Denmark

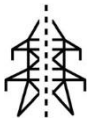
1 Overview of key objectives, targets and contributions in the final NECP

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.