national funding will be simplified where needed. The plan does not provide detailed policies and measures for the digitalisation of the energy system. On the development of clean energy-related skills, the plan mentions some measures related to apprenticeships and Further Education and Training.

The plan refers to strategies such as, for example, the Powering Prosperity for offshore wind, to anchor resilient and sustainable supply chains of key net-zero components and equipment. Though circular economy is a key component of the plan, which includes several related policies, details are missing in terms of research, innovation, and competitiveness in the field.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Ireland partially addressed recommendation 17. The plan includes estimates of investment needs for key low-carbon technologies across various sectors. The estimated total investment is approximately €119-125 billion. However, the plan is not clear on the methodology used. The plan includes partial information on the public budget planned. Ireland acknowledges the critical role of private sector financing for the low-carbon transition, but the strategies to mobilise private investments are not comprehensively explained. The information provided in plan is not sufficient to assess a potential financing gap with respect to the investment needs, or how this would be filled.

Ireland has not addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The plan indicates that work is ongoing to develop a modelling framework to analyse the macroeconomic, fiscal, and distributional impacts of the climate transition

2.8 JUST TRANSITION

Ireland has partially addressed recommendation 21. The plan provides some information on the impact of the transition to climate neutrality on employment and skills but does not sufficiently assess the impact on the most vulnerable households as Ireland is still developing a macroeconomic assessment. The plan mentions the establishment of a Just Transition Commission to advise and support the Government in long-term just transition planning, identifying challenges and opportunities for the transition to climate neutrality. However, it does not provide information on its mandate or composition. The plan provides some details on the form of support but focusing mainly on JTF and the carbon tax.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2, the links to the current carbon tax, and on the identification of vulnerable groups. Though the plan indicates that a large share of Ireland's carbon tax revenues is ringfenced to fund measures that contribute to a just transition, it does not explain how this will be combined with the resources from the Social Climate Fund. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Ireland's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Ireland has partially addressed recommendation 22. Ireland organised two public consultations following the submission of the draft updated NECP. The plan details the consultation process for various specific measures. A webinar was organised in June to explain the process and the NECP, though this was only seven days before the consultation closed. A

Strategic Environmental Assessment (SEA) was still ongoing at the time of the submission of the final plan. The plan explains that relevant information (consultation questionnaire, findings from the first consultation, reports on the SEA and Appropriate Assessment screening) were published together with a questionnaire. The range and type of stakeholders included in the process is not clear.

The plan provides thorough and detailed summaries of the outcome of the consultations, and describes their impact on the final plan or explains why some suggestions were not included.

2.10 REGIONAL COOPERATION

Ireland has partially addressed recommendation 23. The plan describes regional cooperation within established frameworks and in other areas, including the development of renewables and Projects of Common Interest (PCIs). The plan includes a list of initiatives aiming at increasing Ireland's engagement with neighbouring Member States for the deployment of renewables and PCIs and other projects, and within the context of the North Seas Energy Cooperation (NSEC), for which detailed information on regional cooperation is provided. The plan does not mention any progress nor efforts to sign the solidarity agreements for the security of gas supply with Belgium and the Netherlands. Ireland does not provide additional information in its final plan on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II.

2.11 ANALYTICAL BASIS

Ireland has partially addressed recommendation 20. The final plan provides an impact assessment of policies and measures with projections reaching 2050. The methodologies used are not described in detail. In particular, the updated NECP still does not reference, or describe in detail, the analytical framework used for the plan, including energy model.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Ireland has partially addressed recommendation 18. The final plan covers partly the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. The final plan still does not refer to Investment 1.2 (Accelerate the Decarbonisation of the Enterprise Sector) and Investment 5.1 (Upscaling a Biomethane Industry in Ireland). Some of the measures are included in the plan without a reference to the RRP as a source of funding, such as Investment 1.3 (Public Sector Retrofit Pathfinder Project), Investment 1.4 (Enable future electrification through targeted investment in Cork commuter rail) and Investment 1.6 (Enhanced rehabilitation of peatlands), which are relevant climate and energy reforms and investments of the RRP and its REPowerEU chapter. The majority of the measures included in the final updated NECP are more ambitious than those in the RRP, for example key actions for the built environment sector includes a design policy to upgrade 500 000 homes to a B2 Building Energy Rating (BER)[1] and efforts to install 600 000 renewable energy heating sources.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Ireland to ensure a timely and complete implementation of the final updated NECP. Ireland is invited to pay particular attention to the following main elements:

- **On ESR,** implement additional policies towards meeting the 2030 target, closely monitor the impacts of the policies included in the plan on emission reductions, increase efforts across all effort sharing sectors. Explore possible available flexibilities to ensure compliance with the ESR obligations.
- On **LULUCF and the agricultural sector**, consider promoting business models that reduce carbon intensity in farming, enhancing carbon sequestration and diversifying to sectors such as the bioeconomy to create new opportunities for farmers.
- Monitor **F-gas emissions** taking into account the stricter obligations introduced in the 2024 F-gas Regulation (including through the use of recapture methods), with particular attention to the semi-conductor sector.
- On **transport**, expand public transportation networks and implement measures like congestion pricing to encourage the use of public transport and limit car dependency. Implement the ambitious targets for **electric vehicles** by prioritising the expansion of charging infrastructure, particularly the less served areas.
- On **adaptation**, consider using ongoing policy processes, such as the preparation of the climate change risk assessment, to assess quantitatively relevant climate vulnerabilities and risks for the national objectives, targets, and contributions and the policies and measures in the Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies that adaptation policies and measures are meant to support, as well as setting out additional adaptation policies in sufficient detail.
- Detail a timeline for **phasing out fossil fuel subsidies**, including for high-emission sectors. Consider phasing out subsidies for high-emission sectors and providing instead targeted support for affected workers and communities to ensure a **just transition**.
- On **renewable energy,** develop a more comprehensive plan on the acceleration of grid expansion and ensure that energy storage and demand response measures are integrated into the plan, enhancing the ability of the grid to accommodate renewable energy. Prioritise cleaner heating solutions, such as heat pumps and solar thermal energy.
- On energy efficiency, **detail further the investment plan, including a breakdown by dimension and a clearer public/private investment split**, to help better aligning the required resources with the targets. Detail the strategy to implement and monitor the energy efficiency first principle.
- On **buildings**, provide more ambitious renovation rates as milestones for the years 2030, 2040, 2050 and to clarify the future steps to ensure the achievement of a decarbonised building stock.

Greece

1 Overview of key objectives, targets and contributions in the final NECP

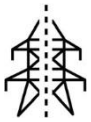
Table 1: Summary of key objectives, targets and contributions of Greece's final updated NECP.

		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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -26.6% 2023: -28%[60]	-22.7%	NECP: -43.2%[61]
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -5.4 Mt CO_2 eq.	-1.15 Mt CO_2 eq. (additional removal target)	Expected to meet its target: a surplus of – 1.23 Mt CO_2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	20.4% (SHARES) 17% (target)	2023: 25.3%	43%	EL contribution of 43% is above the 39.2% required according to the formula set out in Annex II of the Governance Regulation[62].
	National contribution for energy efficiency:				
	Primary energy consumption	24.7 Mtoe	2023: 19.88 Mtoe	17.8 Mtoe	EL primary energy consumption contribution of 17.8 Mtoe is not in line with the EED recast Annex I formula results: 17.13 Mtoe (Reference

[60] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[61] As Greece's NECP does not provide ESR projections, this assessment is based on data provided by Greece in February 2025, as outlined in the UNFCCC Biennial Transparency report (page 151): https://unfccc.int/documents/645147

[62] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Scenario) or 17.55 Mtoe (Updated Reference Scenario).
	Final energy consumption	18.4 Mtoe	2023: 15.73 Mtoe	15.2 Mtoe	EL final energy consumption contribution of 15.2 Mtoe is not in line with the national contribution of 14.64 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)	9.9%	2024: 4.8%	15%[63]	Greece is below the EU-wide interconnectivity target.

Source: Eurostat; Greece's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Greece's draft updated NECP and provided recommendations[64] for the preparation of the final updated NECP. Greece submitted its final updated NECP on 26 December 2024, six months after the deadline of 30 June 2024.[65]

2.1 DECARBONISATION

The final updated plan commits to achieving climate neutrality by 2050. Greece expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 57% in 2030, 79% in 2040, and 97% in 2050.

2.1.1 Effort Sharing Regulation

Greece has partially addressed recommendation 1. The final NECP does not explain in full details how Greece will meet its ESR target of -22.7% by 2030 compared to 2005. The plan does not include emissions projections for 2030 for ESR sectors. However, data provided to the Commission by Greece in February 2025 indicates that Greece is likely to achieve a reduction of 43.2% by 2030, an overachievement of the target of around 20 percentage points.[66] The final plan complemented the information on the policies and measures provided in the

[63] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024-2025). The 2030 level represents the general interconnectivity target of 15%. The 2020 figure covers also interconnectors with the neighbouring countries outside the EU.

[64] SWD(2023) 929 final, and Commission Recommendation of 18 December 2023, C/2023/9619.

[65] Article 14(2) of Governance Regulation.

[66] The figure is the same included in the 2024 Biennial Transparency Report Greece submitted to UNFCCC.

draft plan but more details on scope, timeline and expected impact on GHG emissions would be useful. The plan covers all ESR sectors comprehensively but lacks data broken down by sector.

The **transport sector** is the largest source of GHG emissions among ESR sectors in Greece and the only one where GHG emissions have increased compared to 1990. The final NECP sets more ambitious targets for reducing CO_2 emissions from different categories of vehicles (e.g. 30% of new vehicles will be electric by 2030), expected to bring a 10% decrease of road transport emissions between 2022 and 2030. However, an increase in emissions from the maritime sector is expected.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WAM scenario projections account for the effect of ETS2, but do not quantify the impact of ETS2 in achieving the ESR target.

On **agriculture,** the plan provides sufficient detail on how the measures included contribute to the ESR target, both in terms of funding and impacts.

2.1.2 LULUCF

Greece has partially addressed recommendation 3. Greece's removals are expected to increase in the coming years. The final plan includes projections suggesting that Greece will meet its target of -1.15 Mt CO_2 eq. (additional removal target) and will generate a surplus of -1.23 Mt CO_2 eq by 2030.

The plan provides limited detail on how additional measures for the land-sector will be financed. It refers to funding through the CAP 2023-2027 but provides no information on which measures the CAP will fund. Greece indicates that tax policy will play a prominent role but does not explain how. The plan clearly explains progress with regards to monitoring, reporting and verification (MRV), including for LULUCF emissions and removals.

2.1.3 Carbon Capture and Storage

Greece has partially addressed recommendation 2. The plan includes estimates for how much CO_2 can be captured by 2030 (3.1 $MtCO_2$ for permanent storage and 0.2 $MtCO_2$ for utilisation). Even though several sources are mentioned (including direct air capture), no split by source is defined. The plan outlines some plans for transport infrastructure (mainly for transport for liquefication) and (as in the draft) projects for storage capacity, including an estimate of Total investments.

2.1.4 Adaptation

Greece has partially addressed recommendation 4. The plan refers to the National Strategy for Adaptation to Climate Change and to 13 Regional Adaptation Action Plans (RAAPs) to respond to the recommendation, acknowledging the importance of integrating adaptation planning. An evaluation and revision of the National Strategy is expected to be completed in 2026. The plan embeds adaptation policies and measures in the relevant Energy Union dimensions but lacks detail on their scope and timeline, that would allow an estimation of their impact.

The plan contains a partial analysis of **climate vulnerabilities and risks** to the achievement of national objectives, targets and contributions. The final plan is more thorough compared to the

draft and contains an assessment of climate vulnerability of policies for greenhouse gas mitigation, renewable energy, energy efficiency, energy security, and critical raw materials. It also addresses climate resilience of critical infrastructure. The plan partially outlines the **links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. However, their impacts and benefits on other Energy Union objectives have generally not been quantified.

The plan partially addresses the consequences of climate change on **future water availability** and the implications on the energy sector. National and Regional Adaptation plans foresee integrating climate change aspects into water planning and water management. The plan refers to the impact of the projected climate change induced modification of the annual rainfall pattern and water availability on the operation of thermal water plants, hydrogen and biomethane production and pumped energy storage or hydropower generation.

2.1.5 Fossil Fuels

Greece has partially addressed recommendation 18. The plan includes the commitment to phase-out fossil fuel for power generation by 2028, as provided in national law, and correspondingly increasing the share of renewable energy sources.

The plan acknowledges the need to phase out fossil fuel subsidies, listing the main categories of subsidies. However, the plan does not set a clear deadline nor a roadmap.

2.2 RENEWABLES

Greece has addressed recommendation 5. Greece has put forward an updated contribution of 43% as a share for renewable energy in gross final energy consumption which is lower than the level of 44% of the draft updated NECP. The contribution of 43% is still slightly higher than the level resulting from formula of Annex II of the Governance Regulation. The final plan includes an indicative trajectory with the reference points for 2025 (30.9%) and 2027 (36.3%) which are above the trajectory calculated in line with the increased EU renewable energy target of 42.5% (27% and 32% respectively).

Greece has partially addressed recommendation 6. The NECP includes estimated projections for renewable energy technologies over the next 10 years with an outlook to 2040. The plan provides indicative targets for buildings and industry. However, the final updated NECP does not include a target for innovative renewable energy technologies for 2030 nor the minimum level for renewable fuels of non-biological origin (RFNBOs) in industry by 2030. Greece states that it does not plan the uptake of RFNBOs in energy and non-energy uses in the industry sector before 2030. The plan refers to a share of renewables of 52.6% in heating and cooling for 2030, which is in line with the indicative top-ups of Annex 1A of Directive (EU) 2018/2001 (the 'revised RED II')[67]. On transport, Greece aims for a RES target share in transport of 13,4% in 2030 thus significantly lower than the legally binding target of 29%. Furthermore, the expected share of RFNBO in transport of 0,9% is lower than the 1% set in

[67] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

the revised RED II for 2030 although the combined share of 5,5% for RFNBO and advanced biofuels is reached.

Greece has addressed recommendation 7. The NECP includes additional information on measures aimed at promoting deployment of renewables in different sectors including the estimated amount of investment but without indicating a specific timeline.

Additional measures that have been adopted to facilitate and accelerate permitting are mentioned. Greece mentions its intention to designate renewable acceleration areas following the relevant energy, environmental and strategic assessment. Moreover, Greece refers to a strategy to standardise and strengthen power purchase agreements and elaborates on new measures to support self-consumption and energy communities, including support schemes for solar PVs and storage installations, and creation of a technical assistance and advisory mechanism to support renewable energy communities. Even though no specific quantitative goals are included, it is mentioned that Law 5037/2023 reserves 10MW of capacity in each substation of the Greek distribution system operator for the connection of self-consumers to the grid.

In addition, the plan provides further information on measures aimed at promoting renewables deployment in heating and cooling, including installation of hybrid systems and heat pumps with significant increase projected during the next decade 2030-2040 due to electrification of buildings. As regards renewable hydrogen in industry, Greece projects a relatively minor demand until 2050 mainly due to focus on electrification.

Greece partially addressed recommendation 8. The plan does not include a full assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of the revised RED II nor does it include an assessment of the compatibility of the projected use of forest biomass for energy production with Greece's obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies to ensure such compatibility. However, Greece has included measures to promote sustainable biomethane/biogas production.

Greece has not addressed recommendation 9, as the plan does not include a specific timeline or procedural steps leading to the adoption of legislative and non-legislative measures for transposing and implementing of provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Greece has partially addressed recommendation 10. Greece included an indicative national contribution of 15.2 Mtoe to the Union's binding **final energy consumption** target for 2030. This contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[68] nor equal to the corrected indicative national contribution that the Commission submitted to Greece in March 2024. There is still a gap of 3.8% compared to the target calculated with respec to the indicative results of the 2020 reference scenario and a gap of 3.5% compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario. Greece

[68] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

included an indicative national contribution of 17.8 Mtoe to the Union's indicative **primary energy consumption** target for 2030 in line with Article 4.

Greece did not include the amount of **energy consumption reduction** per year to be achieved by all public bodies nor report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly or the corresponding yearly energy savings to be achieved. It also did not specify if opted for the alternative or default approach[1]. Greece set out policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings, including through the implementation of measures such as energy performance contracting and the promotion of nearly-zero energy and zero emission buildings.

Greece included the amount of **cumulative energy savings** of 11.3 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030 in line with Article 8 of EED Recast and included an explanation on how the annual savings rate and the calculation baseline were established. Greece set out complete policies and measures to achieve the required amount of cumulative end-use energy savings by 2030 and it quantified the energy savings from the reported energy efficiency measures to ensure the achievement of the cumulative target. However, Greece did not include a quantification of the savings from those energy efficiency measures targeting energy poverty.

Greece has partially addressed recommendation 11. Greece sets out comprehensive policies and measures to achieve the national contributions on energy efficiency, but it did not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures, except for those contributing to the achievement of the cumulative energy savings target under Article 8 of EED Recast. Greece specifies robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Greece specified existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as On-Bill and On-Tax schemes, as well as Energy Performance Contractors and ESCOs. Greece did not establish a National Energy Efficiency Fund.

Greece partially addressed recommendation 12. Greece does not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Greece only increases its ambition as regards residential buildings compared to the existing long-term renovation strategy but not for non-residential, for which Greece does not report any clear intermediate milestones for 2030 or 2040. Greece includes future milestones related to the residential buildings renovation rates but did not translate them into energy savings milestones. Greece details the impact in terms of energy savings of each new measures put forward and included sufficient information in terms of funding and costs. Specifically, Greece includes information on policies and measures addressing deep renovation, with a specific focus on worst-performing buildings and vulnerable consumers, as well as decarbonisation of heating or installation of renewables in buildings**.**

2.4 ENERGY SECURITY DIMENSION

Greece has partially addressed recommendation 13. On **gas**, consumption is expected to substantially decrease, while on **electricity** the final plan emphasises the objective of completing the interconnection of the islands, where it adds more details on the individual projects in terms of capacity and costs. Additional details on storage systems are also included.

In the oil sector, the plan includes long term projection of liquid fuel consumption post 2030, however the plan does not assess the adequacy of the oil infrastructure (refineries, oil stocks) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

The final plan contains significantly more information, with a detailed assessment of the climate vulnerabilities of all energy sources as well as of energy efficiency and energy security policies. This includes measures to protect transmission systems from climate change, including physical protection against fire or floods.

2.5 INTERNAL ENERGY MARKET DIMENSION

Greece has partially addressed recommendation 14. Greece does not quantify flexibility needs but includes policies and measures to enhance flexibility. The plan presents five policy priorities for the internal energy market, one of which is to promote systems that provide flexibility, including storage and demand response. Greece reports that the ongoing amendments to the regulatory framework will allow for a full participation of demand response and storage to the electricity markets. As such, Greece expects the demand response capacity to increase and the total capacity of batteries storage to reach 4.3 GW, and the total capacity of pumped hydro storage to reach 1.9 GW by 2030.

Even though the plan provides a good overview of measures promoting flexibility to facilitate energy system integration, it does not provide information on specific measures related to facilitating system integration of renewable electricity in accordance with Article 20a of the revised RED II.

Among other measures, the plan also commits to expand demand response measures to encompass all consumers. Accordingly, Greece aims to significantly increase the penetration of smart meters, with the goal to completely replace conventional meters with smart meters by 2030.

The plan includes measures and programmes to empower consumers and particularly to promote self-consumption, for instance through existing programmes ‘Photovoltaic at Home’ and ‘Photovoltaic in the field’, 15.000 self-consumption plants are now in operation since 2024, with a total installed capacity close to 500 MW, and connection servers have been provided for 17,000 plants with a capacity of 700 MW. Measures are also put in place to further allow for self-consumption through renewable and citizen energy communities.

Greece has addressed recommendation 15. This plan significantly improves the analysis and detailing of measures to tackle energy poverty, including the articulation of specific initiatives and the associated financial frameworks necessary for their implementation. The updated plan offers a comprehensive approach to energy poverty, outlining concrete measures such as energy upgrades in residential buildings and support for renewable energy installations in

affected households. Furthermore, the plan specifies the deployment of these measures through the Energy Efficiency Obligation Scheme, which forms part of a broader strategy aimed not only at alleviating immediate energy costs but also ensuring long-term sustainability for affected populations. Additionally, the plan improves the linkage between planned actions and the financial resources dedicated to them. While the final plan advances the specificity and scope of strategies to mitigate energy poverty as was recommended, it could further enhance transparency by detailing the exact financial allocations for each measure and clearly outlining their expected impacts on reducing energy poverty among vulnerable groups.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Greece partially addressed recommendation 16. The plan includes a comprehensive approach, although it does not include specific targets to support research, innovation, and competitiveness in clean energy technologies, establishing a pathway to 2030 and 2050. Significant policies and measures include scaling up manufacturing capacities in the value chain of zero-emission technologies and supporting innovative production processes like photovoltaics, offshore wind infrastructure, and hydrogen. Targets for development of technologies focusing on hard-to-decarbonize sectors and heavy transport applications, as well as enhancement of competitiveness through innovation in technologies supporting a zero-emission circular economy are also mentioned for 2050. The plan includes measures to promote the development of net-zero projects including those relevant for energy intensive industries. The NECP mentions all the amendments that already began to simplify permitting and, more specifically, that to support entrepreneurship, the existing licensing framework for zero-emission technologies in energy-intensive industries will be improved. and access to national funding will be simplified where needed. The plan includes information on policies and measures for the development of clean energy related skills and to facilitate resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Greece partially addressed recommendation 17. The plan provides aggregate estimates of investment needs per sector but does not specify the share of public and private sources. Investment needs and funding sources are not provided for each measure, though the plan includes a high-level assessment of national and EU funding sources. The plan does not elaborate on measures and initiatives required to mobilise private investments. The information provided in the plan is not sufficient to estimate a potential financing gap and assess how this would be filled.

Greece partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The plan contains a quantitative and qualitative assessment of the macroeconomic impact on selected variables but, does not include a "no policy change" or counterfactual macro-economic scenario.

2.8 JUST TRANSITION

Greece has partially addressed recommendation 20. The plan provides information on the impact of the transition to climate neutrality on employment and skills but does not sufficiently

address the social impact on the vulnerable households. Moreover, the plan outlines the financing sources, including substantial EU funds, without providing information on the impact of initiatives or the resources available.

The plan commits to phasing out fossil fuel power generation, mainly lignite, by 2028 as also indicated in the Territorial Just Transition Plans (TJTPs). However, the plan does not sufficiently explain the alignment between the NECP and TJTPs regarding the coal phase out in the individual lignite-powered plants

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups, even though many measures aiming at fighting energy poverty are mentioned. The plan does not explain how the policy framework identified in the plan will contribute to the preparation of Greece's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Greece has partially addressed recommendation 21. Greece organised several presentations of the draft and final updated NECP within different governance structures and with specific national bodies and stakeholders. In some cases, the presentations were accompanied by a questionnaire. The consultation on the final plan with civil society took place from 22 August to 16 September 2024, after the formal submission date of 30 June. The outcomes were presented to the Greek Parliament in October.

The plan includes a summary of the outcome of the consultations, with figures on the type of respondent (e.g. NGO, company), and on the thematic categories of the comments. However, the plan does not describe how the input from stakeholders was integrated.

2.10 REGIONAL COOPERATION

Greece has partially addressed recommendation 22, stressing the need to further intensify regional cooperation with neighbouring Member States within CESEC and to pursue further efforts in the security of gas supply field**.** The plan elaborates in detail how Greece is participating in regional structures and the bilateral relations that it pursues. It does not specify in much detail future actions to intensify regional cooperation in specific areas, however. The plan also does not contain information on Greece's plans to establish a framework for cooperation with other Member States by 2025, in line with Article 9 of the revised RED II.

The final plan does not refer to efforts or progress regarding the signature of the two bilateral solidarity agreements for the security of gas supply with its neighbours (Bulgaria and Italy).

2.11 ANALYTICAL BASIS

Greece has not addressed recommendation 19. The final plan includes projections for the cost of electricity by 2050 but still does not provide projections under the planned policies and measures on how the energy system will develop. Moreover, the plan does not include projections on GHG emissions for sectors covered by the Effort Sharing Regulation.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The final NECP for Greece covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Greece to ensure timely and complete implementation of the final updated NECP. Greece is invited to pay particular attention to following main elements:

- Analyse the impact on GHG emissions of policies in the effort sharing sectors to confirm progress towards meeting the **2030 ESR target**.
- On **adaptation**, assess quantitatively climate vulnerabilities and risks regarding the achievement of the national objectives, targets, and contributions and the policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies that adaptation policies and measures are meant to support, as well as setting out additional adaptation policies and measures in sufficient detail.
- Set a clear roadmap with specific measures to phase out **fossil fuel subsidies**.
- On **industry**, consider additional actions to reduce the GHG emissions intensity in energy-intensive sectors.
- Move forward on putting in place a framework **for facilitating energy system integration** to efficiently integrate increased shares of variable renewable energy across sectors notably in buildings and industry, including via increased deployment of energy storage.
- Swiftly implement the planned reforms related to **simplification of permit-granting** and administrative procedures for deployment of renewables in line with the revised RED II, including considering the key role of local communities and alternative dispute resolution approaches.
- On **transport**, consider further **energy efficiency measures**, as only 5.7% of the cumulative savings are expected to come from measures targeting transport. Ensure proper implementation of policies such as incentives for public passenger transport, freight transport regulation, awareness raising campaigns to support the decarbonisation of the sector. Given the low adoption rate of electric passenger cars compared to other EU countries, support the proposed targets for EV uptake by introducing robust demand-side measures.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030.
- On **buildings**, ramp up the pace and depth of renovations, especially in the non-residential building stock, and strengthen regulatory enforcement and address market barriers to achieve the objectives set in the Long Term Renovation Strategy.
- Swiftly proceed with implementing the NECP measures to address **energy poverty**. Further clarify and detail financial allocations and funding streams to facilitate more effective

monitoring and evaluation of impacts, ensuring that resources are efficiently targeted, and outcomes align with the broader objectives of energy sustainability and social equity.

- Develop a comprehensive **just transition strategy** which addresses all vulnerable groups and allocates sufficient funding resources.

Spain

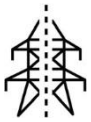
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Spain's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -19.5% 2023: -20.9%[69]	-37.7%	NECP: -44.6%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -47.4 Mt CO_2 eq. in 2022	-5.3Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: A gap of 6.11 Mt CO2 eq. compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	21.2% (SHARES) 20% (target)	2023: 25%	48%	ES contribution of 48% is in line with the required level pursuant the formula of Annex II of the Governance Regulation[70]
	National contribution for energy efficiency:	13% relative to reference scenario	-13.4% by 2020	43% compared to BAU without measures	
	Primary energy consumption	123.4 Mtoe	2023: 110.1 Mtoe	98.4 Mtoe	ES primary energy consumption contribution of 98.4 Mtoe is not in line with the EED recast Annex I formula results: 81.8 Mtoe (Reference Scenario) or 82.2 Mtoe (Updated Reference Scenario)

[69] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[70] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	86.3 Mtoe	2023: 80.6 Mtoe	71.709 Mtoe	ES final energy consumption contribution of 71.7 Mtoe is not in line with the national contribution of 66.3 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[71]	6.5%	2024: 4.2%	15%	ES is below the EU-wide interconnectivity target.

Source: Eurostat; and Spains's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023 the Commission published a thorough assessment of Spain's draft updated NECP and provided recommendations[72] for the preparation of the final updated NECP. Spain submitted its final updated NECP on 25 September 2024, three months after the deadline of 30 June 2024.[73]

2.1 DECARBONISATION

Spain expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 32% in 2030 compared to 1990 levels, and to reach climate neutrality by 2050.

2.1.1 Effort Sharing Regulation

Spain has addressed recommendation 1. The final NECP provides sufficient details on how Spain will meet its ESR target of 37.7% by 2030 compared to 2005.

The plan provides the same projections as in the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 44.6% in 2030 compared to 2005, an overachievement of 6.9 percentage points compared to the national ESR target. In 2022, GHG emissions from effort sharing sectors represented around 66% of the total in Spain (expected to be around 69% in 2030)[74], with transport projected to represent the largest share. The 'with additional measures' (WAM) projected value for ESR in 2030 is roughly 22% lower than the projection under the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require a significant effort. The final plan complements the information on the policies

[72] SWD(2023) 913 final, and Commission Recommendation of 18 December 2023, C/2023/9603.
[73] Article 14(2) of Governance Regulation.
[74] Share of total GHG emissions excluding LULUCF. Source: Commission calculations based on the Spanish final updated NECP and GHG inventories submitted to EEA.

and measures provided in the draft, though not always complete on the scope, timeline and expected GHG emissions reduction.

The plan focuses on all the key sectors and sources of GHG emissions. In 2022, transport accounted for around 45% of Spain's ESR emissions.[75] The WAM projections for **transport** describe a significant change of trend in emissions in the period 2022-2030, with an average decrease per year of 5.7%, compared to the annual increase of 1.05% in the period 2015-2022.[76] This is the result of the modal shift to public transport, shared mobility and zero-emission vehicles, in synergy with the low-emission zones in cities with more than 50.000 inhabitants. The plan foresees the presence in 2030 of more than 5.5 million electric vehicles, and the use of sustainable or advanced biofuels.

On **agriculture**, the final plan maintains an approach similar to the draft, addressing methane and nitrous oxide emissions from manure management, as well as nitrous oxide emissions from agricultural soils. However, the plan still lacks specific measures to tackle methane emissions from enteric fermentation of cattle, which constitutes the predominant source of non-CO_2 emissions and is a significant contributor to Spain's overall GHG emissions in the ESR sectors.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (**ETS2**). The scenario projections do not account for the effect of ETS2 and do not quantify the impact of ETS2 on the ESR target.

2.1.2 LULUCF

Spain has partially addressed recommendation 3. The LULUCF sector in Spain generates net removals, absorbing roughly 16% of the total GHG emissions in 2022. According to the LULUCF Regulation, Spain has to improve its net removals by -5.3 Mt CO_2eq. in 2030 as compared to its yearly average in the 2016-2018 reference period. Considering its projections for 2030, Spain will still have a gap of 6.11 Mt CO2eq in 2030. The final plan does not contain new measures compared to the ones in the draft, which are acknowledged to be insufficient for reaching the target. Climate change impacts are still recognised to be a major issue for enhancing removals. While the plan shows some progress in facing these impacts (i.e. the approval of a National Strategy to Combat Desertification and the implementation of the National Adaptation Plan 2021-2030), it does not indicate impacts on mitigation. In this regard, the plan mentions the importance of the flexibility in the Regulation (article 13b (6)) to comply with the target. The plan does not provide new information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The draft also lacks information on the status and progress of ensuring higher tier levels and geographically explicit datasets, needed for the robustness of net removal estimates.

Overall, based on the available information, Spain does not design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

[76] Compound annual growth rate

2.1.3 Carbon Capture and Storage

Spain has not addressed recommendation 2. The plan does not provide a comprehensive CCUS strategy. It does not contain an estimate of Spain's expected storage capacity and does not provide annual injection capacity targets, nor examples of ongoing/planned CCUS projects. Nonetheless, the plan mentions EUR 2.37 billion financing (EUR 870 million in grants and EUR 1.5 billion in loans) for the decarbonisation of manufacturing industry, including CCUS projects.

2.1.4 Adaptation

Spain has not addressed recommendation 4. The plan refers to the National Climate Change Adaptation Plan for 2021-2030, acknowledging the importance of integrating adaptation planning. While the plan is already rather comprehensive and embeds adaptation policies and measures in the relevant Energy Union dimensions, it lacks the details on their scope and timeline needed for an estimation of their impact.

The plan sets out a significant array of **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union, but provides insufficient details to assess their scope, timing and likely impact.

The plan partially **addresses the consequences of climate change on future water availability and its implications on the energy sector**. However, it lacks a fully comprehensive forward-looking assessment of future water demand and available supply at the national scale, aligned with expected climate warming trajectories. While it proposes desalination and renewable hydrogen as solutions, it does not adequately consider the potential cross-sectoral conflicts, such as with energy production, agriculture, and residential water use in the face of growing water scarcity.

2.1.5 Fossil Fuels

Spain has partially addressed recommendation 16. The plan includes a commitment to phase out fossil fuel subsidies, but does not clearly explain how, in terms of specific measures and timeline. The plan simply includes a reference to the COP28 outcome on phasing out inefficient fossil fuels, and examples of subsidies provided to support the deployment of renewable energy, as well as a rather generic ban on hydrocarbon exploration and exploitation activities.

2.2 RENEWABLES

Spain has partially addressed recommendation 5. The final updated NECP does not provide estimated trajectories nor a long-term plan for the deployment of renewable energy technologies. Although the NECP does not include an indicative target for innovative renewable energy technologies by 2030, it includes a plan to adopt such a target and measures expected to achieve it, in line with Directive (EU) 2018/2001 (the 'revised RED II')[77].

Spain has partially addressed recommendation 6. The plan provides additional details on the policies and measures to enable a timely and cost-effective achievement of Spain's national contribution to the Union's binding renewable energy target of 42.5% in 2030, in line with the

[77] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

revised RED II. It also sets targets for advanced biofuels and RFNBOs in the transport sector. Although the plan does not provide details on the implementation of the provisions on "renewables acceleration areas" with faster and simpler procedures, the policies and measures presented contain additional elements on the zoning aspects of renewable deployment.

Spain has partially addressed recommendation 7. The plan does not provide additional information on the trajectories of bioenergy supply by feedstock and origin, on bioenergy demand and on sustainability, nor an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030. It does not include either an assessment of the compatibility of the projected use of forest biomass for energy production with Spain's obligations under Regulation (EU) 2018/841 as amended, particularly for 2026-2030, together with national measures and policies to ensure such compatibility. Finally, Spain includes measures to promote the sustainable production of biomethane/biogas.

Spain has partially addressed recommendation 8. The plan contains several references to an upcoming royal decree transposing the revised RED II, while not providing a specific timeline.

2.3 ENERGY EFFICIENCY DIMENSION

Spain has partially addressed recommendation 9. Spain includes an indicative national contribution to the Union's binding final energy consumption target for 2030 of 71.7 Mtoe for final energy consumption. This contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[78], nor equal to the corrected indicative national contribution that the Commission submitted to Spain in March 2024 under Article 4(5) of EED recast. There is still a gap of 8.2% compared to the target calculated with respect to the corrected indicative contribution[79]. Spain includes an indicative national contribution to the Union's indicative primary energy consumption target for 2030 of 98.4 Mtoe for primary energy consumption. This contribution is not in line with Article 4 of EED recast. There is still a gap of 20.3% compared to the target calculated with respect to the indicative results of the 2020 refence scenario, and a gap of 19.7% compared to the indicative results of the updated 2020 reference scenario. Spain does not include the amount of energy consumption reduction per year to be achieved by all public bodies as required by Article 5 of EED Recast.

Spain does not report the total floor area of heated and cooled buildings owned by public bodies to be renovated each year[80] nor the corresponding yearly energy savings to be achieved as required by Article 6 of EED Recast but opts for the default approach[81]. Spain sets out policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings.

[78] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[79] Spain explained in the final NECP that the 2020 EU Reference Scenario does not reflect the conditions of the energy system of Spain and they use as baseline the PRIMES 2007 scenario.
[80] It reported as requirement the 300,000 m2 per year in General State Administration plus the expansion of the 3% to other territories. The new inventory is under elaboration.
[81] Spain included a target for General State Administration to be expanded to the 3% of other territories in terms of m2. From this, it could be concluded that the implementation of default approach will be maintained.

Spain has partially addressed recommendation 10. Spain includes an updated ambition level regarding the progress on final energy savings and renewable integration for the building sector in 2030. The targets for the building sector do not disaggregate between the public sector and private sector. Spain also states the objectives for 2050, with a reference to the national Long Term Renovation Strategy. The plan refers to the same strategy regarding milestones, indicators, and intermediate targets for 2030 and 2040, although these are not included in the plan. The plan mentions some of the measures that could be used to support the overall objectives, but these are very limited, and they lack details and definition.

2.4 ENERGY SECURITY DIMENSION

Spain has partially addressed recommendation 11. The plan does not further explain how Spain intends to encourage gas demand reduction or develop detailed policies and measures to reach this objective towards 2030. It provides some forecasts for the evolution of natural gas net imports, which are expected to decrease from 27 874 ktoe in 2020 to 17 940 ktoe in 2030, and domestic production, which is expected to increase from 42 ktoe in 2020 to 49 ktoe in 2030.

For electricity, Spain mentions that a new energy and climate security strategy will be approved, although no date was specified. The strategy will be built around the acceleration of the energy transition, the protection of the energy and industrial supply chain, and the mitigation and adaptation to climate change. The plan also refers to the completion of the final version of the risk-preparedness plan in the electricity sector. Energy storage is mentioned as a way to manage the growth of non-dispatchable renewable generation and increase flexibility. Here the target was raised to 22.5 GW, a slight increase from the draft updated NECP.

The plan does not include forecasts on oil consumption until 2050 and does not assess the adequacy of the oil infrastructure in the long run (refineries, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

As regards nuclear, the plan provides information on the diversification of nuclear materials and fuel, and on the plans and financing of long-term management of nuclear waste. The plan does not provide information on the supply of spare parts but indicated that Spain has a large sector of engineering and service companies in the field of nuclear energy, including for the manufacturing of nuclear fuel assemblies.

2.5 INTERNAL ENERGY MARKET DIMENSION

Spain has partially addressed recommendation 12. The plan does not quantify flexibility needs nor does it set clear targets for demand response, storage, and flexibility. The plan acknowledges the importance of system flexibility to achieve the renewable targets and states that the national measures introduced are well advanced.[82] The plan also elaborates on the measures set out at national level aiming to foster flexibility such as aid programmes for energy storage and promotion of local flexibility markets. Spain projects a slight increase in the expected storage capacity installed by 2030, from 22 GW to 22.5 GW.

[82] See p. 173

The plan states that a national assessment of flexibility needs is on-going following the reform of the Electricity Market Design (EMD). However, so far, regarding the indicative national objectives for non-fossil flexibility introduced by the EMD reform, the plan only defines objectives for energy storage.[83] The plan does not set out monitoring indicators to quantify the progress made towards those targets but only specifies the need for establishing a remuneration framework.

The plan refers to developing more competitive retail electricity markets and increasing consumer empowerment. However, the plan remains vague on the possible measures that would achieve these objectives.

Spain partly addressed recommendation 13. Whilst measure 4.2 of the plan does include a description of social policy and structural energy measures deployed under the National Strategy against Energy Poverty, including promotion of social rental and renovations of buildings, their scope is not described in detail nor correlated with specific measurable targets or details of the financial resources for the implementation of the described policies. General measurable targets based on relevant indicators of energy poverty are included but limited until 2025. No explanation on the use of energy efficiency measures under the Energy Efficiency Obligation Scheme to alleviate energy poverty is provided. Overall, the plan would have benefitted from a stronger link to the New Energy Poverty Strategy developed in 2024.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Spain has partially addressed recommendation 14. The plan provides a comprehensive approach, including strategies and measures to support research, innovation (R&I) and investments in clean energy technologies, the circular economy and the digitalisation of the energy value chain. Spain includes energy transition and decarbonisation as a strategic priority in the national Plan for Investigation, Science, Technology and Innovation (PEICTI) and concrete measures in the NECP to support R&I in the energy sector[84]. While the plan does not include a specific breakdown of investment in R&I for the energy sector for 2030 and 2050 and more could be done to quantify current spending and objectives, it provides measures for regional (coordination between Autonomous Communities) and international cooperation (Mission Innovation) in this area. There is also a good alignment with the Strategic Energy Technology Plan (SET Plan) and the European R&I funding programmes.

The plan outlines measures to promote the development of net-zero projects and to boost technology improvements for energy intensive industries. The plan describes actions to

[83] See p. 141 and ff referring to the 2021 Energy Storage strategy which sets out an objective of 22.5 GW of energy storage by 2030, out of which 12.5 GW of daily and weekly storage and 10 GW of seasonal storage. Based on the information provided, these targets are not specific to non-fossil energy storage.

[84] Such as innovative renewable energy installations (offshore wind, energy storage, biogas, floating PV, CSP with storage, deep geothermal); demand response and storage pilots; innovative business models to enhance flexibility digitalised and competitive energy system, including storage; energy efficiency in buildings and industry, smart cities and communities; renewable fuels and energy vectors.

facilitate resilient and sustainable supply chains of key net-zero components and equipment[85]. However, it does not describe how Spain will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing, nor how access to national funding will be simplified where needed.

The plan includes information on policies and measures for the development of clean energy-related skills.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Spain partially addressed recommendation 15. The final updated NECP does not provide detailed estimates of the investment needs for each policy initiative. Nevertheless, it includes an estimate of the total investment needs and a breakdown by policy priority (e.g. renewables, energy efficiency, grids, electrification, etc.) and a split for public and private sources. Funding gaps are not identified. The estimates are based on a robust top-down analysis.

The plan occasionally outlines the sources of funding per measure and project, but this is not done in a consistent way. The plan does not provide an overview of the instruments envisaged to mobilise private investments.

Spain partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. A more detailed explanation of the different impacts would further enhance the quality of the assessment. Moreover, the estimated impact on GDP seems inconsistent with Spain's mid-term fiscal sustainability plan.

2.8 JUST TRANSITION

Spain has partially addressed recommendation 17. The plan presents the existing Just Transition Strategy, aiming at maximising employment opportunities and minimising the impacts of the energy transition, the Framework Agreement for a Just Transition of Coal Mining and the Just Transition Conventions. It also provides an analysis of the impacts of the transition to climate neutrality on skills, training, overall employment conditions and social needs. Nonetheless, the employment and social impacts for workers or regions are not specified. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the JTF and the cohesion policy programmes

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups, except for the definition of energy poverty, which is already established in Spain. The plan partly explains how the policy framework identified in the NECP will contribute to the preparation of Spain's Social Climate Plan and how the consistency of the two plans will be ensured.

[85] (PERTE ERHA includes support for new manufacturing lines or capabilities for components; PERTE Industrial Decarbonisation features an aid line for new highly efficient and decarbonised manufacturing facilities is foreseen, as well as a new investment included in an addendum to the RRP to support the launch or upgrade of manufacturing facilities for renewable generation, storage and renewable hydrogen generation, storage, distribution, consumption components and systems).

2.9 PUBLIC CONSULTATION

Spain has addressed recommendation 18. Spain organised several rounds of public consultations starting in August 2022. The consultations were organised in different moments during the preparation of the updated NECP, online, through workshops in person and advisory bodies, with a broad participation of stakeholders, citizens, and public institutions. The public consultation process on the draft plan took place from 28 June to 4 September 2023, and on the final plan in March and June 2024. For the latter, there was a significant increase in participation. A consultation in the context of the Strategic Environmental Assessment of the plan took place in June and lasted a month. The plan includes a summary of the main contributions received. However, it is not clear how the views expressed have been considered in the final plan.

2.10 REGIONAL COOPERATION

Spain has partially addressed recommendation 19. The plan adequately addresses the role of regional cooperation in the framework of the High-Level Group for Interconnection in South-West Europe (SWE), describing the main objectives of the cooperation in the fields of electricity interconnections, hydrogen, and offshore infrastructures, as well as the latest developments (new Memorandum of Understanding) and planned actions (SWE Action Plan).

The plan does not refer to any progress or efforts to undertake as regard the signature of the bilateral solidarity agreements for gas supply with Spain's neighbours (Portugal and France).

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework, with projections only until 2030. It covers economic, employment, distributional, and health impacts.

The plan relies on robust quantitative analysis based on well documented models. It provides a rather short assessment of the macroeconomic impacts of policies and measures, complemented by a sensitivity analysis of the impacts of energy prices on few macroeconomic indicators such as GDP and employment.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The final updated NECP covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union. Some measures included in the plan are more ambitious than those in the RRP, for example the increased target for electrolyser capacity to produce renewable hydrogen, set to 12 GW, above the 4 GW included in the hydrogen roadmap.

The plan also improves upon the draft in providing further significant evidence on the outcomes to achieve with the reforms and investments in the RRP, beyond the main initiatives (e.g. renewable hydrogen).

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Spain to ensure a timely and complete implementation of the final updated NECP. Spain is invited to pay particular attention to the following main elements:

- On **ESR**, implement in a timely manner the additional policies proposed in the plan as, while Spain is projected to meet its 2030 target, a significant part of the emissions reduction is driven by measures that are not yet fully in place. Pay particular attention to transport. Ensure robust enforcement of the requirements of the Fluorinated Gas Regulation.
- On **LULUCF**, strengthen measures to meet the 2030 target. Consider measures that mitigate climate change impacts on forests and promote sustainable land-use practices such as combatting desertification, enhancing the resilience of forests to climate change, and implementing measures to increase carbon sequestration.
- On **adaptation**, further operationalise strategies and plans, including the National Adaptation Plan 2021-2030. Detail how climate impacts on water availability affect the energy system, particularly in relation to renewable hydrogen and desalination. Special attention should be paid to potential cross-sectoral conflicts between energy production, agriculture, and urban water use, also across regions. Integrate climate risk assessments into sectoral plans, focusing on energy infrastructure vulnerabilities, such as floods, droughts and heatwaves, and reflect this in planning documents, construction standards and in the design of energy systems. Ensure vulnerability assessments of energy networks and infrastructure are performed under different climate scenarios.
- Set a clear roadmap with specific measures to phase out **fossil fuel subsidies**.
- On **industry**, accelerate efforts to decarbonise hard-to-abate industries. Develop and implement a CCUS strategy detailing the expected storage capacity, injection capacity targets, and sources of financing. Emphasise the role of industry in mobilising energy efficiency investments.
- Implement Spain's planned "**renewables acceleration areas**". These are key to ensure an appropriate balance between accelerated deployment of renewables and respect for environmental and social imperatives. Consider local factors in NECP measures for the deployment of renewables.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030. Implement further measures targeting the transport sector, which is projected to remain the biggest energy consumer in 2030. Streamline further the "energy efficiency first" principle and adopt specific monitoring mechanisms or measures that could support proper implementation.
- On **buildings**, ramp up the pace and depth of renovation of buildings in the non-residential building stock, introduce measures to address the worst performing segments, as well as including measures referred to smart/digital solutions in buildings. and measures related to the use of renewables (i.e. solar installations) for decarbonising heating and cooling.

- On **just transition**, develop a more detailed and robust analysis of social and employment impacts of the transition in a comprehensive just transition strategy which lists all the financial resources.

France

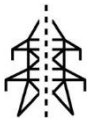
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of France's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -23.7% 2023: -25.7%[86]	-47.5%	NECP: -46.4% However, FR is expected to meet the 2030 target with ESR flexibilities
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of –18.5 Mt CO_2 eq. in 2022	-6.69 Mt CO_2 eq. (additional removal target)	Insufficient ambition: projected gap of 13.4 Mt CO2 eq in 2030
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	19.1% (SHARES) 23% (target)	2023: 22.3%	35% (accompanying letter to the NECP) 41.4% (extrapolation of numbers included in the NECP)	FR contribution of 35% - 41.4% to the EU target is below the 44% required pursuant to the formula of Annex II of the Governance Regulation[87]
	National contribution for energy efficiency:				
	Primary energy consumption	226.4 Mtoe	2023: 209.6 Mtoe	158.6 Mtoe	FR primary energy consumption contribution of 158.6 Mtoe is in line with the EED recast Annex I formula results: 157.3 Mtoe (2020 EU Reference Scenario) or 158.66 Mtoe (Updated

[86] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[87] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Reference Scenario)
	Final energy consumption	137.9 Mtoe	2023: 130 Mtoe	106.9 Mtoe	FR final energy consumption contribution of 106.9 Mtoe is in line with the national contribution of 106.9 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[88]	8.5%	2024: 5.6%	15%	FR is below the EU-wide interconnectivity target.

Source: Eurostat; France's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of France's draft updated NECP and provided recommendations[89] for the preparation of the final updated NECP. France submitted its final updated NECP on 10 July 2024, soon after the deadline of 30 June 2024.[90]

2.1 DECARBONISATION

France expects to decrease total GHG emissions (excluding LULUCF) by 50% in 2030 compared to 1990 (-51% including LULUCF), and to reach climate neutrality by 2050.

2.1.1 Effort Sharing Regulation

France has addressed recommendation 1. The final NECP provides sufficient details on how France will meet its ESR target of -47.5% by 2030 compared to 2005.

The plan provides the same ESR projections as in the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 46.4% in 2030 compared to 2005, a gap of 1.1 percentage points to the national ESR target. However, the plan states that, as the gap is within the margin of error of the models, and with the use of flexibilities, France expects to comply with the regulation. In 2023, GHG emissions from ESR sectors represented 79.9% of the total in France (expected to be 79.3% in 2030)[91], with transport projected to represent the largest share. The 'with additional measures' (WAM) projected value for ESR in 2030 is

[88] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%. The 2020 figure covers also interconnectors with the neighbouring countries outside the EU.

[89] SWD(2023) 931 final, and Commission Recommendation of 18 December 2023, C/2023/9621.

[90] Article 14(2) of Governance Regulation.

[91] Share of total GHG emissions excluding LULUCF. Source: Commission calculations based on EEA data for 2023 and on the French final updated NECP for 2030 (WAM scenario).

roughly 30% lower than the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require a significant additional effort. France has LULUCF accounting debit gaps under the LULUCF Regulation, which are projected to impact its performance under the ESR.

The final plan provides additional information on several policies and measures but could still benefit from a clearer description of their scope, timeline and expected GHG emission reduction. The plan covers all ESR sectors comprehensively. On **transport**, the WAM projections describe a significant decrease in emissions in the period 2022-2030, with the annual percentage decrease 7 times larger compared to the period 2015-2022 (from -0.64% to -4.5%).[92] On **agriculture**, the plan lists a comprehensive set of additional measures expected to reduce emissions by 13% in 2030 (compared to 2021).

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections account for ETS2 pricing, but do not quantify the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

France has partially addressed recommendation 3. The LULUCF sector in France generates net removals, absorbing roughly 5% of the total GHG emissions in 2022. According to 2022 figures, France has worsened its performance by 6.2 $MtCO_2eq$ compared to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, France has to enhance its net removals by -6.69 Mt CO2eq in 2030 compared to the reference period. Based on the projections provided, France will have a gap of 13.4 MtCO2eq in 2030. The plan indicates additional policies compared to the baseline scenario, but these are not sufficient to achieve the LULUCF target.

The plan provides information on how public funding (CAP) and private financing (Label Bas Carbone) are used for mitigation in the agriculture and LULUCF sectors. The final plan clarifies the status and progress in ensuring higher tier levels and geographically explicit datasets needed to guarantee the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

France has addressed recommendation 2. The plan provides a comprehensive strategy on CCUS with financial incentives provided for both capture and storage. France aims to capture between 4 and 8.5 million tonnes of CO_2 per year (Mtpa) by 2030. Out of the 2030 volumes, 1.2 Mtpa will come from biogenic sources and 5.4 Mtpa from fossil sources. 10% of the volumes to capture will be utilised. An assessment the available CO_2 storage capacity started in early 2024 and is still ongoing. The plan recognises the importance of CO_2 transport and refers to ongoing consultations with industry.

2.1.4 Adaptation

France has partially addressed recommendation 4. The plan refers to the National Plan for Adaptation to Climate Change (PNACC), acknowledging the importance of integrating adaptation planning. It partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

[92] Compound annual growth rate. Data refers to whole transport sector, not only the part covered by ETS.

The plan contains a partial **analysis of climate vulnerabilities and risks**. It identifies several significant risks such as floods and heatwaves related to energy supply, infrastructure, agriculture, soils and forestry. Nevertheless, risks associated with droughts and coastal erosion have not been considered. The plan is also short of quantifiable assessment of impacts.

The plan partially outlines the **links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. It introduces detailed adaptation measures to promote climate-resilient infrastructure and energy supply, with a particular focus on water management for hydropower and nuclear electricity production. Additionally, measures are envisaged for agriculture to reduce impacts of continuing droughts and increase carbon storage of agricultural soils. The plan extensively refers to adaptive forest management, with a focus on soil and biodiversity. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

The plan partially addresses **the consequences of climate change on future water availability**. It lacks a fully comprehensive forward-looking assessment of future water demand and supply at the national scale, aligned with expected climate warming trajectories. It also does not adequately address possible cross-sectoral conflicts such as with energy production, agriculture, and residential water use in the face of growing water scarcity.

2.1.5 Fossil Fuels

France has partially addressed recommendation 18. The final updated NECP includes commitments to phase-out coal from electricity production by 2027 with several conditions regarding security of supply. It also includes commitments to phase-down fossil fuels (coal, gas, and oil) consumption, aiming to halve it by 2030 and reduce it by a factor of 3 in 2035 compared to 2012, but with no further details.

The plan includes a commitment to phase out fossil fuel subsidies, mentioning that France started to reduce fossil fuel subsidies by increasing excise duties on certain types of fuels (e.g. gasoil used in road haulage, petrol in aviation and non-road diesel, excluding agriculture) and is working towards further elimination of tax niches by 2030.

2.2 RENEWABLES

France has not addressed recommendation 5[93]. The plan does not include an explicit contribution of renewables to gross final energy consumption by 2030. An extrapolation of the numbers included in the plan yields to an increased range of 35% to 41.4%, which however remains below the formula level of 44% in line with Annex II of the Governance Regulation. The plan does not include an indicative trajectory towards 2030. The plan does not describe how France plans to cover the gap towards reaching its 2020 national binding renewables target and does not clearly explain how it intends to close the gap to the mandatory 2021 baseline.

France has partially addressed recommendation 6. Sector-specific projections, including the different renewable energy carriers for heating and cooling, district heating and cooling, industry, buildings, transport and innovative renewable energy sources for 2030 are included,

[93] France submitted its final updated NECP together with a cover letter that is considered an integral part of the Plan for the purpose of this assessment.

but the plan does not confirm whether those constitute national targets to achieve the sub-targets of Directive (EU) 2018/2001 (the 'revised RED II')[94]. The plan however does not include a specific target for renewable fuels of non-biological origin for industry in 2030.

France has partially addressed recommendation 7. The final plan includes additional information on policies and measures which are expected to be included in the multiannual energy programming law (PPE). This includes measures to support renewable electricity deployment and industrial capacity and specific measures by sector. However, the plan includes few quantified details on expected impacts of, or allocated budget to, these measures, which are also often conditional. France has provided further information on measures promoting the uptake of renewable hydrogen in industry. However, it does not contain further detail on the uptake of power purchase agreements.

The plan describes the measures introduced by the Renewable Energy Acceleration Law, in particular as regards planning and permitting, including some basic elements regarding renewable acceleration areas. It also gives further indications on policies and measures targeting renewable heating and cooling and the design of the obligation on fuel suppliers in the transport sector.

France has addressed recommendation 8. The final plan provides additional information on biomass supply and consumption by sector for 2019 – 2030. It also includes an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of the revised RED II and an assessment of the compatibility of the projected use of forest biomass for energy production with France's obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies to ensure such compatibility. Finally, the plan includes further measures to promote the sustainable production of biogas/biomethane and digestate.

France has partially addressed recommendation 9. The final plan describes the process of transposition of the revised RED II, with a partial timeline for the adoption of legislation. However, the description lacks details on several aspects, in particular related to permitting, renewable acceleration areas and guarantees of origin.

2.3 ENERGY EFFICIENCY DIMENSION

France has partially addressed recommendation 10. France included the amount of energy consumption reduction of 85.9 ktoe[95] per year to be achieved by all public bodies, which is also disaggregated by sector in line with Article 5 of Directive (EU) 2023/1791 ('EED recast')[96]. France did not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly nor the corresponding yearly energy savings to be achieved, but it specified that it opted for the alternative approach. France indicated the total surface of the buildings owned by public bodies to be subject of renovation to nearly zero-

[94] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

[95] This figure is an initial estimation.

[96] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

energy to be 400 bn m^2. France set out policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings.

France has partially addressed recommendation 11. France set out complete policies and measures to achieve the national contributions on energy efficiency but did not quantify the expected energy savings and the contribution for each of the reported energy efficiency measures. France specified how the Energy Efficiency First principle will be implemented and indicated the measure "Environmental Impact Assessment Process" to implement it and monitor its implementation for projects, plans and programmes. Moreover, France plans to extend the scope of the assessment of Energy Efficiency First to both energy efficiency and energy sufficiency.

France set out adequate measures to promote energy audits and energy management systems, including a requirement for energy audits for large companies every four years and plans to install energy management systems for businesses consuming more than 23.6 GWh annually.

France has not addressed recommendation 12. France did not include updated milestones in comparison with the long-term renovation strategy (LTRS) 2020 and draft NECP 2023. The final updated NECP merely reminds the intermediate milestone of final energy consumption reduction to be achieved in 2030. While milestones are missing, the building sector is targeted by several relevant measures, but the quantification of their impact is not detailed.

2.4 ENERGY SECURITY DIMENSION

France has partially addressed recommendation 13. The final plan does not contain significant additional information about how France envisages to further diversify its gas supply and continue encouraging gas demand reduction towards 2030. The plan does however contain a forecast of the evolution of natural gas consumption, reaching 260 TWh in 2030, 40% lower than 2012 levels, and 173 TWh in 2035 (WAM scenario).

The plan provides more details on electricity flexibility needs and includes additional measures, such as a new support scheme for decarbonised flexibility, including demand-side response and storage. The plan indicates an upcoming definition of national flexibility objectives.

The plan includes an objective of returning to nuclear production of more than 400 TWh by 2030, constructing and commissioning new nuclear reactors after 2030, and strengthening uranium conversion and enrichment capacities. The plan does not provide information on the long-term supply of nuclear materials, spare parts, or maintenance services. The long-term management of radioactive waste is addressed, and the plan describes measures to adapt the national nuclear waste management programme.

The plan contains forecasts on oil consumption until 2050. It also describes the measures being investigated to ensure the adequacy of the oil infrastructure in the long run (refineries, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

The final plan is substantially improved on climate adaptation, addressing climate impacts on the electricity system, including risks to the network and the effect of water availability in nuclear production. The plan includes a new list of dedicated objectives, including climate-proofing new builds and reducing the climate vulnerability of hydroelectric and thermoelectric

production. However, the section on the related measures is not very detailed, and the plan mostly refers to actions planned for the PNACC, namely impact and hazard studies.

2.5 INTERNAL ENERGY MARKET DIMENSION

France has partially addressed recommendation 14. The plan does not define objectives or targets concerning market integration nor provide further information on specific measures facilitating system integration of renewable electricity. However, France includes measures facilitating the integration of renewable gases in the existing gas network in line with the revised RED II.

The plan provides some targets to improve the flexibility of the energy system such as an objective for demand response in the multi-year planning (PPE), but there are no specific objectives beyond 2028. The plan describes existing policies and measures and enable a non-discriminatory participation of new flexibility services but does not indicate their impact nor their future development. Nevertheless, the plan elaborates on the quantification of flexibility needs and upcoming measures to develop demand side response through peak load tariffs or through a dedicated tender for demand response.

The plan does not provide measures to develop more competitive wholesale markets or to phase out measures interfering with market signals. The plan mentions the post-Arenh nuclear regulatory framework as well as the financing of new competitive nuclear reactors among measures to be developed, but it does not clarify how these measures will avoid interfering with market signals.

France does not provide measures for a more competitive retail market or to increase the level of consumer empowerment for example through dynamic pricing or being engaged in valuing flexibility services.

France has partially addressed recommendation 15. Based on existing indicators, France sets the objective to reduce energy poverty by 0,5% in 2030 (compared to 2022). The target lacks ambition but the approach is welcomed.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

France has addressed recommendation 16. The plan provides a comprehensive approach, including targets to support research, innovation, and competitiveness in clean energy technologies, establishing a pathway to 2030 and beyond to support the transition towards a net zero and circular economy. The plan presents policies and measures to promote the development of net-zero projects including those relevant for energy intensive industries. It describes a predictable and simplified regulatory framework for permitting procedures for manufacturing and simplified access to national funding. Significant policies and measures include financing of green industry through the mobilisation of public and private funds and speeding up procedures to reduce by half the time to locate industrial sites. Concrete objectives include: the development of two electrolyser gigafactories by 2030 for producing hydrogen from renewable and low-carbon energy sources, together with a trajectory for hydrogen cost reduction; the development of manufacturing capacity of two million zero-emission vehicles by 2030, and associated battery gigafactories; the development of small modular nuclear reactors by 2035; as well as concrete roadmaps for the decarbonisation of 50 emissions

intensive plants in seven sectors. The plan provides detailed policies and measures for the digitalisation of the energy system, the development of clean energy-related skills, and resilient and sustainable supply chains of key net-zero components and equipment.

The plan acknowledges the importance of circular economy which is supported with concrete policies.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

France partially addressed recommendation 17. The plan estimates to EUR 110 billion the additional investment needs in 2030 (compared to 2021), covering all sectors. However, private and public investments are not reported separately. The assessment is based on a sound methodology using a top-down model. The plan contains a brief overview at aggregate level of the main source of financial support for its implementation, without quantification. For some policies and measures, there is information on the amount of public funds available. However, this information is not provided consistently, and it is not linked to the investment needs figures. Hence, it is not possible to assess the existence of a potential financing gap, or how this would be filled.

France has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The macroeconomic impact assessment does not integrate the findings of the accompanying report of the National Low Carbon Strategy (*Stratégie nationale bas-carbone*).

2.8 JUST TRANSITION

France has partially addressed recommendation 19. The final updated plan provides limited additional information on the analysis of the social, employment and skills impacts of the energy and climate transition, and on the distributional impacts on vulnerable groups. While the plan includes several social measures and a quite comprehensive approach on skills in the context of the transition, measures addressing access and preservation of employment are not sufficiently addressed in the plan. The form of support, the impact of the initiatives, the target groups, and the financial resources (such as JTF, ERDF or national funds), are still not detailed. The commitments in the plan, albeit conditional, and the ones in the TJTP are aligned.

The plan does not provide the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework identified in the plan will contribute to the preparation of France's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

France has partially addressed recommendation 20. The plan describes a comprehensive approach to consult stakeholders. However, the process was not specific to the NECP, as related to three energy and climate national documents that fed into the plan. The consultations were organised with relevant stakeholders, national and local authorities, civil society and social partners, and took place at different moments (2 November 2021-15 February 2022, 22

October 2022-22 January 2023) with different methods (online, Youth Forum, working groups etc).

The plan refers to an online summary of the comments received during some of these consultations. However, it does not describe in detail how the final plan integrated the inputs and changes suggested from stakeholders.

2.10 REGIONAL COOPERATION

France has partially addressed recommendation 21. The final plan lists the regional cooperation fora in which France participates: The Pentalateral Energy Forum (Penta), the High-Level Group on North Seas Energy Cooperation (HLG NSEC) and the High-Level Group on Interconnectors in South-West Europe (HLG SWE). Although the plan does not mention specific actions, it sets out in detail the initiatives pursued in the Penta forum and the NSEC HLG. For the former, this includes collaboration on security of supply, market integration, decarbonisation, and hydrogen. For the latter, this includes hybrid projects, permitting, financing and long-term planning. Under the HLG SWE, France, Portugal and Spain signed a new Memorandum of Understanding (MoU) in December 2023 and agreed on an action plan towards 2030 with three priority areas for cooperation: increased electricity interconnections, offshore infrastructure and RES and, lastly, renewable hydrogen. The plan indicates that France will consider the opportunity for joint projects as described in Article 9 of the revised RED II under these three fora.

The final updated plan does not refer to progress nor to efforts to be undertaken for the signature of the three bilateral solidarity arrangements for the security of gas supply with its neighbours (Belgium, Germany, and Spain).

2.11 ANALYTICAL BASIS

The final plan is based on solid quantitative analysis and the methodologies used for projections and impact assessment are clearly explained and referenced. It embeds employment and skills impacts. Social, research and environmental outcomes are considered on a qualitative basis. The plan includes updated projections compared to the draft updated NECP, but still does not provide projections under the planned policies and measures on how the energy system will develop.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The final NECP insufficiently covers the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. The final updated NECP does not refer to energy renovation of public buildings (supported with EUR 6.4 billion in grants by the RRF), nor to the energy renovation of social housing (EUR 500 million in grants by the RFF), which are relevant climate and energy reforms and investments of the RRP and its REPowerEU chapter. Some of the investments and reforms addressed in the final NECP have not been adequately recognized as part of the RRP, such as investments related to the decarbonation of the industry, support to hydrogen, or the MaPrimeRenov scheme.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages France to ensure a timely and complete implementation of the final updated NECP. France should pay particular attention to the following main elements:

- On **ESR**, implement additional policies in a timely manner, as even though France is expected to meet its ESR target with the use of available flexibilities, a significant part of the emissions reduction is driven by measures that are not yet fully in place.
- On **LULUCF**, further align wood harvesting rates with the need to preserve ecosystems' capacity to remove and store carbon. Favour the long-term use of bio-based materials favouring harvested wood products over energy uses. This could be done by adopting a merit order for biomass use through the final Low Carbon National Strategy, and by putting in place concrete measures for its implementation. Continue the incentive-based approaches for carbon farming under Label Bas Carbone, by exploiting any possible synergy with the Carbon Removal and Carbon Farming Regulation (Regulation (EU) 2024/3012).
- On **adaptation**, ensure the risk assessment adopts a more quantitative approach, identifying impacts both short- and long-term, and establishing clear, measurable long-term targets. Consider in risk assessments coastal erosion, storms and floods beyond their impact on infrastructure, agriculture, forests and energy supply. Special attention should be paid to potential cross-sectoral conflicts between energy production, agriculture, and urban water use, ensuring a comprehensive approach to water management.
- Continue the commitment to phase out by 2030 the **fossil fuel subsidies** identified in the NECP. Clarify remaining fossil fuel subsidies and provide a detailed timeline for their gradual phase-out.
- On **industry**, closely monitor the implementation and impact of the measures for decarbonisation included in the plan
- On **renewable energy**, take action towards reaching its 2020 national binding renewables target and to maintain the mandatory baseline after 2020. [97] Submit an explicit contribution in terms of the share of energy from renewable sources in gross final energy consumption for 2030 and put in place measures to achieve the higher ambition for the **deployment of renewables** by 2030 that aligns with the EU's collective target for renewable energy.
- On **energy efficiency**, investigate additional measures tackling the energy consumption of industry, while also ensuring consistent focus on transport, which is the most consuming end-use sector (34% of FEC in 2022) as comparatively few measures in the final plan target the industry sector.
- On **buildings**, ramp up the pace and depth of renovations. Ensure the stability of the national schemes "Ma PrimRenov" since predictability is key to mobilize stakeholders in the national renovation activity.

[97] In line with Article 32(4) of Governance Regulation.

- Further develop and implement a framework that promotes **energy system integration** which accommodates variable renewable energy across sectors, particularly in buildings and industry. Further promote corporate power purchasing agreements
- On **nuclear energy** ensure long-term supply of nuclear materials, spare parts and maintenance services.
- Adopt a more comprehensive **just transition** strategy that includes preservation of employment and allocates appropriate financial resources.

Croatia

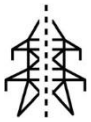
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Croatia's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +0.1% 2023: -9.9%[98]	-16.7%	NECP: -21.3%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -4,9 Mt CO_2 eq.	- 0.6Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: A gap of 2 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	31.0% (SHARES) 20% (target)	2021: 31.3% 2022: 28.1 2023: 28.1	42.5%	HR contribution of 42.5% is slightly below the 44% required according to the formula set out in Annex II of the Governance Regulation[99].
	National contribution for energy efficiency:				
	Primary energy consumption	10.7 Mtoe	2022: 8.30 Mtoe 2023: 8.54 Mtoe	8.050 Mtoe	HR primary energy consumption contribution is 8.05 Mtoe. EED recast Annex I formula results: 6.83 Mtoe
	Final energy consumption	7 Mtoe	2022: 6.89 Mtoe 2023: 7.11 Mtoe	5.88 Mtoe	HR final energy consumption contribution of

[98] The ESR emissions for 2022 are based on Croatia corrected inventory data that was submitted in April 2024, which is reflected in the European Environment Agency's Trends and projections in Europe 2024. The ESR emissions for 2023 are based on approximated inventory data. However, the final ESR emissions for 2022 and 2023 will only be established in 2027 after a comprehensive review.

[99] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					5.88 Mtoe is in line with the national contribution of 5.88 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[100]	52.0%	2024: 36.7%	15%	HR surpasses the EU-wide interconnectivity target

Source: Eurostat; Croatia's final updated national energy and climate plan

2 CONSISDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Croatia's draft updated NECP and provided recommendations[101] for the preparation of the final updated NECP. Croatia submitted its final updated NECP on 31 March 2025, nine months after the deadline of 30 June 2024.[102]

2.1 DECARBONISATION

Croatia expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 42% in 2030 and by 73% in 2040 compared to 1990.

2.1.1 Effort Sharing Regulation

Croatia addressed recommendation 1 on reaching the target under the ESR. The final NECP provides sufficient details on how Croatia will meet its ESR target of 16.7% by 2030 compared to 2005.

The plan provides updated projections that mark an improvement compared to the draft plan, showing that the existing and planned policies and measures will lead to a decrease of -21.3% in 2030 compared to 2005, an overachievement of 4.6 percentage points compared to the national ESR target. In 2023, GHG emissions from ESR sectors represented 71% of the total in Croatia (expected to be 66% in 2030)[103], with transport representing the largest share. The WAM projected value for ESR in 2030 is roughly 14% lower than the WEM, hinting that implementing the plan will require a significant effort.

[100] Calculated by the European Commission based on the ENTSO-E data (Winter Outlook 2024). The 2020 figure covers also interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[101] SWD(2023) 915 final, and Commission Recommendation of 18 December 2023, C/2023/9605.
[102] Article 14(2) of Governance Regulation.

[103] Total GHG excluding LULUCF. Source: Commission calculations based on EEA GHG emission inventories.

The final plan has complemented the information on the policies and measures provided in the draft but could still benefit from a clearer description of their scope, budget, timeline and, where possible, expected greenhouse gas reduction impact.

For **transport**, the WAM projections describe a significant decrease in emissions in the period 2022-2030 compared to the 2015-2022, with the annual percentage change going from +1.8% to -1.7%.[104] The plan includes a variety of measures, including co-financing the purchase of new alternative fuel vehicles and the development of alternative fuel infrastructure. This is very relevant as the share of newly registered electric cars was lower than 5% in 2023, one of the lowest in EU. The plan does not provide quantified targets for the deployment of electric vehicles, nor on the related charging infrastructure.

For **buildings**, the WAM projections describe a decrease in emissions, with the average annual percentage decrease going from -0.2% in the period 2015-2022 to -0.9% in the period 2022-2030.[105] See also sections 2.2 and 2.3.

The plan refers to the introduction of the emission trading system for fuel combustion in buildings, road transport and additional sectors (**ETS2**). The scenario projections do not explicitly account for the effect of ETS2, and do not clearly quantify the impact of ETS2 on the ESR target.

On **agriculture**, the plan describes a stagnation in emission in the period 2022-2030. On **waste** and **F-gases**, the projections show a significantly declining trend in emissions.

2.1.2 LULUCF

Croatia has partially addressed recommendation 3. The LULUCF sector in Croatia generates net removals, absorbing roughly 18.9% of the total GHG emissions in 2022. According to the LULUCF Regulation, Croatia has to improve its net removals by -0.6 Mt CO_2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. However, according to the latest reported 2022 figures, Croatia's performance has worsened by 0.5 Mt CO_2eq compared to the reference period. Moreover, considering its projections for 2030, Croatia will still have a gap of 2 Mt CO_2eq in 2030.

The plan provides some information, though insufficient, on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The plan includes information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates. Overall, based on the available information, Croatia does not design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

2.1.3 Carbon Capture and Storage

Croatia has partially addressed recommendation 2. The plan does not present a strategy on CCUS but provides a detailed description of CCUS activities, including an assessment of the expected availability of storage capacity and a partial assessment of the expected availability of transport capacity. Croatia targets an annual capture capacity of 0.367 Mtpa by 2028.

[104] Compound annual growth rate.
[105] Compound annual growth rate.

2.1.4 Adaptation

Croatia has partially addressed recommendation 4. The plan refers to the Climate Change Adaptation Strategy in the Republic of Croatia until 2040 and the action plan to respond to the recommendation, acknowledging the importance of integrating adaptation planning. The plan is rather comprehensive and embeds most adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains an overall analysis of climate vulnerabilities and risks. It identifies several significant risks related s to floods, drought, water scarcity, forest fires and extreme weather events. The plan outlines adequate policies and measures to address these vulnerabilities and risks but is short of quantifiable assessment of impacts.

The plan partially outlines the link to the specific Energy Union objectives and policies that adaptation policies and measures are meant to support. However, the impacts and benefits of adaptation policies on other Energy Union dimensions have generally not been quantified.

The plan sets out some additional adaptation policies and measures to support the achievement of national objectives, targets and contributions under the Energy Union. For instance, the plan integrates climate change adaptation measures in the use of renewable energy sources. The plan partially addresses the consequences of climate change on future water availability and its implications on the energy sector. National and regional adaptation plans foresee integrating climate change aspects into water planning and water management.

The plan refers to the impact of the projected climate change induced modification of the annual rainfall pattern and water availability on the operation of thermal water plants, hydrogen and biomethane production, pumped energy storage and hydropower generation.

2.1.5 Fossil Fuels

Croatia has partially addressed recommendation 19. The plan includes commitments to phase-down coal for energy use by 2033 and explains the alignment with the Territorial Just Transition Plan (TJTP).

The plan includes a commitment to conduct a comprehensive analysis of existing fossil fuel subsidies, specifically targeting sectors like transportation, agriculture, and fisheries. However, it does not indicate a clear phase out date nor a roadmap.

2.2 RENEWABLES

Croatia has partially addressed recommendation 5. Croatia did not raise the ambition of its national contribution of 42.5% to the Union's binding renewable energy target for 2030 to at least 44% laid down in Article 3(1) of Directive (EU) 2018/2001 (the 'revised RED II')[106] in line with the formula in Annex II to Governance Regulation. The updated trajectory for achieving this contribution is outlined but it falls short of the trajectory calculated in line with the EU's 2030 renewable energy target. The plan sets sector-specific renewable share

[106] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

projections up to 2030, including electricity, heating and cooling, district heating and cooling, industry, buildings and transport. Additionally, Croatia sets a target for the transport sector.

Croatia has partially addressed recommendation 6. Croatia provides a long-term plan for the deployment of renewable energy technologies, but not an estimated trajectory, over the next 10 years, with an outlook to 2040. Croatia has not included an indicative target for innovative renewable energy technologies by 2030 in line with the revised RED II nor a specific target to contribute to the indicative sub target in buildings for 2030, but only an indicative trajectory. Croatia does not increase the projections included in the draft NECP to a level in line with the binding targets in heating and cooling nor increase the projections in the final plan to a level consistent with the binding targets. The final NECP does not confirm whether the projections contribute to the binding target for renewable fuels of non-biological origin (RFNBOs) in industry by 2030, nor does it include the sub-target for advanced biofuels and RFNBOs in transport.

Croatia has not addressed recommendation 7. The final NECP does not include detailed and quantified policies and measures that would enable the timely and cost-effective achievement of the national contribution to the Union's binding renewable energy target of at least 42.5% in 2030, with the collective ambition to reach 45%. In particular, the plan lacks an explanation of how permitting will be accelerated, or which renewable technologies will be covered by the designation of 'renewables acceleration areas' with simplified procedures. Moreover, the plan does not specify how Croatia plans to support increased integration between electricity, and heating and cooling networks.

Croatia has partially addressed recommendation 8. The final NECP lacks information related to the projections for biomass supply, but when it comes to imports, it states that the import of solid biomass is relatively small and amounts to about 2%. The final NECP also includes some further information when it comes to the projected demand of biomass. However, the final NECP does not include information on the source of forest biomass used for energy and an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of Article 29 of the revised RED II. In addition, as no projected use of forest biomass for energy production is included, Croatia fails to provide an assessment of the compatibility of the projected use of forest biomass for energy production with Croatia's obligations under the revised LULUCF Regulation.

Croatia has not addressed recommendation 9. The final NECP does not provide an expected timeline of the steps leading to the adoption of legislative and non-legislative policies and measures aimed at transposing and implementing the provisions of the revised RED II. Where related policies are presented, no timeline is provided. The final NECP includes a general commitment to revise the existing legislative framework to "take into account the new goals and new obligations" defined in recently adopted EU legislation, without timeline or concrete implementation steps.

2.3 ENERGY EFFICIENCY DIMENSION

Croatia has partially addressed recommendation 10. Croatia includes an indicative national contribution of 5.9 Mtoe to the Union's binding final energy consumption target for 2030 in

line with the corrected indicative national contribution that the Commission submitted to Croatia in March 2024 pursuant to Article 4(5) of Directive (EU) 2023/1791 ('EED recast')[107]. Croatia includes an indicative national contribution of 8.1 Mtoe to the Union's indicative primary energy consumption target for 2030. This contribution is not in line with Article 4 of EED Recast. There is still a gap of **17.9%** compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of **20.6%** compared to the target calculated with respect to the indicative results of the updated reference scenario.

Croatia does not include the amount of energy consumption reduction per year to be achieved by all public bodies. Croatia reported the total floor area of 414,000 m2 of heated and cooled buildings owned by public bodies, and specified that it opted for the alternative approach, but without updating the related targets in line with Article 6 of EED recast. Croatia set out some policies and measures to ensure the reduction of energy consumption from public bodies.

Croatia has partially addressed recommendation 11. Croatia sets out comprehensive policies and measures to achieve the national contributions on energy efficiency but does not quantify the expected energy savings and contributions to achieve the targets for each measure. Croatia only quantifies the total effect of energy efficiency and transport measures in comparison to the WEM scenario. Among the main measures, there are programmes supporting the renovation of family houses, the promotion of energy efficiency measures in manufacturing industries and the roll-out of energy management systems in the business sector. Croatia specifies how the energy efficiency first principle will be implemented and mentioned a specific implementation measure in the building sector.

Croatia has not addressed recommendation 12. Similarly to the draft NECP, Croatia's final NECP does not raise the ambition of the 2020 long-term renovation strategy (LTRS). The plan recalls some milestones of the LTRS such as the targeted renovation rates of residential and non-residential buildings and number of renovated buildings. There are five LTRS measures included in the energy efficiency dimension of the plan, mainly financial programmes, targeting all the building subsectors.

2.4 ENERGY SECURITY DIMENSION

Croatia has partially addressed recommendation 13. For **gas**, the final plan does not further explain how Croatia intends to continue encouraging gas demand reduction towards 2030, beyond the measures to promote the replacement of natural gas boilers by alternative technologies. It is however noted that the plan provides some forecast for the evolution of natural gas consumption, which is expected to increase from 101.7 PJ in 2021 to 107.3 PJ by 2030, and then decrease to 97.3 PJ by 2040 (WEM scenario).

To improve system resilience, the plan focuses on securing the natural gas supply and strengthening the role of hydrogen. Key projects include the expansion of the Krk LNG terminal and the reinforcing transmission network towards Slovenia and Hungary. The plan mentions infrastructure development with Albania, Montenegro, and Bosnia and Herzegovina but omits the impact on supply security. The infrastructure will transport hydrogen and mixes

[107] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

gases, but the plan does not mention the technical and policy challenges of cross-border interoperability and blending causes.

For **electricity**, Croatia sets an objective to increase the flexibility of its energy system by increasing energy storage but has not quantified a broader target. The final plan includes targeted measures to improve electric power, gas and heat systems management with a specific target of 250 MW in new battery storage for 2030. It also refers to measure to modernise and digitalize the electricity system to integrate more electricity from renewable sources but lacks quantitative targets. Additionally, the plan refers to further improvement of north-south connection to ensure a smooth flow of energy to continental Croatia and further to other EU members.

For the **oil** sector, the plan does not assess the adequacy of the oil infrastructure (pipelines, refineries and oil storage) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

On **nuclear energy**, Croatia indicates that the operating life of the Krško Nuclear Power Plant in Slovenia (co-owned by Croatia and Slovenia) has been extended until 2043, and negotiations are underway to extend its operation beyond 2043. The plan does not include information on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services, or on the long-term management of nuclear waste. The plan makes a reference to possible SMRs after 2035.

The final plan includes a succinct identification of the risks (e.g., reduction of electricity production in hydroelectric power plants), and highlights the importance of water, notably on the resilience of energy systems to structural or seasonal water scarcity. However, it does not put forward new policies or measures beyond the reference to the national Climate Change Adaptation Strategy and the establishment of a National Centre for Adaptation to Climate Change.

2.5 INTERNAL ENERGY MARKET DIMENSION

Croatia has partially addressed recommendation 14. The final NECP does not put forward clear objectives or targets for demand response to enhance energy system flexibility and contains limited measures to address the challenges of energy system integration, including electro-mobility. The plan proposes to implement pilot projects for demand response measures on the distribution networks. While the projects have not commenced, the plan commits to a public call for the implementation of the pilot projects.

The plan also lacks an assessment of flexibility needs and does not include concrete measures to support energy system integration of renewable electricity in line with Article 20a of the revised RED II.

Croatia has partially addressed recommendation 15. To develop an approach to address energy poverty, Croatia has assessed the number of people affected by energy poverty using the average of four indicators listed in EED recast. Croatia aims to increase its efforts to tackle both energy and mobility poverty based on the preparation of the social climate plan. The Social Climate Fund has been identified as a major financing source for these initiatives. Croatia has not set a reduction target for energy poverty in line with Governance Regulation and it does not mention energy poverty in the context of the analytical basis. In addition, the plan includes

some measures to alleviate energy poverty financed by the Energy Efficiency Obligations Scheme (EEOS), which will focus on building renovation projects for citizens at risk of energy poverty. However, details on how this scheme will function are not provided.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Croatia has partially addressed recommendation 16. The plan includes national goals on R&D spending but lacks specific targets for clean energy technologies and other national strategies for 2029 (e.g. on Smart Specialization Strategy with a priority area in clean energy) and for 2050 (Hydrogen Strategy). Croatia outlines a pathway for 2030 and 2050 to support the decarbonisation of industry, focusing on CCUS, hydrogen, and circular economy, but lacks comprehensive and quantified measures to promote the development of net-zero projects, especially in energy intensive industries. The plan does not describe how it will simplify the regulatory framework for permitting or access to national funding. The plan includes information on policies and measures for the development of clean energy-related skills, for example an initiative like 'Croskills' training centres for clean energy skills but lacks information on policies and measures for resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Croatia has not addressed recommendation 17. Though the plan provides an estimate of the investment needs of EUR 49 billion in 2024-2030, covering all sectors and including a detailed assessment at sub-sector level, the methodology used is still not explained. The plan confirms that at least EUR 11 billion will be covered by available public support (RRP, the Programme Competitiveness and Cohesion 2021-2027, Modernisation Fund, Social Climate Fund, other ETS revenues). Nevertheless, how the remaining part will be financed remains unclear. Moreover, the plan still lacks measures to mobilise private investment. The methodology of the investment needs estimation is not explained.

Croatia has not addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The modelling exercise captures the impact of higher investment but does not account for the consumption and fiscal effects of the transition.

2.8 JUST TRANSITION

Croatia has partially addressed recommendation 20. The updated NECP improves the analysis of the social, employment and skills impacts of the climate transition but does not sufficiently address the impact on the most vulnerable households. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund (JTF).

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. However, it recognizes the need to develop programs addressing energy and transport poverty and the necessity of clearly defining these concepts. The plan partially explains how the policy

framework identified in the NECP will contribute to the preparation of Croatia's Social Climate Plan and how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Croatia has not addressed recommendation 21. Croatia provided very little information about the public consultation on the final NECP. The plan indicates that, from March to June 2023, Croatia organised thematic workshops on several topics (i.e. energy efficiency, renewable energy sources and transport, energy security, agriculture, LULUCF and waste) and that more than 100 stakeholders participated. The plan also states that the national parliament and the local and regional bodies participated in the preparation of the draft NECP. . It is unclear whether a public consultation was carried out for the updated plan. The plan does not include a summary of the consultations and does not describe how the final plan integrates the inputs and changes suggested by the stakeholders, nor why some inputs were not considered.

2.10 REGIONAL COOPERATION

Croatia has not addressed recommendation 22. The plan describes some initiatives aimed at increasing Croatia's engagement with neighbouring Member States and Energy Community Contracting Parties, but still does not refer to regional cooperation in the context of the Central and Southeastern Europe Energy Connectivity (CESEC) group, even if Croatia has been an active member and a beneficiary of this cooperation. The plan still does not identify common challenges and shared objectives in terms of interconnectivity, renewables, energy efficiency and internal market in a detailed way. The plan does not describe how Croatia plans to establish a framework for cooperation on joint projects with one or more other Member States by 2025, in line with Article 9 of Directive (EU) 2018/2001 as amended.

The final plan does not refer to progress nor efforts to be undertaken as regards the signature of the two bilateral solidarity arrangements for the security of gas supply with its neighbours (Italy and Hungary).

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework and includes projections of most of the required variables. It assesses the impacts of planned policies and measures by comparing projections with a WEM scenario. The plan also provides a macroeconomic impact assessment but is limited to an analysis of the impact of additional investments on GDP, employment and gross value added.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Croatia has partially addressed recommendation 18. Croatia's final updated NECP does not cover the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions. The final updated NECP lacks information on several important RRP climate and energy measures relevant to RePowerEU chapter such as reforms facilitating the uptake of renewable energy sources or

renewable hydrogen, investments regarding energy efficiency in the water sector or climate adaptation/flood management.

While some investments and reforms such as developing the gas transmission system correctly reference RRF, some others, such as improving electricity system management lack accurate references. The plan continues to show inconsistencies flagged in the draft updated NECP assessment regarding the RRP measure for a CO_2 capture and storage pilot, which is no longer part of the Croatia's RRP and has been replaced with studies on geological CO2 storage potential.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Croatia to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. Croatia is invited to pay particular attention to the following main elements:

- On **ESR**, implement in a timely manner the measures in the plan as a significant part of the emissions reduction is driven by measures that are not yet fully in place.
- On **transport**, implement policies in a more comprehensive manner by simultaneously boosting sustainable urban transport, rail transport and the electrification of road transport. In parallel, implement measures which will increase the share of renewables in transport.
- On **LULUCF**, consider additional measures to meet the national LULUCF target. Complement the new forest management plan by outlining a clear and detailed pathway to reaching the LULUCF target, with a particular focus to the vulnerability to wildfires.
- On **adaptation**, assess quantitatively the relevant climate vulnerabilities and risks for the national objectives, targets, contributions, policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies that adaptation policies and measures are meant to support.
- Develop a roadmap with specific measures to phase out **fossil fuel subsidies.**
- Speed up decarbonisation of **industry** with faster deployment of renewables, hydrogen production and CCUS.
- As regards **renewable energy**, develop a comprehensive plan with dedicated measures to achieve the higher ambition for the deployment of renewables by 2030 that aligns with the EU's collective target for renewable energy.
- On **energy efficiency**, set a national contribution for primary energy consumption in line with ambition required by the EED recast and put in place sufficient energy efficiency measures to ensure the achievement of the 2030 targets. Provide further details on the volume of private investments mobilised as well as a clear investment plan that anticipates the investments, including their disaggregation by dimension and the split between private/public, to support the implementation of the plan and the achievement of the targets.
- On **buildings**, ramp up the pace and depth of renovation rates in overall building stock; increase ambition for residential buildings and non-residential buildings for the years 2030, 2040 and 2050 in the draft National Building Renovation Plan to be submitted in

December 2025; speed up the roll out of the national financing schemes by increasing the number of one stop shops.

- On **energy security,** develop separate pipeline systems for natural gas and hydrogen, as foreseen in the hydrogen and decarbonised gas package.
- Adopt a more comprehensive **just transition strategy** that addresses the impact on vulnerable households and allocates sufficient funding.

Italy

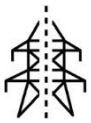
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Italy's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -20.9% 2023: -22.3%[108]	-43.7%	NECP:-40.6%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -21 Mt CO_2 eq.	-3.15 Mt CO_2 eq. (additional removal target)	Insufficient ambition: projected gap of 9.2 Mt CO_2 eq in 2030
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	20.4% (SHARES) 17% (target)	2023: 19.6%	39.4%	IT contribution of 39.4% is slightly above the 39% required according to the formula set out in Annex II of the Governance Regulation[109].
	National contribution for energy efficiency:				
	Primary energy consumption	158.0 Mtoe	2023: 134.82 Mtoe	123.3 Mtoe	IT primary energy consumption contribution is 123.3 Mtoe. EED recast Annex I

[108] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[109] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					formula results: 112.16 Mtoe (Reference Scenario) or 111.18 Mtoe (Updated Reference Scenario).
	Final energy consumption	124 Mtoe	2023: 108.69 Mtoe	101.70 Mtoe	IT final energy consumption contribution of 101.70 Mtoe is not in line with the national contribution of 93.05 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[110]	8.8%	2024: 5.0%	15%	IT is below the EU-wide interconnectivity target.

Source: Eurostat; Italys's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Italy's draft updated NECP and provided recommendations[111] for the preparation of the final updated NECP. Italy submitted its final updated NECP on 4 July 2024, just after the deadline of 30 June 2024.[112]

2.1 DECARBONISATION

Italy expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 49% in 2030 and by 60% in 2040 compared to 1990.

2.1.1 Effort Sharing Regulation

Italy has partially addressed recommendation 1. The plan provides insufficient information on how Italy will work to meet its ESR target of -43.7% by 2030 compared to 2005.

The plan provides updated projections that mark an improvement compared to the draft plan but show that the existing and planned policies and measures will lead to a decrease of only 40.6% in 2030 compared to 2005, 3.1 percentage points above the national ESR target. In 2023,

[110] Calculated by the European Commission based on the ENTSO-E data (Winter Outlook 2024). The 2020 figure covers also interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[111] SWD(2023) 917 final, and Commission Recommendation of 18 December 2023, C/2023/9607.
[112] Article 14(2) of Governance Regulation.

GHG emissions from ESR sectors represented 66.5% of the total in Italy (expected to be 70.1% in 2030)[113], with transport projected to represent the largest share. The 'with additional measures' (WAM) projected value in 2030 is roughly 16% lower than the projections under the 'with existing measures' (WEM) scenario, hinting that implementing the plan and complementing it with additional measures to reach the target will require a significant effort. The plan mentions the availability of a surplus from LULUCF (5.75 Mt CO_2 eq. for the period 2021-2025) to help attain the ESR target.

The final plan complemented the information on the policies and measures provided in the draft but more details on scope, timeline and expected impact on GHG emissions would be useful. This is particularly the case for **agriculture**, whose emissions have stagnated in recent years. For what concerns **transport**, the WAM projections describe a drastic decrease in emissions in the period 2022-2030, with the average percentage decrease per year more than 5 times larger than in the period 2015-2022 (from -2.14% to -5.16%).[114] While the hierarchy of interventions on transport (Avoid – Shift – Improve) is correct and timely, the plan relies on a steep take-up of electric vehicles (4.3 M Battery-electric vehicles plus 2.2 Million Plug-in hybrid by 2030) and a six-fold increase in the use of biofuels by 2030, which is hardly compatible with the existing fleet, where blends are limited to low biofuels concentration. Furthermore, the plan still refers to support for fossil fuelled vehicles and ships (CNG, LNG and LPG).

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WAM scenario projections account for the effect of ETS2, but do not quantify its impact in achieving the ESR target.

On **agriculture**, the plan does not provide sufficient detail in terms of funding and impacts of measures, and how these contribute to the ESR target. Moreover, the projections reflect a stagnation in emission reductions, indicating a need for targeted policies and actions.

The plan describes an effective approach to **circular economy**, including waste management and its impact on methane emissions, projecting a decline through reduced landfilling. It also details the historical reduction of **methane** emissions within the energy sector and outlines necessary measures to sustain this trend. In addition, the plan addresses **fluorinated gas** management, with projections indicating a continued decrease.

2.1.2 LULUCF

Italy has not addressed recommendation 3. The LULUCF sector in Italy generates net removals, absorbing roughly 5% of the total GHG emissions in 2022. According to the LULUCF Regulation, Italy has to enhance its net removals by -3.2 Mt CO2 eq. in 2030 as compared to its yearly average in the 2016-2018 reference period. However, according to the latest reported 2022 figures, Italy's performance has worsened by 13.2 Mt CO2 eq. in comparison to the reference period. Moreover, taking into account its projections for 2030, Italy will still have a gap of 9.2 Mt CO2 eq. in 2030. The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario.

[113] Share of total GHG emissions excluding LULUCF. Source: Commission calculations based on the Italian final updated NECP

[114] Compound annual growth rate.

The plan does not provide sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The plan 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. Overall, based on the available information, Italy does not design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

2.1.3 Carbon Capture and Storage

Italy has addressed recommendation 2. Italy's plans with regards to CCUS are comprehensive, with complete legislation in place or under development. Support schemes are also under development. Italy is also working on cross-border flows of CO_2.

2.1.4 Adaptation

Italy has partially addressed recommendation 4. The plan refers to the National Strategy for Adaptation to Climate Change and the National Climate Adaptation Plan (PNACC) to respond to the recommendation, acknowledging the importance of integrating adaptation planning. It partially embeds adaptation policies and measures in the relevant Energy Union dimensions. The plan contains a partial **analysis of climate vulnerabilities and risks**. It makes a reference to the climate vulnerabilities and risks assessment in the PNACC, and identifies several significant risks related to GHG emissions and energy efficiency. Nevertheless, risks associated with renewable energy and floods have not been considered. The plan is short of quantifiable assessment of impacts.

The plan partially outlines **the links to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support. On the positive side, the preservation of water resources is mentioned as necessary to achieve the objectives of the GHG emissions reduction. The related actions aim to improve efficiency of water infrastructure, effectiveness of planning and management of water resources. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. The plan does not set out significant **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. The measures for nature-based solutions have limited impact in reducing identified risks. The approach to address the investment gap is also insufficient as not sustained over time.

The plan partially addresses **the consequences of climate change on future water availability and its implications on the energy sector**. It however lacks a comprehensive forward-looking assessment of future water demand and supply at the national scale, aligned with expected climate warming trajectories. It also does not adequately address possible cross-sectoral conflicts such as with energy production, agriculture, and residential water use in the face of growing water scarcity.

2.1.5 Fossil Fuels

Italy has partially addressed recommendation 17. The plan includes a timeline to phase-down fossil fuels for energy use, by January 2026 for continental regions, and January 2029 for Sardinia. However, the timeline depends on the availability of sufficient alternative capacity for which Italy has tried to accelerate the necessary authorisations. The plan does not

sufficiently explain the alignment between the NECP and the TJTP for Sardinia, nor the timeline for the updated coal phase-out commitments.

The plan includes a commitment to phase out fossil fuel subsidies, referring to the RepowerEU chapter of the national RRP, which includes the reduction of environmentally harmful subsidies by 2025. This is in line with the 2023 Country Specific Recommendation issued in the context of the European Semester. However, the plan does not set a roadmap.

2.2 RENEWABLES

Italy has partially addressed recommendation 5. The final NECP targets a 39.4% contribution of renewables to gross final energy consumption by 2030, slightly lower than the draft target of 40.5%. The updated trajectory for achieving this contribution is outlined but it falls slightly short of the trajectory calculated in line with the EU's 2030 renewable energy target. Sector-specific projections, including the different renewable energy carriers for heating and cooling, district heating and cooling, industry, buildings, transport and innovative renewable energy sources for 2030 are included, but the plan does not confirm whether these constitute national targets.

Italy has partially addressed recommendation 6. The plan provides some additional information on policies and measures, including further facilitating permitting procedures, to achieve Italy's national contribution to the Union's renewable energy target, including the aim to put in place a consolidated legislative Energy Act (in adoption process) to simplify permit-granting procedures including setting up a single digital gateway for permitting in line with Directive (EU) 2018/2001 (the 'revised RED II')[115]. The plan also provides additional information on measures targeting renewable-based electrification in energy intensive industries. Nevertheless, a linkage between the specific measures and their envisaged outcome is not always quantified.

Some advancements on designation of "renewable acceleration areas" are described, however, not all of them are conducive to meeting the revised RED II targets, namely regarding the designation of areas non-suitable for renewable energy installations. This could lead to a slowdown of new installations which would conflict with the urgency to boost renewable energy deployment.

The final NECP includes projections that renewable hydrogen will reach a 54% share of industrial hydrogen consumed by 2030, in line with the revised RED II obligation. To this end, the plan lists measures to promote hydrogen use in the industry sector, although in a fragmented manner. While important European hydrogen infrastructure projects and overall enabling framework for hydrogen are being developed, specific measures enabling renewable hydrogen trade are to be addressed.

Italy has partially addressed recommendation 7. The final NECP provides additional information on projections on bioenergy demand and supply disaggregated per sector (heat, electricity, transport) but lacks providing data for imports, the source of forest biomass used

[115] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

for energy and an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of Article 29 of the revised RED II. In addition, as no projected use of forest biomass for energy production is included, Italy fails to provide an assessment of the compatibility of the projected use of forest biomass for energy production with Italy's obligations under the revised LULUCF Regulation. Finally, Italy includes further measures to promote the sustainable production of biomethane/biogas and its byproducts.

Italy has partially addressed recommendation 8 as the plan lacks details on the procedural steps and timelines for most policies and measures.

2.3 ENERGY EFFICIENCY DIMENSION

Italy has partially addressed recommendation 9. Italy has set out complete policies and measures to achieve the national contributions on energy efficiency but has not quantified the expected energy savings and the contribution for each of the reported energy efficiency measures. The energy efficiency first principle is acknowledged, with references to cohesion policies for implementation.

Italy has specified robust energy efficiency financing programmes and support schemes to mobilise private investments and co-financing as well as policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes such as Energy Performance Contracts, ESCOs and revolving funds. Italy has also established a National Energy Efficiency Fund and has sufficiently detailed its role and functioning.

Italy has set out measures to develop the necessary infrastructure for high-efficiency cogeneration of district heating and cooling from waste heat and renewable energy sources, such as legislative updates setting stricter limits on the system emissions or obligations to use renewables and. incentives to develop efficient district heating, as well as information and training tools on digitalisation and smart metering. Italy has not submitted a comprehensive heating and cooling assessment.

Italy has partially addressed recommendation 10. Italy has not included updated milestones after the long-term renovation strategy (LTRS) submitted in 2020 and merely refers to the targeted annual renovation rates up to 2050. The building sector is targeted throughout the NECP, in particular with financing and fiscal schemes that are expected to generate significant energy savings. However, the plan does not sufficiently describe the link between measures and financing, and renovation rates and energy savings. The measures described do not have a specific focus on the worst-performing buildings.

2.4 ENERGY SECURITY DIMENSION

Italy has partially addressed recommendation 11. In the gas sector, both the draft and final updated plans are substantial and complete, with for instance a detailed trajectory to phase out Russian gas by 2025, notably by increasing imports from Angola, Egypt, Congo, Qatar, and Algeria and by developing renewable electricity and biogas.

Several objectives have been added as regards constrained or interrupted electricity supply, notably related to interconnections, safe renewables' generation and in terms of increasing the resilience of the energy system against impacts of climate change. Energy storage is mentioned as a way to manage the growth of non-dispatchable renewable generation, even if there is still no indicative objective for the deployment of storage capacities. Planned measures were also updated, including by describing new rules for availability remuneration of electricity production capacity.

The plan describes the demand outlook for crude oil and oil products in detail. Recent capacity adjustments in the country's refining sector are mentioned as well as several upcoming plans. However, it does not fully consider the expected post-2030 decrease in demand especially in the transport sector.

The final plan has partially improved with a new list of dedicated objectives, including climate-proofing new builds, and reducing the climate vulnerability of hydroelectric and thermoelectric production. However, the section on the related measures to achieve this is not very detailed.

2.5 INTERNAL ENERGY MARKET DIMENSION

Italy has partially addressed recommendation 12. The plan details projects that would increase electricity interconnection capacity with information on net transfer capacities and the status of projects. However, it does not set a target for electricity interconnection for 2030.

Italy does not quantify flexibility needs but includes policies and measures to enhance flexibility. Italy will promote active participation of distributed energy resources such as demand response and other flexibility resources and set new rules for demand response for the provision of ancillary services. Italy also aims at procuring long-term centralised storage capacity, which will be made available to interested electricity market participants. The new measure also aims at optimising grid developments. Italy also sets the strengthening of the forward markets (e.g. PPAs and two-way CfDs) as a priority with the aim of promoting investments in renewable generation capacity.

In terms of consumer empowerment, measures focusing on energy communities, energy sharing and advisory services, Italy better empowers consumers thus making the market more competitive.

Italy has partially addressed recommendation 13. The final plan gives a good overview of the measures in place to address energy poverty to vulnerable consumers and energy poor households. The Italian authorities are still working on the methodology to develop their own indicators adapted to the national context with the help of the EPIC (Energy Poverty Indicators Calculation) Project, launched in 2023 and financed by Eurostat. However, the target for reducing the number of households in energy poverty remains unambitious as the definition of energy poverty in the national legislation and related indicators is still being implemented.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Italy has partially addressed recommendation 14. The plan contains a specific breakdown of investment in research and innovation (R&I) for the energy sector for 2030 and 2050 but includes no specific policies and measures to promote and implement research in the priority technological areas for 2030 of energy storage, renewables, hydrogen and other renewable fuels. Similarly, the plan lacks competitiveness targets and only mentions that the future measures on manufacturing of clean technologies will be based on NZIA and the CRMA. The key role of the circular economy in the transition and for competitiveness is clearly underlined and supported with several policies.

The plan foresees a large potential in helping revitalising nuclear energy with the possible deployment of 8 GW of nuclear capacity by 2050 in small and advanced modular reactors (SMRs/AMRs), and microreactors, out of which 0.4 GW are expected to be of fusion origin.

The final plan does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing, nor how access to national funding will be simplified. The plan does not put forward clear measures to promote the development of net-zero projects, including those relevant for the energy intensive industries, but contains measures for regional cooperation and information on initiatives to bridge potential skills gaps for the transition.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Italy has partially addressed recommendation 15. The plan provides an estimate of the additional investment needs for the period 2024-2030 of EUR 174 billion compared to the WEM scenario. The assessment is based on a sound methodology, using a top-down model. It covers the energy sector (electricity generation and networks, energy storages, electrolysers, and district heating), industry, vehicles and buildings. This estimate does not include transport infrastructure, nor policies for GHG emission reduction in other sectors. Private and public investment are not reported separately. The plan does provide a list of public support schemes and occasionally outlines their main sources of public financing. However, this is not done in a consistent way for all measures, and it is not linked to the investment needs figures, making it not sufficient to assess a potential financing gap, or how this would be filled.

Italy has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The macroeconomic assessment lacks a comprehensive analysis of key dimensions as consumption, government budget, and impact of carbon pricing.

2.8 JUST TRANSITION

Italy has partially addressed recommendation 18. The plan provides information on the impact of the transition to climate neutrality on employment but does not sufficiently address the impacts on the most vulnerable households. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the JTF and a minor amount from ETS revenues. The analysis focuses on the JTF and the Territorial Just Transition Plan.

The plan explains why Italy expects delays in the coal phase-out compared to the timeline provided in the TJTP for Sulcis Iglesiente in Sardinia, mentioning grid security, missing enabling infrastructure and the impact of Russian war of aggression in Ukraine. Italy commits to finalising the coal phase-out in the region in question between 2025 and 2028 and refers to concrete measures to protect workers through retraining and relocation.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework in the NECP will contribute to the preparation of the Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Italy has partially addressed recommendation 19. Italy organised two rounds of public consultations, including a wide range of stakeholders and a multi-level dialogue. The second round of consultations, based also on a preliminary version of the plan, started relatively close to the submission of the final plan (spring 2024). A Strategic Environmental Assessment was still ongoing at the time of the submission. The plan includes a summary of the outcome of the consultations, but only limited information is provided on what was discarded and why.

2.10 REGIONAL COOPERATION

Italy has partially addressed recommendation 20. The plan includes a detailed list of initiatives aimed at increasing Italy's engagement with neighbouring Member States, including in the context of the CESEC High-Level Group, but the plan still does not identify common challenges and shared objectives in terms of interconnectivity, renewables, energy efficiency and internal market in a detailed way. Italy does not provide additional information on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II. The final plan refers to ongoing negotiations with Greece, Austria and with France but not with Croatia to sign bilateral solidarity agreements.

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework, with projections reaching 2040. It considers economic, employment and skills, research, innovation, and environmental impacts. Social and competitiveness outcomes are considered on a qualitative basis. Health, gender, and distributional impacts are not examined. The methodologies are described in detail. The final NECP includes an impact assessment of policies and measures.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Italy addressed recommendation 16. The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Italy to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. Italy is invited to pay particular attention to the following main elements:

- Closely monitor the impacts of the policies included in the plan on emission reductions under **the ESR**, increase efforts across all effort sharing sectors and explore possible available flexibilities to ensure compliance with the ESR.
- Decrease the dependency on **fossil fuels** in transport and buildings. Address **transport** emissions through a conducive framework for EV deployment, in line with the ambitious target presented in the plan, including through stable fiscal incentives such as car ownership and company cars taxation based on CO_2.
- On **LULUCF**, implement additional measures given the widening gap to the target. Increase monitoring and enforcement of sustainable forest management practices to address the risk of natural disturbances and improve the targeting and the commitments of existing interventions such as CAP measures on crop rotation and agroforestry.
- On **adaptation**, further assess future water demand and supply under different climate scenarios to evaluate impacts on the energy system, with particular attention to cross-sectoral water conflicts. Elaborate a thorough assessment and mapping of climate risks covering all relevant water-using sectors to ensure a comprehensive approach to water management.
- Set a clear roadmap with specific measures to phase out **fossil fuel subsidies**.
- On **renewable energy**, aim to achieve the more ambitious target of 40.5% as indicated in the draft plan. Address overreliance on imported renewable technologies and fuels (e.g., bioenergy and biogas imports), given the volatile nature of international biofuel markets and the potential for competition with food production. Increase circularity, supporting biofuel targets without negatively impacting other objectives, such as those under LULUCF.
- **On energy efficiency**, put in place measures to achieve the higher ambition by 2030 in line with the requirements of the EED recast. Set up further measures to improve energy efficiency in transport as well as in industry to achieve the required energy savings.
- Clarify plans on the development of nuclear energy, which has an important implication on the green transition and long-term investment decisions by industry, including on **CCS**, given the costs, the construction time, the complexity of the political processes and the potential need for regional cooperation.
- Develop and implement a framework that promotes **energy system integration**, accommodates increased shares of renewable energy sources across sectors, particularly in buildings and industry.
- Promote **demand-response and flexibility programs**, including to promote energy storage and to enable consumers to adjust energy use in response to price signals, and consistency with energy efficiency measures to maximize their impact.

- On **industry**, support decarbonisation through the uptake of renewables and waste heat, including through heat pumps or heat storage. Foster electrification through the PPA market, leveraging on the experience with the first RES-H (FER-T) support scheme, and removing regional obstacles to RES deployment conflicting with the national decree on RES acceleration.
- On **buildings,** accelerate the pace of renovation of the worst-performing residential buildings and those of vulnerable households. Further promote the electrification of heating and deployment of heat pumps by addressing the unbalanced electricity-to-gas-price ratio.
- Clarify how the development of **innovative technologies and industries** will be supported ensuring consistency with the **SET-Plan** and Horizon Europe to support the development of innovative industries in Italy. Detail planning of policies and measures to digitalise its energy system with a focus on grid infrastructure.

Cyprus

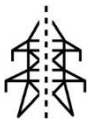
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Cyprus' final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +4.3% 2023: +4.6%[116]	-32%	NECP: -25.9%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -0.3 Mt CO_2 eq.	-0.06 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: a gap of 0.02 Mt CO2 eq
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	16.9% (SHARES) 13% (target)	2023: 20.2%	33.2%	Cyprus's contribution of 33.2% is slightly above the 33% required according to the formula set out in Annex II of the Governance Regulation[117]
	National contribution for energy efficiency:				
	Primary energy consumption	2.2 Mtoe	2023: 2,52 Mtoe	2.03 Mtoe	CY primary energy consumption contribution of 2.03 Mtoe is in line with the EED recast Annex I formula results: 2.04 Mtoe (Reference Scenario) or 1.92 Mtoe (Updated

[116] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[117] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation')

					Reference Scenario)
	Final energy consumption	1.9 Mtoe	2023: 1.87 Mtoe	1.80 Mtoe	CY final energy consumption projection of 1.80 Mtoe is in line with the national contribution of 1.81 Mtoe submitted by the European Commission.
	Level of electricity interconnectivity (%)[118]	0%	2024: 0%	15%	CY is below the EU-wide interconnectivity target.

Source: Eurostat; Cyprus' final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Cyprus' draft updated NECP and provided recommendations[119] for the preparation of the final updated NECP. Cyprus submitted its final updated NECP on 19 December 2024, almost six months after the deadline of 30 June 2024.[120]

2.1 DECARBONISATION

Cyprus expects to increase total GHG emissions (including LULUCF and excluding international aviation) by 1% in 2030 compared to 1990 and decrease by 39% by 2040. The final updated plan indicates that Cyprus has a national target of net zero emissions by 2050.

2.1.1 Effort Sharing Regulation

Cyprus has partially addressed recommendation 1. The final NECP does not provide sufficient details on how Cyprus will meet its ESR target of 32% by 2030 compared to 2005. The plan provides updated projections that mark an improvement compared to the draft plan but showing that the existing and planned policies and measures will lead to a decrease of only 25.9% in 2030 compared to 2005, falling short by 6.1 percentage points from the national ESR target. ESR sectors represent 50% of total GHG emissions in 2022, (expected to be 46% in 2030). The large difference between the WAM (-25.9%) and WEM scenarios (-3.8%) hint that implementing the plan will require a significant effort. The plan mentions that the possible use of flexibilities to reach the ESR obligations is currently being explored.

[118] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[119] SWD(2023) 910 final, and Commission Recommendation of 18 December 2023, C/2023/9600.
[120] Article 14(2) of Governance Regulation.

The final plan complemented the information on the policies and measures provided in the draft plan but could still benefit from a clearer description of their scope, timeline and, where possible, expected greenhouse gas reduction impacts. **Transport** represented the largest share of ESR emissions in 2022 (46%), mainly due to private car use. While some measures are foreseen in the transport sector (e.g. biofuels, infrastructure and incentives for electric vehicles, improving public transport availability, incentivising cycling, etc), others are delayed until after 2030 (e.g. improving public transport availabilities through launching a tram). Regarding **buildings**, the plan notes the challenge of lacking administrative capacity to support decarbonisation of buildings.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WAM scenario projections account for the effect of ETS2. The scenario projections do not clearly consider the impact of ETS2 in achieving the ESR target.

On **agriculture**, the plan does not provide sufficient detail in terms of funding and impacts of measures, and how these contribute to the ESR target. Moreover, the projections reflect a stagnation in emission in 2030, indicating a need for targeted policies and actions. On **waste**, the plan outlines several relevant policies and measures but fails to quantify their impact.

On **F-gases**, the plan includes a collection campaign and destruction effort of refrigerants, as well as the preparation of an inventory of equipment but it is not clear if the collection campaign will be a recurring effort. The plan also lacks consideration of campaigns to train technicians and promote the uptake of heat pumps.

2.1.2 LULUCF

Cyprus has partially addressed recommendation 3. The LULUCF sector in Cyprus generates net removals of -0.3 Mt CO2 eq., absorbing roughly 3.4% of the total GHG emissions in 2022. According to the LULUCF Regulation, Cyprus has to improve its net removals by -0.063 Mt CO2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. However, according to the plan, Cyprus is projected to have a gap of 0.02 Mt CO2eq in 2030. The plan indicates additional LULUCF measures compared to the baseline scenario.

The plan provides sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. However, the plan 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. Overall, based on the available information, Cyprus does design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

2.1.3 Carbon Capture and Storage

Cyprus has not addressed recommendation 2. The plan does not contain a comprehensive CCUS strategy. It does not identify the amount of CO2 emissions that could be captured on an annual basis, provide details on how any captured CO2 would be transported, or identify the overall CO2 storage capacity and injection volumes available by 2030. Nevertheless, Cyprus recognizes the significant role CCUS can play in reducing emissions from hard-to-abate industries. The country is also considering the possibility of opening parts of its territory for the exploration of geological formations suitable for carbon storage sites.

2.1.4 Adaptation

Cyprus has partially addressed recommendation 4. The plan refers to the Cypriot Strategy for Adaptation to Climate Change, and its ongoing review. However, it lacks for most parts adaptation policies and measures in the relevant Energy Union dimensions. The plan contains a partial analysis of climate vulnerabilities and risks.

Even if a **climate risk and vulnerability assessment** has recently been prepared, covering 15 sectors including energy, the plan is nevertheless short of quantifiable assessment of impacts.

The plan partially outlines the **link to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support, particularly for the research, innovation and competitiveness dimensions. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. The plan sets out **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union, but those proposed for agriculture are insufficient, as they do not address the consumption of freshwater. Measures for water management (including networks) are also considered insufficient to properly address the leakage of freshwater during transport or the impacts of floods. The plan does not address the consequences of climate change on **future water availability** and its implications on the energy sector.

2.1.5 Fossil Fuels

Cyprus has not addressed recommendation 16. The plan states that Cyprus does not provide fossil fuels subsidies and hence does not provide a timeline for their phase- out[121]. However, the plan states that there are subsidies to oil prices, and that energy products and electricity are subject to excise duty in accordance with the Excise Duty Act No 91 (I) of 2004.

2.2 *RENEWABLES*

Cyprus has addressed recommendation 5. The final plan contains an increased contribution of 33.17% as a share of renewable energy in gross final energy consumption by 2030, based on WAM scenario. This contribution is slightly above the one resulting from the formula of Annex II of the Governance Regulation (of 33%). Cyprus also provides a table with the indicative trajectory that reaches the reference points for 2025 (23.8%) and 2027 (26.3%) respectively, which are above the trajectory (22% and 26%) calculated in line with the increased EU Renewable energy target of for 2030.

Cyprus has partially addressed recommendation 6. Sector-specific projections for 2030 are included, but the plan does not confirm whether those constitute specific targets to achieve the sub-targets of Directive (EU) 2018/2001 (the 'revised RED II')[122]. Specifically, Cyprus indicates that the share of renewables in electricity will reach 37.6%, in heating and cooling 53.6% and in transport 18.6%. The average annual increase of renewables in heating and

[121] The Commission 2024 study and Report on Energy subsidies in the EU identifies the existence of fossil fuel subsidies.

[122] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

cooling is slightly below the level of the indicative top-ups of Annex IA for the period 2021-25 (1.52%) but above it for 2026-2030 (1.78 ppt). A projected share for renewable energy industry of 27.98% for 2030 is included, mainly to be fulfilled by biomass and energy from waste to produce industrial heat in combination with solar electricity. The Plan does not include a target for district heating and cooling for the 2021-2030 period since Cyprus does not foresee its deployment before 2032. Cyprus does not indicate a specific target for innovative technologies but aims to adopt measures to achieve at least 5% of new installed renewable energy capacity in 2030.

Cyprus has partially addressed recommendation 7. Cyprus mentions that it has concluded the mapping of renewables acceleration areas and published the maps, but without specifying which technologies will be covered. Cyprus indicates that the legislation on the acceleration of permitting is pending, without giving further details. The plan includes additional information on the measures planned to promote energy communities and renewable self-consumption. However, the completion of legal framework with all the necessary elements is still pending. No further information is provided on renewable power purchase agreements except the reference to the need for amending national electricity market legislation nor on the design of the obligation on fuel suppliers in the transport sector.

Cyprus has partially addressed recommendation 8. Some information is included regarding the transposition of the permitting provisions of the revised RED II and the enabling framework on self-consumption and energy communities. However, no detailed timeline is provided for the adoption of measures implementing the targets for RFNBO in industry and the sub-target for advanced biofuels and renewable fuels of non-biological origin (RFNBOs) in transport by 2030.

2.3 ENERGY EFFICIENCY DIMENSION

Cyprus has addressed recommendation 9. The plan includes an indicative national contribution to the Union's binding **final energy consumption target** for 2030 of 1.80 Mtoe for final energy consumption. This contribution is in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[123] or equal to the corrected indicative national contribution that the Commission submitted to Cyprus in March 2024 under Article 4(5) of that Directive. Cyprus included an indicative national contribution to the Union's indicative primary energy consumption target for 2030 of 2.03 Mtoe for **primary energy consumption**, is in line with Article 4.

Cyprus has partially addressed recommendation 10. The NECP does not include an updated ambition level to ensure a highly energy efficient and decarbonised national **building stock** and to transform existing buildings into zero-emission buildings by 2050. The plan includes intermediate milestones for 2030 and for 2040 and milestones for the renovation of both non-residential and residential buildings, including on energy saving. The plan details the impact in terms of energy savings of each new measures put forward and includes sufficient information on measures for buildings in terms of funding and costs and provided specific information on policies and measures addressing **deep renovation**, with focus on worst-performing buildings

[123] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

and vulnerable consumers, as well as decarbonisation of heating and installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Cyprus has partially addressed recommendation 11. Cyprus does not have gas in its energy mix, nor does it have gas interconnections with other Member States. The final plan mentions the objective to start natural gas imports by 2026 thanks to the PCI "CyprusGas2EU", compared to the aim in the draft plan to start in early 2024. The delays are attributed to the pandemic and to the termination of the contract between the company ETHNV and the Cypriot government. According to the WAM scenario, natural gas consumption is expected to ramp up and reach 578 ktoe and make for approximately 27% of the primary energy mix (608 ktoe and 26% in the WEM scenario). The plan does not assess the compatibility of its future gas infrastructure or the ramp up of gas consumption with decarbonization objectives.

The final plan indicates that an indicative target for energy storage has been postponed to a later stage.

The plan does not assess the adequacy of the oil infrastructure (oil storage) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

While the plan refers to the present and upcoming new Strategy on Adaptation to Climate Change and the recently executed Climate Vulnerability and Risk Assessment, it does not provide specific details on how this will contribute to enhancing the climate resilience of the Cypriot energy system.

2.5 INTERNAL ENERGY MARKET DIMENSION

Cyprus has partially addressed recommendation 12. The plan mentions that the electricity market in Cyprus cannot currently support either flexibility services, demand response or aggregation. Cyprus has recently adopted some new legislative measures that make possible flexibility services for storage as well as cumulative representation and demand response, but most likely towards the end of the decade, and the plan does not refer to specific targets. The final plan does not provide information on specific measures to facilitate system integration of renewable electricity in accordance with Article 20a of the revised RED II.

Furthermore, the plan does not provide information regarding the development of a more competitive retail energy market or on strengthening consumer engagement. Although the plan mentions some elements of market liberalization and regulatory changes, it does not clearly describe policies or concrete measures that would ensure greater competition among energy suppliers or increase consumer empowerment.

Cyprus has partially addressed recommendation 13. The draft updated NECP includes an assessment of energy poverty outlining measures such as energy efficiency improvements, financial support through the Social Climate Fund, and the Energy Efficiency Obligation Scheme to assist vulnerable households. It also sets a national reduction target to reduce affected households by 10% by 2030. However, though the financial resources and social measures are outlined, the plan could further detail dedicated funding streams and how the Energy Efficiency Obligations Scheme will address energy poverty.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Cyprus has partially addressed recommendation 14. The plan includes comprehensive approach, with specific targets to support research, innovation, and competitiveness in clean energy technologies, establishing a pathway to 2030 and 2050, but does not specify the support per technology. The plan describes measures to promote the development of net-zero projects including those relevant for the energy intensive industries. It describes how it will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing and how access to national funding will be simplified where needed. The plan provides information on policies and measures for the development of clean energy-related skills and facilitate resilient and sustainable supply chains of key net-zero components and equipment. Relevant measures include the "Labour Force Training Programme for Knowledge and Skills related to the Green Economy", that is being implemented to address the skills gap, funded under the Recovery and Resilience Plan.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Cyprus addressed recommendation 15. The plan provides estimates of total and additional investment needs per sector with a breakdown by public and private investments. The assessment is based on a sound methodology, using a top-down model, complemented by a bottom-up approach.

The plan does not elaborate on how to mobilise private investments, nor does it include a comprehensive description of the financial support schemes or the types of financial instruments. The plan describes planned national and EU sources and outlines only occasionally the sources of funding at measure or project level.

Cyprus provides a robust assessment of the macroeconomic impact of the planned policies and measures**.** The plan includes a quantitative assessment of sectoral impacts, on different socio-economic variables.

2.8 JUST TRANSITION

Cyprus has partially addressed recommendation 17. The plan provides information on the impact of the transition to climate neutrality on employment but does not sufficiently address the impact on skills and the most vulnerable households. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the JTF. The analysis still focuses on the JTF.

The gradual decarbonisation of Dhekelia heavy fuel power plant is mentioned without indicating whether it will be aligned to the fossil fuel phase-down timeline in the Territorial Just Transition Plan (TJTP).

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan only partly explains how the policy framework identified in the NECP will contribute to the preparation of Cyprus' Social Climate Plan and how it will interact with other public funds, both from the EU and the state budget.

2.9 PUBLIC CONSULTATION

Cyprus has partially addressed recommendation 18. Cyprus organised two rounds of public consultations for the preparation of the final plans. The first round took place from the publication of the draft in December 2023 to the publication of the final NECP in December 2024. The plan notes that input was received from various groups, including companies and environmental organisations, and that it was assessed and taken into account in the final text. The second round was a formal public consultation on a preliminary version of the final NECP. The consultation lasted three weeks but was closed only one week before the publication of the final NECP, which limited the possibility to fully take stakeholder input into account. It is unclear how many stakeholders commented on the draft, as the plan only mentions a public presentation on the draft (on 3 December), attended by over 75 participants from the public, private and NGO sector.

The plan includes a detailed summary of the outcome of the consultations and how these comments have been or will be addressed by the Government of Cyprus.

2.10 REGIONAL COOPERATION

Cyprus has not addressed recommendation 19. The final updated plan does not provide further information on plans to establish a framework for cooperation with other Member States by 2025 in line with Article 9 of the revised RED II.

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework under both WEM and WAM scenarios, with projections primarily focusing on 2030, complemented by longer-term view of 2050. The plan also includes a quantitative impact assessment on sectoral basis, which estimates the effect on and socio-economic variables.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The final NECP covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Cyprus to ensure a timely and complete implementation of the final updated NECP. Cyprus is invited to pay particular attention to the following main elements:

- On **ESR**, implement additional policies towards meeting the 2030 target, increase efforts to reduce GHG emissions across all effort sharing sectors, particularly those geared towards

decarbonising transport and reducing passenger vehicles. Explore flexibilities to ensure compliance with ESR obligations.

- On **adaptation**, identify gaps and needs, including financial, to assess the feasibility of implementing the revised 2017 Adaptation Strategy and its action plan. Consider how climate risk assessments are used for policy and investment decisions, i.e. how national or regional/local climate risk assessments are used for spatial planning and what factors hamper their use. Continue to develop adaptation policies and measures to increase the water resilience of key water-using sectors.
- Clarify existing **fossil fuels subsidies** along with a roadmap with specific measures for their gradual phase out.
- On **renewable energy**, accelerate deployment of renewables in heating and cooling and transport sectors, and put in place an effective framework for speeding up the RES permit granting procedures and further measures in support of self-consumption and industry decarbonisation.
- On **energy efficiency**, ensure and monitor proper implementation of the energy efficiency first principle.
- On **buildings**, ramp up the pace and depth of renovation in the overall building stock including through increasing the availability and accessibility of technical assistance to citizens and implementing ambitious reskilling programs to address construction labour shortages.
- Develop a more comprehensive **just transition strategy,** that includes vulnerable households as well as upskilling/reskilling and allocates sufficient funding.
- On **grid development**, speed up the implementation of the Great Sea Interconnector project to ensure its completion by 2030, given the importance of the project to end the energy isolation of Cyprus and to decarbonize through the integration of more renewable energy.

Latvia

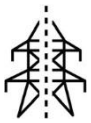
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Latvia's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -1.9% 2023: -4%[124]	-17%	NECP: -20.5%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net emissionsof 4.9 Mt CO_2 eq. in 2022	-0.64 MT CO_2 eq. (additional removal target)	Insufficient ambition: a gap of 5.51 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	42.1% (SHARES) 40% (target)	2023: 43.2%	61%	LV contribution of 61% is in line with formula set out in Annex II of the Governance Regulation[125].
	National contribution for energy efficiency:				
	Primary energy consumption	5.4 Mtoe	2023: 4.27 Mtoe	3.85 Mtoe	LV primary energy consumption contribution of 3.85 Mtoe is not in line with EED recast Annex I formula results: 3.73 Mtoe (2020 EU Reference Scenario) and 3.75 Mtoe (Updated Reference Scenario)

[124] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[125] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	4.5 Mtoe	2023: 3.90 Mtoe	3.46 Mtoe	LV final energy consumption contribution of 3.46 Mtoe is in line with the national contribution of 3.46 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[126]	42.1%	2024: 67.0%	15%	LV has surpased the EU-wide interconnectivity target

Source: Eurostat; Latvia's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In February 2024, the Commission published a thorough assessment of Latvia's draft updated NECP and provided recommendations[127] for the preparation of the final updated NECP. Latvia submitted its final updated NECP on 15 July 2024, two weeks after the deadline of 30 June 2024.[128]

2.1 DECARBONISATION

Latvia expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 59% in 2030, by 72% in 2040 and 71% in 2050, as compared to 1990.

2.1.1 Effort Sharing Regulation

Latvia has largely addressed recommendation 1. The final NECP provides sufficient information on how Latvia will meet its ESR target of -17% by 2030 compared to 2005.

The plan provides updated projections (not available in the draft plan), showing that the existing and planned policies and measures will lead to a decrease of 20.5% in 2030 compared to 2005, an overachievement of 3.5 percentage points compared to the national ESR target. In 2022, GHG emissions from ESR sectors represented 83.3% of the total in Latvia (expected to be 84.4% in 2030)[129], with transport projected to represent the largest share (35.8% in 2030). The 'with additional measures' (WAM) projected value for ESR emissions in 2030 is roughly 10% lower than under the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require effort.

[126] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[127] SWD(2024) 43 final, and Commission Recommendation of 23 February 2024, C/2024/1188.
[128] Article 14(2) of Governance Regulation.
[129] Share of total GHG emissions excluding LULUCF. Source: Commission calculations based on the Latvian final updated NECP.

The final plan complemented the information on the policies and measures provided in the draft but still lacks clarity in terms of their scope, timeline and expected GHG reduction impact. The plan covers all ESR sectors comprehensively. For what concerns **transport**, the WAM projections describe a significant change of pace in emissions reduction in the period 2022-2030 compared to the period 2015-2022 (average annual decrease from –0.04% to –3.06%). In comparison to WEM, this requires an additional decrease of 0.5 MtCO2e, i.e. roughly 20% of the WEM target in 2030 (3 MtCO2e).

For **agriculture**, in the period 2005-2030, the projections show an increase of emissions by 22.5%, suggesting that targeted measures are needed. The plan contains measures on methane emissions related to energy and other sources, as well as on emissions from N_2O and F-gases.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections account for the effect of ETS2, but do not quantify the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

Latvia has partially addressed recommendation 3. The LULUCF sectors in Latvia generate emissions, representing 49% of the total GHG emissions in 2022. According to the LULUCF Regulation, Latvia must enhance its net removals by -0.64 $MtCO_2eq$ in 2030 compared to its yearly average in the 2016-2018 reference period. According to 2022 figures, Latvia has significantly worsened its performance (by 6.5 $MtCO_2eq$.) in comparison to the reference period. This is largely due to increased logging and emissions from organic soils. Despite the introduction of numerous additional measures, Latvia still expects to have a gap of 5.51 Mt CO2eq in 2030. The proposed LULUCF measures do not sufficiently take into account the EU biodiversity objectives.

The plan acknowledges the need for both public (CAP, State aid) and private finance to achieve Latvia's LULUCF targets and details the financial need for individual measures.

The plan contains limited information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Latvia has partially addressed recommendation 2. The plan does not provide a strategy on CCUS, and states that Latvia does not expect carbon capture, storage, transport or reuse by 2030. Hence, the does not include an assessment of the expected availability of storage or transport capacity, nor an estimation of emissions planned to be captured.

2.1.4 Adaptation

Latvia has partially addressed recommendation 4. The plan refers to the 2030 Climate Change Adaptation Plan (LPKPP) to respond to the recommendation, acknowledging the importance of integrating adaptation planning. However, it lacks adaptation policies and measures for most of the relevant Energy Union dimensions.

The plan contains a partial **analysis of climate vulnerabilities and risks**. It also identifies several significant risks, related to power fluctuations, power outages, infrastructure vulnerabilities and biodiversity degradation. However, it is short of a quantifiable assessment of impacts. Nonetheless, it recognises the importance of developing a comprehensive risk

assessment, with the next set of assessments focusing on different aspects of the energy sector expected to be completed in 2025.

The plan does not outline nor quantify **the links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. Nonetheless, it mentions that urban and industrial infrastructure should undergo climate risk assessments, integrating climate change criteria in planning and investments for adaptation.

The plan sets out some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. It mentions several measures from the LPKPP, such as strengthening economic sectors or adapting engineering systems and infrastructure to climate risks and extreme events. However, it does not specify how these measures are implemented. Furthermore, the plan provides insufficient details on the measures identified to assess their financing, implementation, timing and scalability.

2.1.5 Fossil Fuels

Latvia has partially addressed recommendation 19. The plan includes commitments to phase-down by 2030 peat use for electricity and heat generation, industry and services, though they require the modification of relevant national legislation. The plan does not include clear commitments to phase out some fossil fuel subsidies. It does list some policies and measures to eliminate energy fossil fuel subsidies by 2030, but without indicating if these are the only fossil fuel subsidies remaining or when the rest will be phased out.

2.2 RENEWABLES

Latvia has addressed recommendation 5. The plan puts forward an updated national contribution for renewable energy of 61% in gross final energy consumption by 2030 (based on WAM scenario)[130]. This contribution is in line with the level based on the formula of Annex II of the Governance Regulation. The updated indicative trajectory to reach the 61% contribution in 2030 is provided with a specific reference point for 2025 (47.3%)[131], which however is below the trajectory (49%) calculated in line with the increased EU 2030 renewable energy target of 42.5%. No information has been provided on the 2027 reference point.

Latvia has partially addressed recommendation 6. The final NECP indicates that Latvia will reach more than 80% of electricity generation from renewables by 2030 that aligns with the EU's collective target for renewable energy. However, the plan does not contain any projections on technologies up to 2030 to demonstrate how the ambitious contribution will be achieved. The plan contains a target of 5% for deployment of **innovative renewable energy technologies** by 2030. The plan includes the updated projections for the renewable energy shares for specific sectors notably 29% in transport, 65% in buildings, and 73.9% in district heating and cooling in 2030 (without indications whether **waste heat** is included). As regards

[131] Reference points of 18% by 2022, 43% by 2025 and 65% by 2027 pursuant to Article 4(a)(2) of Governance Regulation.

heating and cooling, Latvia will exceed the 60% share of renewable energy in the coming years and will be exempted from the binding increase in line with Article 23(2) of Directive (EU) 2018/2001 (the 'revised RED II')[132]. Latvia has also included a target of 42% for renewable fuels of non-biological origin in industry by 2030.

Latvia has partially addressed recommendation 7. The plan includes a comprehensive chapter on policies and measures with impacts, planned investments and result indicators provided for most of the policies. As regards accelerating permitting, Latvia indicates that no further information has been included as it is subject to the transposition procedure of the revised RED II. The mapping on renewables acceleration areas will be finalised by 21 May 2025 in view of approval by the government in February 2026.

The plan provides information on planned measures to promote electrification in district heating and cooling, including on reducing the use of biomass in the sector after 2030, measures to gradually reduce fossil fuels in heating and cooling and industry sectors as well as the design of the supply obligation in the transport sector. Latvia plans to promote recovery of waste heat in district heating and cooling. The plan explains that it currently does not promote the use of hydrogen in industry. No further information has been provided on promoting the uptake of power purchase agreements or measures using guarantees of origin.

Latvia has partially addressed recommendation 8 where sustainable biomethane production measures are not considered, beyond biogas production.

2.3 ENERGY EFFICIENCY DIMENSION

Latvia has addressed recommendation 10. For energy efficiency, the plan includes an indicative national contribution of 3.46 Mtoe to the Union's binding **final energy consumption** target equal to the corrected indicative national contribution that the Commission submitted to Latvia in March 2024. The plan includes an indicative national contribution of 3.84 Mtoe to the Union's indicative **primary energy consumption** target but the contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[133][134]. There is still a gap of **3.2%** compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of **2.4%** compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario.

Latvia has partially addressed recommendation 11. Latvia sets out complete policies and measures to achieve the national contributions on energy efficiency such as an energy efficiency obligation scheme and an obligation to ensure that the energy performance of data centres, but it does not quantify the expected energy savings and the contribution for each

[132] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

[133] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

[134] From NECP "Latvia has complied with Article 4(5)(3) of EED recast and does not exceed the indicative national energy efficiency contribution calculated by the Commission to the EU binding final energy consumption target. Latvia has declared that the national contributions are determined on the basis of the 2020 EU Reference Scenario." However, it is important to note that the WAM (Target scenario) sets an ambition of 4.031 Mtoe for PEC.

energy efficiency measure[135]. The plan specifies how the **energy efficiency first principle** will be implemented through measures such as the evaluation of the planning system and assessments in legislative and spatial development planning documents.

Latvia includes the amount of cumulative energy savings of 2.54 Mtoe to be achieved by 31 December 2030 but it does not specify clearly how the annual savings rate and the calculation baseline are established nor include quantification of the savings targeting energy poverty. Latvia sets out adequate measures to promote energy audits and energy management systems, determining energy efficiency obligations for the largest energy consumers and obliging the public sector and certain businesses to implement energy management systems.

The plan does not specify robust energy efficiency financing programmes and support schemes, to mobilise private investments and additional co-financing. The plan specifies existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as Energy Performance Contracts and ESCOs).

Latvia has partially addressed recommendation 12. The plan includes an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and the target to transform existing residential and non-residential buildings into zero-emission buildings by 2050 (without setting milestones for 2030 and 2040). Latvia does not quantify the energy savings of each new measure put forward. The plan includes sufficient information on funding and costs and energy savings[136] of the related measures. The plan includes specific information on policies and measures addressing deep renovation with focus on vulnerable consumers, and specific information addressing decarbonisation of heating and installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Latvia has partially addressed recommendation 13. The final plan does not further explain envisaged measures to pursue the diversification of gas supply, nor does it provide any projections for the evolution of natural gas consumption towards 2030.

To strengthen resilience of the electricity system, a main priority is the connection of Baltic States to the Central Europe synchronous area in February 2025 and desynchronisation from Russia's system frequency. Another important step is to increase the electricity generation capacities with renewable energy sources.

On energy storage, Latvia projects at least two pilot projects in large power plants by 2035 and up to 60 MW of electricity storage in residential and economic sectors by 2030, although without setting a general objective for energy storage deployment. It also mandates storage or balancing solutions for facilities with variable power generation, such as hydrogen sites.

[135] The NECP states that the savings from the list of measures provided in section 3.2.1 contribute to the Art 8 target (see section 3.2.4 in LV NECP).
[136] The NECP provides information on sectoral contribution to Article 8 energy savings target, in which the contribution of the household sector is 22%, while the commercial and public sectors account for 20%.

The plan contains projections on oil consumption until 2040. However, it does not describe the measures taken to assess the adequacy of the oil infrastructure in the long run (ports, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

The plan mentions that the draft climate law will require an assessment every 10 years of the risks and vulnerabilities of climate change for the most sensitive sectors to input a policy planning document on adaptation to climate change for the next decade. The first risk assessment for the energy sector is planned for 2024/2025.

2.5 INTERNAL ENERGY MARKET DIMENSION

Latvia has addressed recommendation 14. The plan provides clear targets to improve the **flexibility of the energy system**, elaborating on the quantification of flexibility needs and setting clear objectives for demand response and flexibility. The plan clearly outlines its goal of deploying the "OneNet" IT platform to support energy system flexibility services and Latvia highlights that over 99% of its electricity users are currently covered by smart electricity meters. The updated final plan does not provide further information on specific measures to facilitate system integration of renewable electricity in accordance with the new Article 20a of the revised RED II.

Latvia provides measures to develop competitive wholesale markets and defines forward-looking objectives and targets concerning market integration. Latvia outlines a clear set of policies and measures aimed at significantly reducing electricity imports and becoming an electricity exporter by 2030. These goals are supported by a series of actions detailing the implementation process, responsible institutions, deadlines for execution, budget allocations, and the resources dedicated to each step. Latvia has provided clear targets to improve the electricity interconnection capacity and sets out the objective to achieve the **70% interconnection target** by 2030 with related actions.

Latvia's plan outlines measures to strengthen consumer empowerment, including support for energy production prosumers and energy communities, but primarily for their self-consumption and not for selling or other uses of surplus energy. In addition, the final Plan describes the new regulatory framework for energy communities and energy sharing, to be adopted by the end of 2024. It also sets a dedicated financial instrument to support energy communities.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Latvia has partially addressed the recommendation 16. The plan includes some national objectives in research, innovation, and competitiveness to deploy clean technologies, establishing a pathway until 2030 to support the decarbonisation of industry and promote the transition of businesses towards a net zero economy. Significant policies and measures include increased support for digitalisation in energy and climate, e.g. through the establishment of the European Centre for Digital Innovation and Regional Hubs. The plan does not elaborate on the role of circular economy for decarbonisation and competitiveness and contains few details on related policies.

Latvia is active in international and cross-border cooperation, for instance BalticSeaH2 project, which aims to create a large-scale cross-border hydrogen valley (ecosystem) around the Baltic Sea.

The plan puts forward policies and measures to promote net-zero projects, for instance through regulatory sandboxes. It does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing, or how access to national funding will be simplified where needed. The plan provides detailed policies and measures for the development of clean energy-related skills, notably setting up a Hydrogen Centre of Excellence as part of the Skills Development Action. The plan also includes measures to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment, such as the National Net Zero Technologies strategies for export-oriented production.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Latvia partially addressed recommendation 17. The plan provides detailed estimates of investment needs for several policies across different sectors, indicating the financing sources. However, the plan does not detail how public investments will mobilise private investments, nor does it provide a breakdown for public and private investments.

It is not clear whether the investment needs relate to a WEM or a WAM scenario, nor whether all policies up to 2030 are included in the assessment of investment needs. The information provided in the plan is not sufficient to assess a potential financing gap with respect to the investment needs, or how this would be filled. The assessment is based on a sound methodology, using a top-down model complemented with bottom-up estimates for all sectors.

Latvia has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The assessment is very brief and does not include details, notably on GDP and employment. The impact on public finances is described. However, the plan does not clearly quantify the needs in term of public financing by 2030 and the effects on public spending.

2.8 JUST TRANSITION

Latvia has not addressed recommendation 21. The plan provides an insufficient analysis of the social, employment and skills impacts of the energy and climate transition, or other distributional impacts on vulnerable groups. The plan assesses the impact of policies and measures on employment, but the analysis is not comprehensive. Emphasis is put on energy poverty without including information on the role of the social dialogue.

The plan is not fully consistent with the Territorial Just Transition Plan (TJTP). The phase-out of fossil fuels excludes domestic appliances and is laid out in three steps: phasing out of solid fossil fuels (coal, peat, peat briquettes, shale) by 2030, of liquid fossil fuels by 2040 and of natural gas only starting in 2050. The plan does not mention the planned peatland restoration actions in the regions of Vidzeme, Latgale, Zemgale, and Kurzeme, while the commitments to phase out peat for energy generation by 2030 requires the modification of the relevant legislation.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups.

The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Latvia's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Latvia has partially addressed recommendation 22. Latvia organised two rounds of consultations. An initial consultation organised in early 2024 led to over 50 meetings with various stakeholders (e.g. NGOs, stakeholders from industry, experts, and social partners) to collect proposals and objections. Latvia then organised a public consultation with social partners, but only on 12 June 2024.

The consultation on the final plan started close to the submission (15 July 2024), and stakeholders were given 5 weeks. The plan describes stakeholder input from the consultation but does not clarify whether inputs were included in the final NECP. The plan does not include a summary of the outcome of the consultations, but a summary is available on the website of the Ministry of Climate and Energy. A Strategic Environmental Assessment was still ongoing at the time of the submission of the final NECP.

2.10 REGIONAL COOPERATION

Latvia has partially addressed recommendation 23. Latvia expanded regional cooperation with neighbouring Member States within the Baltic Sea area and within the BEMIP High-Level Group. Regional cooperation for infrastructure planning using the BEMIP format is described, and Baltic States have coordinated their measures for infrastructure development projects proposed in their NECPs to assess the potential impact of their measures on neighbouring countries. However, in the context of renewable energy, Latvia does not provide additional information in its final plan on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of Directive of the revised RED II.

2.11 ANALYTICAL BASIS

Latvia has not addressed recommendation 20. The plan describes the analytical framework and includes projections until 2040. It also includes an assessment of planned policies and measures, including macro-economic, social and employment impacts. However, it lacks an impact assessment of additional policies and measures.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Latvia has addressed recommendation 18. The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. Although only a few RRP measures are explicitly referred to in the NECP text, Latvia has duly specified when RRF (co)financing is envisaged for wider policy actions covered by the NECP. The final updated NECP mentions the reforms included in the reform package to transform the energy sector, for example on energy communities and the net settlement system, but without referring to the RRP and the REPowerEU chapter.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Latvia to ensure a timely and complete implementation of the final updated NECP. Latvia is invited to pay particular attention to the following main elements:

- Implement in a timely manner additional policies towards its **ESR** target, as a significant part of the GHG emissions reduction is driven by measures that are not yet fully in place. Reconsider the uses of CNG/LNG for public transport that may go against decarbonisation objectives.
- On **LULUCF**, increase monitoring and enforcement of sustainable forest management practices, and address emissions from organic soils by initiating large-scale rewetting of drained peatlands and promoting alternative income streams for landowners through the development of paludiculture (the wet cultivation of crops on peatland). Invest into capacity building and programs for landowners, forest managers, and local communities on sustainable land use practices.
- On **adaptation**, ensure that the next risk assessment, planned for 2025, adopts a more quantitative approach, specifying anticipated impacts and establishing clear, measurable long-term targets. Consider different climate scenarios and wide range of climate risks, including flooding, wildfires, drought, and variability in wind and solar energy. The risk assessment should describe in greater detail the implementation, financing, scaling, and timing of adaptation measures to ensure effective mitigation of climate risks.
- Clarify existing **fossil fuel subsidies** and provide a detailed timeline for their gradual phase-out.
- Set specific **milestones for renewable energy technologies for 2030** for wind and solar power to decarbonise the domestic electricity consumption with 100% renewable energy by 2030.
- Put in place an enabling framework to promote the **uptake of power purchase agreements and guarantees of origin**. Further facilitate **energy system integration** by increased demand side flexibility solutions and facilitate integration between electricity and heating and cooling networks.
- Swiftly **implement the planned reforms** on permitting and renewable energy communities and advance with cooperation on joint projects with other Member States. Increase awareness amongst citizens about available measures promoting renewable energy and their wider system benefits.
- On energy efficiency, put in place measures to achieve the higher ambition for **energy efficiency** by 2030 for primary energy consumption. Set further measures on **industry** including an energy efficiency obligation scheme (EEOS) for substantial energy savings, and other supporting measures such as technical assistance, information and education measures to ensure higher energy savings.
- On **transport**, put in place additional regulatory measures, such as stricter standards for consumption or economic incentives, to further support decarbonisation as transport is

projected to become the end-use sector with the highest share of energy consumption (i.e. 32%).

- On **buildings**, clarify intermediate **milestones for building renovations** for 2030 and 2040, and for energy savings for the buildings stock. Put forward policies and measures addressing deep renovation of worst-performing buildings.
- Continue the development of a plan for **peatland restauration** in line with the agreements in the Territorial Just Transition Plan of Latvia.
- Adopt a more comprehensive **just transition strategy** that includes a robust **analysis of social, employment and skills impacts** which dedicates appropriate financial resources.

Lithuania

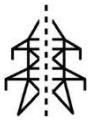
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Lithuania's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +6.2% 2023: +3.8%[137]	-21%	NECP: -21.3%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of - 6 Mt CO_2 eq.	-0.66 Mt CO_2 eq. (additional removal target)	Lithuania is expected to meet its target based on the latest projections: overachievement by - 0.31 Mt CO2 eq
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	26.8% (SHARES) 30% (target)	2023: 32%	55%	Lithuania's contribution of 55% is significantly above the 49% required pursuant to the formula of Annex II of the Governance Regulation[138]
	National contribution for energy efficiency:				
	Primary energy consumption	6.5 Mtoe	2023: 6.34 Mtoe	5.4 Mtoe	Lithuania's primary energy consumption contribution is 5.4 Mtoe. EED recast Annex I formula results: 5.2 Mtoe (2020 EU Reference Scenario) and 5.4 Mtoe (Updated Reference Scenario).

[137] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[138] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	4.3 Mtoe	2023: 5.32 Mtoe	4.4 Mtoe	Lithuania's final energy consumption contribution of 4.4 Mtoe is not in line with the national contribution of 4.25 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[139]	77.0%	2024:41.0%	15%	Lithuania surpasses the EU-wide interconnectivity target

Source: Eurostat; Lithuania's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Lithuania's draft updated NECP and provided recommendations[140] for the preparation of the final updated NECP. Lithuania submitted its final updated NECP on 7 October 2024, over three months after the deadline of 30 June 2024.[141]

2.1 DECARBONISATION

Lithuania expects to decrease total GHG emissions (excluding LULUCF and excluding international aviation) by 44.6% in 2030 compared to 1990 and has committed to reach climate neutrality by 2050.

2.1.1 Effort Sharing Regulation

Lithuania has addressed recommendation 1. The final NECP provides sufficient details on how Lithuania will meet its ESR target of -21% by 2030 compared to 2005. The plan provides projections showing that the existing and planned policies and measures will lead to a decrease of 21.3% in 2030 compared to 2005, overachieving the ESR target by 0.3 percentage points. In 2023, GHG emissions from ESR sectors represented 74% of the total (expected to be 71% in 2030)[142], with transport projected to represent the largest share.

The final plan complemented the information on the policies and measures provided in the draft but is still unclear on their scope, timeline and GHG impacts. The plan focuses on all ESR sectors. On **transport**, Lithuania expects an average annual reduction of approximately 5.4% between 2022 and 2030, a substantial acceleration compared to the observed increase in transport emissions of 2.4% per year between 2015 and 2022[143]. Lithuania set a national target to reduce transport emissions but according to their projections they will miss it by 4 percentage points. This indicates the need to closely monitor and scale up measures in the sector, such as

[139] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[140] SWD(2023) 918 final, and Commission Recommendation of 18 December 2023, C/2023/9608.
[141] Article 14(2) of Governance Regulation.
[142] The 2023 emissions are based on 2024 approximated inventory reports and 2030 is based on reporting of greenhouse gas projections (Article 18 of the Governance Regulation).
[143] Compound annual growth rate

promoting the development of alternative fuels infrastructure and of intermodal transport, and the deployment of electric vehicles.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections account for the effect of ETS2 and its impact in achieving the ESR target.

On **agriculture,** the plan provides sufficient detail in terms of funding and impacts of agricultural measures.

2.1.2 LULUCF

Lithuania has addressed recommendation 3. The LULUCF sector in Lithuania generates net removals, absorbing roughly 34% of the total GHG emissions in 2022. According to 2022 figures, Lithuania has slightly worsened its performance by 0.33 MtCO2eq in comparison to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, Lithuania has to enhance its net removals by -0.66 MtCO2eq in 2030 compared to the reference period. In its 2030 projections Lithuania overachieves its LULUCF target by -0.31 Mt CO2eq in 2030.

The creation of a strategic Lithuanian Agriculture and Rural Development Plan for 2023-2027 played a key role in achieving this target. Lithuania expects to meet its national 2030 mitigation goals through a continuous increase in carbon absorption in sustainable agriculture and forestry, wood use in construction, as well as natural habitat and peatland restoration.

2.1.3 Carbon Capture and Storage

Lithuania has addressed recommendation 2. The plan provides a strategy on CCUS including an assessment of the amount of CO_2 emissions that could be captured annually by 2030, broken down by source for fossil fuel and biogenic CO_2 emissions. Overall, Lithuania plans to capture 0.2 million tonnes of CO_2 emissions per year by 2030. The plan also provides details on how the captured CO_2 will be transported, primarily via gas carriers, rail and pipelines, with the possibility to construct a CO_2 export terminal. The plan does not identify the overall CO_2 storage capacity and injections volumes available by 2030.

2.1.4 Adaptation

Lithuania has partially addressed recommendation 4. The plan refers to the national adaptation plan for 2024-2030, acknowledging the importance of integrating adaptation planning. It partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a partial **analysis of climate vulnerabilities**, and identifies several significant risks related to flooding, forest fires, droughts, and fluctuations in wind and solar energy. However, except for the risk related to flooding, it is short of a quantifiable assessment of impacts. The plan partially outlines **the links to specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. It acknowledges seasonal shifts and flooding risks, which are essential to consider for climate-resilient infrastructure. It also refers to preservation of water resources and envisages measures in agriculture to reduce the impacts of droughts. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

The plan sets out some a**dditional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. The plan discusses anticipated changes in energy demand for heating and cooling and acknowledges risks such as drought and floods, which are critical for safeguarding energy infrastructure and managing evolving electricity needs. Although adaptation measures for residential cooling and heating are mentioned, they are explained in insufficient detail to assess their scope, timing and likely impact. Furthermore, the plan does not extensively address the financing, implementation, or scalability of adaptation measures, nor does it specify how policies will be monitored or adjusted over time.

2.1.5 Fossil Fuels

Lithuania has partially addressed recommendation 17. The plan identifies thirteen energy subsidies that will be phased out by 2026, the majority of which involve fossil fuels. However, the plan does not clarify whether these are all the remaining fossil fuel subsidies and states that some fossil fuel subsidies will remain as considered essential for the population, while some will be reduced but not phased out.

2.2 RENEWABLES

Lithuania has partially addressed recommendation 5. Lithuania does not provide information on the deployment of renewable energy towards 2040. Lithuania has included projections policy measures for an increased use of renewables (as well as green hydrogen needs) in the industry, and buildings with their estimated effects on GHG emissions reduction. However, the final plan does not commit on specific targets for these sectors nor provide an indicative target for deployment of innovative renewable energy technologies by 2030.

Lithuania has partially addressed recommendation 6. The final NECPs provides detailed and quantified information about the policies and measures it envisages for achieving its targets. However, there is no information about renewables acceleration areas, neither on measures enabling integration of the electricity and heating and cooling networks, although the National Strategy for Energy Independence acknowledges this as a goal among future R&D&I priorities. The plan includes information on the design of the supply obligation in transport.

Lithuania has partially addressed recommendation 7. Lithuania included sub-targets for advanced biofuels and renewable fuels of non-biological origin (RFNBOs), in transport by 2030 and measures to develop sustainable production of biomethane.

Lithuania has not addressed recommendation 8 as the plan lacks information on timelines and procedural steps leading to the transposition of the provisions of the Directive (EU) 2018/2001 (the 'revised RED II')[144].

2.3 ENERGY EFFICIENCY DIMENSION

Lithuania has addressed recommendation 9. Lithuania set out complete policies and measures to achieve the national contributions on energy efficiency, such as higher excise

[144] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

duties and taxes on fuel consumption, replacing boilers with more efficient technologies, renovating of multi-apartment buildings, and giving VAT relief for industrial customers. Lithuania also quantified expected energy savings and the contribution for each of the reported energy efficiency measures.

Lithuania established a **National Energy Efficiency Fund** and provided sufficient information on the role of the fund, as defined in Article 30 of Directive (EU) 2023/1791 ('EED recast')[145] in helping deliver the energy efficiency national contributions to the EU target, by including the use of financial instruments within the fund.

Lithuania has not addressed recommendation 10. Lithuania did not increase ambition regarding buildings energy consumption and GHG emissions compared to its draft update and its 2020 long-term renovation strategy. Lithuania's goal is still to achieve net zero emissions in the building sector by 2040. The renovation measures are to be implemented mainly through financial support to the renovation of multi-apartment and single-family buildings, support to replacing fossil-fuel boilers, and support to complex urban renovation. Lithuania ensured consistency between the household final energy consumption and energy savings estimates for buildings.

2.4 ENERGY SECURITY DIMENSION

Lithuania has partially addressed recommendation 11. The final updated plan does not further explain how Lithuania intends to further encourage gas demand reduction towards 2030. However, the plan provides a projection for the evolution of natural gas consumption, which is expected to decrease from 950 ktoe in 2020, to 567 ktoe in 2030, and 539 ktoe in 2040.

Energy storage is mentioned in different parts of the plan, establishing targets for up to 2030. At transmission level, the Lithuanian TSO estimates that the frequency restoration reserve (FRR) needs will increase from 700 MW in 2024 up to 1238 MW in 2030 with a gap of at least 300 MW in 2027, which can be covered with a range between 300 and 600 MW of additional storage depending on its capacity. Storage is also mentioned as one of the key priority areas in research and development.

The final plan did not update the oil section and therefore does not further assess the adequacy of the oil infrastructure (refinery, oil stocks) with the expected decline in oil demand and the move toward lower-carbon alternatives.

2.5 INTERNAL ENERGY MARKET DIMENSION

Lithuania has addressed recommendation 12. The plan outlines measures to enhance flexibility services, including regulations for electricity sharing, flexibility market participation, and compressed air storage development. It also includes measures to enhance consumer empowerment as well as demand response and flexibility across the energy system. However, the plan does not provide sufficient measures facilitating system integration of renewable electricity in line with article 20a of the revised RED II.

[145] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

Lithuania's plan sets forth policies to achieve market integration by 2030, enhancing market liquidity, local generation, security of supply, competitiveness, and mitigate the impact of the energy transition on citizens and businesses.

Lithuania has partially addressed recommendation 13. The updated NECP presents some energy poverty indicators. The plan includes a more ambitious target on energy poverty as included in the National Progress Plan for 2030, on the share of households that spend a significant share of their income on energy expenditure. However, the plan does no longer include the target on the share of families who are unable to keep their home adequately warm. Whereas the draft plan mentioned a target of 17% by 2030, the final plan no longer includes a target and projects that it will be 17.4% by 2040. Lithuania commits to complete the framework of statistical indicators and set of measures for identifying, analysing, and eradicating energy poverty by 2030. The final NECP, however, contains commitment to include energy poverty definition into the national law by transposing the EED recast still in 2024.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Lithuania has partially addressed recommendation 14. The plan includes national objectives in research, innovation, and competitiveness to deploy clean technologies, establishing a pathway to 2030, with a clear objective to support the decarbonisation of industry and the transition of businesses towards a net zero economy. Significant policies and measures include the 2024 revision of Lithuania's *National Energy Independence Strategy*, the upward revision of the Smart Specialisation Strategy's budget (EUR 747M), the establishment of a Centre for the Development of Energy Technology (2024-2030) and a significant increase in the budget for planned measures in research, innovation and competitiveness.

The plan puts forward policies and measures to promote the development of net-zero projects, including for the energy intensive industries. It does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified. The plan presents relevant policies and measures for the digitalisation of the energy system (e.g. implement research on the digitalisation of energy to boost the digitalisation of the energy sector); and for the development of clean energy-related skills (e.g. under the Smart Specialisation concept), while it includes less details on to open trade for resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Lithuania partially addressed recommendation 15. The plan provides an estimate of the investment needs of 17.64 billion EUR to implement existing policy measures, and 13.5 billion EUR to implement planned policy measures, covering all sectors. More than half of them are public investments, mainly financed with EU funds. The assessment is based on a top-down model, but the plan does not provide sufficient information on the methodology used. The information provided is also insufficient to assess a potential financing gap, or how this would be filled. The plan provides different funding sources but does not present a strategy to attract private investment.

Lithuania provides a robust assessment of the macroeconomic impact, mainly focusing on sectoral GDP, but also covering air pollution, household disposable income, and employment.

However, the channels through which the planned policy framework will affect the economy, and the financing of measures could be explained in more detail.

2.8 JUST TRANSITION

Lithuania has partially addressed recommendation 18. The final plan includes an assessment of the impact on macroeconomic indicators, which improves on the analysis of the social, employment and skills impacts of the energy and climate transition but doesn't sufficiently address the impact on the most vulnerable households. The plan discusses the current labour market policies in place to increase employment opportunities for jobseekers, including measures focused on the achievement of the green transition and circular economy, as well as some upskilling measures. The plan explains how an interinstitutional working group was established in June 2024 to begin preparations for the Social Climate Plan (SCP) and highlighted how a technical assistance project has been initiated to identify vulnerable social groups, assess the socio-economic impact of ETS2, identify possible measures for the most vulnerable households and micro-enterprises that could be included in the SCP. However, the government's assessment on the estimated impact of ETS2 and the identification of vulnerable groups is not yet available, and therefore this information has not been provided in the final NECP. The plan also does not explain how the policy framework identified in the NECP will contribute to the preparation of Lithuania's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Lithuania was not given a Commission recommendation on the public consultation process.

2.10 REGIONAL COOPERATION

Lithuania has partially addressed recommendation 19. Lithuania continues to build on a strong existing cooperation framework between the Baltic countries, Poland and Finland and is actively engaging in the work of the BEMIP High-Level group, the Baltic Council of Ministers, and the Nordic Council of Ministers. The importance of well interconnected gas network is highlighted as one of the main instruments to ensure energy security in the Baltic region along with the upcoming synchronisation of the Baltic states' electricity systems with the Continental Europe in February 2025. The plan also anticipates the need of regional cooperation in planning an interconnected market for transportation of CO2 and Hydrogen.

Lithuania did not provide additional information on concrete plans to sign the bilateral solidarity arrangement for the security of gas supply with Poland.

2.11 ANALYTICAL BASIS

The plan includes an improved description of the analytical framework compared to the draft NECP. The methodology is based on a number of sectoral analytical tools covering energy, transport, waste, LULUCF, industry etc. In addition to the projections of the energy system and greenhouse gas emissions that those sectoral tools provide, the plan also includes an assessment of macroeconomic impacts.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Lithuania has partially addressed recommendation 16. The final NECP covers partly the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. However, most of the investments and reforms addressed have not been recognized as part of the RRP, such as the investments to promote sustainable inland navigation.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Lithuania to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. Lithuania is invited to pay particular attention to the following main elements:

- On **ESR**, closely monitor the impacts of the policies included in the plan on emission reductions, particularly for the transport sector (including EV deployment, alternative infrastructure deployment and promoting intramodal transport).
- On **adaptation**, ensure that the risk assessment adopts a more quantitative approach, specifying anticipated impacts and establishing clear, measurable long-term targets. Consider different climate scenarios. The risk assessment should describe in greater detail the implementation, financing, scaling, and timing of adaptation measures to ensure effective mitigation of climate risks.
- Implement the commitment to phase out the **fossil fuels subsidies** identified in the NECP by 2026. Clearly identify remaining fossil fuel subsidies and provide a detailed timeline for their gradual phase-out.
- On **renewable energy**, develop a more comprehensive plan for increasing the use of **renewables** in industry and heating and cooling sectors, and identify innovative renewable energy technologies in view of achieving the indicative target of 5% by 2030. Identify **renewables acceleration areas**, which will be subject to the new permitting procedures. In the context of promoting **energy system integration,** develop policy measures that can help realise the reported potential of demand response and electricity system flexibility.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030. Further promote energy efficiency in **industry**, including through stronger requirements for energy audits and energy management systems.
- On **buildings**, ramp up the pace and depth of **renovation in building stock** including both residential and non-residential buildings and speed up the roll-out of the national financing schemes by increasing technical assistance and focusing on one-stop shops to achieve the objectives set in the Long Term Renovation Strategy (LTRS).
- Develop a more comprehensive **just transition strategy**, that address vulnerable households and present upskilling/reskilling strategies. Allocate sufficient financial resources.

Luxembourg

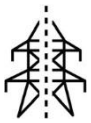
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Luxembourg's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -30.2% 2023: -31.7%[146]	-50%	NECP: -55.6%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -0.65 Mt CO_2 eq. in 2022,	– 0.03 Mt CO_2 eq. (additional removal target)	LUis expected to meet its target based on the latest projections
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	11.7% (SHARES) 11% (target)	2023: 14.4%	37%	Luxembourg´s contribution of 37% is in line with the level required pursuant to the formula set out in Annex II of the Governance Regulation[147].
	National contribution for energy efficiency:				
	Primary energy consumption	4.5 Mtoe	2023: 3.7 Mtoe	3.28 Mtoe	Luxembourg´s primary energy consumption contribution is 3.28 Mtoe. EED recast Annex I formula results: 2.82 Mtoe (2020 EU Reference Scenario) and 2.8 Mtoe (Updated Reference Scenario)
	Final energy consumption	4.2 Mtoe	2023: 3.5 Mtoe	3.18 Mtoe	Luxembourg´s final energy

[146] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[147] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					consumption contribution is 3.18 Mtoe. Corrected contribution notified by the Commission in March 2024: 2.8 Mtoe.
	Level of electricity interconnectivity (%)[148]	55.2%	163.8%	15%	Luxembourg´s surpasses the EU-wide interconnectivity target.

Source: Eurostat; Luxembourg's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Luxembourg's draft updated NECP and provided recommendations[149] for the preparation of the final updated NECP. Luxembourg submitted its final updated NECP on 24 July 2024, a month after the deadline of 30 June 2024.[150]

2.1 *DECARBONISATION*

Luxembourg expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 59% in 2030 and by 87% in 2040 compared to 1990. Luxembourg committed to bring net GHG emissions to zero by 2050.

2.1.1 Effort Sharing Regulation

Luxembourg has addressed recommendation 1. The final NECP provides sufficient information on how Luxembourg will meet its ESR target of -50% by 2030 compared to 2005.

The plan provides updated projections showing that with the existing and planned policies and measures, Luxembourg will reduce ESR emissions by 55.6% by 2030 compared to 2005, overachieving their ESR target by 5.6 percentage points. The 'with additional measures' (WAM) projected value in 2030 is roughly 33% lower than the projections under the 'with existing measures' (WEM) scenario, hinting that implementing the plan and complementing it with additional measures to reach the target will require a significant effort. In 2023, GHG emissions from ESR sectors represented 89% of the total in Luxembourg (expected to be 84% in 2030[151]), with transport projected to represent the largest share.

The final plan complemented the information on the policies and measures provided in the draft. For **transport**, the WAM projections indicate an annual average emissions decrease of

[148] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[149] SWD(2023) 919 final, and Commission Recommendation of 18 December 2023, C/2023/9609.
[150] Article 14(2) of Governance Regulation.
[151] Total GHG emissions including LULUCF. Source: Commission calculations based on latest data from the European Environmental Agency (EEA)

6.5% per year from 2022 to 2030, in contrast to a 4.1% decline between 2015 and 2022[152]. The plan provides details on several measures to reduce transport emissions, including the 2035 National Mobility Plan; the rollout of electric buses; charging infrastructure and incentives for electric cars (including a leasing scheme for disadvantaged households); and the increase of the CO_2 tax.

On agriculture, the plan provides sufficient detail in terms of funding and impacts of agricultural measures. The WAM projections show a considerable reduction of 21% between 2022 (latest reported data) and 2030.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections do not account for the effect of ETS2 and do not quantify its impact in achieving the ESR target. However, the plan refers to the current CO_2 taxation in Luxembourg and the related social measures.

2.1.2 LULUCF

Luxembourg has addressed recommendation 3. The LULUCF sector in Luxembourg generates net removals, absorbing roughly 8% of the total GHG emissions in 2022. According to 2022 figures, Luxembourg has improved its performance by 0.29 MtCO2eq compared to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, Luxembourg has to enhance its net removals by -0.03MtCO_2 eq in 2030 as compared to the reference period. In its 2030 projections Luxembourg overachieves its LULUCF target by -0.04 Mt CO2eq in 2030. The final plan includes information on progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Luxembourg has not addressed recommendation 2. The plan indicates that by 2030 the amount of CO_2 captured will be negligible, but a significant amount may occur after 2030. The Government plans to assess the potential of CCUS technologies in Luxembourg, especially for process emissions in industries as cement. They will work on transport infrastructure where EU cooperation is essential.

2.1.4 Adaptation

Luxembourg did not receive a recommendation on adaptation.

2.1.5 Fossil Fuels

Luxembourg has partially addressed recommendation 17. The plan mentions that by the end of 2024, all crisis-related fossil fuel subsidies will expire. It also mentions the general commitment to phase out remaining fossil fuel subsidies, referring to the COP28 international coalition committed to phase out fossil fuel subsidies. However, the phase-out of fossil fuel subsidies is only briefly mentioned in the context of the increase of excise duties for transport, without a description of the subsidies nor a roadmap and timeline for phasing them out.

[152] Compound annual growth rate

2.2 RENEWABLES

Luxembourg has partially addressed recommendation 4. Estimated trajectories based on their updated NECP target scenario (i.e. WAM scenario reaching a 37% RES-share) are provided, including an outlook for 2040. Overall, the final plan does not confirm whether the included trajectories for different sectors constitute the specific targets that contribute to the sectoral targets of Directive (EU) 2018/2001 (the 'revised RED II')[153]. More specifically Luxembourg has not included an indicative target for innovative renewable energy technologies by 2030, indicative sub-targets in buildings or in industry, a specific target to contribute to the binding sub-targets for RFNBOs in industry, indicative target in heating and cooling to achieve the top-ups of Annex IA or an indicative target in district heating and cooling for 2021-2030. Luxembourg has included trajectories for advanced biofuels and renewable fuels of non-biological origin (RFNBOs), in transport by 2030 as well as information about the design of the supply obligation including limits for certain types of biofuels and the inclusion of a credit mechanism.

Luxembourg has addressed recommendation 5. The final updated NECP provides further detail on measures related to renewable deployment, renewable hydrogen, international cooperation and heating and cooling[154]. Solar and wind are mentioned as technologies for which Luxembourg plans to designate renewable acceleration areas. The final NECP mentions that permitting procedures should be accelerated and simplified, in line with the revised RED II. Further details on how Luxembourg plans to achieve this are however not given. The acceleration of renewables through the promotion of self-consumption, power purchase agreements and energy communities are covered by multiple measures in the final NECP.

Luxembourg has partially addressed recommendation 6. The final NECP provides projections of energy production from solid biomass for 2021-2030. It also foresees an assessment of the domestic supply of forest biomass for energy purpose to be carried out in 2024. An assessment of the compatibility of the projected use of forest biomass for energy production with Luxembourg's obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies to ensure such compatibility is missing. Finally, Luxembourg includes further measures to promote the sustainable production of biogas/biomethane and digestate.

Luxembourg has partially addressed recommendation 7 as the final NECP lacks details on the procedural steps and timelines for most policies and measures.

2.3 ENERGY EFFICIENCY DIMENSION

Luxembourg has partially addressed recommendation 8. Luxembourg includes an indicative national contribution of 3.2 Mtoe to the Union's binding final energy consumption

[153] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

[154] Further detail compared to the draft NECP is given for measures 205, 218, 219, 221, 222 and 223. An update on the description is given for measures 209, 216 and 217.

target for 2030 for **final energy consumption**. This contribution is not in line[155] with Article 4 of Directive (EU) 2023/1791 ('EED recast')[156], nor equal to the corrected indicative national contribution that the Commission submitted to Luxembourg in March 2024. There is still a gap of 17.1% compared to the target calculated with respect to the indicative results of the 2020 reference scenario and **a gap of 16.2%** compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario. Luxembourg includes an indicative national contribution of 3.3 Mtoe to the Union's indicative **primary energy consumption** target for 2030[157] but the contribution is not in line with Article 4. There is still a gap of 16.2% compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of 15.3% compared to the target calculated with respect to the indicative results of the updated reference scenario.

Luxembourg sets a yearly energy consumption reduction target of 1.26 ktoe[158] to all public bodies, which is also disaggregated by sector. Luxembourg reports the total floor area of 1,832 m^2 of heated and cooled buildings owned by public bodies to be renovated yearly in line with Article 6 of EED Recast, and it specified that it opted for the default approach. Luxembourg set out policies and measures to achieve the reduction of energy consumption from public bodies, and the renovation of public buildings.

Luxembourg has partially addressed recommendation 9. Luxembourg set out adequate measures to promote energy audits and energy management systems but does not quantify the expected energy savings nor the contribution for each of the reported energy efficiency measures. Regarding financing, Luxembourg specified robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Luxembourg specified existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes such as Energy Performance Contractors, ESCOs and third-party financing. Luxembourg established a National Energy Efficiency Fund and provided sufficient information on the fund, in helping deliver the energy efficiency national contributions to the EU target, by including the use of financial instruments within the Fund.

Luxembourg has partially addressed recommendation 10. The ambition of the 2030 and 2040 intermediate milestones for buildings is increased in comparison to the Long-Term Renovation Strategy 2020, but there is no quantitative milestone for 2050. The building sector is targeted throughout several sections of the plan, through financing schemes and regulatory standards. The plan does not include milestones in terms of renovation or energy savings related to non-residential buildings.

2.4 ENERGY SECURITY DIMENSION

Luxembourg has partially addressed recommendation 11. The final updated plan provides additional details on Luxembourg's plans to further encourage gas demand reduction, notably with a reference to a new national energy saving campaign. The plan does not, however, include

[155] Luxembourg explained that it cannot commit to the targets in line with the EED. WAM scenario projections have been used instead.
[156] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[157] Number is only given in a table and not reported explicitly as target.
[158] Figures under elaboration.

any other additional policy or measures to strengthen the national security of gas supply compared to the draft updated plan. It is however noted that the final plan contains a forecast for the evolution of natural gas demand, which should decrease from 157 GWh in 2022 to 31 GWh in 2030 and 0 in 2040 (WAM scenario).

The plan refers to the storage of renewable energy as a priority technological objective but does not provide any new information compared to the initial draft. It also maintains that setting up network development plans would also help to facilitate the establishment of energy storage facilities, but without providing more details.

The plan contains oil consumption forecasts until 2050. The plan does not assess the adequacy of the oil infrastructure with the expected oil demand decline and the move towards lower-carbon alternatives, or the impact of the large proportion of stocks currently held abroad (86%) on security of supply.

Luxembourg highlights that it is preparing for the effects of climate change and its future impact on energy infrastructure but does not specify policies and measures to integrate the imperative of climate adaptation in the energy system.

2.5 INTERNAL ENERGY MARKET DIMENSION

Luxembourg has partially addressed recommendation 12. Luxembourg does not provide any new information on the objectives and targets for demand response or storage to improve the flexibility of the energy system. However, Luxembourg provides descriptions of measures to facilitate the integration of new technologies and to make the energy system more flexible. Luxembourg presents descriptions of measures such as the express support mechanism for flexibility, the smart meter rollout, dynamic electricity price contracts, new tariff structure for network tariffs, an energy data platform, and a regulatory framework for aggregation. Even though the plan contains a good overview of measures promoting flexibility solutions in the context of facilitating energy system integration, it does not provide information on specific measures for facilitating system integration of renewable electricity in accordance with Article 20a of the revised RED II.

Luxembourg has partially addressed recommendation 13. Luxembourg describes the calculation of the national energy poverty rate. However, it does not set a measurable reduction target as required by Governance Regulation. Luxembourg describes in detail the measures put in place to address energy poverty, which are set in social policy, as well as in energy policy. The structural measures put in place include access to renewable energy as well as measures aiming to increase the energy efficiency of housing occupied by the energy poor. It does however not explain how the use of energy efficiency measures under the Energy Efficiency Obligations Scheme to alleviate energy poverty is foreseen to be deployed as required by Governance Regulation.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Luxembourg has addressed recommendation 14. The plan includes national targets or measures to support research, innovation and to deploy clean technologies, establishing a pathway for 2030. However, it does not include clear competitiveness targets. The plan

provides sufficient details on research and innovation dedicated to circular economy (in particular, the Circular Economy strategy 2023-2028).

The plan describes how to ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing and the needs to simplify access to national funding. The plan provides policies and measures for the digitalisation of the energy system, and for the development of clean energy-related skills. It also includes measures to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Luxembourg has partially addressed recommendation 15. The plan provides an updated estimate of the total additional investment needs for the period 2023-2040 of EUR 8.5 billion compared to the WEM baseline. As in the draft plan, it covers the buildings, transport, industry, and energy sectors. One third of the investment needs are private investment, two thirds are public investments and subsidies. The assessment is based on a sound methodology, using both a bottom-up and a top-down economy-wide approach. It is not clear to which extent additional national funding needs will be covered by the planned budget and if there is a potential financing gap. The plan does not specify reforms and measures to mobilise private investments, nor does it provide more details on the provision of state subsidies beyond what was already outlined in the draft plan.

The plan provides a robust macro-economic assessment, though the analysis is not disaggregated by sector. The methodology used for the assessment is clear.

2.8 JUST TRANSITION

Luxembourg has partially addressed recommendation 18. The plan provides some information on the impact of the transition to climate neutrality on employment but does not sufficiently address the impact on the most vulnerable groups. It lists some measures to support the just transition including (re)skilling and upskilling, and the financial support schemes in the framework of the Just Transition Fund and Just Transition Mechanism. Luxembourg plans to further assess the impacts on labour markets for the preparation of the Social Climate Plan.

The plan misses the analytical basis for the preparation of the Social Climate Plan, such as estimates of the impact of ETS2, the links to the existing carbon tax, and the identification of vulnerable groups. Though the plan indicates that Luxembourg's carbon tax revenues are ringfenced to fund measures contributing to a just transition, it does not explain how they will be combined with the resources from the Social Climate Fund. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Luxembourg's Social Climate Plan or how the consistency of the two plans will be ensured, except for a reference to the existing CO_2 taxation at national level.

2.9 PUBLIC CONSULTATION

Luxembourg has not addressed recommendation 19. While Luxembourg conducted a 30-day public consultation for the draft updated NECP, it did not provide a summary of how the final plan integrated the views expressed during the consultation.

2.10 REGIONAL COOPERATION

Luxembourg has partially addressed recommendation 20. The plan includes a list of initiatives aiming at increasing engagement with neighbouring Member States, notably Belgium and Germany, and in particular a political agreement to sign a solidarity agreement with Belgium. However, the final plan does not mention any progress nor efforts to sign the bilateral solidarity arrangement for the security of gas supply with Germany.

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework, with projections reaching 2050. It provides an impact assessment along the dimensions of the Energy Union. The methodologies used are described in detail. The policies and measures have been updated to reflect developments since July 2023.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Luxembourg has addressed recommendation 16. The plan sufficiently covers the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union. The NECP covers all measures from the REPowerEU chapter. However, it does not specify that they are funded by the RRP. This is understandable considering that the REPowerEU chapter was only adopted after the submission of the final updated NECP.

All investments under the green transition pilar are well reflected in the plan.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Luxembourg to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. Luxembourg is invited to pay particular attention to the following main elements:

- On **ESR**, implement the additional measures outlined in the NECP as, though Luxembourg expects to achieve its target, a significant part of the emissions reduction is driven by measures that are not yet fully in place.
- On **adaptation**, consider using the upcoming update of the national climate adaptation strategy to carry out a comprehensive vulnerability assessment of the network and infrastructure, based on different climate scenarios. This would enable identifying potential weaknesses of the energy system as regards climate resilience and develop measures to address them.
- Identify **fossil fuel subsidies** and set a roadmap and specific measures for their gradual phase-out.
- On **energy efficiency**, put in place measures to achieve the higher ambition for energy efficiency by 2030. Set further measures to streamline the energy efficiency first principle across all relevant sectors to support the achievement of required energy savings.

- On **buildings,** set policies, measures and financing to reduce energy consumption and GHG emissions in the building sector in view of decarbonising the building stock by 2050.
- Further promote the electrification of heating and roll out of heat pumps by addressing the unbalanced electricity-to-gas-price ratio.
- Adopt a more comprehensive **just transition strategy** that addresses the impact on vulnerable households and identify the available financial resources.

Hungary

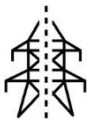
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Hungary's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -8.1% 2023: -14.7%[159]	-18.7%	NECP: -25%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: reported net removals of -6.8 $MtCO_2$ eq. in 2022	-0.93 Mt CO_2 eq. (additional removal target)	Expected to meet its target: a gap of 0.12 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	13.85% (2020, SHARES) 13% (target)	2023: 17.1%	30%	Hungary's contribution of 30% is significantly below the required 34% persuant to formula set out in Annex II of the Governance Regulation[160]
	National contribution for energy efficiency:				
	Primary energy consumption	26.6 Mtoe	2023: 22.1 Mtoe	24.1 Mtoe	HU primary energy consumption contribution is 24.1 Mtoe. EED recast Annex I formula results: 23.3 Mtoe (2020 EU Reference Scenario) and 23.4 Mtoe (Updated Reference Scenario)

[159] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[160] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	18.2 Mtoe	2023: 16.8 Mtoe	17.7 Mtoe	HU final energy consumption contribution of 17.7 Mtoe is not inline with the national contribution of 16.2 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[161]	35.3%	2024: 41.7%	15%	HU has surpassed the EU-wideconnectiviy target

Source: Eurostat; Hungary's final updated national energy and climate plan.

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Hungary's draft updated NECP and provided recommendations[162] for the preparation of the final updated NECP. Hungary submitted its final updated NECP on 15 October 2024, over three months after the deadline of 30 June 2024.[163]

2.1 DECARBONISATION

Hungary expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 54% in 2030 compared to 1990. The NECP builds on Hungary's legally binding commitment to achieve climate neutrality by 2050 but does not provide projections of GHG emission reductions to net zero by 2050.

2.1.1 Effort Sharing Regulation

Hungary has addressed recommendation 1. The final NECP provides sufficient detail on how Hungary will meet its ESR target of 18.7% by 2030 compared to 2005.

The plan provides updated projections that mark a slight improvement compared to the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 25% in 2030 compared to 2005, an overachievement of 6.3 percentage points compared to the national ESR target. In 2023, GHG emissions from ESR sectors represented 75% of the total in Hungary (expected to be 76% in 2030)[164], with transport projected to represent the largest share. The 'with additional measures' (WAM) projected value in 2030 is approximatively 11% lower than the projections under the 'with existing measures' (WEM) scenario, hinting that

[161] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[162] SWD(2023) 916 final, and Commission Recommendation of 18/12/2023, C/2023/9606.
[163] Article 14(2) of Governance Regulation.
[164] The 2023 emissions are based on 2024 approximated data from annual reporting of final greenhouse gas inventory (Article 26 of the Governance Regulation).

implementing the plan and complementing it with additional measures to reach the target will require a significant effort. The plan provides projections showing that the existing and planned policies and measures will deliver on the national GHG target without making use of flexibilities.

The final plan complemented the information on the policies and measures provided in the draft, including – albeit in a limited manner – on agriculture and non-CO_2 emissions. The plan provides for a balanced sectoral coverage. For what concerns **transport**, the WAM projections describe a significant change of the expected trend in emissions, with the average percentage change going from +3.02% per year in the period 2015-2022 to -5.34% in the period 2022-2030.[165]

As regards industrial energy demand, the plan outlines efforts to reduce energy intensity. However, the implications of increased energy consumption from new manufacturing projects, notably in the battery industry, are not addressed in detail.

The plan does not refer to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). Nonetheless, the WAM scenario accounts for the effect of ETS2, though not clearly quantifying its contribution to achieving the ESR target.

2.1.2 LULUCF

Hungary has partially addressed recommendation 3. The LULUCF sector in Hungary generates net removals, absorbing roughly 11% of the total GHG emissions in 2022. According to 2022 figures, Hungary has improved its performance by roughly 1.9 MtCO2eq in comparison to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, Hungary has to enhance its net removals by -0.93 Mt CO2eq in 2030 as compared to the reference period. Based on the projections provided, Hungary will have a gap of 0.12 MtCO2eq in 2030.

The plan does not provide sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The final plan lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to guarantee the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Hungary has not addressed recommendation 2. The plan does not include a detailed breakdown of the potential annual CO_2 emissions that could be captured by 2030. It does not include information on the development of CO_2 transport infrastructure or on the overall CO_2 storage capacity and injection volumes available by 2030.

2.1.4 Adaptation

Hungary has partially addressed recommendation 4. The plan refers to the National Adaptation Strategy (NAS) to respond to the recommendation, acknowledging the importance of integrating adaptation planning. It also partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

[165] Compound annual growth rate.

The plan contains a partial **analysis of climate vulnerabilities and risks.** It includes no reference to the climate vulnerabilities and risks analysis in the National Adaptation Plan. However, it recognizes the general vulnerability of the country to climate change but without going into details, except for impacts on forestry. The plan is short of quantifiable assessment of impacts. Among others, a recognition of vulnerability of nuclear power to the availability of cooling water is lacking, despite recent difficulties in cooling the Paks Nuclear Power Plant with river water during heatwaves.

The plan partially **outlines the links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. However, it only mentions the contribution of adaptation for forestry and energy security. The plan refers to the importance of adaptation research. The impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. The impact assessment chapter mentions the need to take into account climate adaptation when carrying out building renovations, but this is not reflected in the chapter on policies and measures.

The plan sets out some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. While the inclusion of an adaptation category in the list of policies and measures is a positive step, the way these measures contribute to adaptation objectives and to the resilience of the energy system remains insufficiently detailed.

2.1.5 Fossil Fuels

Hungary has partially addressed recommendation 19. The plan mentions the phase-out of coal by 2029. The commitment to phase out the use of lignite in the three regions covered by Territorial Just Transition Plans (TJTPs) in Hungary is 2025. The plan does not sufficiently explain the alignment between the NECP and TJTPs, nor the timeline for the updated coal phase-out commitments, including those related to lignite extraction in mines (Visonta and Bükkábrány).

The plan includes a timeline to phase out heating-related fossil fuel subsidies for households and industry (e.g. stand-alone fossil fuel boilers) but not for phasing out other, direct or indirect types of fossil fuel subsidies[166].

2.2 RENEWABLES

Hungary has partially addressed recommendation 5. The plan includes an updated contribution based on the WAM scenario of renewable energy of 30% in gross final energy consumption by 2030. Even though this contribution is slightly higher than 29% included in the draft NECP, it remains significantly below the 34% as calculated in line with the formula in Annex II of Governance Regulation. The indicative trajectory for achieving the contribution is provided, with the specific reference points of 22% for 2025 and 25% for 2027 respectively, with the reference point for 2027 being slightly below the level (26%) calculated in line with the Governance Regulation.

[166] The Commission 2024 study and Report on Energy subsidies in the EU identifies the existence of fossil fuel subsidies.

Hungary has partially addressed recommendation 6. The NECP includes additional information about renewables deployment over the 2030-2040 period. Hungary does not provide a specific target for renewable fuels of non-biological origin (RFNBOs) in industry but mentioned the significant needs for imports to achieve the binding sub-target of RFNBOs of Directive (EU) 2018/2001 (the 'revised RED II')[167].

The plan does not incorporate a specific target for buildings, but the projected share of renewable energy, with a breakdown per technology, was revised upward, with a stronger emphasis on heat pumps. The annual increase in the share of renewables in heating and cooling is above the binding target of the revised RED II but below the additional indicative top ups in line with Annex IA. Hungary does not provide information on a target for deployment of innovative renewable energy technologies by 2030.

Hungary has partially addressed recommendation 7. Hungary provides additional information on measures on phasing out fossil fuels in heating and cooling sector. However, the plan lacks information on how it will facilitate the uptake of power purchase agreements, promote renewable hydrogen uptake in industry and how it aims to ensure the imports. Even though the plan refers to the introduction of a new regulatory framework for permitting it does not specify the nature and expected impact of these measures and does not indicate technologies for which Hungary aims to designate renewable acceleration areas.

Hungary has addressed recommendation 8. The plan provides additional information on projections on bioenergy demand and supply disaggregated per sector (heating and cooling, electricity, transport). It also provides the source and projected use of forest biomass used for energy and an assessment of the compatibility of the projected use of forest biomass for energy production with Hungary's obligations under the revised LULUCF Regulation. Hungary also includes measures to promote the sustainable production of biomethane and biogas.

Hungary has not addressed recommendation 9. The NECP does not include information on the expected timeline and procedural steps in relation to adoption of policies and measures aimed at transposing and implementing the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Hungary has not addressed recommendation 10. Hungary's indicative national contribution of 17.7 Mtoe to the Union's binding **final energy consumption** target for 2030 is not in line with the requirements of Article 4 of Directive (EU) 2023/1791 ('EED recast')[168]. There is a **gap of 9.3%** compared to the corrected indicative contribution that the Commission submitted to Hungary. Furthermore, Hungary's indicative national contribution of 24.1 Mtoe to the Union's indicative primary energy consumption target for 2030 for **primary energy consumption[169]** is not in line with Article 4. There is still a **gap of 3.5%** compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and **a gap of**

[167] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413
[168] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[169] The target is marked as non-binding.

3.3% compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario.

Hungary includes an energy consumption reduction target of 0.081 Mtoe by 2030 to be achieved by all public bodies**.** Hungary does not report the total floor area of heated and/or cooled buildings owned by public bodies to be renovated yearly but reported the corresponding energy savings to be achieved[170] but does not specify if it opted for the alternative or default approach[171]. Hungary sets out some policies and measures **to reduce the energy consumption from public bodies, and to promote the renovation of public buildings.**

Hungary includes the **amount of cumulative energy savings** of 8.0 Mtoe[172] to be achieved over the period from 2021 to 2030, which is not in line with Article 8 of EED Recast nor include an explanation on how the annual savings rate and the calculation baseline were established.

Hungary has partially addressed recommendation 11. Hungary sets out policies and measures to support the achievement the national contributions on energy efficiency, as well as the **cumulative end-use energy savings**, but it does not quantify each of the reported energy efficiency measures[173] nor the savings from measures targeting energy poverty.

Hungary specifies how the **energy efficiency first principle** will be implemented but it does not mention any measures to implement or monitor the implementation[174]. Hungary sets out adequate measures to promote energy audits and energy management systems, including an obligation for large companies to carry out an energy audit every four years or to operate an energy management system.

Hungary has partially addressed recommendation 12. Hungary does not include updated milestones in comparison to the long-term renovation strategy (LTRS) submitted in 2020, nor detail the impact in terms of energy savings of each new measures put forward. Nonetheless, Hungary includes intermediate milestones for 2030 and 2040, energy savings milestones for the buildings stock for non-residential and residential buildings. Furthermore, Hungary does not include sufficient information on related measures for buildings in terms of energy and emissions savings, funding, and costs but includes some information on policies and measures addressing deep renovation, in particular of worst-performing buildings and for vulnerable

[170] According to NECP, page 181 of English translation "Following Fit for 55, Member States will be guided by an energy renovation of public buildings up to a nearly zero-energy-demand level of 3% of floor area per year and an obligation to reduce energy consumption by 1.9% per year, compared to consumption two years earlier. As there is no regional governance in Hungary, the basis of the two obligations is essentially the same, but it is also necessary to fulfil them separately. Based on the state of the Hungarian public institution building stock, savings of 18% (-6.6 PJ/10 years) can be achieved by 2030 through cost-optimal renovation, based on a linear trajectory. Compared to this, new savings of approximately 14.6 PJ/10 years are required for near-zero energy use."

[171] It seems that it opted for the alternative approach because the target is expressed in energy savings.

[172] Hungary also states that in order to be in line with the more ambitious requirements of the Directive (EU) 2023/1791, it would have to achieve cumulative energy savings of 11.6 Mtoe (484.6 PJ).

[173] Except for the EEOS.

[174] Hungary mentioned that EE1st principle will be implemented through "an integral part of planning processes, support, funding and investment decisions" in the area of energy policy. The NECP also stated that EE1st principle has already been implemented in domestic legislation, however, it did not specify in which specific legislation.

households, as well as specific information on policies and measures addressing decarbonisation of heating and installation of renewables in buildings.

Importantly, Hungary announces that the upcoming National Building Renovation Plan (NBRP) from 2025 will provide higher ambition for the building stock, while the measures will be reviewed as well.

2.4 ENERGY SECURITY DIMENSION

Hungary has partially addressed recommendation 13. The plan does not further explain how Hungary will reduce energy imports of Russian fossil fuels and continue encouraging gas demand reduction. However, the plan does provide forecasts for the evolution of natural gas consumption, which is expected to decrease from 352 PJ in 2019, to 321 PJ by 2030, to 240 PJ by 2040 and to 124 PJ by 2050 (WAM scenario), which is a more ambitious trajectory than in the draft plan. The plan does not elaborate on the compatibility of its future gas infrastructure and the planned new concessions for natural gas extraction with the decarbonisation objectives.

Energy storage installations, initially mainly battery but increasingly hydro as well, will reach 500-600 MW by 2026 and 1 GW by 2030, although the plan does not include a specific objective for energy storage deployment. The final plan mentions a flexible tariffs system and a specific demand product as potential ways to better exploit demand response potential, and new CCGT capacities are envisaged to address electricity system flexibility.

There are still few details on when alternative solutions to Russian oil deliveries will be in place. In addition, while the final plan now states that the construction of a new Serbian-Hungarian oil pipeline is essential to improve security of oil supply, it does not explain how. Finally, the plan does not describe the measures taken to assess the adequacy of the oil infrastructure in the long run (refinery, oil stocks) with the expected decline in oil demand and the move toward lower-carbon alternatives.

The plan describes some measures to ensure security of supply of nuclear materials, e.g. by maintaining sufficient stocks of nuclear fuel. It confirms that an agreement has been concluded with an alternative fuel supplier, although this fuel is not yet used or licensed in Hungary. There is no information on alternatives to Russian suppliers to ensure diversified supplies of spare parts and maintenance services for the VVER reactors in the country. The plan provides some information on research activities related to radioactive waste management.

The final plan mentions that the energy security dimension is impacted by all other dimensions (including by the adaptation in the decarbonisation dimension) but does not clearly put forward policies and measures to integrate the imperative of climate adaptation in the energy system. It only refers to the National Adaptation Strategy that contains measures supporting the assessment and management of climate risks and energy adaptation, including the assessment of climate vulnerability of critical infrastructure elements, such as electricity.

2.5 INTERNAL ENERGY MARKET DIMENSION

Hungary has partially addressed recommendation 14. The plan provides clear targets to improve energy system flexibility with a target for storage, which is firm until 2026. There is no specific target for demand response, but it is mentioned as an important tool to increase the

flexibility of the Hungarian market. Currently, a large part of this flexibility remains provided by gas-fired installations. The new measures include the development of legislation for aggregators by 2024 to enable a non-discriminatory access to markets and the plan mentions other potential measures to be investigated such as flexible tariff structures or specific flexibility products.

The plan defines some forward-looking objectives and targets concerning market integration, as part of regulatory obligations such as target to connect to the EU balancing platforms. Some objectives, such as the objective to strengthen the connection between intraday and day-ahead markets are not substantiated with clear measures. The plan does not provide measures to develop competitive wholesale markets nor measures influencing market signals. Hungary provides measures facilitating system integration of renewable gases in the existing gas network in line with the revised RED II.

The plan provides measures to develop more competitive retail markets and to increase the level of consumer empowerment in the retail market. Those measures relate to the access to smart meters, where a clear but low target has been set, and smarter regulation for system operators.

Hungary has partially addressed recommendation 15. Hungary does not have a definition of energy poverty. However, the plan specifies the number of households experiencing energy poverty, including information on the direct financial support given to those requiring assistance with their energy costs. However, structural initiatives aimed at improving the retail housing market energy efficiency are quite broad and apply to all households, without focusing on disadvantaged individuals or those living in energy poverty.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Hungary has partially addressed recommendation 16. The plan includes national objectives in research, innovation, and competitiveness to deploy clean technologies, although without establishing clear pathways to 2030 and 2050. It also describes relevant measures to support the decarbonisation of industry and the transition of businesses towards a net-zero economy. The plan envisages the adoption of an "Industrial and Technological Action Plan" to support domestic manufacturing and competitiveness, but the timeline is unclear. The plan highlights the development of twenty net-zero innovation projects by 2030. However, it does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified. The plan recognizes the importance of digitalisation in the energy system, the development of clean energy-related skills, and the strengthening of supply chains for key net-zero components and equipment, without describing detailed policies and measures.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Hungary has partially addressed recommendation 17. The plan provides an estimate of the additional investment needs for several sectors compared to a 'with existing measures' scenario. However, it lacks information on total investment needs and estimates at policy level. In addition, it does not discuss how to mobilise private investment. Nevertheless, the plan

details several EU and national funding programmes. The information provided in the plan is not sufficient to estimate whether there is a potential financing gap with respect to the investment needs, or how this would be filled.

Hungary has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. It includes quantitative estimates of impacts on GDP, employment, and government revenue. However, it lacks information on the methodology used.

2.8 JUST TRANSITION

Hungary has partially addressed recommendation 20. The plan provides some references to the social, employment and skills impacts of the energy and climate transition, but focuses only on the counties of Baranya, Heves and Borsod-Abaúj-Zemplén covered by the TJTPs. Moreover, it lacks details on the objectives, policies, and measures, as the form of support, the impact of the initiatives, the target groups and the dedicated resources.

The alignment between the TJTP and the plan is not sufficient, as for the above-mentioned counties the coal phase out commitment is set for 2025. The plan does not refer to the commitments to phase out lignite extraction in the two associated open-cast mines (Visonta and Bükkábrány). However, it explains that the coal phase-out in Mátra will take longer, due to the social, economic, and environmental impacts, and to technological and security of supply challenges.

The plan does not provide the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Hungary's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Hungary has partially addressed recommendation 21. Hungary organised several rounds of public consultations for the preparation of the final plan but started very close to the submission date of the plan. They were organised online and only on a shortened version of the draft NECP in summer 2023, and in person in different sessions, conferences, forums, and as written proposals, with the participation of relevant stakeholders between May and June 2023. The National Environmental Council, where environmental organizations, professional and economic interest representatives and academia are represented, was also consulted on the draft and final NECP in May 2023 and 2024 respectively. The strategic environmental assessment (SEA) of the final NECP took place in summer 2024.

The plan does not include a detailed summary of the consultations but based on the findings of the SEA it lists a few issues to consider during the implementation of the plan. The plan does not describe how inputs from stakeholders was integrated but suggests rather generically, that the views expressed by different actors during the consultations (on the draft plan) were considered to improve the consistency of the plan.

2.10 REGIONAL COOPERATION

Hungary has not addressed recommendation 22. The plan includes initiatives aiming at increasing Hungary's engagement with neighbouring Member States and Energy Community Contracting Parties. Nevertheless, the plan only makes a very brief mention of its membership in the CESEC High-Level Group omitting details about Hungary's role and objectives within the regional cooperation setting. The plan does not identify in detail common challenges and shared objectives in terms of interconnectivity, renewables, gases, and internal market.

The plan includes additional information on the possible deployment of recharging infrastructures in the transport sector under Connecting Europe Facility. Even though Hungary refers to regulatory cooperation in implementing the revised RED II, the plan does not elaborate on how it aims at establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II.

The plan does not refer to any progress nor efforts to be undertaken to sign five bilateral solidarity arrangements for the security of gas supply with its neighbours (Austria, Slovenia, Croatia, Slovakia, and Romania).

2.11 ANALYTICAL BASIS

The plan provides a description of the analytical framework with projections reaching 2050, relying on quantitative modelling. However, it lacks information on the methodology used.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Hungary has not addressed recommendation 18. The final NECP partially addresses the Commission's recommendation and largely covers the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. The final updated NECP still does not refer to the reform on improving transparency, predictability and availability of the grid connection, which is a relevant climate and energy reform of the RRP and its REPowerEU chapter. Most of the RRP measures are included in the plan but they are not linked to the RRP. The plan still fails to elaborate on how the RRP and REPowerEU chapter investments and reforms will contribute to achieving the quantitative targets included in the NECP.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

Hungary needs to swiftly proceed with implementing its final updated National Energy and Climate Plan. Hungary is invited to pay particular attention to the following main elements:

- On **ESR,** implement in a timely manner additional policies and measures towards the ESR target, as a significant part of projected emissions reductions in Hungary is driven by measures that are not yet fully in place.

- On **agriculture**, support practices leading to more efficient input use, harnessing the potential of precision farming, low input and agro-ecological methods, adopting low emission feeding strategies, improving manure management, increasing the use of energy from renewable sources and energy efficiency, improving the management of agricultural residues, grassland and forest land.
- On **adaptation**, carry out a comprehensive vulnerability assessment of the network and infrastructure, based on different climate scenarios, to identify and address potential weaknesses of the energy system.
- Analyse the impact of postponing the commitment to phase out **fossil fuels** to 2029, including for open cast mines. Develop a roadmap with specific measures to phase out all **fossil fuel subsidies.**
- On **industry**, develop a more comprehensive plan for increasing the use of renewables, including by identifying concrete measures to promote renewable hydrogen and CCUS, increasing energy efficiency, and supporting skills development.
- On **renewable energy**, put in place measures to achieve the higher ambition for **renewables** by 2030 that aligns with the EU's collective target for renewable energy. Develop a more comprehensive plan for increasing the use of renewables in **buildings**. Identify **renewables acceleration areas** which will be subject to the new permitting procedures, and establish a framework for renewable power purchase agreements, thereby providing certainty to market actors. **Identify innovative renewable energy technologies** in view of achieving the indicative target of 5% set in the revised RED II.
- On **energy efficiency**, put in place measures to achieve the higher ambition by 2030.
- On **buildings**, ensure ambitious depth of renovation of the overall building stock, specifically addressing deep renovation of worst performing buildings. Increase the availability and accessibility of technical assistance and one stop shops to citizens. Design and implement ambitious reskilling programs to address construction labour shortages.
- On **transport**, further promote a modal shift to public transport by investing in infrastructure and policy changes.
- On **nuclear energy**, continue efforts to diversify nuclear fuel supplies, and ensure the long-term supply of spare parts and maintenance services.
- Develop a more comprehensive **just transition strategy,** that includes a robust analysis of social, employment and skills impacts of the transition and allocates sufficient financial resources.

Malta

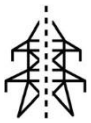
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Malta's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +43.6% 2023: +30.6%[175]	-19%	NECP: +29.4%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net emissions of 0.001 Mt CO_2 eq.	-0.002 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: A gap of 0.003 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	10.7%% (SHARES) 10% (target)	2023: 15.1%	24.5%	MT contribution of 24.5% is below the 28% required according to the formula set out in Annex II of the Governance Regulation[176]
	National contribution for energy efficiency:				
	Primary energy consumption	0.8 Mtoe	2023: 0.91 Mtoe	0.964 Mtoe	MT primary energy consumption contribution of 0.964 Mtoe is not in line with the EED recast Annex I formula results: 0.83 Mtoe (Reference Scenario) or 0.76 Mtoe (Updated

[175] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[176] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Reference Scenario).
	Final energy consumption	0.6 Mtoe	2023: 0.72 Mtoe	0.803 Mtoe	MT final energy consumption contribution of 0.803 Mtoe is not in line with the national contribution of 0.68 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%[177])	31.0%	2024: 39.5%	15%	Malta surpasses the EU-wide interconnectivity target

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

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Malta's draft updated NECP and provided recommendations[178] for the preparation of the final updated NECP. Malta submitted its final updated NECP on 7 January 2025, over six months after the deadline of 30 June 2024.[179]

2.1 DECARBONISATION

Malta expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 32% in 2030 compared to 1990.

2.1.1 Effort Sharing Regulation

Malta has partially addressed recommendation 1. The final NECP provides insufficient details on how Malta will meet its ESR target of -19% by 2030 compared to 2005.

The plan provides updated projections that mark an improvement compared to the previous submission under the National Energy and Climate progress reports (March 2023)[180], but showing that the existing policies and measures will lead to an increase of ESR emissions by 29.4% in 2030 compared to 2005, a gap of over 48 percentage points to the national target. In 2023, GHG emissions from ESR sectors represented 62.6% of the total in Malta (expected to be 59% in 2030)[181], with transport representing the largest share. The plan mentions the availability of LULUCF flexibilities to attain ETS objectives.

[177] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[178] SWD(2023) 920 final, and Commission Recommendation of 18 December 2023, C/2023/9610.
[179] Article 14(2) of Governance Regulation.
[180] The draft NECP did not include projections on GHG emissions from the sectors covered by ESR.
[181] The 2023 emissions are based on 2024 approximated inventory reports and 2030 is based on reporting of greenhouse gas projections (Article 18 of the Governance Regulation).

The final plan includes little extra information on the policies and measures and still lacks details on their scope, timeline and expected impact on GHG emissions. For what concerns **transport**, over the period 2015-2022 emissions showed an annual percentage increase of 3.1%[182], but are expected to decrease relatively slowly (1.9% per year) in the period 2022-2030[183]. The plan includes only generic information on how Malta plans to address this issue.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections do not account for the effect of ETS2, and do not quantify the impact of ETS2 in achieving the ESR target.

On **waste**, the measures to reduce methane emissions, such as gas capture equipment for existing landfills, may not achieve significant reductions, and do not address Malta's high landfilling rate, with the organic waste processing plants limited capacity of 74,000 tonnes per year being significantly outpaced by the 257,974 tonnes landfilled (2019), highlighting the need for more effective waste reduction and management strategies.

The plan does not present any mitigation measures for **F-gases** from industrial processes and product use. It mentions only vaguely the end-of-life treatment of HFCs and does not envisage the use of climate-friendly alternatives to HFCs with a high GWP in the air conditioning and cooling sector.

2.1.2 LULUCF

Malta has not addressed recommendation 2. The LULUCF sector in Malta accounted for less than 1% of Malta's total GHG emissions in 2022. According to the LULUCF Regulation, Malta has to improve its net removals by -0.002 Mt CO2eq in 2030 compared to its yearly average in the 2016-2018 reference period. According to 2022 figures, the LULUCF sector in Malta produced net emissions of 0.001 MtCO2eq. in 2022. Moreover, taking into account its projections for 2030, Malta will still have a gap of 0.003 MtCO2eq. in 2030. The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario.

The plan does not provide sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The plan 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.

Overall, based on the available information, Malta does not design sufficiently effective policies to support the land sector and the achievement of the LULUCF target.

2.1.3 Carbon Capture and Storage

Malta did not receive a recommendation on CCUS. The NECP does not include a CCUS strategy.

2.1.4 Adaptation

Malta has not addressed recommendation 3. The plan refers to the forthcoming 'Climate Vulnerability Risk Assessment of the Maltese Economy', which was still not available at the

[182] Compound annual growth rate.
[183] Compound annual growth rate. Source: EEA.

time of publishing this document. Therefore, it does not analyse **climate vulnerabilities and risks.** It is also short of quantifiable assessment of impacts. The plan lacks for most parts **adaptation policies and measures** in the relevant Energy Union dimensions. However, Malta has set up a dedicated Climate Action Authority in 2024 to implement measures to combat, mitigate, and adapt to climate change.

The plan does not outline the **link to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. The impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. The plan does not set out additional adaptation policies and measures to support the achievement of national objectives, targets and contributions under the Energy Union.

The plan does not address the consequences of climate change on **future water availability** and its implications on the energy sector. Nonetheless, it refers to ongoing general actions on rainwater capture and green infrastructure against surface water run-off.

2.1.5 Fossil Fuels

Malta has not addressed recommendation 17. The plan states that Malta is committed to accelerate efforts towards the phase-out of inefficient fossil fuel subsidies. However, currently there are no plans to phase out energy subsidies, due to its insularity.

2.2 RENEWABLES

Malta has partially addressed recommendation 4. Malta has significantly increased its renewable energy contribution for 2030 to 24.5% of gross final energy consumption. However, this contribution remains below 28%, resulting from the formula of Annex II of the Governance Regulation. Indicative trajectories for 2025 (16.5%) and for 2027 (20.7%) were also provided but they are below the reference points calculated in line with the EU 2030 renewable energy target of 42.5% (18% for 2025 and 22% for 2027 respectively).

Malta has partially addressed recommendation 5. Projections for the deployment of renewable energy technologies are provided. The plan does not provide an indicative target for the deployment of innovative renewable energy technologies for 2030. Malta refers to the sectoral targets of the 'revised RED II'[184]. However, the plan does not mention the specific targets for buildings, industry and the heating and cooling sector, and the minimum level of renewable fuels of non-biological origin (RFNBOs) in industry by 2030 and sub-targets for advanced biofuels and RFNBOs in transport by 2030. The plan does not include an indicative top-up for heating and cooling in line with Annex IA of the revised RED II.

Malta has partially addressed recommendation 6. Malta refers to support schemes for solar PVs, but without quantifying their impacts and contribution towards achieving Malta's target of 24.5% renewables for 2030. The recommendations related to accelerated permitting and renewable acceleration areas have been addressed. Malta indicates that a study is currently being carried out to address the recommendation on power purchase agreements and energy

[184] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

communities. The plan includes measures to promote the sustainable production of biogas/biomethane.

Malta has partially addressed recommendation 7. For most of the policies and measures the plan does not provide information on the expected timeline and procedural steps as regards transposing and implementing the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Malta has not addressed recommendation 8. Malta included an indicative national contribution of 0.8 Mtoe to the Union's binding final energy consumption target for 2030. This contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[185], nor equal to the corrected indicative national contribution that the Commission submitted to Malta in March 2024 under Article 4(5) of that Directive. There is still a gap of 16.9% compared to the indicative results of the 2020 reference scenario and a gap of 22.4% compared to the indicative results of the updated 2020 reference scenario.

Malta included an indicative national contribution to the Union's indicative primary energy consumption target for 2030 of 1.0 Mtoe for primary energy consumption. This contribution is not in line with Article 4 of EED Recast. There is still a gap of 16.2% compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of 26.8% compared to the target calculated with respect to the indicative results updated 2020 reference scenario.

Malta did not include the amount of energy consumption reduction per year to be achieved by all public bodies. Malta did not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly - nor the corresponding yearly energy savings to be achieved and it also did not specify if opted for alternative or default approach. The plan sets out some policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings.

Malta has partially addressed recommendation 9. The plan sets out policies and measures to achieve the national contributions on energy efficiency, but it did not quantify the expected energy savings and the contribution of each of the reported measures. The plan specifies robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. However, Malta does not report existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes such as On-Bill and On-Tax schemes, Energy Performance Contractors, ESCOs and third-party financing[2]. Malta has established a National Energy Efficiency Fund but the plan does not elaborate on its role in helping deliver Malta's energy efficiency contributions, and it also does not include the use of financial instruments within the Fund.

Malta has partially addressed recommendation 10. The plan does not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Malta included

[185] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

intermediate milestones for 2030 and 2040 for the renovation of both residential and non-residential buildings. The plan includes energy savings milestones for the buildings stock but does not detail the impact in terms of energy and emission savings of each new measures put forward and it does not include sufficient information in terms of funding and costs. However, the NECP provides specific information on policies and measures addressing deep renovation, with a specific focus on vulnerable consumers, as well as decarbonisation of heating or installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Malta has partially addressed recommendation 11. Gross inland consumption of natural gas is expected to decrease from 318.2 ktoe in 2020 to 201.6 ktoe in 2030 (WAM scenario), driven mainly by the reduced electricity generation from natural gas.

The plan sets an objective of developing two utility scale battery energy storage systems before 2030. The first one, located inside the A Station in Marsa, with a capacity of 8MW/20 MWh and the second, 32 MW/64 MWh located within the Delimara power station. There are also incentives for the deployment of behind-the-meter battery storage linked to domestic PV systems. Additionally, the resilience of the electricity system will be enhanced by a second interconnector with Italy.

As regards the imperative of climate adaptation of the energy system, the final plan includes 'energy' under the 47 sector-specific actions under the Low Carbon Development Strategy (LCDS), but it still contains few details on concrete planned steps.

The plan does not assess the adequacy of the oil stocks of which a majority is held as tickets[186], with the expected oil demand decline and the move to lower-carbon alternatives.

2.5 INTERNAL ENERGY MARKET DIMENSION

Malta has partially addressed recommendation 12 by providing targets to improve the flexibility of the energy system. Although the plan elaborates on the quantification of flexibility needs, it does not set clear targets and objectives for demand response, storage, and flexibility. While Malta acknowledges the importance of demand response and flexibility, the Member State's current market structure, particularly the lack of price signals and a liquid wholesale electricity market, limits the development of demand response. The updated plan includes an assessment of potential solutions but does not provide concrete, quantified targets.

The plan does include measures to enhance flexibility and enable a non-discriminatory participation of new flexibility services. It outlines initiatives such as the deployment of battery energy storage systems vehicle-to-grid technology, and the expansion of smart grid technologies. Additionally, Malta has implemented financial support schemes to encourage behind-the-meter battery storage and demand-side solutions. However, the absence of real-time price signals remains a barrier to fully enabling demand response participation. The plan

[186] Tickets are stockholding arrangements under which the seller agrees to hold (or reserve) an amount of oil on behalf of the buyer, in return for an agreed fee. https://www.iea.org/data-and-statistics/data-tools/oil-stocks-of-iea-countries

does not provide information on specific measures to facilitate energy system integration in accordance with Article 20a the revised RED II. Regarding consumer empowerment, the plan outlines several measures including support for self-consumption and further roll-out of second-generation smart meters. However, regulated electricity provides little incentive for consumers to play an active role in the market.

Malta has partially addressed recommendation 13. The updated NECP includes an assessment of the situation regarding energy poor and vulnerable households in the country. It also set outs a comprehensive list of existing and planned measures to address energy poverty, including regulated tariffs, subsidy schemes, energy efficiency measures, personalised energy advise for vulnerable households and programmes for replacement of inefficient appliances. Furthermore, Malta launched a consultation on the so-called National Strategy for Poverty Reduction and Social Inclusion 2025-2035, which also addresses energy poverty. The plan however does not indicate any specific measurable targets for energy poverty reduction.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Malta has not addressed recommendation 14. The plan lacks a comprehensive approach, including targets to support research, innovation and competitiveness in clean energy technologies, the manufacturing of clean energy technologies and equipment, and the digitalisation of the energy value chain. The plan does not set a pathway to 2030 and 2050, nor measures to promote the development of net-zero projects including those relevant for the energy intensive industries. It does not describe how it will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified where needed. Although investing in education in general is part of the Vision Malta 2050 and the National Reform Programme 2024, the plan does not include information on policies and measures for the development of clean energy-related skills and does not include measures to facilitate resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Malta has not addressed recommendation 15. The plan does not provide estimates of investment needs per sector and does not distinguish between private and public investments. Funding sources are briefly described, but neither per sector nor at the level of the planned initiatives. The plan does not discuss measures and initiatives to mobilise private investments. Overall, the information provided in the plan is not sufficient to assess whether there is a potential financing gap compared to the investment needs, or how this would be filled.

Malta has not addressed the recommendation to provide a robust quantitative assessment of the macroeconomic impact of the planned policies and measures. The plan provides a qualitative analysis of possible macroeconomic impacts.

2.8 JUST TRANSITION

Malta has partially addressed recommendation 19. The plan provides information on the impact of the transition to climate neutrality, targeting sectors such as energy, buildings, transport and waste management, and analysing skills, employment and other social aspects.

However, it does not sufficiently addresses the impacts on vulnerable groups. . Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund.

The plan partially provides the analytical basis needed for the preparation of the Social Climate Plan, such as information on the identification of vulnerable groups. The plan partially explains how the policy framework identified in the NECP will contribute to the preparation of Malta's Social Climate Plan but does not explain how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Malta has partially addressed recommendation 20. The plan provides very little information on how the public consultation on the draft and final updated NECP was organised (rounds of consultation, their duration and stakeholders involved are not described). It only states that key stakeholders were involved from the early stages of the NECP update, and a public consultation was later conducted to gather broader input from society, through the government's online platform with a questionnaire. However, the plan describes in a greater extend other consultation processes on key thematic policies relevant to the NECP. The plan provides a summary of the main views, as well as information on other consultation processes on topics of relevance for the preparation of the NECP. However, it does not describe how the final plan integrated the inputs and changes suggested from stakeholders.

2.10 REGIONAL COOPERATION

Malta has not addressed recommendation 21. The importance of regional cooperation is mentioned as well as the 'Med9' Energy Minister's meeting of 18 May 2023, where Mediterranean Member States pledged to transform the Mediterranean region into a green energy hub. The plan however does not elaborate on how Malta intends to establish an enabling framework for cooperation on joint projects with one or more other Member States for the production of renewable energy in line the revised RED II.

2.11 ANALYTICAL BASIS

Malta has addressed recommendation 18. The plan provides projections for the energy system and GHG emissions for WEM and WAM scenarios, although not until 2040 for several indicators.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Malta has addressed recommendation 16. The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Malta to ensure a timely and complete implementation of the final updated NECP. Malta is invited to pay particular attention to the following main elements:

- Closely monitor the impacts of the policies included in the plan on emission reductions under the **ESR** and increase efforts across all effort sharing sectors. Explore available flexibilities to comply with ESR obligations. Foster the uptake of climate-friendly alternatives to HFCs in the air conditioning and cooling sector.
- On **adaptation**, finalise and use the results of the 'Climate Vulnerability Risk Assessment of the Maltese Economy' to assess relevant climate vulnerabilities and risks for the national objectives, targets, and contributions and the policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific objectives that adaptation policies are meant to support. The assessment should cover all relevant water user sectors to ensure a comprehensive approach to water management. Set additional adaptation policies and measures in sufficient detail.
- Clarify **fossil fuel subsidies** and set timeline to gradually phase them out. Carbon pricing and targeted social support can help maintain affordability while meeting climate goals.
- Enhance **energy system integration**, particularly in electricity, transport, and buildings. Policies should support demand-response programs, energy storage deployment, and digitalization of energy infrastructure. Set up a framework promoting cross-sectoral energy efficiency to help maximize the benefits of increased renewable deployment. Introduce dynamic electricity pricing to improve demand-side flexibility.
- Develop a comprehensive plan with dedicated measures to achieve the higher ambition for the **deployment of renewables** by 2030 that aligns with the EU's collective target for renewable energy including the deployment of innovative renewable energy technologies. Put in place measures for renewables uptake in buildings. Streamline permitting processes and regulatory frameworks to facilitate investment, particularly in offshore renewables, given that spatial constraints remain a challenge. Accelerate the deployment of floating solar PV and offshore wind projects, notably by ensuring policy certainty.
- Expand charging **infrastructure** for EVs and reduce car dependency through for example congestion pricing and improved public transit options.
- On **energy efficiency**, put in place measures to achieve the higher ambition for energy efficiency by 2030 and to target the energy consumption of the public sector.
- On **industry,** put in place measures aimed at promoting renewables uptake, in particular for renewable hydrogen.
- **On buildings**, provide further efforts to improve energy efficiency, particularly in increasing renovation rates and encouraging deep retrofits with a focus on the residential building stock. Prioritise electrification of heating and deployment of heat pumps and address electricity-to-gas price disparities. Speed up implementation of the NECP by strengthening regulatory enforcement and increasing technical assistance.
- **Expand investment** in clean energy research and development. Strengthening public-private partnerships and aligning with EU research frameworks will accelerate innovation.

- Develop a more comprehensive **just transition strategy,** that includes upskilling/reskilling measures and allocates appropriate financial resources.

Netherlands

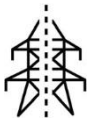
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of the Netherland's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -33.8% 2023: -34.4%[187]	-48%	NECP: -38.7%. However, NL is expected to meet the 2030 target with ESR flexibilities
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net emissions of 5.1 Mt CO_2 eq. in 2022	0.44 MtCO_2 eq. (additional removal target)	NL is expected to meet its target based on the latest projections: overachievement by – 1.22 Mt CO2 eq
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	14% (SHARES) 14% (target)	2023: 17.2%	32-42%	NL contribution to the EU target is a share of 32-42%. This range includes the 39% required according to the formula set out in Annex II of the Governance Regulation[188].
	National contribution for energy efficiency:				
	Primary energy consumption	60.70 Mtoe	2023: 53.8 Mtoe	46.22 Mtoe	NL primary energy consumption contribution is 46.22 Mtoe. EED recast Annex I formula results: 46.21 Mtoe (Reference Scenario) or 45.30

[187] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[188] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Mtoe (Updated Reference Scenario)
	Final energy consumption	52.2 Mtoe	2023: 41.0 Mtoe	38.4 Mtoe	NL final energy consumption contribution of 38.4 Mtoe is in line with the national contribution of 38.4 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[189]	25.9%	2024: 10.3%	15%	NL is below the EU-wide interconnectivity target.

Source: Eurostat; the Netherland's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of the Netherland's draft updated NECP and provided recommendations[190] for the preparation of the final updated NECP. The Netherlands submitted its final updated NECP on 24 June 2024, in line with the deadline of 30 June 2024.[191]

A new Dutch government was sworn in on 2 July 2024, shortly after the submission of the final updated NECP. The plan thus includes a disclaimer that several policies included in the NECP will be adjusted to align with the new administration's plans. These changes are discussed in the latest Climate and Energy Outlook (KEV 2024)[192] published in October 2024, with specific details of policy changes are still being elaborated.

2.1 DECARBONISATION

The Netherlands expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by between 46% to 57% in 2030 compared to 1990. However, the most recent update of the KEV 2024 points to a lower expected emissions reduction in 2030 of only 44% to 52% compared to 1990[193]. The Netherlands has committed to bring net GHG emissions to zero by 2050 in its updated Climate Act of July 2023.

[189] Calculated by the European Commission based on the ENTSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[190] SWD(2023) 921 final, and Commission Recommendation of 18 December 2023, C/2023/9611.
[191] Article 14(2) of Governance Regulation.
[192] Annual report that provides an assessment of the Netherlands' progress toward achieving its climate and energy goals, including emission reductions and the transition to a sustainable energy system. The KEV 2024 provides an update of the KEV (2022 and 2023) projections that were used in the Final Updated NECP. Link: Klimaat- en Energieverkenning 2024 | Planbureau voor de Leefomgeving

[193] Climate and Energy Outlook 2024 | Netherlands Environmental Assessment Agency

2.1.1 Effort Sharing Regulation

The Netherlands has partially addressed recommendation 1. The final NECP provides information on how the Netherlands will work to meet its ESR target of -48% by 2030 compared to 2005.

The plan provides updated projections based on the KEV 2023, showing that with existing and planned policies and measures The Netherlands will reach ESR emission reductions of -38.7% in 2030 compared to 2005, 9.3 percentage short of their -48% target. However, the more recent KEV2024 provides a 2030 ESR projection that result in a 46.7% reduction compared with 2005 emissions. The Netherlands is on track to stay within its cumulative emissions cap for the period 2021-2030. While the Netherlands expects its GHG emissions to be above its annual emission allocations towards the end of the decade, overachievements in the earlier years will be sufficient to cover for these shortfalls in accordance with Article 5 of the ESR. In 2023, GHG emissions from ESR sectors represented 59% of the total in the Netherlands (expected to be 65% in 2030[194]), with buildings and transport representing the largest shares.[195]

The final plan complemented the information on the policies and measures provided in the draft, but it would be useful to have a clearer description of their scope, timeline and expected greenhouse gas reduction impact. For **transport**, the projections indicate a slowdown in GHG emissions reduction until 2030, with a projected average decrease of 0.5% per year from 2022 to 2030, in contrast to a 2.0% decline recorded between 2015 and 2022. For **buildings**, the projections also describe a reduced average annual decline in GHG emissions in the period 2022-2030 compared to the pace attained in the period 2015-2022 (from -3.0% to -1.0%).[196]

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections account for the effect of ETS2 but do not quantify its impact in achieving the ESR target.

On **agriculture**, the plan does not provide sufficient detail on how to bridge the gap towards the national sectoral objective.

2.1.2 LULUCF

The Netherlands has addressed recommendation 3. The LULUCF generates net emissions, representing roughly 3% of the total GHG emissions in the Netherlands in 2022. According to 2022 figures, the Netherlands has improved its performance by 0.3$MtCO_2$eq. in comparison to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, the Netherlands has to enhance its net removals by -0.4 $MtCO_2$eq in 2030 compared to the reference period. In its 2030 projections the Netherlands overachieves its LULUCF target by -1.22 MtCO2eq in 2030. A possible overachievement of the 2030 LULUCF target can, if necessary, be used to compensate for any shortfall in meeting the 2030 ESR target. The plan provides sufficient information on how public funding (CAP, state aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The draft also clarifies the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

[194] The 2023 emissions are based on 2024 approximated inventory reports.
[195] Based on annual reporting of final greenhouse gas inventory data (Article 26 of the Governance Regulation).
[196] Compound annual growth rate

2.1.3 Carbon Capture and Storage

The Netherlands has addressed recommendation 2. The plan provides a strategy on Carbon Capture and Storage (CCS). It contains an assessment of the total theoretical storage capacity of 1,600 $MtCO_2$. The actual commercial capacity is to be further assessed. The Netherlands aims at an annual injection capacity of 2.5 $MtCO_2$ per year from 2026, through the Porthos project. For 2030, it is estimated that 10-15 Mtpa of CO_2 will be captured and permanently stored. The plans for CCS are robust, with complete legislation in place and support schemes.

2.1.4 Adaptation

The Netherlands has partially addressed recommendation 4. The plan refers to the National Adaptation Strategy (NAS) and the National Adaptation Implementation Programme to respond to the recommendation, acknowledging the importance of integrating adaptation planning. It partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a partial **analysis of climate vulnerabilities and risks.** It contains a brief description of the outcome of the new national climate scenarios, and information on the impact of planned polices and measures on the energy system and GHG emissions. However, the plan is short of quantifiable assessment of impacts.

The plan partially outlines the **links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support. It provides a brief description of the activities of the national government in the field of climate adaptation, referring to the upcoming NAS, the Delta Programme and the National Adaptation Implementation Programme. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

The plan sets out some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union, notably the climate scenarios, the upcoming climate risk assessment and the climate adaptation strategy. However, this overview misses specific links between adaptation policies and the five dimensions of the Energy Union. The information on adaptation measures is insufficient to assess their financing, implementation, timing and scalability.

2.1.5 Fossil Fuels

The Netherlands has partially addressed recommendation 19. The plan declares the intention to phase out of fossil fuel subsidies, indicating that the Netherlands has phased out several fossil fuel subsidy schemes (e.g. the refund scheme for energy-intensive businesses for the energy tax on electricity) and that it has taken steps to phase out others (e.g. the reduced tax rate on natural gas for glasshouse horticulture and the input exemption from the energy tax on natural gas). However, it does not provide a clear commitment or a roadmap.

2.2 RENEWABLES

The Netherlands has partially addressed recommendation 5. The updated Dutch contribution (based on KEV2023 scenario, assuming additional measures) to the EU renewable energy target is a share between 32-42% of gross final energy consumption by 2030. The Netherlands underlines that based on the new policies announced in 2024, the level of 39% (in line with the formula of Annex II of the Governance Regulation) is within the range. The

Netherlands does not provide the indicative trajectory for the years 2025 and 2027 arguing that the trajectory is not linear. As regards the 2021 renewables baseline –the Netherlands explains that in 2021, there was a deficit compared to the baseline as the (domestic) share of renewable energy reached 13%, but in 2022 the share reached 15%, i.e. above the 2020 baseline target.

The Netherlands has partially addressed recommendation 6. The Netherlands provides projections for the deployment of offshore wind beyond 2030. The plan also refers to plans to deploy innovative technologies (e.g. solar power at sea, offshore electrolysis), even though the Netherlands does not set a specific indicative target for innovative renewable energy technologies by 2030 in line with Directive (EU) 2018/2001 (the 'revised RED II')[197].

Regarding specific targets to achieve the indicative sub-targets in industry for 2030, the Netherlands indicates a share of 0.6% to 1.3% per year by 2030. The final plan also clarifies that 42% of renewable fuels of non-biological origin (RFNBOs) in industry would equal 81 PJ in 2030. The Netherlands has not included a specific target on the renewable energy share in buildings. The plan merely refers to projections within the range of 41-49% for 2030. The Netherlands does not confirm the binding targets in heating and cooling for both 2021-2025 and 2026-2030 periods and does not include an indicative target to achieve the top-ups of Annex IA of the revised RED II.

The Netherlands has partially addressed recommendation 7. The Netherlands present detailed and quantified policies and measures to meet the Dutch contribution to the 2030 EU renewable energy target of 32-42% based on WAM scenario. The Netherlands describes how it plans to accelerate permitting (notably with the Environmental Act) and as regards green gas and energy infrastructures, by covering different levels of administration (at national, provincial and municipal levels) as well as how it will design the obligation on fuel suppliers in the transport sector. However, the Netherlands does not indicate the renewable energy technologies for which it plans to designate 'renewables acceleration areas' with faster and simpler procedures.

The Netherlands has partially addressed recommendation 8. The final NECP outlines where projections on bioenergy demand and supply per sector, and data for imports and the source of forest biomass used for energy can be found. It also indicates that an assessment of the compatibility of the projected use of forest biomass for energy production with the Netherlands' obligations under the revised LULUCF Regulation, particularly for 2026-2030, will be included in the Dutch Bioraw Materials Strategy currently being preprared. Finally, the Netherlands includes further measures to promote the sustainable production of biogas/biomethane, digestate and biogenic CO2.

The Netherlands has not addressed recommendation 9, as it does not provide an expected timeline and the procedural steps leading to the adoption of legislative and non-legislative policies and measures aimed at transposing and implementing the provisions of the revised RED II.

[197] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

2.3 ENERGY EFFICIENCY DIMENSION

The Netherlands has partially addressed recommendation 10. The Netherlands included an indicative national contribution of 38.4 Mtoe to the Union's binding final energy consumption target for 2030. This contribution is in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[198].

The Netherlands did not include the amount of energy consumption reduction per year to be achieved by all public bodies. The Netherlands reported the total floor area of 2,160,000 m2 of heated and cooled buildings owned by public bodies to be renovated yearly and it also specified that it opted for the default approach. The Netherlands set out policies and measures to achieve the renovation of public buildings. The Netherlands included the amount of cumulative energy savings of 30.7 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030 and included an explanation on how the annual savings rate and the calculation baseline were established.

The Netherlands has partially addressed recommendation 11. The Netherlands set out complete policies and measures to achieve the required amount of cumulative end-use energy savings by 2030 and it quantified the energy savings from the reported energy efficiency measures to ensure the achievement of the cumulative target. Furthermore, the Netherlands set out adequate measures to promote energy audits and energy management systems and specified robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. The Netherlands specified existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as third-party financing).

The Netherlands has partially addressed recommendation 12. The Netherlands included an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. The new 2030 target is 13.2 $MtCO_2$-eq which is about 14% lower than the initial target set in the 2020 long-term renovation strategy (LTRS). The Netherlands did not include energy savings milestones for the buildings stock and did not detail the impact in terms of energy savings of each new measure put forward.

2.4 ENERGY SECURITY DIMENSION

The Netherlands partially addressed recommendation 13. The final updated plan neither defines clear objectives in terms of diversification of energy sources, nor does it describe the measures taken to assess the compatibility of national gas infrastructure with decarbonisation, nor further explain how the Netherlands intends to further encourage gas demand reduction. However, the annex of the plan provides a forecast for the evolution of gross inland gas consumption which should decrease from 31 438 ktoe in 2020 to 20 389 ktoe in 2030 and 18 239 in 2040 and of domestic natural gas production which should decrease from 17 261 ktoe in 2020 to 5 975 ktoe in 2030 and 2 913 ktoe in 2040.

[198] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

The final plan does not add additional information on energy storage deployment.

The final plan indicates ongoing assessments of risks of climate change to the energy network and the measures to be taken. More concrete targets will be developed in 2026.

The final plan includes forecasts on oil consumption until 2050 and a rough assessment of the adequacy of the oil infrastructure in the long run (refineries, pipeline, oil stocks) considering the expected oil demand decline and the move to lower-carbon alternatives.

On nuclear, the plan and its annexes provide information on plans to exploit and extend its existing uranium enrichment facilities. It also provides information on the Netherlands' ambition to extend the lifetime of the Borssele nuclear power plant and possibly to construct two new additional reactors. However, the plan indicates that this policy direction may be changed based on the Framework Coalition Agreement 2024–2028.

The final NECP includes nuclear fuel diversification measures. It clarifies that the economic entities operating the existing fuel cycle facilities, in particular for isotope enrichment, are responsible for diversifying their spare parts and services. Due to the strong market position of these entities, no additional governmental strategy is deemed to be needed. The operator of the Borssele nuclear power plant is reported to no longer have direct business with Russia. On the long-term management of radioactive waste, the plan refers to the National Programme for the management of radioactive waste and spent fuel. The NECP indicates that an update of the Programme will be published in 2026.

2.5 INTERNAL ENERGY MARKET DIMENSION

The Netherlands has partially addressed recommendation 14. The plan refers to the EU Electricity Market Design Package, as well as the *'Nationaal Plan Energiesysteem'* (NPE) of 2023, in which flexibility of the electricity system is recognised as an important focus area. The Netherlands explains that the development of flexibility will be further monitored, and further government intervention considered if needed. It does not, however, define clear targets or elaborate on criteria that will be followed in the monitoring exercise. Even though the final NECP provides a good overview of measures aimed at facilitating energy system integration, it does not provide information on specific measures to facilitate system integration of renewable electricity in accordance with Article 20a of the revised RED II. The newly adopted Energy Law contains several provisions aimed at strengthening the position and choice of energy consumers, including giving energy communities an official legal status and a separate role in the energy market.

The Netherlands has partially addressed recommendation 15. The plan lists the work done so far to address energy poverty and gives a good overview of the measures currently in place, particularly on the work together with local authorities in the 3-year National Energy Poverty Research Programme and on making use of local 'energy fixers' teams. Furthermore, measures are included to support vulnerable households in making their homes more energy efficient and gas free. Currently the more structural measures focus on energy efficiency, and a strategic workplan is being developed. The plan describes well all the ongoing reflections by TNO (independent research company employed by the government) to research energy poverty and to draw an energy poverty definition for use in policy making. Four indicators have been

designated to be used when researching energy poverty. However, a target for reducing the number of households in energy poverty is still missing.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

The Netherlands has partially addressed recommendation 16. The plan includes national objectives in research, innovation and competitiveness to deploy clean technologies. It mentions a general target of 3% GDP spending on R&I (not energy specific) and establishing a pathway for 2030. The NECP lists national funding schemes and provides an overview by sectors of expenditure for 2022-2028 related to climate policy, and related subsidies for certain technologies. The National Growth Fund has been established to support knowledge and innovation (not energy specific). Certain long-term policies on decarbonisation are mentioned as pathway towards 2050 to support industry and promote the transition of businesses towards a net zero and circular economy.

Significant policies and measures include the development of hydrogen infrastructure and production, additional capacity for nuclear energy and offshore wind parks in the *Supplementary Roadmap Windenergie 2030.* The plan puts forward policies and measures to promote the development of net-zero projects, including those relevant for energy intensive industries. It refers to the regulatory framework for permitting procedures *(Environment Act*).

The plan provides policies and measures for the digitalisation of the energy system, the development of clean energy-related skills (*the Human Capital Agenda*) such as labour-saving innovation or innovation on energy transition, and to facilitate open trade

The plan includes projects to develop resilient and sustainable supply chains for key net-zero components and equipment, in the field of solar PVs (SolarNL), circular batteries and polymer materials.

The circular economy is well integrated throughout the plan. Its GHG emissions reduction potential is quantified, and it is underlined as a key component of the transition, with several policies and measures described in detail.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

The Netherlands partially addressed recommendation 17. While the plan does not provide a detailed estimate of the investment needs, it outlines the planned public expenditure to finance climate policies by sector for the period 2022-2028. The plan does not provide a detailed assessment on how public investments will mobilise private investments. However, it does describe public-private programmes focussing specifically on the green transition. It also outlines incentives, such as subsidies, energy taxation, and risk mitigation measures, that will encourage private sector investment in the climate and clean energy transitions. The information provided in the plan is not sufficient to assess a potential financing gap with respect to the investment needs, or how this would be filled.

The Netherlands has not addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The plan does not include quantitative estimates of its impact on GDP, employment and government revenues.

2.8 JUST TRANSITION

The Netherlands has partially addressed recommendation 20. The plan provides information on the impact of the transition to climate neutrality on employment and skills. However, it lacks a more detailed mapping of the social and employment impacts of the transition on specific groups and does not address labour shortages due to skill mismatches. Nonetheless, the plan specifies how the Green and Digital jobs action plan will stimulate education in STEM sectors and life-long learning.

The plan refers to the natural gas phase-out as a just transition element, and explains how the Just Transition Fund (JTF) will counter negative socio-economic impacts of the transition in selected areas by addressing energy poverty, stimulating up and re-skilling, innovation and job creationThe plan provides the first elements of the analytical basis needed for the preparation of the Social Climate Plan, providing estimates of the aggregate effect of ETS2 on households and transport users costs. It provides broad categories of households and transport users that are most likely to be affected by ETS2. However, it lacks a more granular and detailed assessment of the effects of ETS2 and the subsequent identification of vulnerable groups. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of the Netherlands' Social Climate Plan nor how the consistency of the plans will be ensured.

2.9 PUBLIC CONSULTATION

The Netherlands has addressed recommendation 21. The Netherlands organised several rounds of consultation. The first, on the draft NECP run from July 2023 to October 2023. An online public consultation on the draft updated NECP took place for six weeks between 1 December 2023 and 12 January 2024. The plan describes the National Citizens' Forum on Climate Policy established in July 2023, and the public campaign "Save the button" launched that August, organised to involve citizens at national level. The plan provides a link to a consultation report that gives an overview of the main results and explains how the different views were incorporated into the plan.

2.10 REGIONAL COOPERATION

The Netherlands has partially addressed recommendation 22. The plan includes a list of initiatives aiming at increasing the Netherlands' engagement with neighbouring Member States (notably the regional cooperation in the Pentalateral Forum (NL, BE, LU, DE, FR, AT)) and within the context of the Energy Cooperation between the North Seas Countries, where detailed information on regional cooperation is provided. The plan does not yet identify common challenges and shared objectives in terms of interconnectivity, renewables, energy efficiency and internal market in a detailed way.

The Netherlands does not provide additional information on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II. Regarding the signature of three bilateral solidarity arrangements for the security of gas supply with its neighbours (Ireland, Belgium, Germany), the final plan highlights the necessity to assess the

need for such agreements in light of the recent addition of default solidarity provisions to Regulation (EU) 2017/1938 but does not mention any progress or new efforts to be undertaken.

2.11 ANALYTICAL BASIS

The plan describes the analytical framework and includes projections until 2050. It embeds economic, social, employment and skills impacts.

The methodologies used are described in detail for the WEM ("KEV 2022) and WAM ("KEV 2023") scenarios. For these, the NECP provides an impact assessment of policies and measures, but it lacks an assessment of new policies, foreseen for March 2025.

The plan does not include quantitative estimates of impacts on GDP, employment and government revenue.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The Netherlands has addressed recommendation 18. The plan sufficiently covers the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. However, some investments and reforms have not been adequately recognized as part of the RRP, such as the energy taxation reform and the CO_2 levy for industry.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages the Netherlands to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. The Netherlands is invited to pay particular attention to the following main elements:

- Closely monitor the impacts of policies on **greenhouse gas emission reductions**, to meet the ESR target. Implement additional measures coordinating efforts across all economic sectors in line with nationally set decarbonisation objectives for 2030.
- **Promote sustainable land use**, including by encouraging sustainable agriculture practices.
- On **adaptation**, assess future water demand under different climate scenarios and evaluate impacts on the energy system, paying attention to possible cross-sectoral water conflicts. Carry out a comprehensive vulnerability assessment of the energy network and infrastructure based on different climate scenarios. This would enable identifying potential weaknesses of the energy sector and develop measures to address them.
- Clarify existing **fossil fuel subsidies** and provide a detailed timeline for their gradual phase-out.
- As regards **renewable energy,** put in place measures to achieve at least the 39% share for renewables by 2030 that aligns with the EU's collective target for renewable energy. Develop a more comprehensive plan to increase the use of renewables in heating and cooling and identify specific technologies to be covered by the renewables acceleration areas, subject to the new permitting rules of the revised RED II.

- **Further address network congestion**, as it is a major obstacle to the transition to a higher share of renewable energy and decarbonisation efforts. This is particularly relevant for industrial sectors, which are major energy consumers and face long waiting times for grid connections.
- On **energy efficiency**, strengthen existing, or implement additional, energy efficiency policies and measures to ensure it will meet its 2030 national contribution for FEC.
- On **buildings**, ensure the timely implementation of the main measures in the Long-Term Renovation Strategy such as renovating the worst-performing rented dwellings, commercial properties, and offices to increase renovation rates.
- On **industry**, put in place robust measures on decarbonisation, and accelerate the ‘maatwerkaanpakken’ (a tailored approach to reducing emissions), develop and deploy relevant clean technologies at scale, further integrate the 'energy efficiency first' principle and address structural congestion to ensure efficient market access.

Austria

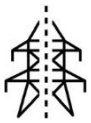
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Austria's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -19% 2023: -23.3%[199]	-48%	NECP: -41.7 up to -46% However, AT is expected to meet the 2030 target with ESR flexibilities
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of –5.84 Mt CO_2 eq.	-0.88 Mt CO_2 eq. (additional removal target)	An overachievement of -3.36 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	36.55% (SHARES) 34% (target)	2023: 40.84%	At least 57%	Austria's contribution of at least 57% is in line with the level required under the formula set out in Annex II to the Governance Regulation[200].
	National contribution for energy efficiency:				
	Primary energy consumption	31.5 Mtoe	2023: 29.35 Mtoe	25.92 Mtoe	AT primary energy consumption contribution of 25.92 Mtoe is not in line with the EED recast Annex I formula results: 24.9 Mtoe (Reference

[199] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[200] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Scenario) or 24.0 Mtoe (Updated Reference Scenario
	Final energy consumption	25.1 Mtoe	2023: 24.17 Mtoe	21.59 Mtoe	AT final energy consumption contribution of 21.59 Mtoe is in line with the national contribution of 21.61 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[201]	37.6%	2024: 29.0%	15%	Austria surpasses the EU-wide interconnectivity target.

Source: Eurostat; Austria's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In October 2024, the Commission published a thorough assessment of Austria's draft updated NECP and provided recommendations[202] for the preparation of the final updated NECP. Austria submitted its final updated NECP on 18 December 2024, almost six months after the deadline of 30 June 2024.[203]

2.1 DECARBONISATION

Austria expects to decrease total net GHG emissions (including LULUCF and excluding international aviation) by 28% in 2030, 52% in 2040 and 67% in 2050, as compared to 1990. The final updated plan reconfirms the Federal Government's commitment to reach climate neutrality by 2040 for sectors not covered by the EU ETS.

2.1.1 Effort Sharing Regulation

Austria has partially addressed recommendation 1. The final NECP provides sufficient details on how Austria will meet its ESR target of -48% by 2030 compared to 2005.

The plan presents the same **projections** as in the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 41.7% in 2030 compared to 2005, a gap of 6.3 percentage points compared to the national ESR target. However, the plan estimates that additional measures, including the implementation of CCS projects and the elimination of fossil fuel subsidies, which are not included in the projections, will further reduce emissions, achieving a total of -46%. Moreover, the use of ETS flexibilities is expected to bridge the remaining 2 percentage point gap to target. In 2023, GHG emissions from ESR sectors

[201] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[202] SWD(2024) 850 final, and Commission Recommendation of 18 October 2024, C/2024/8100.
[203] Article 14(2) of Governance Regulation.

represented 64% of Austria's total emissions (61% in 2030)[204], with transport accounting for the largest share. The 'with additional measures' (WAM) projected value for ESR in 2030 is approximately 17% lower than the 'with existing measures' (WEM) scenario, indicating a significant gap between the two, especially considering that the WAM projections do not include all planned measure. This highlights the importance of fully implementing all existing and planned policies and measures, as well as further additional measures, to reach the target.

The plan covers all **ESR sectors** comprehensively, though it does not include further details on the policies and measures, their scope, timeline and expected impact on GHG emissions as compared to the draft.

Transport emissions are expected to fall more rapidly, with the WAM projections showing an annual percentage decrease of 8.2% in 2022-2030, more than double the -3.9% rate seen in 2015-2022.[205] To reach this desired level, an additional decrease of 2.4 Mt CO_2eq is needed compared to the WEM. Full implementation of all policies and measures is therefore crucial to achieve this goal.

On **agriculture**, the plan provides sufficient detail in terms of funding and impacts of policies and measures, and how these contribute to the ESR target. The projections indicate a reduction in emissions by 16.7% under WAM and 8.3% under WEM in 2030 compared to 2005, which, although slow, represents a decrease.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (**ETS2**). The WAM scenario projections account for the effect of ETS2, however they do not clearly consider the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

Austria has partially addressed recommendation 3. The LULUCF sector in Austria generates net removals, absorbing roughly 6.1% of the total GHG emissions in 2022. According to the LULUCF Regulation, Austria has to increase its net removals by -0.879 Mt CO2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. Despite a declining trend in its carbon sink, projections for 2030 show that Austria will overachieve its target by -3.36 Mt CO2eq.

The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario. However, it acknowledges the importance of carbon farming measures whose potential will be assessed by 2026. Concerning projections, the plan does not provide specific quantifications of how policies contribute to achieving the target. Furthermore, it 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.

2.1.3 Carbon Capture and Storage

Austria has partially addressed recommendation 2. The plan highlights the importance of CCUS and outlines the main components of Austria's Carbon Management Strategy. It

[204] Total GHG excluding LULUCF. Source: Commission calculations based on the Austrian final updated NECP
[205] Compound annual growth rate based on the ESR share of transport, sourced from EEA, whose data is aligned with data included in the NECP.

includes a reference that 0.5MtCO2 can be captured by 2030 to contribute to the ESR target, but without including the source.

2.1.4 Adaptation

Austria has partially addressed the recommendation 4. The plan refers to the Austrian Strategy for Adaptation to Climate Change (NAS), acknowledging the importance of integrating adaptation planning. It is also already very comprehensive and embeds adaptation policies and measures in the relevant Energy Union dimensions. However, as **quantitative measurements of adaptation needs and policies** are currently hardly available, these links are established in a qualitative way.

The plan partially outlines the link to the specific Energy Union objectives and policies that adaptation policies and measures are meant to support. It includes numerous references to the NAS and its Action Plan (NAP), which address climate adaptation needs and measures in the energy sector. It also refers to the relevant provisions of the Austrian Integrated Network Infrastructure Plan (ÖNIP).

2.1.5 Fossil Fuels

Austria has partially addressed recommendation 21. The plan includes the objective to reduce 2MtCO_2eq by 2030 through the phase out of fossil fuel subsidies. It indicates the work so far done for analysing and reporting such subsides, while the concrete way and timing of the phase-out is tasked to the Federal Ministry of Finance, which will set up an inter-ministerial working group to ensure that the reduction target is met.

2.2 RENEWABLES

Austria has partially addressed recommendation 5. Estimated trajectories for renewable energy technologies are included up to 2030, but not beyond and for the electricity sector provided for 2040. The updated plan does not contain the target on **innovative renewable energy technologies** to contribute to the indicative 5% target in line with Directive (EU) 2018/2001 (the 'revised RED II')[206]. The plan does not include specific targets to achieve the indicative sub-targets in **buildings, transport** and **industry** for 2030. The plan does not contain the specific target for **RFNBOs** of hydrogen use in industry by 2030, but it includes a target of 1 GW of installed electrolyser capacity by 2030. Austria plans, to introduce requirements for the use of renewables in transport in line with the legal requirements as well as renewable hydrogen in industry. The plan includes measures for **district heating and cooling** but does not provide a target.

Austria has partially addressed recommendation 6. Austria plans to implement the provisions on **permit-granting** of the revised RED II as amended through a renewable energy acceleration law and through measures at the level of the federal states for the implementation of renewables acceleration areas (with a focus on wind and solar PVs), but the final plan does not provide further detail on this. The final NECP announces measures to promote the uptake of **PPAs**, without going into further detail. The enabling framework for **energy communities**

[206] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413.

is deemed effective, as more than 1000 energy communities are active in Austria. The final NECP describes measures to promote **hydrogen** use in the industry sector but does not explain how Austria prepares for renewable hydrogen trade. Further, the NECP sets out that the provisions on promoting renewables in transport, which include the obligation on fuel suppliers will be implemented in the form of a multi-modal fuel act.

Austria has not addressed recommendation 7. The final NECP does not include a full assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of the revised RED II as amended nor does it include an assessment of the compatibility of the projected use of forest biomass for energy production with Austria's obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies to ensure such compatibility. In addition, Austria did not provide projections for biomass supply by feedstocks and origin and explained that it was not possible to differentiate between raw materials and sources of supply for biomass. Also, the final NECP does not include any data on imports. As for biomethane, Austria has addressed all recommendations to support sustainable biogas and biomethane production.

Austria has not addressed recommendation 8. The plant does not provide an expected **timeline** and the procedural steps leading to the adoption of legislative and non-legislative policies and measures aimed at transposing and implementing the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Austria has partially addressed recommendation 9. Austria included an indicative national contribution of 21.6 Mtoe to the Union's binding final energy consumption target for 2030[207]. This contribution is in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[208], or equal to the corrected indicative national contribution that the Commission submitted to Austria in March 2024 under Article 4(5) of that Directive.

Austria includes an indicative national contribution of 25.9 Mtoe to the Union's indicative primary energy consumption target for 2030. This contribution is not in line with Article 4 of EED Recast. There is still **a gap of 4.2%** compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and **a gap of 8.0%** compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario**.**

Austria has partially addressed recommendation 10. The plan includes the amount of energy consumption reduction of 8 ktoe per year disaggregated by sector to be achieved by all public bodies with more than 50.000 inhabitants[209]. Austria does not report the energy savings

[207] The target currently in force is equal to 21.97 Mtoe, corresponding to gaps of 1.7% to the corrected contribution, 2.9% to the EU Reference Scenario and 8.8% to the updated EU Reference Scenario. The target of 21.59 Mtoe is the one to be considered when EED will be transposed to the national legislation. WAM projections are also mentioned, equal to 24.6 Mtoe.
[208] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[209] As required by Article 5 of EED Recast.

to be achieved by all public bodies[210] but it specified that it opted for a combined approach[211]. Austria sets out policies and measures to achieve the reduction of energy consumption from public bodies and will apply for instance on thermal renovations, energy management and trainings for building users on energy-efficient behaviour and conscious use of resources.

Austria has addressed recommendation 11. Austria includes the amount of cumulative energy savings of 17.13 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030 in line with Article 8 of EED Recast and included an explanation on how the annual savings rate and the calculation baseline were established.

Austria has addressed recommendation 12. Austria sets out complete policies and measures to achieve the national contributions on energy efficiency including measures to promote energy audits and energy management systems. The main measures are investments in the thermal renovation of buildings, energy management systems in buildings, the use of commercial and industrial waste heat and support for e-mobility.

Austria specifies how the **energy efficiency first principle** will be implemented and mentioned energy efficiency measures such as energy renovation of buildings and mobility to implement the principle.

Austria has not addressed recommendation 13. The plan does not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Austria included intermediate milestones for 2030 and intermediate milestones for 2040 but only related to GHG emissions and not to energy savings. Austria detailed the impact in terms of energy savings under Art.8 of each new measures put forward.

2.4 ENERGY SECURITY DIMENSION

Austria has not addressed recommendation 14. The final NECP does not set out a roadmap for securing alternative supplies to Russian gas nor explain how Austria will further encourage gas demand reduction. It also does not provide quantified long-term gas consumption forecasts beyond noting that a decrease is foreseen.

Austria has partially addressed recommendation 15. The final plan includes measures to improve the flexibility of the system. It provides little new information on integrating the imperative of climate change compared to the draft plan, yet it clarifies the link to Austria's national adaptation strategy, which includes a detailed vulnerability assessment and a comprehensive list of recommended actions in the various components of the energy system.

Austria has partially addressed recommendation 16. The plan includes measures to decrease oil import dependency and long-term projections of oil consumption. However, the

[210] Austria specified that this area is going to change due to the EED III implementation and the expansion of the obligation to the whole building stock. The energy savings target, derived from the 3% renovation rate of buildings owned by public bodies, has been re-introduced for the Federal Government for the period 2025 to 2030. Länder, cities and municipalities, are not covered in the value presented.

[211] Annex including the responses of Austria to the recommendations mentions that "The vast majority of local and regional authorities have opted for the alternative approach."

plan does not assess the adequacy of the oil infrastructure (refineries, pipelines, oil stocks) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

2.5 INTERNAL ENERGY MARKET DIMENSION

Austria has partially addressed recommendation 17. The final plan does not detail specific means to promote non-fossil flexibility such as demand response and storage nor defines quantitative flexibility needs. Austria intends to complete the legal framework for flexibility resources by means of the draft Electricity Industry Act (EIWG) that has not yet been adopted. The act will specify (independent) aggregation and enable full participation of demand response at storage at wholesale electricity markets. The procurement of flexibility by system operators for system services shall be facilitated by the implementation of a flexibility platform. In parallel, implicit demand response, as 'grid-friendly' behaviour of consumers shall be incentivised via time of use tariffs and dynamic retail tariffs.

Austria does not describe the specific measures to facilitate system integration of renewable energy in accordance with Article 20a of the revised RED II.

Austria acknowledges the importance of consumer empowerment and protection measures to prevent climate action from endangering the affordability of housing and energy and to ensure consumers' trust in energy markets but does not set out specific measures or actions towards achieving more empowerment.

Austria has partially addressed recommendation 18. The NECP presents quantified information on energy poverty, relying on several indicators, and highlights several concrete measures and programmes to alleviate it, but lacks quantifiable targets. Austria stipulates that the Energy Poverty Definition Act is in political negotiations and is intended to provide the legal basis for the statistical recording and monitoring of energy poverty; the 2023 Energy Efficiency Act established the Coordination Body for Combating Energy Poverty (KEA) as the central contact and competence centre for energy poverty in Austria and a data and monitoring plan on energy poverty is being drawn up to help develop a concrete, measurable reduction target. Austria furthermore highlights its short-term and ongoing measures to alleviate energy poverty, with energy cost subsidies, a Housing Energy programme, income support, housing benefits and energy advice to reduce energy consumption.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Austria has partially addressed recommendation 19. The plan includes a comprehensive approach, although it does not include specific targets to support research, innovation and competitiveness in all relevant clean energy technologies, establishing a pathway to 2030 and 2050. The plan included measures to promote the development of net-zero projects including those relevant for the energy intensive industries. Flagship projects promote a wide range of research and innovation, from renewable energy technologies to energy efficiency and sustainable mobility. The chapter did not fully describe how the measures will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified where needed. The plan included information on policies and measures for the development of clean energy-related skills and facilitate resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Austria has partially addressed recommendation 20. The plan provides estimates of the investment needs for key sectors, but not at the level of the planned measures. It provides a detailed overview of the available public budget per sector and describes the initiatives and measures to mobilise private investments. The assessment is based on a sound methodology, using a top-down model.

The information provided in the plan is not sufficient to estimate whether there is a potential financing gap with respect to the investment needs, or how this would be filled.

Austria has addressed the need to provide a robust assessment of the macroeconomic impact of the planned policies and measures on value-added, consumption, employment, and investment. The methodology employed is outlined in the referenced documents.

2.8 JUST TRANSITION

Austria has partially addressed recommendation 22. The plan provides information on the impact of the transition to climate neutrality on employment and skills but does not sufficiently address the impact on the most vulnerable households. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund (JTF).

Regarding the Social Climate Fund, despite the above-mentioned reference, the plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Austria's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Austria has not addressed recommendation 23. Austria provides very little information about the public consultation on the draft and final NECP. The plan indicates that consultation with the key stakeholders and social partners (economic camera, Chamber of Labour, Chamber of Agriculture, Austrian Trade Union Confederation) was done through the National Climate Change Committee and also involved the Citizens' Climate Council. The plan does not describe how it was carried out, (e.g. the consultation period) nor provides a summary of the outcome of the consultation nor how the views were considered.

2.10 REGIONAL COOPERATION

Austria has not addressed recommendation 24. The plan does not make a reference to having engaged in regional cooperation, notably the Central and South-Eastern Europe Energy Connectivity (CESEC) High-Level Group. Moreover, it does not describe how Austria plans to establish a framework for cooperation with other Member States by 2025, in line with Article 9 of the revised RED II. The final plan does not refer to any efforts nor progress regarding the signature of the remaining bilateral solidarity agreements with Austria's neighbours (Hungary, Slovakia, Czechia, Slovenia).

2.11 ANALYTICAL BASIS

The methodologies and models used for the analytical basis of the NECP, are described in a separate document by the Austrian Federal Environmental Agency (UBA)[212]. The draft NECP provides an impact assessment of policies and measures, which includes a partial assessment of economic, employment, social, and health impacts.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The Austrian final updated NECP covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

Austria needs to swiftly proceed with implementing its final integrated national energy and climate plan. Austria is invited to pay particular attention to the following main elements:

- On **ESR**, implement in a timely manner the identified additional policies to meet the 2030 target (including reducing fossil fuel subsidies and deployment of Carbon Capture and Storage). While Austria is expected to achieve its ESR target with the use of flexibilities, part of the emissions reduction is driven by measures that are not yet fully in place.
- On **LULUCF**, implement continuous monitoring and address the long-term declining trend in the carbon sink.
- On **adaptation,** assess quantitatively relevant climate vulnerabilities and risks for the national objectives, targets, and contributions and the policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies, that adaptation policies and measures are meant to support.
- Continue the commitment to phase out the **fossil fuel subsidies** identified in the NECP by 2030. Clarify existing fossil fuel subsidies along with a detailed timeline for their gradual phase-out.
- On **transport**, fully implement the 2030 Mobility Master Plan, and use strategically funding instruments to incentivise the electrification of the vehicle fleet, the expansion of related infrastructure, and the promotion of public transport.
- On **buildings**, promote thermal renovation, renewable energy deployment, and heating system upgrades, among others through funding instruments and regulatory measures, and provide a stable and predictable framework. Accelerate the pace and depth of **renovations** by increasing the availability of technical assistance facilities and one-stop shops and clarifying planned energy savings for public buildings.

[212] The modelling framework used to develop the scenarios and the related results are available on the Umweltbundesamt's website: Umweltökonomische Analysen mit dem MIO-ES-Modell.

- On **industry**, develop a comprehensive plan for promoting the use of renewable energy and boost energy efficiency. Implement the Carbon Management Strategy, which includes establishing a comprehensive legal framework for the deployment of **CCUS** technologies and developing a plan for the rollout of CCUS infrastructure and operations.
- On **renewable energy**, put in place a favourable framework to support renewables-based **electrification** across sectors, increase awareness amongst citizens and companies on financing possibilities and system benefits of renewable energy technologies. Promote the deployment of **innovative renewable energy technologies** to contribute to the indicative target of 5% by 2030 of the revised RED II. Develop a strategy to significantly increase the acceptance of **wind power,** involving local communities and considering biodiversity.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030 for primary energy consumption.
- Further increase **system flexibility**, for instance by introducing measures to facilitate the uptake of power purchase agreements in industry.

Portugal

1 Overview of key objectives, targets and contributions in the final NECP

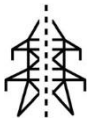
Final updated NECP submitted on 03.12. 2024

Table 1: Summary of key objectives, targets and contributions of Portugal's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -18.2% 2023: -18.6%[213]	-28.7%	NECP: -39.4%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -5.93Mt CO_2 eq.	-0.97 Mt CO_2 eq. (additional removal target)	Projecting to meet the target: An overachievement of -11.91 Mt CO2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	34% (SHARES) 31% (target)	2023: 35.2%	51%	PT contribution of 51% is in line with the level required according to the formula set out in Annex II of the Governance Regulation[214]
	National contribution for energy efficiency:				
	Primary energy consumption	22.5 Mtoe	2023: 20.71 Mtoe	16.71 Mtoe	PT primary energy consumption contribution is 16.71 Mtoe. EED recast Annex I formula results: 15.16 Mtoe (Reference Scenario) or 16.71 Mtoe (Updated Reference Scenario)

[213] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[214] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	17.4 Mtoe	2023: 17.20 Mtoe	14.37 Mtoe	PT final energy consumption contribution of 14.37 Mtoe is in line with the national contribution of 14.37 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[215]	8.08%	2024: 11.5%	15%	PT is below the EU-wide interconnectivity target.

Source: Eurostat; Portugal's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Portugal's draft updated NECP and provided recommendations[216] for the preparation of the final updated NECP. Portugal submitted its final updated NECP on 3 December 2024, over five months after the deadline of 30 June 2024[217].

2.1 DECARBONISATION

Based on the projections available in the NECP, Portugal expects to decrease total GHG emissions (excluding LULUCF and excluding international aviation) by 37% in 2030 and by 63% in 2040 compared to 1990[218].

2.1.1 Effort Sharing Regulation

Portugal has addressed recommendation 1. The final NECP provides sufficient details on how Portugal will meet its ESR target of -28.7% by 2030 compared to 2005.

Portugal has provided projections showing that with existing and planned policies and measures Portugal will decrease emissions by 39.4% by 2030 compared to 2005, overachieving their target by 10.7 percentage points. However, Portugal has accounting debit gaps under the LULUCF Regulation, which are projected to impact its performance under the ESR. In 2023, GHG emissions from ESR sectors represented 75% of the total in Portugal (expected to reach 71% in 2030[219]), with transport representing the largest share. The WAM value for ESR in

[215] Calculated by the European Commission based on the ENTSO-E data (Winter Outlook 2024). The 2020 figure covers also interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[216] SWD(2023) 922 final, and Commission Recommendation of 18 December 2023, C/2023/9612.
[217] Article 14(2) of Governance Regulation.
[218] Calculated based on the EEA reported 1990 figure and the projections provided by Portugal in the final updated NECP.
[219] The 2023 emissions are based on 2024 approximated inventory reports.

2030 is roughly 12% lower than the WEM, hinting that implementing the plan will require a significant effort.

The final plan complemented the information on the policies and measures provided in the draft but could still benefit from a clearer description of their scope, timeline and expected impact. The plan covers all ESR sectors comprehensively. On **transport**, the WAM projections describe a steep decrease in emissions in the period 2022-2030, with the annual percentage change significantly decreasing compared to the period 2015-2022 (from +0.6% to – 5.7%)[220]. While the plan promotes public transport and active travel, the plan reports an increase in private vehicle ownership, including electric vehicles. The plan includes measures to incentivise EV but without specific targets or detailed plans to roll out charging infrastructure.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenarios adequately account for the effects of Portugal's national carbon tax and the implementation of ETS2, but do not quantify their impact in achieving the ESR target.

On **agriculture**, the plan provides sufficient detail in terms of funding and impacts of measures, and how these contribute to the ESR target. On **waste**, the plan presents several relevant policies and shows significant reductions. On **F-gases**, the plan shows a stark contrast between the WEM and WAM scenarios, with emissions projected to increase by 94% by 2030 compared to 2005 under WEM, but decrease by 89% under WAM, highlighting the importance of monitoring implementation.

2.1.2 LULUCF

Portugal has addressed the recommendation 3. Policies in the LULUCF sector will result in increased net removals compared to 2022 values. The final plan includes projections indicating that Portugal will overachieve its target to deliver additional - 0.97 Mt CO2 eq. net removals in 2030.

The plan provides minimal information on how mainly public funding (CAP, CF/SF, State Aid, etc) will be used to ensure fulfilment of LULUCF target. The plan provides sufficient references on planned measures towards ensuring progress in the implementation of MRV in the LULUCF sector.

2.1.3 Carbon Capture and Storage

Portugal has partially addressed recommendation 2. The plan explains that Portugal will develop a CCUS strategy and estimates that 95 kt of CO_2 will be captured annually by 2030, thanks to additional measures (though these measures are not specified). The plan does not provide estimates of Portugal's expected storage capacity, nor examples of planned/ongoing CCUS projects based in Portugal.

2.1.4 Adaptation

Portugal has partially addressed recommendation 4. The plan refers to the National Strategy for Adaptation to Climate Change (ENAAC 2020), the National Climate Change Programme (PNAC 2020-2030) and the National Adaptation Roadmap 2100 (RNA2100) to respond to the recommendation, acknowledging the importance of integrating adaptation

[220] Compound annual growth rate.

planning. The plan also partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a thorough **analysis of climate vulnerabilities and risks.** Grounded in different climate scenarios outlined in the RNA2100, the plan identifies several significant risks, such as forest fires, drought, coastal erosion, flooding and fluctuations in wind and solar energy, which could influence the resilience and functionality of the energy system. However, the plan is short of a quantifiable assessment of impacts. The plan outlines the **links to specific Energy Union objectives and policies** that adaptation measures are meant to support. It links measures and their contribution to the objectives and policies of the five Energy Union dimensions. However, the impacts and benefits of adaptation policies and measures on them have generally not been quantified.

The plan partially addresses the consequences of climate change on future water availability. It lacks a fully comprehensive forward-looking assessment of future water demand and supply at the national scale, aligned with expected climate warming trajectories. It also does not adequately address possible cross-sectoral conflicts such as with energy production, agriculture, and residential water use in the face of growing water scarcity.

2.1.5 Fossil Fuels

Portugal has not addressed recommendation 19. The plan indicates the need to phase out fossil fuel subsidies in line with international commitments and mentions the intention to phase out by 2030 fiscal advantages related to the use of fossil fuels. However, it does not provide a clear explanation of the specific measures and timeline Portugal intends to adopt to phase out fossil fuel subsidies.

2.2 RENEWABLES

Portugal has addressed recommendation 5. The plan puts forward an increased national contribution for renewable energy of 51% share of renewables in gross final energy consumption in 2030. This contribution is in line with the level calculated in line with formula of Annex II of the Governance Regulation. The updated indicative trajectory to reach the 51% contribution in 2030 is provided, including specific reference points for 2025 (41%) and 2027 (47%), which are above the trajectory calculated in line with the increased EU 2030 renewable energy target of 42.5% (40% for 2025 and 44% for 2027 respectively).

Portugal has partially addressed recommendation 6. The plan states that offshore wind and wave capacity will lead to the achievement of the indicative target for innovative renewable energy technologies of at least 5% by 2030. However, the plan falls short of specifying targets to achieve the sectoral targets for industry, buildings and for heating and cooling of Directive (EU) 2018/2001 (the 'revised RED II')[221]. The plan does not include a specific target for renewable fuels of non-biological origin (RFNBOs) in industry by 2030. Nevertheless, Portugal indicates that it plans in line with its National Hydrogen Strategy to install the electrolysers with 3 GW of net production capacity by 2030. Portugal has not included the sub-target for advanced biofuels and RFNBOs for transport by 2030, albeit referring to the

[221] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

mandatory ones set by the revised RED II, deferring its definition to the transposition of the revised RED II itself.

Portugal has addressed recommendation 7. The updated plan provides further information on power purchase agreements for which a legal framework will be put in place in line with the Regulation amending the Electricity Market Design, to promote and facilitate the use of such contracts in the long term while preserving the competitive and liquid electricity market.

Portugal has addressed partially recommendation 8. The updated plan includes information on biomass supply projections, differentiating between domestic production and import. But the plan lacks including an assessment of the compatibility of the projected use of forest biomass for energy production with Portugal's obligations under the revised LULUCF Regulation. Portugal includes further measures to promote the sustainable production of biogas/biomethane but expresses its target as a percentage of gas consumption in 2030.

Portugal has partially addressed recommendation 9 as the plan does not provide a detailed overview of timelines and procedural steps for all policies and measures.

2.3 ENERGY EFFICIENCY DIMENSION

Portugal has partially addressed recommendation 10. Portugal includes an indicative national contribution of 14.4 Mtoe to the Union's binding final energy consumption target for 2030 and an indicative national contribution of 16.7 Mtoe to the Union's indicative primary energy consumption target for 2030, both in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[222].

However, the plan does not include the amount of **energy consumption reduction** to be achieved by all public bodies annually. Portugal does not report the total floor area of heated and cooled **buildings owned by public bodies** to be renovated yearly - nor the corresponding yearly energy savings to be achieved[223] nor **does it specify** if it opted for alternative or default approach.

Portugal has partially addressed recommendation 11. Portugal sets out policies and measures to achieve the national contributions on energy efficiency but does not quantify the expected energy savings and the contribution for each of the reported measure. The main measures include the promotion of renovations of multi-apartment buildings, coupled with financing and technical assistance, as well as the development of municipal and regional climate action plans. Portugal specifies how the **energy efficiency first principle** will be implemented but did not mention any implementation measures.[224] Portugal sets out policies and measures to achieve the required amount of cumulative end-use energy savings by 2030, but it does not quantify the energy savings from the reported energy efficiency measures.

Portugal specified robust **energy efficiency financing programmes and support schemes** but did not specify existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes, as well as Energy Performance Contractors, or

[222] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[223] The NECP sets targets of energy savings for all buildings, including various types of public buildings by 2050.
[224] It specified that building renovation and ZEB will play an important role.

ESCOs[225]. Portugal established a National Energy Efficiency Fund, but it did not detail its role nor provided sufficient information on its functioning**.**

Portugal has not addressed recommendation 12. Portugal included intermediate milestones for 2030 and 2040. The final plan includes objectives (primary and final energy savings, area of intervention, investment) for residential and non-residential buildings for 2030 which refer to the LTRS of Portugal (Estratégia de Longo Prazo para a Renovação dos Edifícios (ELPRE). The final plan also includes objectives for 2040 and 2050 for residential and non-residential buildings which provide target values for a number of indicators (e.g. primary and final energy savings, share of renewables, percentage reduction of CO2 emissions, etc). However, the level of ambition itself has not been increased.

The NECP contains information on the related measures for buildings and provides figures on the expected energy savings. The related measures are estimated to result in primary energy savings of 40% in residential buildings and 28% in non-residential buildings, and in total 34% by 2050. The plan indicates that the combination of measures and action by the private sector should guarantee all buildings in existence in 2018 are renovated by 2050 (if still in use). However, information on the deployment of the measures or allocated budgets is not clear.

2.4 ENERGY SECURITY DIMENSION

Portugal has partially addressed recommendation 13. Portugal raises the target for battery storage capacity to 2 GW in 2030, as opposed to 1 GW in the draft plan, while pumped hydro installed capacity remains the same (3,9 GW).

The oil section of the updated plan did not undergo significant changes, and thus it does not assess the long-term adequacy of Portugal's oil infrastructure (including refinery, oil stocks) with the expected decline in oil demand and the move toward lower-carbon alternatives.

The plan acknowledges the need for the energy sector to consider climate variability and climate change and sets out a commitment to develop a sectoral climate change adaptation plan.

2.5 INTERNAL ENERGY MARKET DIMENSION

Portugal has partially addressed recommendation 14. The plan does not elaborate on the quantification of flexibility needs, nor does it set clear targets and objectives for demand response and to improve the flexibility of the energy system. While it references the promotion of market aggregators and the roll-out of smart meters to facilitate demand participation, some of these initiatives lack detailed measures or defined timelines. The plan does include policies and measures that support flexibility. Portuguese authorities are evaluating ongoing projects on demand participation and flexibility services, but these initiatives lack a comprehensive framework and clear objectives. Even though the plan provides measures promoting flexibility solutions in the context of facilitating energy system integration, it does not provide information on specific measures for implementing Article 20a of the revised RED II.

[225] It mentions such mechanisms only as topics for research projects.

The plan also includes a measure on citizens' empowerment (education and training) for low-carbon behaviours and more sustainable production and consumption patterns, as well as measures of consumers empowerment in self-consumption, focusing on individual, collective self-consumption and renewable energy communities. The plan recognizes the importance of consumer education, empowerment and engagement through energy literacy campaigns and access to new technologies that increase energy efficiency and offer innovative solutions.

Portugal has partially addressed recommendation 15. The plan includes an assessment of the situation of affected households and specific measurable targets. Portugal provides additional details on existing and potential measures to address energy poverty. In particular, Portugal has developed a National Long-Term Strategy to Combat Energy Poverty (ELPPE) with the goal to eradicating energy poverty by 2050. The plan also includes measures to promote the creation and development of renewable energy communities and one stop shops, which can contribute to addressing energy poverty, thus linking the consumer protection agenda to the consumer empowerment in a coherent way. However, there is no clarity on the dedicated financial resources from the perspective of both social policy and structural energy measures. The plan explains how the use of energy efficiency measures will contribute to alleviating energy poverty.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Portugal has partially addressed Commission recommendation 16. The plan includes national objectives for research and innovation in energy for 2030. Compared to the draft, the final plan establishes a more developed approach to support research, innovation, and investments in clean energy technologies, for instance through initiatives to strengthen the link between research and innovation activities and the business sectors. The plan lacks information on concrete initiatives to promote the manufacturing of clean energy technologies and equipment. It does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing facilities. The plan does not provide detailed policies and measures for the digitalisation of the energy system. The plan highlights the importance of clean-energy related skills and puts forward a measure to promote training and reskilling for the energy and climate transition.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Portugal has not addressed recommendation 17. The plan does not provide data on investment needs. Nonetheless it provides a broad description of the main sources of financing for each measure. The plan does not outline how the planned measures will mobilise private investments and does not include a split of public and private investments. Overall, the information provided in the plan is not sufficient to assess a potential financing gap with respect to the investment needs, or how this would be filled.

Portugal has partially addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures.

2.8 JUST TRANSITION

Portugal has partially addressed Commission recommendation 20. The plan provides information on the impact of the transition to climate neutrality on employment, training, and skills, but does not sufficiently detail the actions, the target groups and the dedicated resources. Despite the increasing emphasis on energy poverty as a just transition element, the plan does not assess other distributional impacts of the climate and energy transition and on the planned objectives, policies and measures to support a just transition. Moreover, the plan gives only general information on the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund (JTF). The plan lacks a concrete description of the initiatives and resources to translate the commitments into action.

The plan is aligned with the Territorial Just Transition Plans, the phase-out date of fossil fuels is maintained. In particular, while Portugal has closed its last mine in 2021, it also plans to stop producing electricity from coal by 2030 at the latest.

The plan partially provides the analytical basis needed for the preparation of the Social Climate Plan, such as information on the monitoring of vulnerable groups in energy poverty. The plan does not clearly explain how the policy framework identified in the NECP will contribute to the preparation of Portugal's Social Climate Plan. Nonetheless, the NECP explains how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Portugal has addressed recommendation 21. Portugal organised two rounds of public consultations to prepare the final plans, and organised various exchanges with stakeholders, including social partners, civil society and the general public (also through Participatory Assemblies). The public consultations were organised through an online portal. The first round, on the draft updated NECP, (with a questionnaire) took place from 15 March to 14 April 2023, before the submission date in June 2023. It collected 59 contributions from various sectors of the economy. The second round, on the draft final integrated NECP, took place from 22 July to 5 September and attracted increased interest, with 177 participations and more detailed comments. The plan includes a detailed summary of the outcome of the consultations, describes in a limited way how the final plan integrates the inputs and changes suggested from stakeholders, and explains why certain inputs were not included.

2.10 REGIONAL COOPERATION

Portugal has partially addressed recommendation 22. The plan includes a detailed list of initiatives aimed at increasing Portugal's engagement with neighbouring Member States, including in the context of the High-Level Group on Interconnections for South-West Europe. It refers to the negotiations to sign the solidarity agreement for gas supply with Spain which is in the final stage of preparation. The plan does not describe how Portugal plans to establish a framework for cooperation with other Member States by 2025 in line with Article 9 of the revised RED II.

2.11 ANALYTICAL BASIS

The final plan is based on solid quantitative analysis and the methodologies used for projections and the impact assessment are clearly explained and referenced. The assessment of economic and social impacts has been further developed compared to the draft updated NECP. The plan now includes the impacts of scenarios on main economic aggregates such as GDP, employment, private consumption and investments.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Portugal has addressed recommendation 18. The plan covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Portugal to ensure a timely and complete implementation of the final updated NECP. Portugal is invited to pay particular attention to the following main elements:

- On **LULUCF**, monitor implementation as the projected sink to meet the 2030 target relies on a reduction of burnt areas, a reduction of harvesting or an increase of forest area. It is crucial to ensure that use of biomass in the energy sector does not negatively impact the achievement of the sequestration target under the LULUCF sector.
- Closely monitor the impacts of **transport** policies, as a significant part of projected emissions reduction is driven by measures that are not yet fully in place. Notably, consider promoting holistic approach promoting alternative mobility solutions, the expansion of charging infrastructure and incentives for EVs.
- On **adaptation**, use the vulnerability assessment already developed in the National Adaptation Roadmap as a basis for the 2025 review of the National Adaptation Strategy and the subsequent review of the regional and municipal adaptation plans. Establish specific, measurable adaptation measures and targets.
- Develop a roadmap with specific measures to phase out **fossil fuel subsidies**.
- As regards **renewable energy,** put in place the planned measures to facilitate the uptake of power purchase agreements, thereby ensuring certainty to market actors as over 95% of the electricity generation is expected to be from renewable sources.
- Set additional measures to ensure the **necessary grid developments**, including streamlined permitting and capacity allocation process, as well as developing network storage and flexibility. Develop a more structured approach to enhancing energy system flexibility.
- Prioritise the use of **renewable gases and green hydrogen** in sectors with hard to abate emissions where electrification is not feasible given the energy intensity and costs associated with the production of these renewable gases.
- On **energy efficiency**, develop adequate measures targeting the public sector, including the renovation of public buildings. In this context, proper implementation of Articles 5 and 6 EED recast is crucial.

- Regarding the **heating and cooling sector**, continue efforts on the renovation of buildings, to promote energy efficiency and reduce energy poverty. Prioritise the use of high-efficiency heat pumps to promote electrification of the heating and cooling sector.
- Develop a more comprehensive **just transition strategy** that allocates appropriate financial resources.

Romania

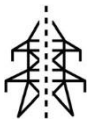
1 Overview of key objectives, targets and contributions in the final NECP

Table 1: Summary of key objectives, targets and contributions of Romania's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: +4% 2023: +3.8%[226]	-12.7%	NECP: -15.3%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -46.5 Mt CO_2 eq. in 2022	-2.38 Mt CO_2 eq. (additional removal target)	Insufficient ambition: projected gap of 2 Mt CO_2 eq. in 2030
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	% 24.5% (SHARES) 24% (target)	2022: 24.2% 2023: 25.8%	38.3%	RO contribution of 38.3% is below the required 41% in line with the formula set out in Annex II of the Governance Regulation[227]
	National contribution for energy efficiency:				
	Primary energy consumption	43 Mtoe	2023: 30.0 Mtoe	28.7 Mtoe	RO primary energy consumption contribution is 28.7 Mtoe. EED recast Annex I formula results: 30.2 Mtoe (2020 EU Reference Scenario) and 28.9 Mtoe (Updated Reference Scenario)
	Final energy consumption	30.3 Mtoe	2023: 23.3 Mtoe	22.5 Mtoe	RO final energy consumption contribution of 22.5 Mtoe is in

[226] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[227] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					line with the national contribution of 22.5 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[228]	9.3%	2024: 16.3%	15%	RO has surpassed the EU-wide interconnectivity target

Source: Eurostat; Romania's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Romania's draft updated NECP and provided recommendations[229] for the preparation of the final updated NECP. Romania submitted its final updated NECP on 14 October 2024, over three months after the deadline of 30 June 2024[230].

2.1 DECARBONISATION

Romania expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 85% in 2030 and 96% in 2040 as compared to 1990, and to reach climate neutrality by 2050.

2.1.1 Effort Sharing Regulation

Romania has addressed recommendation 1. The plan provided sufficient details on how Romania will meet its ESR target of -12.7% by 2030 compared to 2005.

The plan provides projections showing that the existing and planned policies and measures will lead to a decrease of 15.3% in 2030 compared to 2005, overachieving the national ESR target by 2.6 percentage points. In 2023, GHG emissions from ESR sectors represented 77% of the total in Romania (expected to be 79% in 2030)[231], with transport and agriculture representing the largest shares. The 'with additional measures' (WAM) projected value in 2030 is roughly 7% lower than the projections under the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require additional effort.

The final plan complemented the information on most of the policies and measures provided in the draft but at times still lacks details on their timeline and expected GHG reduction. On transport, the WAM projections describe a decrease in emissions in the period 2022-2030, with the average percentage decrease per year of 3 times larger than in the period 2015-2022 (from

[228] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[229] SWD(2023) 930 final, and Commission Recommendation of 18 December 2023, C/2023/9620.
[230] Article 14(2) of Governance Regulation.
[231] The 2023 emissions are based on 2024 approximated inventory reports and 2030 is based on reporting of greenhouse gas projections (Article 18 of the Governance Regulation).

4.29% to 1.36%)[232]. The plan focuses on increasing alternatively fuelled vehicles and modernising public transport but lacks clarity on implementation. Moreover, the plan lacks information on policies and measures addressing the two biggest sources of non-CO_2 emissions, namely N_2O from agricultural soils and CH_4 from coal, oil and gas.

The plan does not refer to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections do not account for the effect of ETS2.

2.1.2 LULUCF

Romania has not addressed recommendation 3. The LULUCF sector in Romania generates net removals, absorbing roughly 42.3% of the total GHG emissions in 2022. Romania has to enhance its net removals by -2.38 $MtCO_2eq$ in 2030 compared to the reference period. According to 2022 figures, Romania has worsened its performance by -2.2 $MtCO_2eq$ in comparison to its yearly average in the 2016-2018 reference period. Considering its projections for 2030, Romania will still have a gap of 2 $MtCO_2eq$ in 2030. The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario.

The plan does not provide sufficient information on how public funding (CAP, State aid) and private financing through carbon farming schemes are used to reach the LULUCF target. It 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.

2.1.3 Carbon Capture and Storage

Romania has partially addressed recommendation 2. The plan envisages the development of a comprehensive national carbon management strategy but does not provide clear annual injection capacity targets for 2030. The plan provides estimates of the total need of CO_2 capture (62 million tonnes per year, though the source is not defined), the total CO_2 transportation via pipelines capacity in Romania (16 million tonnes per year) and the total CO_2 storage capacity (9 million tonnes per year), though the timing is not clearly indicated. The plan outlines that CCUS legislation is in place or under development, and that a €750 million budget will be reserved to implement CCUS technologies, mostly using EU financing instruments.

2.1.4 Adaptation

Romania has partially addressed recommendation 4. The plan refers to the National Strategy for Adaptation to Climate Change for the period 2024-2030 (SNASC) and the National Action Plan for Adaptation to Climate Change (PNASC) to respond to the recommendation, acknowledging the importance of integrating adaptation planning. The plan also partially embeds adaptation policies and measures in the relevant Energy Union dimensions.

The plan contains a partial **analysis of climate vulnerabilities and risks.** The plan, referencing the SNASC, outlines objectives for 13 key sectors, including reducing water scarcity and flood risks, adapting forest management to climate change, expanding forested areas, and enhancing resilience of the energy sector and critical infrastructure. However, the plan is short of a

[232] Compound annual growth rate.

quantifiable assessment of impacts. The plan outlines the **links to specific Energy Union objectives and policies** that adaptation measures are meant to support. It links the key sectors mentioned in the SNASC such as water resources, forestry, and energy sector with the objectives and policies of the five Energy Union dimensions. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified. The plan sets some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. While the plan highlights the need for strategic adaptation objectives to align with other policies, and emphasizes legislative and policy measures that incorporate nature-based solutions, the measures provide insufficient details to assess their scope, financing, timing, and likely impact. However, the creation of RO-Adapt platform for climate data is a positive step.

2.1.5 Fossil Fuels

Romania has not addressed recommendation 18. The plan includes the Territorial Just Transition Plans (TJTPs) commitments to phase down coal by 2032. However, the timeline for the phase-out of coal and lignite-based power plants is not indicated. The plan does not sufficiently explain the alignment with the TJTPs as it does not clarify the intermediate trajectory and milestones for the phase out of fossil fuels.

The plan did not include commitments to phase out fossil fuel subsidies. The Law 226/2021 on the establishment of social protection measures for vulnerable energy consumers lists an increased number of general subsidies, without specifically identifying the fossil fuels subsidies.

2.2 RENEWABLES

Romania has partially addressed recommendation 5. The plan includes an increased share of renewable energy contribution of 38.3% in gross final energy consumption by 2030, based on WAM scenario. However, it remains below the level (of 41%) calculated in line with formula of Annex II of the Governance Regulation. The updated indicative trajectory for achieving the increased contribution was also provided with the reference points for 2025 (31%) and 2027 (33.6%). The reference point for 2027 is below the trajectory (35%) calculated in line with the EU 2030 renewable energy target of 42.5%.

Romania has taken sufficient measures to cover the gap towards its 2021 renewables baseline which must not be lower than its mandatory national overall target for the renewable energy share in 2020, in line with Article 32(4) of Governance Regulation.

Romania has partially addressed recommendation 6. The plan provides projections for the deployment of renewable energy technologies over the next 10 years, with an outlook to 2040. The plan includes projections in buildings and industry for 2030, advanced biofuels and the RFNBOs in transport by 2030; however, the plan does not confirm whether those constitute the specific targets to achieve the sub-targets in line with Directive (EU) 2018/2001 (the 'revised RED II')[233], and the plan does not include information on the RFNBO target for industry Romania confirmed its plans to meet the binding average increase of renewables in

[233] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

heating and cooling for both 2021-2025 and 2026-2030 periods. Over both periods, the increase is close to the indicative level of the top-up in line with Annex IA of the revised RED II. The plan does not include an indicative target for innovative renewable energy technologies by 2030 in line with the revised RED II.

Romania has partially addressed recommendation 7. Romania provides additional information on policies and measures, including specifying an estimated budget and the sources of financing. The plan provides further detail on measures aimed at ensuring an enabling framework to promote self-consumption and energy communities. However, no further information was included on how Romania plans to accelerate permitting and designate renewables acceleration areas, including which renewable energy technologies will be covered. The plan does not elaborate on the uptake of renewable power purchase agreements and guarantees of origin. It does not provide further indications on an enabling framework for increasing integration between electricity and heating and cooling networks. Romania does not provide further information on measures for promoting renewable hydrogen in industry and in transport.

Romania has partially addressed recommendation 8. The plan includes an assessment of the compatibility of the projected use of forest biomass for energy production with Romania's obligations under the revised LULUCF Regulation but does not provide an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of Article 29 of the revised RED II. Romania also included measures to promote the sustainable production of biogas and biomethane.

Romania has not address recommendation 9. The plan does not include information on the expected timeline and the steps leading to the adoption of legislative and non-legislative policies and measures aimed at transposing and implementing the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Romania has partially addressed recommendation 10. Romania includes an indicative national contribution of 28.7 Mtoe to the Union's **primary energy consumption** target for 2030[234]. This contribution is in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[235][236]. However, Romania does not include the amount of energy consumption reduction per year to be achieved by all public bodies. Romania does not report the **total floor area** of heated and cooled buildings owned by public bodies to be renovated yearly, nor the corresponding yearly energy savings to be achieved, and it also did not specify if it opted for the alternative or default approach. Romania includes the amount of cumulative energy savings of 10.1 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030, which is however not in line with Article 8 of EED Recast in terms of ambition. The plan also does

[234] The Romanian final NECP does not commit to a PEC target. Instead, the projected decrease in PEC (under the WAM scenario) is compared with the EED target, and the document concludes that the EED target will be surpassed.
[235] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).
[236] It is projected to surpass by 4.8% the indicative results of the Article 4 and Annex I formula (REF2020 scenario), and by 0.5% the indicative results of the Article 4 and Annex I formula (updated REF2020 scenario).

not include any explanation on how the **annual savings rate** and the calculation baseline were established. Moreover, values are inconsistently reported across the plan in primary or final energy consumption, thus being difficult to compare and assess.

Romania has partially addressed recommendation 11. Romania sets out policies and measures to achieve the required amount of **cumulative end-use energy savings** by 2030, but it does not quantify the energy savings from all the reported energy efficiency measures to ensure the achievement of the cumulative target. Romania does not include the quantification of the savings from those energy efficiency measures targeting energy poverty. Romania sets out adequate measures to promote **energy audits and energy management systems**. Romania does not specify robust energy efficiency **financing programmes and support schemes**, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. Romania specifies existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes such as ESCOs.

Romania has partially addressed recommendation 12. Romania does not include updated milestones in comparison to the Long-Term Renovation Strategy submitted in 2020 or the draft 2023 NECP, nor detailed the impact in terms of energy savings of each new measure put forward. Nonetheless, Romania includes intermediate milestones for 2030 and 2040, further considers non-residential buildings in addition to residential buildings, and emphasises the increase of near zero energy buildings and the decrease in worst performing buildings within the projected increase of the annual renovation rate. Furthermore, the plan does not include sufficient information on related measures for buildings in terms of energy and emissions savings, funding, and costs. However, Romania includes some information on policies and measures addressing deep renovation, in particular of worst-performing buildings, as well specific information on policies and measures addressing decarbonisation of heating and installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Romania has partially addressed recommendation 13. The plan does not provide further details on clear objectives for encouraging gas demand, nor does it assess the compatibility of the national gas infrastructure with decarbonisation objectives. However, the plan provides forecasts of the evolution of natural gas consumption, which is expected to increase from 8.4 Mtoe in 2022 to 9.5 Mtoe by 2030 and then decrease to 5.4 Mtoe by 2040 and to 3.9 Mtoe by 2050 (WAM scenario).

The plan sets an objective of 1200 MW or 2400 MWh for battery storage for 2030 and a clear target (800 MW) for pumped hydro storage. A projection of installed battery capacities for 2035 and 2040 was also provided.

The plan was updated with projections on oil consumption until 2050 but does not include an assessment of the adequacy of the oil infrastructure in the long run (refineries, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

The NECP provides information on plans to expand Romania's nuclear generation capacity by building new small modular reactors (SMRs) with a total installed capacity of 462 MW, and 2 new units at the Cernavodă NPP. However, the plan does not provide information on the diversification and long-term supply of nuclear materials, fuel, spare parts, and services, or on

measures for long-term management of nuclear waste. The latter is however covered in the 4th national report submitted in August 2024 in accordance with Article 14 of Directive 2011/70/EURATOM.[237]

The plan recognises the need to consistently implement strategic climate adaptation objectives of the National Strategy on Adaptation to Climate Change to increase energy system resilience. It does not, however, clearly put forward policies and measures to integrate the imperative of climate adaptation in the energy system.

2.5 INTERNAL ENERGY MARKET DIMENSION

Romania has partially addressed recommendation 14. The plan mentions some positive steps related to improving electricity interconnection capacity but does not set clear targets to improve the electricity interconnection capacity or set out a clear timeline for projects. With regards to non-fossil flexibility sources providing the right flexibility amount to the system, the plan rather focuses on the benefits of energy storage and does not provide clear targets for demand response. Finally, the plan does not provide information on how to facilitate energy system information in accordance with Article 20a of the revised RED II, nor on the organisation of electricity markets and the phasing out of measures interfering with market signals.

The Plan includes measures for consumer protection and consumer empowerment. It provides updates on smart metering deployment and information on legislative measures for ensuring contractual rights for consumers. Romania has a dedicated program for energy communities.

Romania has partially addressed recommendation 15. A measurable reduction target on energy poverty was adopted based on the indicator 'population unable to keep home adequately warm.' Romania also sets up some clear objectives and measures to address energy poverty referring to ensuring access to sustainable and diverse energy sources for households, vulnerable energy consumers protection and governance of the process to reduce energy poverty. However, while there is information on some of the financial resources from the perspective of structural energy measures, there is no overview of all relevant financial resources nor of potential further measures.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Romania has not addressed recommendation 14. The plan largely lacks a comprehensive approach that includes targets to support research, innovation and competitiveness in clean energy technologies, the manufacturing of clean energy technologies and equipment, and the digitalisation of the energy value chain.

The Romanian National Strategy for Research, Innovation, and Smart Specialization 2022-2027 (SNCISI) includes objectives and targets which apply to overall R&I activities and includes energy and mobility as one of the six priority domains for national smart

[237] Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste.

specialisation. However, the specific national objectives and funding targets for clean energy remains unclear.

The plan identifies general sources for financing R&I with European and national funding schemes but does not include a breakdown of investments in research and innovation targeted on the energy sector for 2030 and beyond.

The plan does not include a pathway for 2030 and beyond to support the decarbonisation of industry and to promote the transition of businesses towards a net zero economy.

The plan does not include measures to promote the development of net-zero projects including those relevant for the energy intensive industries. It does not describe how it will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified where needed.

Finally, the plan includes general mentions that the Romanian Recovery and Resilience Plan and Just Transition funding are used for up-skilling and re-skilling the workforce for participating to the clean energy transitions, but it did not provide more details on these policies.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Romania partially addressed recommendation 17. The plan provides an estimate of the overall investment needs of 4,193 billion EUR, and a breakdown by sector. The plan neither provides a complete overview of investment needs and funding sources nor quantifies the share of private and public investments. The plan does not explain which instruments will be used to mobilise private funding.

The information provided in the plan is not sufficient to assess whether there is a potential financing gap with respect to the investment needs, or how this would be filled.

Romania has **partially addressed recommendation 17 to provide a robust assessment of the macroeconomic impact of the planned policies and measures**. The macroeconomic analysis focuses only on projected green job creation and estimated energy costs. The NECP lacks the macroeconomic impact assessment for certain policies, e.g. carbon pricing.

2.8 JUST TRANSITION

Romania has partially addressed recommendation 19. The final plan improves the analysis of the social, employment and skills impacts of the energy and climate transition, as part of the overall macro-economic assessment. It identifies the sectors in which most green jobs will be created but not the groups, sectors and regions likely to be most affected by the green transition in terms of employment losses. The plan analyses the social cost associated with primary energy consumption up to 2050 under the WEM and WAM scenarios and emphasizes the potential benefits of implementing further energy policies. However, it fails to provide a granular analysis of the social impacts on vulnerable groups. It also fails to provide information on reskilling and upskilling objectives and a clear breakdown of financing needs. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the JTF.

The plan does not provide the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups, except for the definition of energy poverty, which is already established in Romania. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Romania's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Romania has not addressed recommendation 20. Romania organised three rounds of public consultations to prepare the final plan. The consultations on the final NECP were organised in the form of debates (respectively on 21 February, 28 February and 6 March 2024) attended by a range of stakeholders (e.g. NGOs, industry stakeholders and social partners). A wide range of policy measures were discussed.

The plan includes a limited summary of the consultations but does not describe in detail how the final plan integrates the inputs.

2.10 REGIONAL COOPERATION

Romania has not addressed recommendation 21. The final updated NECP does not provide clarity on how Romania plans to intensify its cooperation with EU Member States and Energy Community Contracting Parties within the Central and South Eastern Europe Energy Connectivity High Level Group (CESEC HLG), especially in the context of the most urgent priority actions such as the harmonisation of the gas quality parameters and establishment of the firm capacities along the Trans-Balkan pipeline. Moreover, Romania does not explain how the regional cooperation in CESEC could support an improvement in the electricity interconnection capacity and particularly the realisation of electricity infrastructure projects between Romania and other countries in the region that have been identified as the CESEC priority projects. Romania also does not provide additional information in its final plan on establishing the framework for cooperation on joint projects by 2025 in line with Article 9 of the revised RED II.

The plan does not refer to progress nor efforts to be undertaken as regards the signature of the two bilateral solidarity arrangements for the security of gas supply with its neighbours (Hungary and Bulgaria).

2.11 ANALYTICAL BASIS

The analysis is based on bottom-up modelling and least-cost optimisation. However, modelling details are not documented extensively.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

The final NECP sufficiently covers the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the climate and energy objectives targets and contributions. However, some of the investments and reforms are not adequately recognised as part of the RRP, for example the renovation of residential and public buildings.

Some measures included in the final updated NECP are less ambitious than those in the RRP, for example the installed renewable energy sources capacity by 2026, decarbonisation of the energy system with its replacement capacities and energy renovations of buildings.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY A*ND CLIMATE PLAN*

Romania needs to swiftly proceed with implementing its final updated NECP. Romania is invited to pay particular attention to the following main elements:

- Implement in a timely manner additional policies towards their **ESR** target as significant part of the emissions reductions in ESR are projected to come from policies not yet in place.
- Monitor the impacts on mitigation of **CH_4 emissions from the energy sector**, given the relevance of the sectors.
- On **adaptation,** carry out a thorough assessment and mapping of climate risks also based on different climate scenarios. Integrate the findings in relevant planning documents and construction standards, and into the design of future or renewed energy systems, including choices over its locations. Greater detail regarding the financing, scaling and timing of adaptation measures to effectively mitigate climate risks should be provided.
- Adopt additional measures and policies to reach the **LULUCF** target and to improve the targeting and the commitments of existing interventions such as those under the CAP.
- Consider how to enable gradual phaseout of **solid fossil fuels** in view of the 2032 target of the Romanian Decarbonisation Law**.** Clarify existing **fossil fuel subsidies** along with a detailed timeline for their gradual phase-out.
- Consider adopting a more comprehensive **just transition strategy** that addresses the impact on vulnerable households and allocates sufficient funding.
- Put in place robust measures to decarbonise **industry**, including through renewables-based electrification and a supportive framework for CCUS. Clarify the implementation of energy efficiency measures for industry, including a clear financing and investment plan.
- Put in place measures to achieve the higher ambition for the **deployment of renewables** by 2030 that aligns with the EU's collective target for renewable energy. Identify **innovative renewable energy** technologies to be deployed by 2030 and advance with identifying designated renewables acceleration areas, including identifying which renewable energy technologies are to be covered. Reflect on possible measures to promote the uptake of renewable power purchase agreements and guarantees of origin.
- Apply the **"energy efficiency first"** principle and adopt specific monitoring mechanisms or measures to support implementation. Develop appropriate measures tackling the energy consumption of the public sector pursuant to Articles 5 and 6 EED recast, including through the renovation of public buildings. Set the amount of energy consumption reduction to be achieved by all public bodies, disaggregated by sector, as well as the total floor area of heated and/or cooled buildings owned by public bodies to be renovated yearly or the corresponding yearly energy savings to be achieved.

- Ramp up the pace and depth of **renovation in the non-residential building stock** and expand the national financing renovation scheme to vulnerable households and people affected by energy poverty.
- Speed up **public procurement processes** to successfully implement the energy renovation measures in the Recovery and Resilience Plan.
- **Check current plans to invest heavily in gas infrastructure** against decarbonisation objectives. Romania's plan of switching to at least 50% renewable and/or low-carbon gaseous fuels starting from 2036 may face implementation challenges due to the slow uptake of hydrogen projects in Romania so far.
- Streamline a framework for **cooperation on cross-border infrastructure projects** to exploit the full potential of regional cooperation under the CESEC High-Level Group. Implementation of infrastructure and renewable energy projects as well as completion of main CESEC priority regulatory and market actions are essential for enhancing Romania's and regional security of supply.
- On **nuclear energy**, ensure its long-term supply of nuclear materials, spare parts and maintenance services.
- On **transport**, reflect on how the targets for electric charging points and for various types of alternatively fuelled cars will be achieved for 2030. Consider policies, beyond taxes, focusing on the transport sector (i.e. behavioural measures targeting on a modal shift towards public transport to reduce energy demand.

Slovenia

1 Overview of key objectives, targets and contributions in the final NECP

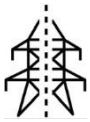
Final updated NECP submitted on 6.12.2024

Table 1: Summary of key objectives, targets and contributions of Slovenia's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -9.1% 2023: -15% [238]	-27%	NECP: -28.6%
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of -0.17 Mt CO_2 eq.	-0.21 Mt CO_2 eq. (additional removal target)	Sufficient ambition based on projections: An overachievement of -2.6 Mt CO_2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	20.4% (SHARES) 17% (target)	2023: 25.1%	33%	SI contribution of 33% is signifcantly below the 46% required according to the formula set out in Annex II of the Governance Regulation[239]
	National contribution for energy efficiency:				
	Primary energy consumption	7.1 Mtoe	2023: 5.9 Mtoe	5.98 Mtoe	Sl primary energy consumption contribution is 5.98 Mtoe. EED recast Annex I formula results: 5.79 Mtoe (Reference Scenario) or 5.68 Mtoe (Updated Reference Scenario).

[238] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[239] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

	Final energy consumption	5.1 Mtoe	2023: 4.48 Mtoe	4.32 Mtoe	SI final energy consumption contribution of 4.32 Mtoe is in line with the national contribution of 4.32 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[240]	78.90%	2024: 85.46%	15%	SI surpassess the EU-wide interconnectivity target.

Source: Eurostat; Slovenia's final updated national energy and climate plan.

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Slovenia's draft updated NECP and provided recommendations[241] for the preparation of the final updated NECP. Slovenia submitted its final updated NECP on 6 December 2024, over five months after the deadline of 30 June 2024.[242]

2.1 DECARBONISATION

Based on the projections available in the NECP, Slovenia expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 22% in 2030 and by 75% in 2040 compared to 1990. The NECP does not include emission projections from 2040 to 2050. Slovenia has a target of climate-neutrality by 2050 in law.

2.1.1 Effort Sharing Regulation

Slovenia has addressed recommendation 1. The final NECP provides sufficient information on how Slovenia will meet its ESR target of -27% by 2030 compared to 2005. The plan provides updated projections that are similar to the draft plan, showing that the existing and planned policies and measures will lead to a decrease of 28.6% in 2030 compared to 2005, overachieving the national ESR target by 1.6 percentage points. In 2023, GHG emissions from ESR sectors represented around 69% of the total in Slovenia and are expected to be around 66% in 2030.[243] The 'with additional measures' (WAM) projected value in 2030 is around 19 percentage points lower than the 9.5% reduction projection under the 'with existing measures' (WEM) scenario, hinting that implementing the plan will require a significant effort.

The final plan complemented the information on the policies and measures provided in the draft but more details on scope, timeline and expected impact on GHG emissions would be

[240] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2030 level represents the general interconnectivity target of 15%.
[241] SWD (2023) 924 final, and Commission Recommendation of 18 December 2023, C/2023/9614.
[242] Article 14(2) Governance Regulation.
[243] The 2023 emissions are based on 2024 approximated inventory reports and 2030 is based on reporting of greenhouse gas projections (Article 18 of the Governance Regulation).

useful. This is particularly the case for **transport**, which accounted for around 50% of all ESR emissions in 2022 and is projected in 2030 to also dominate ESR emissions, decreasing by only 1% in the 'with additional measures' (WAM) scenario and increasing by over 40% in the 'with existing measures' (WEM) scenario.[244] Slovenia's measures to address the continued growth of road (freight and passenger) transport focus on upgrading existing rail infrastructure, developing integrated public transport, and promoting sustainable mobility by developing cycling, walking, and recharging infrastructure.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections do not account for the effect of ETS2, and do not clearly consider the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

Slovenia has partially addressed recommendation 3. The LULUCF sector in Slovenia generates net removals, absorbing roughly 1% of the total GHG emissions in 2022. According to the LULUCF Regulation, Slovenia has to improve its net removals by -0.21 Mt CO_2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. According to the latest reported 2022 figures, Slovenia's performance has improved by - 0.91 Mt CO_2eq in comparison to the reference period. Taking into account its projections for 2030, Slovenia projects an overachievement of -2.6 Mt CO_2eq in 2030. The plan indicates additional policies for LULUCF compared to the baseline scenario.

However, the plan does not provide sufficient information on how public funding (including CAP, state aid) and private financing through carbon farming schemes are used to reach the LULUCF target. Similarly, it does not set out information as to how specific measures will contribute to the national LULUCF target. The plan 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.

2.1.3 Carbon Capture and Storage

Slovenia has not addressed recommendation 2. The plan does not provide a detailed breakdown of the potential annual CO_2 emissions that could be captured by 2030. The plan does not offer information on the development of CO_2 transport infrastructure or storage capacity. Slovenia has a ban on CO_2 storage, so the plan indicates there are no plans to capture CO_2 at scale by 2030. However, the plan reports that financial incentives for CCUS in hard-to-abate sectors are to be developed, aiming to encourage pilot project in the cement industry.

2.1.4 Adaptation

Slovenia has partially addressed recommendation 4. The plan refers to the country's national adaptation plan 'Strategic Framework on Climate Adaptation' to respond to the recommendation, acknowledging the importance of integrating adaptation planning. The plan is rather comprehensive and embeds adaptation policies and measures in the relevant Energy Union dimensions. The plan contains a partial analysis of **climate vulnerabilities and risks.**

[244] Based on Table 64 in the NECP.

. The plan also mentions briefly the need to prioritise nature-based solutions but does not provide information on the funding needed for their deployment.

The plan partially outlines the **link to the specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support, particularly for research, innovation and competitiveness. However, the impacts and benefits of adaptation policies on other Energy Union objective have generally not been quantified. The plan sets out some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union. Measures proposed in the field of agriculture are nevertheless limited to monitoring. The land use, land use change and forestry (LULUCF) sector Slovenia is adjusting the tree composition and structure of forests to the impacts of climate change.

2.1.5 Fossil Fuels

Slovenia has not addressed recommendation 19. The plan mentions the commitment to phase out of fossil fuel subsidies, also indicating some amounts paid as energy subsidies in the past. However, the plan does not set a clear roadmap for phasing out fossil fuel subsidies.

2.2 RENEWABLES

Slovenia has partially addressed recommendation 5. The plan includes an updated contribution of 33% of renewables in gross final energy consumption by 2030 which remains significantly below the level of 46% resulting from the formula in Annex II of the Governance Regulation and recommended by the Commission[245]. The updated indicative trajectory for achieving its contribution of 33% by 2030 has been provided including specific reference points for 2025 (28.4%) and 2027 (30.2%), which are below the trajectory calculated in line with the increased EU 2030 renewable energy target of 42.5% (34% and 39% respectively)[246].

Slovenia has partially addressed recommendation 6. The plan provides estimated trajectories for the deployment of renewable energy technologies over the next 10 years, with an outlook to 2040. Slovenia aims to install 5% of innovative renewable energy technologies in line with Directive (EU) 2018/2001 (the 'revised RED II')[247]. The plan also includes specific targets namely an average annual increase of 2.5pp for district heating and cooling by 2030 covering between 25%- 40% by waste heat, a renewable energy share of 30% in industry by 2030 including use of waste heat. The plan includes a binding minimum of 42% of renewables of non-biological origin in industry in 2030, a share of renewable energy of 55% in buildings, 45% in heating and cooling and 26% for transport by 2030. The share of renewable energy in heating and cooling falls short of the required 0.8pp increase per year on average in the period 2021- 2025 but is above the required 1.1 pp in 2026-2030.

[245] The draft updated Plan includes the share of renewable energy share as a range between 30 and 35% in gross final energy consumption in 2030.
[246] The justification provided is the high risk of conflict with other objectives of Slovenia or the EU, especially in the area of biodiversity.
[247] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

Slovenia has partially addressed recommendation 7. Slovenia plans to designate renewable acceleration areas through the preparation of a Thematic Action Programme for potential priority areas for the solar and wind energy, without providing further details on it. The plan includes measures to promote the renewable and energy communities, self-consumption, the uptake of guarantees of origin, and the power purchase agreements. The plan describes measures to promote renewable hydrogen use in the industry sector but does not explain how Slovenia prepares for renewable hydrogen trade. Slovenia aims to introduce several measures for the deployment of renewables in view of phasing out of fossil fuels in the heating and cooling sector Slovenia plans to develop a heating and cooling strategy for 2050 with an action plan (in 2025) with a particular focus on the efficient use of electricity in heating and cooling.

Slovenia partially addressed recommendation 8. The final NECP includes some projections for the use of woody biomass per sector. Slovenia has not included any detailed data on imports and the source of forest biomass used for energy. It explained, however, that it does not expect any significant imports of woody biomass for energy. The plan does not include a detailed assessment of the compatibility of the projected use of forest biomass for energy production with Slovenia's obligations under the revised LULUCF Regulation. The final plan notes that the use of woody biomass is aligned with LULUCF objectives and does not reduce sinks, but it reduces the need for other energy sources. It also notes that the total use of woody biomass for energy purposes is projected to decrease by 2030. On biomethane Slovenia provides limited measures to support sustainable biogas and biomethane production.

Slovenia has addressed recommendation 9 as the final NECP includes details on the procedural steps and timelines for the transposition and implementation of the provisions of the revised RED II.

2.3 ENERGY EFFICIENCY DIMENSION

Slovenia has partially addressed recommendation 10. Slovenia includes an indicative national contribution of 4.3 Mtoe for final energy consumption to the Union's binding final energy consumption target for 2030 [1]. This contribution is in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[248], or equal to the corrected indicative national contribution that the Commission submitted to Slovenia in March 2024 under Article 4(5) of EED recast. Slovenia included an indicative national contribution to the Union's indicative primary energy consumption target for 2030 of 6.0 Mtoe for primary energy consumption. This contribution is not in line with Article 4 of EED Recast. There is still a **gap of 3.3%** compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a **gap of 5.4%** compared to the target calculated with respect to the indicative results of the updated 2020 reference scenario**.**

Slovenia has not included the amount of energy consumption reduction per year to be achieved by all public bodies. Slovenia does not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly - nor the corresponding yearly energy savings to be achieved as required by Article 6 of EED Recast. The plan does not specify

[248] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

if Slovenia opted for alternative or default approach[2]. Slovenia sets out policies and measures to achieve the reduction of energy consumption from public bodies and the renovation of public buildings, such as the promotion of energy management system and a programme to progressively phase out the use of fossil fuels. Slovenia includes the amount of cumulative energy savings of 3.1 Mtoe[3] to be achieved over the period from 1 January 2021 to 31 December 2030 in line with Article 8 of EED Recast and included an explanation on how the annual savings rate and the calculation baseline were established.

Slovenia has partially addressed recommendation 11. The plan sets out policies and measures to achieve the national contributions on energy efficiency as well as the required amount of end-use energy savings, but it does not quantify the expected energy savings nor the contribution for each of the reported energy efficiency measures. However, Slovenia provided the quantification of the savings from the energy efficiency measures targeting energy poverty. The plan explains how the **energy efficiency first principle** will be implemented and mentioned one measure relevant for its implementation and monitoring. Slovenia specifies robust energy efficiency financing programmes and support schemes, including financial instruments and public guarantees, able to mobilise private investments and additional co-financing. The plan describes existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes (such as Energy Performance Contracts). Slovenia sets out adequate measures to promote energy audits and energy management system.

Slovenia has not address recommendation 12. The plan includes a list of policies and measures related to building renovations. However, it did not update the 2020 Long-Term Renovation Strategy's ambition in terms of energy savings. Slovenia did not detail the impact in terms of energy savings of each new measure put forward. Slovenia indicated the new and updated milestones will be provided in the future National Building Renovation Plan.

2.4 ENERGY SECURITY DIMENSION

Slovenia has partially addressed recommendation 13. In terms of diversifying energy sources, it notably refers to an intention to reinforce cross-border capacities to promote security of gas supply, yet there are only few details on measures, timeline or performance indicators. While the plan clarifies that the bulk of Russian gas supplies were already phased out and that there is no longer an active contract between Slovenian suppliers and the Russian federation, the plan also notes that the share of Russian gas in Slovenian gas imports can range from 0 to 30%. Lastly, while the plan does not provide projections on the evolution of primary consumption of fossil gas as such, it does so for gaseous fuels: it is expected to decrease from 24 TWh in 2021 to 19 TWh by 2030.

Diversification of generation and supply continues to be a key priority. In particular, the final plan notably highlights the overachievement of the 15% electricity interconnection target (over 80% today) as an important contribution to the security of electricity supply. Slovenia even intends to bring this rate to 85% by 2030. While the plan defines general objectives for developing energy storage, these are not quantified.

The plan does not assess the adequacy of the oil infrastructure (pipelines, oil stocks) in the long run with the expected oil demand decline and the move to lower-carbon alternatives.

The final plan adds a new climate vulnerability analysis and includes an explicit reference to the need to assess such vulnerabilities in the section on energy security. Nevertheless, the plan contains few new concrete measures and objectives beyond the objective to increase the share of underground distribution grid to 50% (from 35% currently) to increase resilience against extreme weather events.

As regards nuclear energy, the plan confirms that Slovenia aims to maintain the operation of the Krško nuclear power plant and to decide on the construction of a new nuclear power plant no later than in 2028. One of the scenarios envisages the installation of a new conventional nuclear power plant by 2040 and the construction of a small modular nuclear reactor by 2050. The plan does not address the issues of diversification and security of supply of nuclear materials, fuel, spare parts, and services.

Regarding nuclear waste, the plan indicates that Slovenia has adopted a *Resolution on the National Programme for Radioactive Waste and Spent Fuel Management 2023-2032*. It aims to ensure that the financial resources needed to achieve the objectives of the decommissioning and disposal programme for low- and intermediate-level waste and spent fuel are adequately collected.

2.5 INTERNAL ENERGY MARKET DIMENSION

Slovenia has partially addressed recommendation 14. The plan provides clear targets and objectives to improve the flexibility of the energy system by defining specific measures and deadlines for demand response, storage, and system flexibility. However, the plan does not elaborate on the quantification of flexibility needs. The plan includes incentives for development of local storage with renewable energy and advanced flexibility devices with further measures like advanced metering systems and RES-storage incentives planned by 2030. The plan aims to develop policies and measures that enhance flexibility and enable a non-discriminatory participation of new flexibility services to the market. Some of these measures include supporting a functional flexibility market and targeting full system flexibility to meet 100% of the frequency restoration reserve (RPF) through market-based services by 2030. Even though the plan includes several measures aimed at facilitating energy system integration, it does not elaborate on specific measures in the context of implementing Article 20a of the revised RED II.

The plan includes measures for stakeholder engagement and active customers in order to strengthen consumer empowerment in the retail market. It also foresees incentives to invest in advanced customer devices and coordination mechanisms to improve market flexibility, as well as measures to promote local energy communities and renewable energy communities and energy sharing schemes. It however includes little information on measures to simplify supply offers to customers and details on their comparability.

Slovenia has partially addressed recommendation 15. The plan includes clear targets on energy poverty alleviation and investments in energy efficiency and renewable sources in households in energy poverty. It also includes a new target on cumulative energy savings to be achieved in households in energy poverty. The Energy Poverty Action Plan was better described, although it still lacks details on the pilot phase (2024-2026) and the implementation of the long-term financing of the operation of the scheme. The 'Strategic Energy Poverty Council' that was mentioned in the draft NECP became the 'Energy Poverty Panel' in the final

NECP. The additional details provided foresee a coordinated role of the panel in the first phase, and a steering role at a later stage, with no further specifications. Measure 31.3 provides more insights on the implementation of actions to alleviate energy poverty. However, the focus on local level could have been enhanced.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Slovenia has partially addressed recommendation 16. The plan provides a comprehensive approach, including targets to support research, innovation, and competitiveness in clean energy technologies, establishing a pathway to 2030, but not to 2050. Significant policies and measures include an increase in R&D investment – at least 3.5% of GDP by 2030, planned increased cybersecurity in all strategic systems, support to the upgrade and deployment of research infrastructure (including energy storage technologies, energy sites and research nuclear infrastructures). Nevertheless, the plan fails to provide details on the presented policies and measures for the digitalisation of the energy system.

The plan does not set out measures to promote the development of net-zero projects, including those relevant for the energy intensive industries, but lists actions related to funding and monitoring for demonstration projects for the green transition. It does not describe how Slovenia will ensure a predictable and simplified regulatory framework for permitting procedures for manufacturing but includes information on how access to national funding will be simplified where needed (developing long-term research programme to support the green transition). The plan includes information on policies and measures for the development of clean energy-related skills (training for energy efficiency, RES, and green technologies) but does not include information on how to facilitate resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Slovenia addressed recommendation 17. The plan provides estimates of the investment needs per sector, with a breakdown for private and public investments. Though investment needs are not presented at the level of initiatives, the plan provides estimates of the investment gaps. The plan states that substantial private investments will be needed but does not specify the measures and initiatives specifically aimed at mobilising private capital. Funding sources (both national and EU) are presented in an aggregate form, but not at the level of the initiatives.

Slovenia has addressed the recommendation to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The methodology employed is detailed in reference documents. The macro-economic assessment in these documents is well-founded.

2.8 JUST TRANSITION

Slovenia has partially addressed recommendation 20. The plan provides some information on the impact of the transition to climate neutrality on employment and skills but lacks a granular assessment. The plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Slovenia's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Slovenia has partially addressed recommendation 21. The plan includes detailed summaries of the outcome of the consultation, but without substance relating to the public's views. It does not include any details on the resulting changes to the final NECP or summaries of or explanations as to why certain suggested changes could not be addressed.

2.10 REGIONAL COOPERATION

Slovenia has partially addressed recommendation 22. The plan does not emphasise how Slovenia plans to coordinate and realise regional priority actions that concern Slovenia and are relevant for Central-Eastern and South-Eastern European regions. The plan includes a measure to incentivise cross-border and regional cooperation on renewable energy projects, by establishing a framework for cooperation with other Member States by 2025, in line with Article 9 of the revised RED II.

The plan provides some information on the signature of bilateral solidarity agreements with its neighbours in the annex. Slovenia indicates that there are no plans for an agreement with Austria and to rather rely on the newly established default solidarity rules, and that talks are ongoing with Hungary.

2.11 ANALYTICAL BASIS

The plan provides an analytical framework with projections reaching 2050, based on the REES-SLO model, an adaptation of the REES framework for Slovenia. Slovenia also provided a macro-economic impact assessment of different scenarios (in a separate document). Nevertheless, further integration with the sensitivity analysis and stress testing of the key variables could enhance the analysis of potential implications and uncertainties associated with the different policy pathways.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Slovenia has partially addressed recommendation 18. The plan does not outline some of the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets and contributions of the Energy Union. While the plan outlines the foreseen resources in the RRP, including its REPowerEU chapter, for the green transition, these are not linked to specific investments. Furthermore, the plan does not outline key reforms under the RRP and its REPowerEU chapter linked to the deployment of renewable energy installations and of alternative fuels infrastructure.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Slovenia to ensure a timely and complete implementation of the final updated NECP. Slovenia is invited to pay particular attention to the following main elements:

- Implement in a timely manner additional policies towards the **ESR target**, notably in the transport sector as a very significant part of the emissions reduction is driven by measures that are not yet fully in place.
- Closely monitor the implementation of relevant policies and measures on the evolution of the **LULUCF sector** to ensure it reaches its 2030 target.
- On **adaptation,** assess quantitatively climate vulnerabilities and risks regarding the achievement of the national objectives, targets, and contributions and the policies and measures in the different Energy Union dimensions. That would enable better outlining and quantifying the link to the specific Energy Union objectives and policies, that adaptation policies and measures are meant to support, as well as setting out additional adaptation policies and measures in sufficient detail.
- Clarify existing **fossil fuel subsidies** along with a detailed timeline for their gradual phase-out.
- As regards **renewable energy,** put in place measures to achieve the higher ambition for the **deployment of renewables**, including wind, by 2030 that aligns with the EU's collective target for renewable energy. Ensure a swift and timely transposition of the revised RED II to support the objectives of the updated NECP. Increase the average annual **renewable energy share in heating and cooling** in line with the binding sub-target and the indicative top-up of Article 23 of the revised RED II. In addition, swiftly implement the planned reforms to speed-up **permit-granting and administrative procedures** for the deployment of renewables in line with the revised RED II, including by enhancing internal coordination allowing simultaneous permitting applications and increasing financial and especially human resources available to public authorities. In this regard, it is key to complete the development of the Thematic Action Programme for identifying potential priority areas for solar and wind power in line with Article 15c of the revised RED II by February 2026.
- Consider adopting an overall **electrification strategy** at national level to coordinate and have a better overview on planned electrification efforts, including for instance by improving grid connection waiting times in the solar sector and accessibility for individuals who want to invest in self-supply using renewable energy sources. Ensuring overall energy system integration in line with the provisions contained in Article 20a of the revised RED II.
- Consider adopting a strategy to increase **wind power capacity** including considering the role of local communities and alternative dispute resolution systems to enhance public acceptability, ensuring environmental and climate risk assessments are in place, exploring synergies with biodiversity objectives, and setting up auctions to support the uptake of renewable energy, together with a clear project pipeline.
- On **nuclear energy**, ensure its long-term supply of nuclear materials, spare parts and maintenance services.

- Regarding **energy efficiency**, put in place measures to achieve the higher ambition for energy efficiency by 2030 for primary energy consumption and further expand energy efficiency measures targeting the public sector.
- On **industry**, set up additional measures to the existing financial incentives for energy audits and the promotion of renewable energy as industry is projected to be the second most-consuming sector in 2030. Consider further measures to support new low carbon technologies including hydrogen and the promotion of circular economy.
- Develop a comprehensive **just transition** strategy which takes into account the impact on vulnerable groups.

Finland

1 Overview of key objectives, targets and contributions in the final NECP

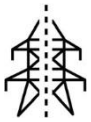
Table 1: Summary of key objectives, targets and contributions of Finland's final updated NECP

		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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -22.9% 2023: -27%[249]	-50%	NECP: -45.2% However, FI is expected to meet the 2030 target with ESR flexibilities
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net emissionsof 4.44 Mt CO_2 eq. in 2022	-2.89 Mt CO_2 eq. (additional removal target)	Insufficient ambition based on projections: a gap of 1.22 Mt CO_2 eq compared to the 2030 target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	43.9% (SHARES) 38% (target)	2022: 47.7% 2023: 50.7%	62% gross final consumption of energy	Finland's contribution of 62% is in line with the contribution according to the formula set out in Annex II of the Governance Regulation[250]
	National contribution for energy efficiency:				
	Primary energy consumption	35.9 Mtoe	2023: 31.3 Mtoe	n.a. Mtoe[251]	Finland did not provide a primary energy consumption contribution.

[249] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[250] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

[251] Strictly, the final NECP states that Finland's national energy and climate strategy will be completed in spring 2025. Finland provided values for a WEM scenario instead, which would contribute 30.7 Mtoe primary energy consumption.

					EED recast Annex I formula results: 29,8 Mtoe (Reference Scenario) or 29.7 Mtoe (Updated Reference Scenario).
	Final energy consumption	26.7 Mtoe	2023: 22.2 Mtoe	n.a.[252]	Finland did not provide a final energy consumption contribution. A national contribution of 20.6 Mtoe was submitted by the Commission.
	Level of electricity interconnectivity (%)[253]	29.0%	2024: 15.5%	15%	FI has surpased EU-wide interconnectivit y target

Source: Eurostat; Finland final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Finland's draft updated NECP and provided recommendations[254] for the preparation of the final updated NECP. Finland submitted its final updated NECP on 28 June 2024, in line with the deadline of 30 June 2024.[255]

2.1 DECARBONISATION

Based on the projections available in the plan, Finland expects to decrease total GHG emissions (including LULUCF and excluding international aviation) by 51% in 2030, by 71% by 2040 and by 90% by 2050 compared to 1990. These projections are based on a 'with existing measures' (WEM) scenario and do not reflect additional measures.

[252] Strictly, the final NECP mentions a contribution of 20.6 Mtoe but states that Finland's national energy and climate strategy will be completed in spring 2025. Finland provided values for a WEM scenario instead, which would contribute 22.8 Mtoe final energy consumption.

[253] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.

[254] SWD(2023) 914 final, and Commission Recommendation of 18 December 2023, C/2023/9604.

[255] Article 14(2) of Governance Regulation.

2.1.1 Effort Sharing Regulation

Finland has partially addressed recommendation 1. The final NECP provides some details on how Finland will meet its ESR target of -50% by 2030 compared to 2005.

The plan provides only projections in the 'with existing measures' (WEM) scenario, showing a decrease of 45.2% in 2030 compared to 2005, a gap of 4.8 percentage points compared to the national ESR target. In 2023, GHG emissions from ESR sectors represented 62% of the total in Finland (expected to be 72% in 2030)[256], with transport accounting for the largest, followed by agriculture. Finland is expected to achieve its ESR target with the use of flexibilities. However, Finland has accounting debit gaps under the LULUCF Regulation, which are projected to impact its performance under the ESR. The plan partially complemented the information on policies and measures provided in the draft but the description of their scope, timeline and GHG reduction impact is only partial.

On transport, the plan aims at halving emissions by 2030 compared to 2005 by replacing fossil fuels with alternative fuels, by renewing the vehicle fleet and enhancing energy efficiency. However, the support schemes to purchase natural gas (heavy-duty) vehicles – and for the use of natural gas in transport, risk undermining the target unless covered entirely with biogas.

Emissions from **waste management** have decreased steadily but national measures to reduce emissions from waste incineration have not been implemented. Several measures in the plan are likely to contribute to a reduction in GHG emissions from **agriculture**, the largest source of methane emissions in Finland, but the magnitude remains difficult to estimate. The plan also contains measures to further reduce F-gas emissions efficiently.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The scenario projections do not account for the effect of ETS2, and do not clearly quantify its impact in achieving the ESR target.

2.1.2 LULUCF

Finland has partially addressed recommendation 3. The LULUCF represent 10% of the total GHG emissions in Finland in 2022. The latest reported 2022 figures show that Finland worsened its performance by 9.1 Mt CO_2eq compared to its yearly average in the 2016-2018 reference period. According to the LULUCF Regulation, Finland has to enhance its net removals by -2.89 Mt CO_2eq in 2030 as compared to the reference period. Taking into account its projections for 2030, Finland will still have a gap of 1.22 Mt CO_2eq in 2030. This gap could affect the achievement of the ESR target.

The main driver behind the worsening performance of LULUCF sector, currently a net source of emissions, is the increase of commercial loggings combined with a slower growth in forests. Furthermore, the lack of action for reducing emissions from organic soils, which is the main source of LULUCF emissions, has a big influence in the overall results.

The plan indicates that for LULUCF there are no additional policies compared to the baseline scenario. Nonetheless, the plan mentions several policies, including a Climate Plan for the Land Use Sector, prepared in 2022 and updated in 2024. According to this plan, Finland will reach

[256] The 2023 emissions are based on 2024 approximated inventory reports.

additional net removals of 2 Mt CO_2eq in 2030 and hence comply with the 2030 target. Although these are steps in the right direction, the final measures are still under preparation at the time of submitting the NECP and therefore cannot yet be assessed.

The plan does not provide sufficient information on how public funding (CAP, state aid) and private financing through carbon farming schemes are used to reach the LULUCF target. The draft also lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to guarantee the robustness of net removal estimates.

2.1.3 Carbon Capture and Storage

Finland has not addressed recommendation 2. The plan does not identify the amount of CO_2 emissions that can be captured by 2030. It mentions that no geological storage sites have been identified in Finland and that there are no large fossil CO_2 point sources suitable for capture. Biogenic sources could be an option, though due to need to develop transport infrastructure to a harbour for transport by ship, CCU is considered as a better option.

2.1.4 Adaptation

Finland has partially addressed recommendation 5. The plan refers to the National Climate Change Adaptation Plan until 2030 (NAP2030), acknowledging the importance of integrating adaptation planning. It embeds adaptation policies and measures in the Energy Union dimensions.

The plan partially outlines the **links to the specific Energy Union objectives and policies** that adaptation policies and measures are meant to support, particularly for the energy security dimension. It outlines several nature-based solutions, including peatland restoration, wetland creation, and sustainable forest management, aimed at enhancing carbon sinks and improving climate resilience. These measures are expected to reduce emissions, improve water retention, prevent floods, and enhance biodiversity, contributing significantly to climate adaptation efforts. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

Finland has provided further clarification on their overall approach to adaptation policy, with streamlining in sectoral and local planning, and in other national plans.

2.1.5 Fossil Fuels

Finland has partially addressed recommendation 20. The plan mentions the Territorial Just Transition Plans (TJTPs) commitment to reduce peat use by 50% by 2030 but does not explain how to achieve this target nor the necessary measures and resources to support the peat phase-out. The plan does not sufficiently explain the alignment between the TJTPs and NECP.

The plan indicates that there are no clear fossil fuel subsidies nor established definitions for them[257]. Nonetheless, it lists some fossil fuel subsidies, such as tax reductions or exemptions for natural gas and diesel used in transport, for which no phase-out is foreseen.

[257] The Commission 2024 study and Report on Energy subsidies in the EU identify the existence of fossil fuel subsidies.

2.2 RENEWABLES

Finland has addressed recommendation 6. The plan includes an increased contribution of the renewable energy share to 62% in gross final energy consumption by 2030, which is in line with the level resulting from the formula in Annex II of the Governance Regulation. The updated trajectory for achieving the contribution is also provided, with the specific reference points of 49% for 2025 and 54% for 2027 respectively also included, which correspond to the trajectory calculated in line with the increased EU 2030 renewable energy target of 42.5%.

Finland has partially addressed recommendation 7. The plan provides information on projections for offshore wind beyond 2030, with an outlook up to 2050. Finland indicates that it endeavours to reach an indicative target 5% of innovative renewable energy for newly installed renewable energy capacity by 2030. Finland also aims to increase the share of renewable energy in the industry sector by 1.6 pp annually until 2030 including referring to the specific target of renewable fuels of non-biological origin (RFNBOs) for industry (stating that the achievement of RFNBO targets in 2030 and 2035 is highly dependent on new investments that are under development). However, the plan does not include a specific target in buildings to contribute to the sectoral target, even though the 85% of renewable share and waste heat in 2030 indicates a target would most likely be reached. Finland sets out a combined target for advanced biofuels and RFNBOs in transport stating that the minimum binding level for RFNBOs in transport will be reached (29% in 2030).

Finland has partially addressed recommendations 8 and 10. Regarding the RFNBO in industry, the plan mentions ongoing projects (planning phase or under construction) and points out that Finland is currently assessing the need for additional measures to use RFNBOs to reach the target, such as new legislation which will be implemented in May 2025 together with other measures required by Directive (EU) 2018/2001 (the 'revised RED II')[258].

On permitting, speeding up permitting processes and predictability in governmental procedures are mentioned as principal elements to strengthening competitiveness in Finland. However, the plan does not describe how Finland plans to designate the renewables acceleration areas. The uptake of power purchase agreements is well outlined, in particular concerning new wind power projects. The final plan also provides additional information on measures to promote self-consumption and renewable energy communities. The plan lacks details on the procedural steps and timelines for most policies and measures in particular on industry-related measures notably RFNBOs and on guarantees of origin. Finland includes measures to promote the sustainable production of biomethane.

Finland has addressed recommendation 9. The plan provides projections on biomass by type used for 2020-2030. It also provides some information on the compatibility of the projected use of forest biomass for energy production with Finland's obligations under the revised LULUCF Regulation. Finally, Finland includes measures to promote the sustainable production of biogas, but does not quantify the target, feedstock to be used and the market for resulting byproducts.

[258] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

2.3 ENERGY EFFICIENCY DIMENSION

Finland has not addressed recommendation 11. Finland did not include[259] an indicative national contribution to the Union's binding final energy consumption target for 2030 for final energy consumption[260] nor an indicative national contribution to the Union's indicative primary energy consumption target for primary energy consumption[261].

Malta included an indicative national contribution of 0.8 Mtoe to the Union's binding final energy consumption target for 2030. This contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[262], nor equal to the corrected indicative national contribution that the Commission submitted to Malta in March 2024 under Article 4(5) of that Directive. There is still a gap of 16.9% compared to the indicative results of the 2020 reference scenario and a gap of 22.4% compared to the indicative results of the updated 2020 reference scenario.

Malta included an indicative national contribution to the Union's indicative primary energy consumption target for 2030 of 1.0 Mtoe for primary energy consumption. This contribution is not in line with Article 4 of EED Recast. There is still a gap of 16.2% compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of 26.8% compared to the target calculated with respect to the indicative results updated 2020 reference scenario.

Finland included the amount of energy consumption reduction of 11.9 ktoe per year to be achieved by all public bodies, which is also disaggregated by sector, but Finland did not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly, nor the corresponding yearly energy savings to be achieved[263]. Finland did not set out policies and measures neither to achieve the reduction of energy consumption from public bodies nor the renovation of public buildings. Finland included the amount of cumulative energy savings of 16.12 Mtoe to be achieved over the period from 1 January 2021 to 31 December 2030 and an explanation on how the annual savings rate and the calculation baseline were established.

Finland has addressed recommendation 12. Finland set out complete policies and measures to achieve the national contributions on energy efficiency and to achieve the required amount

[259] Strictly, the Final NECP states that Finland's national energy and climate strategy will be completed in spring 2025.
[260] Finland provided values for a WEM scenario instead, which would contribute 22.8 Mtoe final energy consumption. With existing measures there is still a gap of 10.68% compared to the target calculated with respect to the indicative results of the 2020 reference scenario, a gap of 11.71% compared to the indicative results of the 2020 updated reference scenario and a gap of 10.68% compared to the corrected indicative contribution.
[261] Finland provided values for a WEM scenario instead, which would contribute 30.7 Mtoe primary energy consumption. With existing measures there is still a gap of 3.1% compared to the indicative results of the Article 4 and Annex I (REF2020 scenario), and a gap of 3.3% compared to the indicative results of the Article 4 and Annex I (updated REF2020 scenario).
[262] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

[263] However, it reported the total obligation by 2030, equal to 28375 ktoe (330.8 GWh)

of cumulative end-use energy savings. In the plan, Finland specified how the energy efficiency first principle will be implemented. Finland specified some[264] energy efficiency financing programmes and support schemes.

Finland has partially addressed recommendation 13. Finland did not include an updated ambition level[265] to ensure a highly energy efficient and decarbonised national building stock by 2050. The final plan contains **intermediate milestones for 2030 and 2040** for the renovation of residential and non-residential buildings. Finland included energy savings milestones for the buildings stock but **did not detail the impact in terms of energy savings** of each new measure related to buildings, nor provide sufficient information in terms of funding, costs, energy and emissions savings. The plan contains information on policies and measures addressing deep renovation with a specific focus on vulnerable consumers, as well as decarbonisation of heating or installation of renewables in buildings.

2.4 ENERGY SECURITY DIMENSION

Finland has partially addressed recommendation 14. On gas, the plan provides estimations for the evolution of natural gas consumption, which is expected to decrease from 76 PJ in 2020 to 27 PJ in 2030 and 16 PJ in 2040.

For electricity, the plan provides details on the various options to secure long-term supply of alternative nuclear materials, including nuclear fuel, to the Loviisa nuclear power plant (Russian VVER design) and clarifies the operator's commitment to ensure diversified fuel supply. The plan does not contain information on the measures for long-term management of nuclear waste. However, the information is covered in the 4th national report on waste management submitted in August 2024. The plan does not set an objective target for energy storage, but the Government's strategy is to increase the deployment of energy storage and some partial investment subsidies are available.

In the oil sector, the plan contains forecasts on oil consumption until 2050 and describes possible measures to ensure the adequacy of the oil infrastructure in the long run (refineries, oil stocks).

2.5 INTERNAL ENERGY MARKET DIMENSION

Finland has partly addressed recommendation 15. Finland does not elaborate on the quantification of flexibility needs but it includes policies and measures that enhance flexibility. The plan provides estimates for the demand side response capacity in different energy markets and notes that it is expected to increase.

Regarding storage, Finland informs that there are several planned storage projects under development (for instance, batteries and pumped hydro), the estimated combined capacity of which is approximately 5 GW. Finland explains that while there are currently no specific

[264] The report is focused on information and communication about financing.
[265] The Finnish NECP explicitly points out that "no need for a quick update was detected" with respect to the targets from the 2020 Long-Term Renovation Strategy.

targets for energy storage capacity, the Government's strategy is to increase its deployment, including through the National Battery Strategy 2025.

Finland has partly addressed recommendation 16. The assessment of the households affected by energy poverty is limited, with the only indicator being the number of non-payment records regarding electricity bills. Finland did not provide a specific measurable reduction target but provided additional details on existing measures to address poverty and energy efficiency. While there is information on some financial resources of the structural energy measures, there is no overview of all relevant financial resources nor of potential further measures to address energy poverty.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Finland has partially addressed recommendation 17. The final plan includes high level targets and objectives in research, innovation and competitiveness to deploy clean technologies, establishing a pathway for 2030 to support the decarbonisation of industry and promote the transition of businesses towards a net zero and circular economy.

Policies and measures include an initiative called Growth Engines, a cooperation network supporting new business activities. The objectives on R&I expenditure are set at 4% by 2030 (both public and private, for all sectors). However budgetary information is limited to budgets from 2018-2019.

The plan does not put forward concrete policies and measures to promote the development of net-zero projects, including those relevant for the energy intensive industries. However, the Finnish Government is preparing an eight-year plan on R&D funding and other aspects related to RDI policy.

The plan does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing, nor how access to national funding will be simplified where relevant. The plan partly provides information on some policies and measures for the digitalisation of the energy system, focussing on the rollout of smart meters. The plan does not provide measures on the development of clean-energy-related skills, and to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment.

Finland does not provide clear competitiveness targets and measures for regional cooperation in R&I, nor information on measures and investments to bridge potential skills gaps for the energy transition. The role of circular economy for decarbonisation is generally well integrated.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Finland has not addressed recommendation 18. The plan provides estimates of the total investments in the clean energy transition planned by individual businesses (EUR 257 billion), covering various sectors. It also includes dedicated information on the decarbonisation of the transport sector. However, it does not provide an estimate of total investment needs, nor a breakdown by funding source (public/private). A description of the types of instruments used or envisaged is only included for specific measures. The assessment is only based on a bottom-up analysis. The information provided in the plan is not sufficient to estimate whether there is a potential financing gap with respect to the investment needs, or how this would be filled.

Finland has partially addressed the need to provide a robust assessment of the macroeconomic impact of the planned policies and measures. The macro-economic assessment included in the plan focuses only on expected labour market developments and challenges while discussing these in qualitative terms.

2.8 JUST TRANSITION

Finland has partially addressed recommendation 22. The plan provides some general information on the impact of the transition to climate neutrality on skills, based on a study funded by the Finnish Government. However, it does not include an analysis of the social, employment and skills impacts of the transition on the planned objectives, policies, and measures to support a just transition. Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for the Just Transition Fund (JTF) and a small amount from ETS revenues. The analysis focuses on the JTF and the Territorial Just Transition Plans (TJTPs). In terms of alignment with TJTPs, the plan mentions the commitment to reduce peat use by 50% by 2030 as a TJTPs commitment.

The plan lacks the analytical basis needed for the preparation of the Social Climate Plan, such as information on the estimated impact of ETS2 and the identification of vulnerable groups, albeit including some initial reflections on the latter. Finland also provides limited information on how it intends to organise the preparation of its Social Climate Plan. However, the plan only partly explains how the policy framework identified in the NECP will contribute to the preparation of Finland's Social Climate Plan and how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Finland has partially addressed recommendation 23. Finland organised two rounds of public consultation in the preparation of the NECP. The first consultation was organised from 14 April to 18 May 2022 as part of the preparations of the National Climate and Energy Strategy, the Medium-term Climate Change Policy Plan and the Climate plan for the Land Use Sector of Finland, containing the targets and policy measures set in the draft updated NECP delivered in 2023. The consultation for the final plan was organised from 22 May to 10 June 2024, close to the submission date (30 June). Finland received 107 comments for the strategy and 57 comments for the final plan. The plan provides a summary on the content of the comments of both consultations and how the comments were considered in the NECP.

2.10 REGIONAL COOPERATION

Finland did not receive Commission recommendations on regional cooperation.

2.11 ANALYTICAL BASIS

Finland has not addressed recommendation 21. The final plan includes updated projections compared with the draft plan but does not provide WAM projections on how the energy system will develop. The plan mentions that a WAM scenario is being developed and will be published in 2025.

The plan references a description of the analytical framework, with projections reaching 2040. It embeds economic, social, employment and skills impacts. The methodologies used are described in detail in referenced documents.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Finland has partially addressed recommendation 19. The final updated NECP covers sufficiently the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to the implementing the objectives, targets and contributions of the Energy Union.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

The Commission encourages Finland to ensure a timely and complete implementation of the measures needed to achieve its national climate and energy targets. Finland is invited to pay particular attention to the following main elements:

- On **ESR**, finalise the design of additional measures to reduce emissions in the effort sharing sectors, in line with the government's preparation of a new energy and climate strategy and the third medium-term climate change policy plan. Analyse the projected impact of the additional measures on GHG emissions.
- On **LULUCF**, implement additional policies to reduce emissions from organic soils and increase forest sink. Policies should focus on sustainable forest management practices, promoting afforestation and reforestation. Implement measures to reduce emissions from drained organic soils. Establish a robust monitoring system to track the effectiveness of these policies. Develop geographically explicit datasets and higher tier levels to ensure the accuracy of net removal estimates.
- On **adaptation**, use relevant ongoing local, national and sectoral processes to detail their contribution to the different Energy Union dimensions.
- Clarify the list of existing **fossil fuel subsidies** and set a roadmap and specific measures for their gradual phase-out.
- On **industry**, support investments in innovative technologies, including CCUS. Ensure that raw materials are sourced sustainably, strengthening recycling and energy efficiency, especially for the pulp and paper industry.
- On **energy efficiency**, put in place measures to achieve the higher ambition by 2030 for primary energy consumption. Diversify energy efficiency measures for **transport** beyond fiscal measures. Set up a strategy to support and monitor the proper implementation of the efficiency first principle.
- On **buildings,** ensure that the ambition level in the building sector is in line with 2050 decarbonisation efforts and clarify policies and financing of energy efficiency measures with clearly identified budgets and expected outcomes in terms of energy and emissions savings.
- Continue efforts to **diversify nuclear fuel supplies** for its VVER reactors and ensure the long-term supply of spare parts and maintenance services.

- Improve data quality for vulnerable households and **energy poverty**, both quantitative and qualitative, to identify fit for purpose measures to reduce energy poverty.
- Develop a comprehensive **just transition strategy** that analyses the social and employment impacts of the transition and allocates appropriate resources.

Sweden

1 Overview of key objectives, targets and contributions in the final NECP

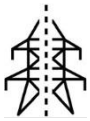
Final updated NECP submitted on 28.06.2024

Table 1: Summary of key objectives, targets and contributions of Sweden's final 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 to 2005 under the Effort Sharing Regulation (ESR) (%)		2022: -36.9% 2023: -37.8%[266]	-50%	NECP: -43.8% However, SE is expected to meet the 2030 target with ESR flexibilities
	Binding target for additional net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		2022: Reported net removals of – 41Mt CO_2 eq	-3.96 Mt CO_2 eq. (additional removal target)	Insufficient ambition: projected gap of 13.32 Mt CO_2 eq in 2030
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	60.1% (SHARES) 49% (target)	2023: 66.4%	67%	SE contribution of 67% is signifcantly below the 76% required according to the formula set out in Annex II of the Governance Regulation[267].
	National contribution for energy efficiency:				
	Primary energy consumption	43.4 Mtoe	2023: 41.41 Mtoe	41.19 Mtoe	SE primary energy consumption contribution is 41.19 Mtoe. EED recast Annex I formula results: 35.42 Mtoe (Reference Scenario) or 35.84 Mtoe (Updated

[266] The ESR emissions in 2022 are based on 2024 final GHG inventory reports, and 2023 emissions are based on 2024 approximated inventory reports. The percentage reduction is compared with the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. However, the final ESR emissions for 2021-2025 will only be established in 2027 after a comprehensive review.

[267] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77 ('Governance Regulation').

					Reference Scenario).
	Final energy consumption	30.3 Mtoe	2023: 30.26 Mtoe	30.09 Mtoe	SE final energy consumption contribution of 30.09 Mtoe is not in line with the national contribution of 25.41 Mtoe submitted by the Commission.
	Level of electricity interconnectivity (%)[268]	24.2%	2024: 12.8%	15%	SE is below the EU-wide interconnectivity target.

Source: Eurostat; Sweden's final updated national energy and climate plan

2 CONSIDERATION OF COMMISSION RECOMMENDATIONS ON DRAFT NECP UPDATE

In December 2023, the Commission published a thorough assessment of Sweden's draft updated NECP and provided recommendations[269] for the preparation of the final updated NECP. Sweden submitted its final updated NECP on 28 June 2024, in line with the deadline of 30 June 2024.[270]

2.1 DECARBONISATION

Based on the projections available in the plan, which are only provided for the "with existing measures" (WEM) scenario, Sweden expects to decrease total GHG emissions (excluding LULUCF and international aviation) by between 47% by 2030 compared to 1990. Sweden has a national target of climate neutrality by 2045 with goal to reduce GHG emissions (excluding LULUCF) by 85% compared 1990. Sweden projects to reach reductions of 70% compared to 1990 by 2045, falling short of this goal.

2.1.1 Effort Sharing Regulation

Sweden has addressed recommendation number 1. The final NECP provides sufficient details on how Sweden will meet its ESR target of a 50% reduction in emissions by 2030 compared to 2005. The plan provides projections only with existing measures (WEM) for a baseline scenario and sensitivity case[271]. Sweden projects to achieve a 43.8% reduction in ESR

[268] Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2024). The 2020 figure also covers interconnectors with the neighbouring countries outside the EU. The 2030 level represents the general interconnectivity target of 15%.
[269] SWD(2023) 923 final, and Commission Recommendation of 18 December 2023, C/2023/9613.
[270] Article 14(2) of Governance Regulation.
[271] The final NECP outlines that the sensitivity case scenario adjusts the projections of the amount of energy consumed by the transport sector, as recent statistics have shown a different trend compared to what was initially adopted in the baseline scenario. The sensitivity case is considered the more likely scenario.

emissions by 2030 compared to 2005 levels, a gap of 6.2 percentage points to the national ESR target. However, with the use flexibilities available under the ESR (banking as well as the use of ETS allowances), Sweden is expected to exceed its 2030 target.

The final plan complemented the information on the policies and measures provided in the draft but a clearer description of scope, timeline and expected impact on GHG emissions would be useful, particularly in the case of the buildings sector. In 2022, GHG emissions from ESR sectors represented 60.3% of the total in Sweden (expected to be 63.8% in 2030)[272], with **transport sector** projected to represent the largest share. ESR emissions for the transport sector decreased by an average of 4.1% annually between 2015 and 2022 (biofuel blending contributed to the reductions), while Sweden projects they will decrease by a smaller amount (1.3%) annually between 2022 and 2030, leading to an overall emissions reduction of 41.5% for the sector between 2005 and 2030. The electrification of the transport sector is expected to play a large role in this emissions reduction, and the Government is promoting measures such as the roll-out of home charging in multi-apartment buildings to accelerate this transition. In the case of **agriculture**, the plan includes some measures but not the quantified impact on emission reductions. A good example is the inclusion of a rewetting scheme that includes overview of the planned funding and achieved emissions reductions.

With regards to **non-CO2 emissions**, notably methane and N2O, the plan contains some policies and measures but fails to integrate increased ambition, notably for methane. Methane from enteric fermentation of cattle and N2O from agricultural soils are the biggest sources of non-CO2 emissions, accounting for almost a fifth of Sweden's ESR emissions. There is not sufficient information on measures designed to reduce methane from enteric fermentation of cattle, except for some advice on livestock management.

The plan refers to the introduction of the emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2). The WEM scenario projections account for the effect of ETS2, but do not clearly consider the impact of ETS2 in achieving the ESR target.

2.1.2 LULUCF

Sweden has partially addressed recommendation 3. The LULUCF sector absorbed roughly 91% of the total GHG emissions in 2022 (–41MtCO_2 eq.). According to the LULUCF Regulation, Sweden has to enhance its net removals by -3.96 Mt CO2eq in 2030 as compared to its yearly average in the 2016-2018 reference period. According to the latest reported figures in 2022, Sweden has decreased its performance by approximately 3.8 Mt CO_2eq in comparison to its yearly average in the 2016-2018 period. Moreover, taking into account its projections for 2030, under the average growth scenario for forest land, Sweden will still have a gap of 13.32 Mt CO_2 eq in 2030. Under the scenario of reduced forest growth, total net removals would be around 29 Mt CO_2 eq t, bringing the gap to the target in 2030 to around 19 Mt CO_2 eq.

The final plan includes updated projections, based on forest growth, indicating that Sweden will likely fall short of the 2030 target. This highlights the need to identify and implement

[272] Excluding LULUCF.

additional measures in the sector. The plan indicates that a process is underway to identify a strategy to contribute to delivering on the LULUCF targets.

The plan provides additional information on how public funding and private financing through carbon farming schemes are used to reach the LULUCF target. The final plan does not include additional information on the progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates, but the Environmental Protection Agency delivered a set of recommendations on this topic in September 2024.

2.1.3 Carbon Capture and Storage

Sweden has addressed recommendation number 2. The plan contains an assessment of the expected volumes of CO_2 to be captured in the upcoming decades. By 2030, Sweden aims to capture more than 1.5 million tonnes per year (Mtpa) of CO_2 from industrial installations and 1.2-2.2 Mtpa of CO_2 from biogenic sources. With regards to the potential for CO_2 storage, Sweden is not expected to have a CO_2 injection capacity by 2030. The volumes captured by 2030 are planned to be transported by ship to Norway for storage. Sweden's plans with regards to CCUS are robust, with competitive financial incentives provided, especially for bioenergy with carbon capture and storage (BECCS).

2.1.4 Adaptation

Sweden has partially addressed recommendation 4. The plan refers to the country's new national adaptation strategy and to the National Climate Adaptation Action Plan to respond to the recommendation, acknowledging the importance of integrating adaptation planning. It partially embeds adaptation policies and measures in the relevant Energy Union dimension.

The plan contains a partial **analysis of climate vulnerabilities and risks**. It identifies several significant risks related to forest fires, as well as increased occurrence of pests, diseases, and invasive species. It also refers to the 2021 climate and vulnerability assessment conducted by the Swedish National Grid, which provides insights into the potential impacts of climate change on the electricity system. However, it is short of quantifiable assessment of impacts. Sweden's municipalities are required to carry out risk and vulnerability assessments to deal with extraordinary events and crises.

The plan partially outlines the links to the **specific Energy Union objectives and policies**, that adaptation policies and measures are meant to support, particularly for the energy security dimension. It references the recently adopted National Strategy and Action Plan on Adaptation to Climate Change, which provides the basis for the government's work on adaptation to climate change over the next five years. The government has also appointed a special investigator to analyse and, if necessary, propose new or adapted legislation on climate adaptation measures. However, the impacts and benefits of adaptation policies on other Energy Union objectives have generally not been quantified.

The plan sets out some **additional adaptation policies and measures** to support the achievement of national objectives, targets and contributions under the Energy Union, notably under the National Strategy and Action Plan on Adaptation to Climate Change. However, the updated NECP does not include an in-depth overview of specific targets and measures. The plan provides insufficient details on the extent to which investments aimed at minimising environmental impacts and biodiversity loss contribute to climate adaptation.

2.1.5 Fossil Fuels

Sweden has partially addressed recommendation 19. The plan indicates the need to phase out fossil fuel subsidies in line with international commitments and mentions the aim to reduce its support for fossil fuels by more than one third from 2019 to 2025. However, it does not provide a clear explanation of how it intends to phase out fossil fuel subsidies, including the specific measures that will be taken and the timeline for the phase-out.

2.2 RENEWABLES

Sweden has partially addressed Commission recommendation 5. The plan puts forward an updated national contribution for renewable energy of 67% of gross final energy consumption in 2030[3]. Even though this contribution is slightly higher than 65% included in the draft NECP, it remains significantly below the level (of 76%) calculated in line with formula of Annex II of the Governance Regulation. The updated indicative trajectory to reach the 67% contribution in 2030 is provided, including specific reference points for 2025 (57%) and 2027 (61%)[4], which are below the trajectory calculated in line with the increased EU 2030 renewable energy target of 42.5% (61% and 66% respectively).

Sweden has partially addressed recommendation 6. Sweden has included projections on the overall renewable energy share and per sector for 2035 and 2040 (with the renewable share to reach 76% in 2040). The final NECP includes updated projections for the renewable energy share for specific sectors: 81% in electricity, 46% in transport, 79% in heating and cooling in 2030, with the renewable energy share in district heating and cooling projected to reach 80% in 2030 (by specifying that those shares do not include waste heat). Sweden has also included in its final updated plan the projected shares of renewable energy in industry of 74% and 89% in buildings in 2030, respectively, but it does not confirm whether those constitute specific targets to achieve the indicative sub-targets for buildings and industry in line with Directive (EU) 2018/2001 (the 'revised RED II')[273]. As regards renewable fuels of non-biological origin in industry, Sweden indicates that the binding minimum level of 42% will be achieved by 2030 as projections show that hydrogen in Sweden will be produced from renewable electricity by 2040. The updated plan does not contain information on the innovative renewable energy technologies to achieve the indicative target 5% set in the revised RED II.

Sweden has partially addressed recommendation 7. Sweden included in its final NECP some additional information on policies and measures merely updating the existing measures included in the draft plan. As regards the designation of renewables acceleration areas the final Plan indicates that the Swedish Energy Agency shall give a particular priority to identifying larger interlinked areas in line with Article 15(c) of the revised RED II, which should be finalised by the Government on 25 October 2025, without specifying which technologies other than wind the mandate would cover.

As regards district heating and cooling, Sweden states that Swedish Energy Agency has adopted a district and combined heat and power strategy which shows that cogeneration and district heating will play an important role in the future, considering the impacts of an increased

[273] Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413

electricity production from solar and wind power. Furthermore, the Swedish government has tasked the Swedish Energy Agency to examine the conditions for setting up and operating renewable energy communities and citizen energy communities, and whether further efforts are needed to promote such communities.

Sweden has partially addressed recommendation 8. The plan provides an assessment of the domestic supply of forest biomass for energy purposes and mentions that the projected use of forest biomass for energy production is compatible with Sweden's obligations under the revised LULUCF Regulation. Sweden includes measures to promote the sustainable production of biogas/biomethane but does not report a target for 2030.

Sweden has partially addressed recommendation 9 as the plan lacks details on the procedural steps and timelines for most policies and measures.

2.3 ENERGY EFFICIENCY DIMENSION

Sweden has not addressed recommendation 10. The plan includes an indicative national contribution of 30.1 Mtoe to the Union's binding final energy consumption target for 2030**.** This contribution is not in line with Article 4 of Directive (EU) 2023/1791 ('EED recast')[274], nor equal to the corrected indicative national contribution that the Commission submitted to Sweden in March 2024. There is still a gap of 19.9% compared to the target calculated with respect to the indicative results of the 2020 reference scenario and a gap of 21.9% compared to the target calculated with respect to the indicative results updated 2020 reference scenario. Sweden included an indicative national contribution of 41.2 Mtoe to the Union's indicative primary energy consumption target for 2030. This contribution is not in line with Article 4. There is still a gap of 16.3% compared to the target calculated with respect to the indicative results of the 2020 reference scenario, and a gap of 14.9% compared to the target calculated with respect to the indicative results updated 2020 reference scenario.

Sweden did not include the yearly amount of energy consumption reduction to be achieved by all public bodies. The plan does not report the total floor area of heated and cooled buildings owned by public bodies to be renovated yearly, nor the corresponding yearly energy savings to be achieved nor specify if Sweden opts for the alternative or default approach. The plan does not set out complete policies and measures neither to achieve the reduction of energy consumption from public bodies nor the renovation of public buildings.[2]

Sweden has partially addressed recommendation 11. The plan sets out complete policies and measures on energy efficiency but does not quantify the expected energy savings and the contribution for the reported measures. The main measures include inter alia energy and CO_2 taxes above the levels of Energy Taxation Directive, aid for energy efficiency in single-family houses[4] and tax deductions for building renovations[5]. Moreover, Sweden did not specify how the energy efficiency first principle will be implemented or monitor its implementation.

Sweden includes the amount of cumulative energy savings of 20.4 Mtoe to be achieved over the period from 2021 to 2030 and an explanation on how the annual savings rate and the calculation baseline are established. Sweden sets out complete policies and measures[7] to

[274] Directive EU 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

achieve the required amount of cumulative end-use energy savings by 2030 and quantifies the savings from the reported measures to ensure the achievement of the cumulative target. Sweden does not include the quantification of the savings from measures targeting energy poverty.

Sweden sets out adequate measures to promote energy audits and energy management systems and specified some energy efficiency financing programmes and support schemes, including financial instruments and public guarantees to mobilise private investments and additional co-financing. Sweden did not specify existing policy measures to promote the uptake of energy efficiency lending products and innovative financing schemes.

Sweden partially addressed recommendation 12. Sweden does not include an updated ambition level to ensure a highly energy efficient and decarbonised national building stock and to transform existing buildings into zero-emission buildings by 2050. Sweden does not update the milestones for 2030 and for 2040 from the long-term renovation strategy (LTRS 2020). The plan recalls the milestones of specific energy consumption, distribution of energy classes in the building stock and share of fossil fuels used in buildings up to 2050 comparing them with the previous milestones, without providing numerical values. The milestones for the renovation of buildings include both non-residential and residential buildings. Sweden has included energy savings milestones for the building stock but has not detailed the impact of the measures put forward.

Energy and CO_2 taxes in buildings are expected to generate significant savings under Article 8 of EED Recast, however the NECP does not describe sufficiently the link between measures and financing on one hand and renovation rates and energy savings on the other hand.

2.4 ENERGY SECURITY DIMENSION

Sweden has partially addressed recommendation 13. The final plan does not define clear objectives in terms of diversification of energy sources, nor does it explain how Sweden intends to further encourage gas demand reduction towards 2030. According to projections, it appears that the consumption of natural and urban gas is expected to increase towards 2040, but no precise figure is provided.

Sweden appears to clarify that there are no specific national objectives for the deployment of energy storage.

The plan contains projections on oil consumption until 2040. However, the plan does not describe the measures taken to assess the adequacy of the oil infrastructure in the long run (refineries, pipeline, oil stocks) with the expected oil demand decline and the move to lower-carbon alternatives.

While the plan refers to the Strategy and Action Plan on Adaptation to Climate Change, it does not provide specific details on how this will contribute to enhancing the climate resilience of Sweden's energy system.

The final NECP describes measures taken by both operators of nuclear power plants in Sweden to avoid dependence on Russian uranium and nuclear fuel. However, the plan does not provide information on the long-term supply of spare parts and maintenance services for the existing reactors in the country. It provides information on the steps by the Swedish Government to

analyse the need to adapt the existing nuclear waste management programme and to ensure its financing.

2.5 INTERNAL ENERGY MARKET DIMENSION

Sweden has partially addressed recommendation 14. The plan provides measures to develop competitive wholesale markets and to phase out measures interfering with market signals. In particular, the plan outlines the ongoing work to improve the functioning of the wholesale market before the introduction of a capacity mechanism. Concerning market integration, the plan has defined a programme of work with a vision to 2030 together with other Nordic countries focused on several objectives to enhance regional integration and optimise electricity markets and flows in the region. Indeed, a major project to better integrate renewables and optimise electricity trading in the Nordic region, known as flow-based market coupling, went live in October 2024.

The plan does not elaborate on the quantification of flexibility needs but it does set clear objectives for non-discrimination of demand response, storage, and flexibility and includes policies and measures that enhance flexibility and enable a non-discriminatory participation of new flexibility services. In particular, the plan outlines the objective of further developing energy markets at regional level for balancing products, which would allow more types of resources and actors to participate in trade. Furthermore, legislation enables electricity grid companies to test on smaller scale tariffs that can stimulate more efficient grid use through demand response and a Dialogue Forum aims to identify how regulatory frameworks and methodologies need to be developed to create a well-functioning market where aggregators can offer their flexibility and support services.

Even though the plan provides a good overview of measures promoting flexibility solutions in the context of facilitating energy system integration, it does not provide information on specific measures for implementing Article 20a of the revised RED II.

New requirements on the measurement, calculation and reporting of transferred electricity will apply from 2025 and promote more reliable and efficient network operation and contribute to consumer empowerment by enabling the integration of microgeneration of RES.

Sweden has partially addressed recommendation 15. There is ongoing work towards further addressing energy poverty by defining energy poverty according to the EU legal framework, notably Article 8, 10 and 24 of the recast EED, taking into account the Commission Recommendation EU (2023/2407) and in accordance with the legal transposition period. This work should help determine the number of energy poor at national level and be completed with the identification of a reduction target and structural measures on how to reduce energy poverty. The plan provides information on the campaigns carried out in 2021 and 2022 to mitigate the impact of high energy prices, based on which further structural measures can be taken.

Action is also taken to strengthen energy consumer protection through the memorandum of January 2024, aimed at protecting contractual rights including the contract termination rules.

2.6 RESEARCH, INNOVATION AND COMPETITIVENESS

Sweden has partially addressed recommendation 16. The plan does not include national objectives in research, innovation, and competitiveness to deploy clean technologies, establishing a pathway for 2030 and 2050 with a view to support the decarbonisation of industry and promote the transition of businesses towards a net zero and circular economy. Nonetheless, the plan puts forward policies and measures to promote the development of net-zero projects, including those relevant for the energy intensive industries. For instance, to promote industrial decarbonisation. the plan presents the Industry Leap, which can support projects running until up to 2031 and covers strategically important net zero technologies and activities (such as biofuels, hydrogen production, battery production, CCS). However, the plan only partly details specific policies and measures to promote and implement research in the identified priority technological areas. The plan mentions the Net Zero Industry Programme, which aims to accelerate the development of the Swedish manufacturing industry towards net-zero emissions. While business development and commercialisation programmes are mentioned to support companies, the plan does not describe a predictable and simplified regulatory framework for permitting procedures for manufacturing or how access to national funding will be simplified where needed.

The plan does not elaborate on the opportunities provided by the digitalisation of the energy system but described measures taken to bridge potential skills gaps for the energy transition, for instance through the Budget Bill for 2024.

The strategy for Sweden's external trade, investment and global competitiveness identifies energy technology and energy transition as areas that offer major export opportunities. However, the plan does not provide detailed policies and measures to facilitate open trade for resilient and sustainable supply chains of key net-zero components and equipment.

2.7 FINANCING THE ENERGY AND CLIMATE TRANSITION

Sweden did not address recommendation 17. The plan provides estimates of investment needs only in some sectors including those related to the transmission network for the years 2022-2031, which amount to SEK 170 billion. Moreover, the methodology underlying the few estimates is not clearly presented. The investment estimates pertain to the WEM scenario only.

The plan does not provide an estimate of investment needs for specific policy measures to 2030, and no breakdown is presented for public and private investments. No investment estimates are provided for the industry, transport, or buildings sectors.

Information on funding sources is limited and scattered throughout the plan. Except for nuclear energy, the plan does not describe in detail how the reforms and measures will mobilise private investments. The information provided in the plan is not sufficient to estimate whether there is a potential financing gap with respect to investment needs, or how it would be filled.

2.8 JUST TRANSITION

Sweden has partially addressed recommendation 21. The plan describes the impact of the energy and climate transition on education and skills, mentioning the challenge of skills

shortages as an obstacle to electrification. It also refers to the Swedish Energy Agency's report on the effects on health and the environment of electrification and an analysis of the Public Health Agency of the impact of climate change on public health, developing an action plan to adapt its activities to climate change. However, the plan does not include the analysis of the social and employment impacts of transition to climate neutrality nor the impacts on most vulnerable groups.

Moreover, the plan does not specify the form of support, the impact of initiatives or the resources available, except for a general reference to the Just Transition Fund

The plan does not provide the proper analytical basis needed for the preparation of the Social Climate Plan. While it includes information on the estimated impact of ETS2, the plan does not identify vulnerable groups -if any- and does not refer to any definition of energy transport poverty. The plan does not explain how the policy framework identified in the NECP will contribute to the preparation of Sweden's Social Climate Plan nor how the consistency of the two plans will be ensured.

2.9 PUBLIC CONSULTATION

Sweden has partially addressed recommendation 22. Sweden organised a public consultation in the autumn of 2023, where members of the public were invited to comment on the draft updated NECP via the Swedish Energy Agency's website. It is unclear if sufficient time was given to allow members of the public to comment on the draft plan, however a summary of the submission input is provided.

Sweden also held a hearing in May 2024 where key stakeholders were given the opportunity to comment on a draft of the final updated NECP. This round of consultations started relatively close to the submission of the final plan. The draft was made available on the Energy Agency's website in April, and a timeframe of three weeks was given to allow stakeholders to comment. The final plan includes a summary of the hearing and the written inputs. It does not provide however how the views expressed during the consultations had been integrated into the final plan.

2.10 REGIONAL COOPERATION

Sweden has partially addressed recommendation 23. Sweden engaged in regional cooperation by being part of the high-level groups NSEC and BEMIP. Nevertheless, in September 2024, Sweden decided to end its participation in NSEC. While the participation in the High-Level Groups is voluntary for Member States, Sweden should ensure regional cooperation on energy matters, including in the North Sea. Regarding renewable energy cooperation, Sweden does not provide additional information in its final plan on establishing the framework for **cooperation on joint projects** by 2025 in line with Article 9 of the revised RED II.

2.11 ANALYTICAL BASIS

Sweden has not address recommendation 20. The plan provides a description of the analytical framework with projections reaching 2040, but does not include WAM projections,

which are essential for the impact assessment of the planned policies and measures. The methodologies used are described and/or referenced in detail, according to the recommendations provided by the Commission. The updated NECP also provides an impact assessment of existing policies and measures, including macro-economic impacts.

2.12 STRATEGIC ALIGNMENT, COHERENCE AND INTERACTION WITH OTHER PLANNING INSTRUMENTS AND POLICIES

Sweden has partially addressed recommendation 18. The plan covers most of the main reforms and investments of the Recovery and Resilience Plan (RRP) that contribute to implementing the objectives, targets, and contributions. The final updated plan still does not refer to the energy efficiency scheme for multi-dwelling buildings included in the Swedish RRP, which aims to incentivise property owners to renovate multi-dwelling buildings; the reform on streamlining the process for environmental permits included with the latest revision on Swedish RRP from Q4 2024; nor the inclusion of the REPowerEU chapter in the RRP.

3 GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN

Sweden needs to swiftly proceed with implementing its final integrated national energy and climate plan. Sweden is invited to pay particular attention to the following main elements:

- Monitor the impacts of policies included in the plan on emission reductions under **ESR,** including notably for non-CO2 emissions.
- Identify additional policies and measures to meet the **LULUCF target,** to be delivered by the Parliamentary Committee on Environmental Objectives (Miljörådsberedningen) under (dir. 2022:126). In defining these additional policies and measures, consider the impact of the projected levels of harvesting on the development of the LULUCF sink until 2030 and beyond.
- On **adaptation,** consider using the recently adopted new National Strategy and Action Plan on Adaptation to Climate Change to integrate their priorities in the implementation of the NECP. Use relevant ongoing local, national and sectoral processes to detail their contribution to the different Energy Union dimensions.
- Clarify how it intends to phase out **fossil fuel subsidies**, including by developing a roadmap detailing the specific measures that will be taken and the timeline for phase-out.
- Put in place measures to achieve the higher ambition for **renewables** by 2030 that aligns with the EU's collective target for renewable energy given its high potential notably for wind energy. Put in place a favourable framework to support **renewables-based electrification** across sectors including increasing awareness amongst citizens and companies about financing possibilities and wider system benefits of renewable energy technologies.
- On **energy efficiency**, put in place measures to achieve the higher ambition for **energy efficiency** by 2030. Consider further energy efficiency measures targeting **industry and transport**.
- On buildings, ramp up the pace and depth of **renovation of the building stock** and put forward a complete investment plan for building renovation, including the investment

needs to reach the targets, the budgetary resources and the available or planned financing schemes.

- Consider adopting a more comprehensive **just transition strategy** that includes robust analysis of social and economic impacts and allocates appropriate financial resources.