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Assessment of the draft updated National Energy and Climate Plan of the Netherlands

Accompanying the document

COMMISSION RECOMMENDATION

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

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Contents

1	SUMMARY	3
1.1	Overview of key objectives, targets and contributions in the draft updated NECP 3	
1.2	Summary of the main observations	4
2	PREPARATION AND SUBMISSION OF THE DRAFT UPDATED NECP	7
2.1	Process and structure	7
2.2	Public consultation.....	8
2.3	Regional consultations for preparing the draft updated NECP.....	8
3	ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND ADEQUACY OF SUPPORTING POLICIES AND MEASURES	8
3.1	Decarbonisation dimension.....	9
3.1.1	<i>Greenhouse gas emissions, removals and storage</i>	9
3.1.2	<i>Adaptation</i>	13
3.1.3	<i>Renewable energy</i>	13
3.2	Energy efficiency (including buildings) dimension.....	17
3.3	Energy security dimension.....	19
3.4	Internal energy market dimension	21
3.5	Research, innovation, competitiveness and skills dimension	22
3.5.1	<i>Research and innovation</i>	22
3.5.2	<i>Competitiveness</i>	23
3.5.3	<i>Skills</i>	24
4	JUST TRANSITION.....	24
5	REGIONAL COOPERATION	25
6	INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP	25
7	STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS	25
8	FINANCING THE ENERGY AND CLIMATE TRANSITIONS.....	26
8.1	Investment needs.....	26
8.2	Funding sources	27
9	ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP	27





1 SUMMARY

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


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

The Netherlands’ draft updated national energy and climate plan (‘the draft updated NECP’ or ‘the plan’), submitted on 29 June 2023, partially takes into account this new geopolitical and legislative framework.

Table 1: Summary of key objectives, targets and contributions of the Netherlands’ draft updated NECP

	2020	Progress based on latest available data	2030 national targets and contributions	Assessment of 2030 ambition level
 Binding target for greenhouse gas (GHG) emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)		2021: -27% 2022: -33.3% ¹	-48%	NECP: -38.7%
 Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF Regulation)		Reported net emissions of 4.31 Mt CO ₂ eq. in 2021 and reported approximated net emissions of 4.38 Mt CO ₂ eq. in 2022	- 435 kt CO ₂ eq. (additional removal target) 4 523 kt CO ₂ eq. (total net removals)	Projected to reach the target
 National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	14% (SHARES and target)	2021: 13%	27%	NL contribution of 27% is not in line with the 38.8% required pursuant the formula set out in Annex II of the Governance Regulation.
 National contribution for energy efficiency: Primary energy consumption	60.7 Mtoe	2021: 60.83 Mtoe	46,600 ktoe	NL primary energy

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

					consumption contribution is 46,600 ktoe. EED recast Annex I formula results: 46,210 ktoe
	Final energy consumption	52.2 Mtoe	2021: 46.85 Mtoe	43,900 ktoe	NL final energy consumption contribution is 43,900. EED recast Annex I formula results: 38,419 ktoe
	Level of electricity interconnectivity (%)	25.9%	12%	15% ²	

Source: Eurostat; the Netherlands' draft updated national energy and climate plan

1.2 Summary of the main observations³

The draft updated NECP refers to the revised energy and climate targets recently agreed under the **Fit for 55 package** and **REPowerEU Plan**, and to the obligation under the Dutch Climate Act for the Netherlands to reach climate neutrality by 2050.

Regarding the **reduction of greenhouse gas emissions under the Effort Sharing Regulation (ESR)**, the plan provides emission projections demonstrating that with both existing and additional policies and measures, the Netherlands is not on track to meet its national greenhouse gas target of -48% in 2030 compared to 2005 levels. The Netherlands' projections point to a gap of 9.3 percentage points, highlighting the need for more ambitious climate action. However, these projections that date back to 2022 do not reflect the full set of additional measures agreed in April 2023 and included in the draft updated plan. The Netherlands published updated projections in September 2023 that suggest these additional measures would suffice to reach the 2030 ESR target.

On **Land Use, Land Use Change and Forestry (LULUCF)**, the draft updated plan indicates that the Netherlands will meet, even slightly exceed, its 2030 target with existing measures. However, the capacity of forests to absorb CO₂ is projected to decrease. The draft does not provide a clear implementation timeframe nor quantification of the impacts of specific policies and measures. It also lacks information on the status and progress in

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

³ In addition² to the notified draft NECP, this assessment also considers informal bilateral exchanges, which are part of the iterative process established under the Governance Regulation.

ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

On **Carbon Capture Utilisation and Storage (CCUS)**, the plan identifies annual CO₂ emissions that can be captured from the manufacturing sector by 2030. However, it is not clear how much is to be captured from ETS or non-ETS sources. Details about planned CO₂ transport infrastructure are provided. The plan mentions no indicative CO₂ storage capacity. Estimates of annual CO₂ injection capacity available by 2030 are referenced, based on public announced industry initiatives.

The draft updated plan reflects some progress towards **international commitments** under the Paris Agreement. While Netherland confirms the commitment to phase out coal in electricity production, the phasing out of fossil fuel subsidies is announced in the plan without providing concrete steps and a timeline for their phase-out.

Regarding **adaptation to climate change**, the draft updated NECP does not contain an adequate analysis of the relevant climate vulnerabilities and risks for the achievement of the national objectives, targets, and contributions and the policies and measures in the individual dimensions of the Energy Union. The link to the specific Energy Union objectives and policies, which adaptation policies and measures should support, is not specified and quantified. Adaptation policies and measures, to support the Netherland's achievement of national objectives, targets and contributions under the Energy Union, are not properly described in terms of their scope, timing and expected impacts. For instance, measures to improve resilience of energy systems to structural or seasonal water scarcity are not sufficiently outlined in the plan.

On **renewable energy**, the draft updated plan includes a contribution to the EU's overall target of 27% of renewables in the Netherland's gross final energy consumption by 2030, which is significantly below the share of 39% resulting from the formula in Annex II of the Regulation (EU) 2018/1999 on the Governance Regulation of the Energy Union and Climate Action ("Governance Regulation"). The draft updated plan includes indicative trajectories for renewables in the electricity, transport and heating and cooling sectors. The renewable energy share in industry, buildings and sectoral targets such as Renewable Fuels of Non-Biological Origin (RFNBO) are not clearly indicated, however. The plan provides some information on current and future policies and measures while indicating that the final updated plan will reflect Directive (EU) 2018/2001 on the promotion of energy from renewable sources as amended by Directive (EU) 2023/2413 ("revised REDII").

On **energy efficiency**, the Dutch draft updated NECP is comprehensive, informative, and detailed. The level of ambition for the primary energy consumption target is almost in line with the results of the formula included in Annex I to Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955⁴ ("EED recast"), although this is not the case for the final energy consumption target. However, the plan mentions that new targets will be established in 2023. More than 100 measures impacting energy efficiency in all sectors reflecting the 'energy efficiency first principle' are reported. The plan does not, however, quantify the impacts of these measures, and the planned and adopted measures appear insufficient to meet the existing targets. It is stated that the impact of several planned measures is not yet included in the draft updated NECP.

⁴ OJ L 231

On **buildings**, the draft updated NECP provides an updated long-term renovation strategy (LTRS) on building stock decarbonisation including more ambitious targets for reducing GHG emissions in buildings. It also includes a new set of measures to support this updated strategy. Nevertheless, the plan does not provide targets in terms of energy savings in buildings.

The **energy security** dimension is important for the Netherlands given the high reliance on fossil fuels, in particular fossil gas, and because of now ceased domestic extraction. The draft updated NECP displays ambition in terms of renewable **gases** (particularly hydrogen), but it does not detail how the Netherlands intends to mitigate the decrease in domestic natural gas extraction. The draft updated plan also does not describe how the emergency measures to reduce gas demand are integrated in the mid-term planning towards 2030. Regarding the **electricity** sector, the increase in decarbonised and renewable electricity production will help diversify generation technologies. Yet, while support to power storage is specified, the plan does not indicate a measurable target for it. **Oil** is set to replace gas as the most important energy source in the Dutch energy mix, but the draft updated NECP does not address the impact of decarbonisation in Europe on the national oil infrastructure (refinery, oil stocks).

On the **internal energy market** the Netherlands has very high **interconnection** levels, therefore no additional interconnection targets appears required. Measures are already in place to promote flexibility, but despite the challenge of grid congestion, the draft updated plan lacks an assessment of flexibility needs, clear targets and objectives for demand response and flexibility and plans for how these will be achieved.

Focus on **energy poverty** is increasing in the Netherlands. The National Energy Poverty Research Programme is operational since 2022, which aims to monitor energy poverty on a national and local scale. In 2023, several measures were adopted to mitigate the negative effects of high energy prices and to support vulnerable households in carrying out energy efficiency upgrades. The draft updated plan lacks specific targets and objectives for energy poverty, however. The plan indicates that the Netherlands is still in the process of developing a specific policy to reduce energy poverty.

In the **research, innovation, competitiveness and skills** dimension, the Dutch draft updated NECP presents a broad range of strategic programmes and measures to boost clean energy research, innovation, and competitiveness in line with the Green Deal objectives. However, the plan does not provide a breakdown of research and innovation (R&I) funding by public and private investors. The Netherlands' plan also does not identify the expected share of climate and energy in total R&I spending, nor does it elaborate on the Netherlands' plans for regional cooperation in R&I. The plan refers to certain investments for the manufacturing of net zero technologies, such as renewables, low carbon hydrogen and infrastructure. The plan, however, lacks sufficient information about the investments needed for the manufacturing of key components and equipment for other net-zero technologies, and how the Netherlands will increase the resilience of its supply chains. The plan includes measures to promote circularity and refers to a national strategy and examples of projects related to digitalisation.

Just transition is addressed in a limited manner in the draft updated NECP. The plan contains little analysis of social, employment and skills consequences, including distributional impacts, of the climate and energy transition. The plan does not elaborate on concrete employment and skills policies and measures to support a just transition but refers

to the Action Plan for Green and Digital Jobs. It pays little attention to regional and local impacts of the transition. While there are intentions to minimising increases in the financial burden and support those in most need, deeper analysis of the impact on vulnerable households of reported policies and measures is missing. Except for the Just Transition Fund, the plan does not detail the resources dedicated for supporting a just transition. Finally, the draft plan does not provide sufficient information for the preparation of the Social Climate Plan or on how the consistency of the two plans will be ensured.

On its strategic alignment with other planning tools, the draft updated NECP does not directly refer to the Dutch **Recovery and Resilience plan** (RRP) or its REPowerEU chapter. Possible synergies with climate and energy reforms and investments included in the RRP, including the REPowerEU chapter, are therefore not reflected in a consistent and detailed manner. The measures in the draft updated NECP address the 2023 European Semester **Country Specific Recommendations** and reflect the identified challenges to be addressed by the country.

Finally, the draft updated plan explicitly states that no specific analysis is available of the **investments needed** to reach the 2030 targets. It provides only limited qualitative analysis of additional public finance needed to implement the planned policies and measures. The **sources of funding** in terms of national, EU and private funding are not properly specified or quantified. The plan provides only a limited qualitative analysis of how additional public finance will be mobilised stating this will be done through subsidies, standardisation, and pricing.

Overall, the **analytical base** of the draft updated NECP is based on solid quantitative analysis. Updated projections have been published in September and October 2023 after the submission of the draft updated plan, however, and will therefore only be used for the final version of the NECP. The methodologies used for projections and impact assessment of specific policies and measures are clearly explained and referenced. There is, however, no macro-economic assessment provided for the entire NECP, only on the Fit-for-55 package.

2 PREPARATION AND SUBMISSION OF THE DRAFT UPDATED NECP

2.1 Process and structure

The draft updated NECP was notified to the European Commission on 29 June 2023, ahead of the deadline. The plan is generally well developed and follows the structure of the template set out in Annex I of the Governance Regulation, covering all five dimensions of the Energy Union, and includes objectives, targets or contributions for each dimension, backed by policies and measures, and underpinned by an analytical basis, including an impact assessment.

The draft updated NECP describes well the national context in which it was developed, with attention for Russia's full-scale invasion of Ukraine and how this has accelerated European cooperation in the domains of security of supply and affordability of energy. It pays attention to the increasing frequency of extreme weather conditions and the impact this will have on future generations.

Municipalities have only been partially involved in the consultation process and in the development of policy measures and priority areas, even though they are part of

some of the key initiatives related to climate mitigation and energy poverty. Dutch cities participate in international initiatives such as the Global Covenant of Mayors and the 100 Climate-Neutral and Smart Cities by 2030 mission, which is a positive example of multilevel cooperation on climate objectives across different governance levels. However, the plan does not sufficiently recognise the role that cities play in involving the general public in the implementation of adaptation measures.

2.2 Public consultation

The public participation procedure outlined in the draft updated NECP ensured early public participation before decisions were taken and throughout the decision-making process. However, the public participation programme is more focused on climate and energy policies in general than on the plan, as there has not been a specific consultation on the plan. A wide range of interest groups were identified and encouraged to take part, even though involvement of Parliament was not mentioned, and it is unclear how social partners were consulted. The latter hinders the assessment on the fulfilment of a “whole-of-society” approach, as stated in the Council Recommendation on ensuring a fair transition towards climate neutrality. Some consultation took place before work on the draft update of the NECP started, and some will only be held or generate outputs after submission of the draft updated NECP.

The draft updated plan does not specify the time frame for the public to prepare and participate, and except for the conclusions of the Expert Team Energy System Outlook, it does not contain a clear and detailed summary of the outcomes of the consultations nor of how views were considered and addressed, or why they were not.

The Netherlands has established a multilevel energy and climate dialogue in the format of a national climate platform, and a regular dialogue is also ongoing through a decentralised network of 30 regions. Additional initiatives to consult the public are planned. However, the draft updated plan was not specifically discussed in these fora, except for the consultation with the Expert Team Energy System Outlook.

2.3 Regional consultations for preparing the draft updated NECP

There have been various consultations, with nearby countries such as Belgium, Luxembourg, France, and Germany in the framework of the Pentalateral Forum (established in 2005). In addition, the Netherlands is an active member of the North Seas Energy Cooperation (NSEC) established under Regulation 2022/869 on guidelines for trans-European energy infrastructure (“TEN-E Regulation”), which seeks to put into practice the goals of the EU Offshore Strategy. These discussions took place in established fora including under the EU energy platform. The main outcome has been summarised in a common chapter in the draft updated NECP on energy security and internal energy market (Pentalateral Energy Forum) and renewable energy (North Sea Energy Cooperation).

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

The draft updated NECP is in accordance with the supplementary Dutch package of policies and measures adopted in April 2023. It includes the adaptation of the Dutch Climate Law, the spatial frameworks, and the just transition and labour market requirements. The policies and measures address the five dimensions of the Energy Union in five identified sectors, i.e., electricity, industry, mobility, agriculture and land use, and the built environment, and in several cross-cutting topics, including electrification, hydrogen, bio-raw materials, innovation, labour market and training, financing, citizen participation, spatial integration and regional energy strategy.

3.1 Decarbonisation dimension

3.1.1 Greenhouse gas emissions, removals and storage

The draft updated plan incorporates the increased climate targets included in the ESR and LULUCF Regulation, as part of the Fit for 55 legislative package.

The plan includes an obligation for the Netherlands to reach climate neutrality by 2050, which has become legally binding in July 2023 with the entry into force of the Dutch Climate Act. However, the updated plan does not include specific pathways to 2050. Projections in the draft updated NECP are either performed with a time horizon of 2040 ('with additional measures' or WAM) or, if they include 2050 ('with existing measures' or WEM), they fall short of reaching climate neutrality by then, pointing to net GHG emissions of 83 million tonnes of CO₂ equivalent (CO₂ eq.) by 2050, translating into around 63% reduction compared to 1990 (Table 4.7). Projections submitted in March 2023 under Article 18 of the Governance Regulation show net GHG emissions (including LULUCF and excluding international aviation) of 92 million tonnes of CO₂ eq. by 2050 considering existing measures and of 90 million tonnes of CO₂ eq. with additional measures. This is equivalent to projected reductions by 2050, compared to 1990, of 60% and 61%, respectively. Despite the commitment to achieve climate neutrality by 2050, the information provided in the draft updated plan does not allow for a full assessment as to whether progress by the Netherlands is consistent with the achievement of the EU climate-neutrality objective. However, based on all the available information, progress by the Netherlands is likely to be consistent with the achievement of the EU climate-neutrality objective.

The Netherlands sets an economy-wide target of at least -55% GHG emissions by 2030 below 1990 levels, including land use. It is commendable that to reach this target, the Government has agreed to over-programme measures to reach a -60% reduction in case not all measures materialise. The policies to reach the new economy-wide 2030 target of at least 55% emission reduction are included in the June 2022 Climate Policy Programme and in an additional package of measures presented by the Government in the spring decision making in April 2023. The April 2023 package of measures is estimated to reduce an additional 22 Mt CO₂ eq. These additional measures are included in the plan but not in the scenario analysis. The new official projections published in September 2023 suggest

that with these additional measures GHG emissions in 2030 could be between 46% and 57% below 1990 levels.

Based on the projections in the draft updated plan, the Netherlands would fall short of the new ambition required by the ESR. The ESR sets the Netherlands’ 2030 emissions reduction target at -48% by 2030, compared to 2005 levels. The plan projects emissions from the effort sharing sectors in the Netherlands to be above their 2030 target, both with existing (WEM scenario: -38%) and with additional planned measures (WAM scenario: -38.7%), with a gap estimated at 28 Mt (10 pp) and 26 Mt (9.3 pp), respectively. However, these projections do not reflect the full set of new measures agreed in April 2023 and included in the draft updated plan. The plan refers to the publication of updated projections that will reflect the full set of policies and measures, i.e., the 2022 climate policy programme and the 2023 spring decision-making. Updated official projections released in September 2023 suggest that these measures would likely suffice to reach the 2030 ESR target, provided these are rigorously implemented. The draft updated plan also refers to the final updated plan for information on the annual binding national limits under the ESR. In 2021, the Netherlands’ ESR emissions were below the Annual Emission Allocation (AEA) by 5 Mt CO₂ eq.

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

Table 2: ESR target and projections in the Netherlands’ draft updated NECP

ESR target and projections⁵					
	2030 target*	2021 performance (inventory data) *	2022 performance (approximated data) *	2030 WEM projection *	2030 WAM projection *
NL	-48%	-27%	-33.3%	-38%	-38.7%
EU	-40%	-14.5%	-16.9%	-27%	-32%

*Compared to the 2005 emissions as set out in Annex I of Commission Implementing Decision (EU) 2020/2126. Based on projections as reported in the draft updated NECP hence excluding the impacts of the additional measures agreed in April 2023 and included in the plan.

The draft updated plan reflects the increased ambition of the LULUCF Regulation and the 2030 national target requiring the Netherlands to deliver an additional - 435 kt CO₂ eq. net removals to reach the total value of 4,523 kt CO₂ eq. in 2030. According to the WEM projections submitted, the Netherlands will achieve 3,700 kt CO₂ eq. by 2030, which is 800 kt CO₂ eq. surplus compared to the abovementioned 2030 value. The main sources of LULUCF emissions are from grasslands, farmland and cultivated land, so the Netherlands has rightly placed a significant focus on policies and measures in these areas. However, the Netherlands’ projections until 2030 show a decreasing trend in forest land sinks. Although the draft updated plan identifies several relevant EU funds, it does not link

⁵ Comparison between the ESR target and emission projections does not take into account the flexibilities available for Member States under the ESR to comply with their 2030 targets. The ESR emissions will be comprehensively reviewed in 2027 (for the years 2021-2025) and 2032 (for the years 2026-2030).

them with specific measures. The draft updated plan does not provide information on the current status of and the progress to be made in ensuring improvements to higher tier levels and geographically explicit datasets for monitoring, reporting and verification, in line with the provisions under Regulation (EU) 2018/1999. Overall, the Netherlands presents how its policies and measures for the LULUCF sector will help bring about the long-term transition to climate neutrality by 2050.

The draft updated NECP includes policies and measures for improved access to zero- and low-emission mobility. It sets an indicative limit on GHG emissions from road transport of 21 Mt CO₂ by 2030 and builds transport decarbonisation around four pillars: (1) active and sustainable mobility for people, (2) electric passenger cars, (3) logistics, and (4) strengthening of sustainable fuels. It estimates that the introduction of ETS2 will result in GHG emission reductions road transport (and in the built environment) of up to 1.25 megatons by 2030. Other policies include allocating 265 million EUR to 2030 for greening passenger transport and travel behaviour and promoting soft mobility for an amount of EUR 780 million.

Policies and measures include support for charging infrastructure for light and heavy-duty vehicles with the aim for all new cars and vans to be emission-free by 2030 at the latest i.e., five years earlier than the 2035 date set at European level. The objective to have at least 1,9 million zero emission vehicles registered by 2030 is in line with the Green Deal and more than 500,000 recharging points have been installed. Fuel suppliers are required to reach 28% renewables in 2030, including a defined minimum for advanced biofuels and a maximum for food and feed-based biofuels. The draft updated plan also includes subsidy schemes and grants to large employers who commit to halving their transport CO₂ emissions. Zero-emission zones for urban logistics are planned, as is a subsidy scheme for zero emission company cars and zero emission trucks, and specific allowances for local authorities for zero emission buses. The plan includes measures to phase out harmful transport related fossil fuel subsidies.

The draft updated NECP does not include specific targets to reduce maritime GHG emissions beyond what is required by EU legislation. According to the draft updated NECP, an instrument like an emissions trading system will be deployed at national level for inland waterways to speed-up decarbonisation. The plan also aims to ensure the availability of alternative fuels including hydrogen. For the use of renewable (biological and synthetic) fuels in aviation, the Netherlands has separate targets of 14% by 2030 and 100% by 2050. The Netherlands is exploring the possibility of achieving this objective by means of incentives, as it goes beyond the EU target of 6% blending.

The plan includes specific measures for the production and use of sustainable aviation fuels (SAF) to contribute to the ReFuelEU Aviation Regulation. For example, in 2023, the Netherlands will present measures to help develop new ultra efficient and hydrogen-powered aircraft with the help of a national fund of EUR 282 million. In March 2023, the government took a decision in principle to introduce a CO₂ cap per airport and is earmarking resources for the development of sustainable sea-going vessel. The draft updated plan also briefly addresses measures for the electrification and the introduction of zero-emission technologies and related infrastructure in ports. There are plans to provide funding to support shore power supply in ferry and port areas.

Carbon Capture Utilisation and Storage (CCUS) is expected to play a most significant role in achieving a target of CO₂ reduction of 20 million tons in the manufacturing

sector by 2030. Techno-economic analysis estimates this at around 9 million tonnes of CO₂ emission reductions (estimates vary between 5 to 11 million tonnes per year), mainly in the chemical and refinery sector and in waste incineration. However, it is not clear how much is to be captured from ETS or non-ETS sources. The policy aims to provide incentives so that the market chooses the most cost-effective emission reduction measures, by covering the financial gap between the ETS price and the marginal emission reduction costs associated with the construction and operation of the CCS project. Meanwhile, several CO₂-infrastructure projects are under development, including two domestic and three cross-border projects. The two domestic projects consist of an offshore CO₂ storage project with an annual capacity of 2.5 million tonnes, and one dedicated CO₂ transport infrastructure with a total final capacity of 22 million tonnes per year. Based on public announced industry initiatives 10 million tonnes of annual injection capacity are expected to be made available to the market by 2030. With regards to transport, apart from the infrastructure projects currently under development, the plan mentions that further research is being conducted in view of converting existing natural gas infrastructure through a 10-year plan. The support scheme SDE++ is the main measure stimulating the application of CCS.

The draft updated NECP pays some attention to mitigating non-CO₂ emissions. It refers to the Global Methane Pledge and to the upcoming methane regulation for the energy sector but adds that in the Netherlands methane emissions from energy are already low as emission sources have been removed from the processes for a long time and permits require all operators to continue to monitor emissions periodically. The plan refers to reducing methane and N₂O emissions in agriculture (e.g. scheme for the purchase of livestock farms; national discontinuation scheme for livestock sites), including enteric fermentation (e.g., measure optimising dairy feed ratio; development of low-methane feed for dairy cows) and manure management (e.g. high quality manure processing subsidy scheme), methane emissions from waste management (e.g. food waste: healthier balance and less waste), and N₂O emissions from agricultural soils (e.g. National Programme Agricultural soils (NPL); meadows measure). However, the draft updated NECP does not provide measures to support biogas and biomethane development, which could help mitigate methane emissions from manure management in agriculture. Moreover, the plan does not cover methane emissions from fuel combustion in energy. In addition, the plan does not address emissions of F-gases. Finally, the plan does not provide quantified projections of non-CO₂ emissions. This is important to understand whether the measures are sufficient to mitigate, for example, methane emissions from enteric fermentation in agriculture and N₂O emissions from agricultural soils, which are the two largest sources of non-CO₂ emissions.

The analytical basis of the draft updated plan includes an assessment of the impact of groups of policies and measures on achieving the GHG mitigation targets. However, not all policies and measures announced were described in sufficient detail to allow for their assessment, leaving potential room for additional emission reductions by 2030. The draft updated plan does not explain how the impact of policies and measures is modelled. There are indications that policies and measures explore synergies across policy areas and that they are cost-efficient.

The draft updated plan reflects some progress towards international commitments under the Paris Agreement. Between 2016 and 2022 the share of electricity from coal-fired power plants decreased by 70%, yet up to 2025 a temporary increase in the use of coal-fired power stations is expected. However, with the Act on the Prohibition of Coal,

which entered into force in January 2022, as of 2030 operators of coal-fired power stations are no longer allowed to use coal in electricity production. Coal will remain in use for steel production, however. The phasing out of fossil fuel subsidies is announced in the plan, starting with an inventory of all fossil exemptions, discounts and adjusted tax rates with the aim of increasing transparency and providing a clear annual picture of these subsidies. However, this is not yet paired with further concrete step and a timeline for their phase-out.

On 18 December 2019, the Netherlands submitted its national long-term strategy to the Commission. The strategy did not include the goal of achieving climate neutrality by 2050, nor did the Netherlands refer to such a goal in the report on the status of implementation of its initial NECP submitted in March 2023. The 2050 climate-neutrality goal is now enshrined into Dutch law since July 2023.

3.1.2 *Adaptation*

The draft updated NECP has not explicitly identified the relevant climate vulnerabilities and risks that may threaten the achievement of national objectives, targets and contributions across the five Energy Union dimensions. For adaptation goals, the plan refers to the national adaptation strategy (NAS) and the Delta Plan. However, the objectives are only described qualitatively and are not linked to specific Energy Union objectives. This was also the case for the 2019 NECP, in which goals were not expressed and with only references to the NAS and Delta Plan. The Netherlands aims to achieve climate-resilient and water-resilient spatial planning by 2050.

The draft updated NECP puts forward four **policies and measures** promoting the integration of mitigation, adaptation and nature restoration measures in the land-use, forestry and agriculture sectors together with related initiatives for biodiversity and bioenergy: agricultural soils, farm meadow approach, trees, forest and nature approach, and the peat grazing approach. The plan does not provide details on nature-based solutions, resilience of energy systems to water, notably on structural or seasonal water scarcity or preservation, protection and restoration of ecosystems, even if restoration of some ecosystems with positive impacts on climate adaptation are mentioned. The resilience of energy systems to water, notably on the structural or seasonal water scarcity or preservation, is not covered with sufficient detail.

3.1.3 *Renewable energy*

The renewable energy contribution proposed in the draft updated NECP is a share of 27% (and 30.5% according to *Klimaat- en Energieverkenning 2022 (KEV 2022)*, with a range of 26.9 - 32.6%) of the national gross final consumption of energy in 2030 based on the WEM scenario of May 2022. According to the WAM scenario, the projected share for 2030 is 30.7% (27.1 - 32.7%). The Netherlands has based its contribution on the EU renewable energy target of 32% that was in force at the time of submission. Absolute values in terms of energy were also included. This contribution is significantly below the share of 39% resulting from the formula in Annex II to the Governance Regulation. The Netherlands states that its contribution will increase considerably when the revised REDII enters into force. The Netherlands does not provide the indicative trajectory values for the years 2022, 2025 and 2027 in the plan, indicating

instead that those will be provided in the final updated NECP⁶. The overall renewable energy trajectories and national energy and climate reports consider the projected shortfall against the 2020 target (baseline) and give an indication of the action required to catch up. However, this is done based on the EU targets of 32%. The Netherlands met the 2020 binding target of 14% using statistical transfers (11.5% share of renewables, reaching the level of 14% with statistical transfers), but in 2021, the RES share fell again to 13%.

Renewable electricity generation is projected to reach 86.2% in 2030, with wind power becoming the main source of renewable electricity with a share of 59% and 23.2 GW of installed capacity, against a 12% share and 7.3 GW of installed capacity today. Solar power is expected to represent a 15% share of electricity production with 25.7 GW of installed capacity in 2030 (and 42.6 GW in 2040), compared with the current 14.6 GW. The plan does not include a target for **innovative renewable energy technologies** deployment. However, it does provide an overview of measures to promote deployment of renewable energy technologies as part of the dedicated innovation programmes covering priority sectors.

The use of renewable energy in the heating and cooling sector is projected to reach a share of 13.7% by 2030 under current policies. However, the Netherlands estimates that it can achieve an annual increase of 1.34% percentage points of renewable energy in final heat consumption by fully using the option of counting waste heat and cold to the target. While this is not expressed as required under the revised REDII, this could comply with the binding target, but remains significantly below the indicative top up resulting in a 1.9 percentage point average increase over 2021-2030. The Netherlands aims to clarify how renewable cooling should be accounted for in its final plan. The plan does not clarify the role of renewable electricity and its accounting. The share of renewable heat in final heat consumption was 10.4% in 2021 and is projected to increase year on year. Bioenergy accounts for the largest share of renewable heat in the residential sector, but it is decreasing each year. Combined heat and power (CHP) will remain dominant with 71% of all heat generation in 2030, although it is projected to decline by 10 percentage points relative to 2020 due to air quality concerns.

Deployment of heat pumps (mainly air-to-air heat pumps) increased by 37% in 2021. The share of energy from heat pumps consumed in buildings is expected to more than triple, to 0.507 Mtoe by 2030. Information on the electricity needed for heat pumps and the projected capacity was not included in the draft updated NECP. The plan does not include the shares of renewable energy in industry and in buildings, nor in district heating and cooling in the context of the revised REDII.

For the transport sub-targets, the main measures indicated in the draft updated NECP are a supply obligation for renewable fuels and the phase-out of new fossil vehicles by 2030. The obligation can be fulfilled by using various forms of renewable energy, but certain limitations apply. As part of the supply obligation, a minimum will apply to the use of advanced biofuels while the use of biofuels from food and feed crops will be limited. The share of biofuels in transport fuels is projected to increase from 6% in 2021 to 9% in 2030. Hydrogen is planned to be used for heavy-duty vehicles, such as trucks and buses, and to replace diesel in trains and aviation. Innovative biofuels are expected to reduce GHG

⁶ In line with reference points of 18% by 2022, 43% by 2025 and 65% by 2027 pursuant to Article 4(a)(2) of Regulation 2018/1999.

emissions from the existing fleet. For aviation, the target for synthetic and biofuels is set at 15% by 2030 and 100% by 2050, respectively. Comprehensive information about measures related to electric transport (both relating to vehicles and to charging infrastructure) is included in the draft updated NECP. However, these relate mostly to existing measures.

The Netherlands has put forward a national agenda for recharging infrastructure to support the deployment of alternative refuelling and recharging infrastructure in line with the Alternative Fuels Infrastructure Regulation. The agenda provides an overview of the necessary recharging infrastructure and sets out the framework for its deployment. The Netherlands has put in place the ‘Stimuleren Elektrische Personenauto Particulieren’ (SEPP) programme, which provides incentives to switch to new or second-hand electric vehicle. Moreover, the government remains committed to strengthening current European vehicle standards, including intermediate targets by 2030 and works to put in place measures to enable cross-border e-mobility.

The draft updated NECP provides information on the **expected capacity of electrolyzers. Between 3 and 4 GW is expected in 2030 and 8 GW in 2032**, but the plan does not contain an RFNBO target for industry. The government does not expect large-scale use of hydrogen in the built environment before 2030, although the Netherlands is exploring the possibility of introducing a purchase obligation for hydrogen from renewable sources in industry, starting from 1 January 2026. The plan also aims to increase the production of green gas to at least 2 bcm by 2030. The green gas will be incorporated into the natural gas grid and will thus mainly be used for the built environment but is also expected to reduce emission in other sectors.

Regarding **international partnerships to facilitate imports of renewable hydrogen**, work is underway on the conditions for the international hydrogen market, for example on standardisation, quality criteria and safety standards for hydrogen transport, storage and use, and on hydrogen certification. This is done jointly with neighbouring countries in the EU and countries outside Europe. The Netherlands is working to encourage the construction of import terminals and to seek cooperation with several countries through bilateral memoranda of understanding (MoUs) to create corridors between exporting countries and north-west Europe. Through participation in the German H2Global initiative, an auction mechanism also supports the purchase of imported hydrogen. The plan contains some information regarding the pathway for oil-based transport fuel substitution through electrification and renewable hydrogen in land transport.

On **policies and measures in the electricity sector**, the objective is to accelerate the production of electricity from renewable energy using reverse auctions. The Netherlands has examined whether there are obstacles to entering into power purchase agreements but did not identify any. The Netherlands does not specify measures to strengthen the system for guarantees of origin to improve consumer information.

On **joint projects**, the Netherlands uses the North Seas Energy Cooperation (NSEC) as a platform to collaborate on offshore wind projects and electricity infrastructure. The NSEC has increased its activity as its member countries have started more joint and hybrid projects in the North Sea. In January 2023 the Netherlands agreed to the following non-binding commitments for offshore and ocean energy: 16 GW by 2030, 30 – 50 GW by 2040 and 38 – 72 GW by 2050.

The draft updated NECP contains some information on measures to ensure an accelerated deployment of solar energy in line with the EU Solar Energy Strategy objectives, although these are not always very detailed. Individual and collective self-consumption of renewable energy as well as renewable energy communities are considered a means to achieve the objectives. They will be promoted through a 0% value-added tax rate on the supply and installation of solar panels and net metering, which will be phased out between 2025 and 2030. Energy communities can also benefit from the Subsidieregeling Coöperatieve Energieopwekking (SCE) subsidy scheme. The SCE encourages energy cooperatives and owners' associations to generate renewable electricity (solar, wind or hydropower) locally and as a cooperative through small-scale projects. The SCE covers the unprofitable top margin by offering an operating grant. The grant is paid in the form of an amount per kilowatt hour produced.

Quantitative targets for **self-consumption and for energy communities** are not included in the draft updated plan. The plan also does not present sufficient well-described measures to promote individual and collective self-consumption and renewable energy communities. The Netherlands has not indicated a specific strategy for energy system integration but underlines the importance of sectoral integration and refers to measures to facilitate it such as the regulatory framework for encouraging demand response, the use of innovative technologies and electricity storage in batteries promoted in the context of the Energy Storage Roadmap. The draft updated NECP mentions that 88.5% of retail connections has installed a smart meter. In addition, a shift to digitalisation in consumer administration is set as a strategic objective under the cross-cutting theme in the national energy system plan for 2050 which also covers aspects related to privacy, cybersecurity, and vendor lock-in prevention.⁷

Measures for renewable **heating and cooling** are closely linked to the ongoing phase-out of gas heating. They include removing bottlenecks in the sustainability of district heating networks in the built environment. Work is under way on the Collective Heat Supply Act, to encourage the construction of new district heating networks and phase in cost-based tariff regulation, as well as a sustainability standard and to integrate a large share of renewables including geothermal energy.

The national programme to support the local heat transition (NPLW) supports municipalities adopting neighbourhood approaches in the heat transition. There is also an obligation to blend 20% of green gas into the gas consumed in the built environment by 2030. To address the rapid increase in cooling demand, the draft updated NECP outlines initiatives to promote passive cooling and discourage active and energy-intensive cooling, and to develop a knowledge agenda on cooling. The draft updated plan does not provide information on measures to be implemented under Article 23(4) of the revised REDII and on the framework to enable sector integration between energy networks and measures to promote renewable-based electrification of **industrial processes** to replace fossil fuels.

On **bioenergy**, the Netherlands has included projections on the share of renewables per sector and per technology, and of the energy supply per sector. However, the draft updated NECP does not include information on biomass supply by feedstock or on the origin of the feedstock. It also does not differentiate between domestic production and imports, nor

⁷ The plan was published after the submission of the NECP:
<https://www.rijksoverheid.nl/documenten/rapporten/2023/07/03/bijlage-1-hoofddocument-concept-npe>

between sources of forest biomass used for energy and the impact on the LULUCF sink. The draft updated NECP does not provide an assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the sustainability criteria as per the revised REDII or of the compatibility with the Netherlands's projected use of forest biomass for energy production as per the new obligations under the revised LULUCF Regulation, particularly for 2026-2030. Bioenergy consumption is set to increase to 184 PJ in 2040 mainly due to an increase in biogas consumption. The consumption of biogas increases from 14.5 PJ in 2020 to 17.6 PJ in 2030 and 63.8 PJ in 2040.

The draft updated plan includes a **mapping of areas** in which action is necessary to achieve the required national contribution to the Union's 2030 renewable energy target. This includes the planned implementation of the Omgevingswet in early 2024, which provides the basis for measures such as streamlining environmental and permitting procedures and one-stop shops and setting up digitalised procedures. This law integrates most of the existing individual environmental permits (except nature legislation and the Environmental Impact Assessment (IEA)) into a single environmental permit. This permit may be granted for projects at national, provincial and municipal level. Work within the North Seas Energy Cooperation also concerns the way offshore renewable development is addressed in the maritime spatial plan. The draft updated NECP however does not provide information on the designation of renewables acceleration areas and dedicated infrastructure areas nor on other measures to streamline administrative procedures for other technologies and has not elaborated on the additional human resources dedicated to permitting.

3.2 Energy efficiency (including buildings) dimension

Energy savings are presented as a central pillar of the draft updated NECP, with the Netherlands targeting a reduction in final energy consumption of 0.44 Mtoe/year by 2030 compared with the 2017-2019 average.⁸ This corresponds to a corrected national contribution of 46.6 Mtoe for primary energy consumption (compared with 46.2 Mtoe according to the results of the formula in Annex I to the EED recast) and 43.9 Mtoe for final energy consumption (compared to 38.4 Mtoe according to the EED recast Annex I formula results). The Netherlands reported 2030 contributions for primary and final energy consumption deviate from the theoretical results from the use of the formula in Annex I to the EED recast by 0.8% and 14.3%, respectively.⁹

The targets for 2030 are also lower than the Dutch final 2020 NECP energy efficiency targets, which were -23.2% and -15.9% for primary and final energy consumption, respectively¹⁰. The primary energy consumption (PEC) target is almost in line with the results of the formula in Annex I to the EED recast, whereas the target for final energy consumption (FEC) is significantly higher considering the need to step up action at EU level to collectively reach the EU's 2030 energy efficiency targets. The draft updated NECP notes that new targets will be set after the EED recast is published. The adopted and planned measures reflected in the WAM scenario appear insufficient to meet the existing

⁸ The 2017-2019 average has been calculated based on the EED recast FEC definition, and the savings per year have been calculated for the period 2021-2030.

⁹ According to Article 4(4) EED recast, a Member State shall ensure that its contribution in Mtoe is not more than 2.5% above what it would have been had it resulted from the EED recast Annex I formula.

¹⁰ The comparison has been done with the 2020 targets as included in the Netherlands' factsheet of the NECP 2020 EC assessment (60.7 Mtoe PEC, 52.2 Mtoe FEC).

targets, although the impact of several planned measures could not be accounted for due to lack of data.

The target to reduce total final energy consumption of **all public bodies** is not described in the draft updated NECP and there is not sufficient information on the planned measures, nor on the exclusion/inclusion of public transport or armed forces. Concerning the renovation of buildings owned by the central government, the draft updated plan provides limited information, mentioning that the implementation details will be determined once the EED recast is published.

The Dutch cumulative saving requirement over 2021-2030 is equal to 22.07 Mtoe (924 PJ) in final energy consumption. It is announced that a more ambitious energy saving obligation will follow when the EED recast is published. The Netherlands has adopted an alternative approach. The draft NECP provides satisfactory information on what measures will be used to deliver the savings required in the period after 2020 under Article 7 EED (Article 8 EED recast) on **energy savings obligation**.

The policies and measures contained in the draft updated NECP under the energy efficiency dimension are generally sufficiently well described, but they include only a partial estimation of energy savings. More details are needed to understand how recent measures help to achieve the 2030 energy efficiency contributions. Moreover, information on the National Energy Efficiency Fund is missing. In the draft updated NECP, the Netherlands states that the estimate for energy savings with adopted and planned policies is unlikely to be sufficient to achieve the target. The Dutch draft updated NECP presents a wide range of measures (over 100 with an impact on the energy efficiency dimension) covering all sectors, also including measures reflecting the **‘energy efficiency first principle’**. New measures adopted after 2020 and new planned measures to reach the higher 2030 target are introduced. The impact of the measures is reported in terms of estimated energy consumption across all sectors and measures by 2030. However, not all measures are detailed due to a stated lack of data.

Important measures in the draft updated NECP are those strengthening the **energy-saving obligation** for companies and institutions, notably to take all energy-saving measures with a payback period of 7 years or less. Additional important measures are a CO₂-levy that may be higher than the ETS price for industrial companies, aid schemes for energy saving measures with high investment costs and payback periods longer than 5 years and regulatory measures to phase-out worst performing buildings. Furthermore, there are planned subsidies for zero-emission truck and construction machineries, allowances for municipalities for purchasing zero-emissions buses and new energy-saving targets in the agriculture sector and others. The plan also includes measures to improve energy efficiency in the electricity supply, namely an incentive for electricity grid operators to reduce the volumes of network losses.

There is only limited information provided on **energy audits**. The plan states that very large energy users will be required to carry out a study to make energy use more sustainable (going beyond the requirements of the audit obligation under the EED recast) and that companies and institutions must draw up a plan to effectively implement the measures on sustainable energy use.

The draft updated NECP provides an updated ambition compared to the 2020 submitted **long term renovation strategy (LTRS)**. The Netherlands sets a 2030 decarbonisation target for the building sector at 13.2 Mt CO₂ eq., which is 14% lower than the 2020 LTRS

to align with the updated climate target. According to the plan, strong environmental requirements for new construction and the sustainability of the existing stock have reduced greenhouse gas emissions in the built environment from 29,1 megatons in 1990 to 22,6 megatons in 2021. In 2021, more than 1,7 million heat pumps were installed. The Netherlands targets a fully decarbonised building stock by 2050 compared to the previous target in the LTRS which was 1.5 Mt CO₂ eq. in 2050. This will be achieved by the renovation of 7 million dwellings and 1 million non-residential buildings, although the renovation depths are not specified. The sub-targets for 2030 include measures such as insulation of 2,5 million homes with a focus on phasing out the worst performing buildings (E, F and G) and switching to sustainable installations or heat networks and increased use of sustainable resources including blending 1,6 bcm green gas, equivalent to 2,9 Mt of greenhouse gas reduction by 2030.

This updated ambition is supported by new measures in comparison with the 2020 NECP, particularly regulatory and economic measures. The energy savings' contribution to meet the target of each group of measures is not provided, however. The impact is assessed by sectors and only in terms of GHG emission reduction. However, in 2021, the Netherlands achieved final energy savings of 752 ktoe (31.5 PJ) of which 322 ktoe (13.5 PJ) in buildings, placing the building sector first in energy savings among all sectors. The draft updated NECP mentions that green hydrogen can also be used as an energy carrier in the built environment, even though heating in buildings is not a hard to abate sector such as industry or transport. In fact, energy efficient and renewable based solutions for heating are already available and significantly more affordable and efficient than hydrogen. As such, it is not clear whether the target of 13.2 Mt CO₂ eq. emissions will be achieved by 2030 as several recent measures were not included in the draft updated NECP.

3.3 Energy security dimension

Fossil fuels play a very significant role in the Dutch energy mix, as in 2021 they still accounted for 89% of the gross available energy in the country¹¹. According to the draft updated NECP, the energy mix is expected to change significantly within the current decade, and the share of fossil fuels is expected to decrease to roughly 79% in 2030 and 76% in 2040, which is positive but still high. The use of natural gas and coal will decrease, while the use of renewable and fossil free (nuclear) sources will increase. **Energy import dependency** has been on an upward trend in the past decades, increasing from 24% in 2013 to 58% in 2021, with non-EU countries' share in energy imports increasing in parallel from 52% to 61%¹² mainly due to the fall in domestic gas production.

Natural gas is still the main energy source in the Netherlands, accounting for 41% of the Dutch energy mix and 49% of the electricity mix in 2021¹³. Domestic natural gas extraction has decreased significantly due to the phasing out of extraction in the Groningen gas field. Import dependency on non-EU countries for natural gas went up from 21% in 2013 to 47%

¹¹ Eurostat data.

¹² Given the limitations of the statistical unavailability of data for 2022 and geopolitical situation triggered with the Russian war against Ukraine, this indicator needs to be further monitored, as no definitive conclusions can be drawn.

¹³ Data from https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en

in 2021¹⁴, with Russian gas comprising 35% of gas imports¹⁵. The Netherlands has committed itself to phase out Russian gas as soon as possible. The Netherlands imports liquefied natural gas (LNG) of Russian origin (40% of LNG imports in 2021).

The Netherlands exceeded both the **storage** filling target for 2022 set by Regulation (EU) 2022/1032 and the 15% demand reduction target set by Regulation (EU) 2022/1369. The Netherlands cut gas demand by 28% between August 2022 and August 2023, well above the EU27 average (-18%)¹⁶. The plan expects the share of gas in the primary energy mix to decrease by 2040 but without providing specific figures. While the plan appropriately describes the emergency measures taken to reduce gas demand, it does not explain how these measures are integrated into the medium-term planning towards 2030.

To compensate for the winding down of gas extraction from the Groningen field by 1 October 2023, combined with the ambition to phase out Russian gas, a total of 35 bcm is forecast to be extracted from onshore small fields until 2047. The Netherlands also invested in a nitrogen facility in Zuidbroek to create low-calorific gas from high-calorific gas to compensate for the decrease in gas production in Groningen.

In 2022, the Netherlands doubled its LNG import capacity from 12 to 24 bcm per year. Sufficient LNG import capacity in north-western Europe and for the rest of Europe is instrumental to safeguarding security of supply in the coming years. However, the draft updated NECP does not clearly show how this increase in capacity remains in line with decarbonisation objectives.

The draft updated plan shows high ambitions for hydrogen as a replacement for fossil gas. Work on preparing the existing gas pipeline network to transport hydrogen has been ongoing since 2022. In 2022, and as mentioned in section 3.1.3 the Dutch government increased the ambition of its hydrogen production target to 8 GW of electrolyser capacity by 2032. The feasibility of large-scale hydrogen storage in salt caverns in Groningen as well as in empty gas fields is being explored.

In terms of **electricity**, the Netherlands does not have specific targets for increasing flexibility in the system. The plan reports a significant increase in the demand to connect batteries to the electricity grid, with energy storage having played a crucial role in the Dutch energy system for a long time. This is exemplified by the Dutch energy storage roadmap, which encompasses all forms of energy storage and identifies measures to be taken to promote energy storage until 2035 and beyond. However, the Netherlands does not set a measurable target for the deployment of power storage. According to a study on storage ordered by the Commission, the current operational Dutch power storage capacity is around 43 MW (mainly electrochemical)¹⁷ and the main barrier to power storage

¹⁴ Eurostat data

¹⁵ European Commission, https://economy-finance.ec.europa.eu/system/files/2023-06/ip243_en.pdf

¹⁶ DG ENER Chief Economist Team based on ESTAT NRG_CB_GASM (sub-series IC_CAL_MG subtracted by TOS) in TJ (as of 29 September 2023, 11:00)

¹⁷ This figure is derived from the database which accompanied the ENTEC study on Storage funded by the European Commission and published in November 2022, by taking into account only the “operational” facilities: https://op.europa.eu/en/publication-detail/-/publication/dfcaa78b-c217-11ed-8912-01aa75ed71a1/language-en?WT_mc_id=Searchresult&WT_ria_c=37085&WT_ria_f=3608&WT_ria_ev=search&WT_URL=https%3A//energy.ec.europa.eu/

deployment is the lack of guidelines on permitting leaving the responsibility to municipalities, leading to some inconsistent requirements.

The Netherlands is investigating the construction of two new **nuclear power** plants. The increase in decarbonised and renewable electricity production playing a role in diversifying generation technologies in the electricity market. Reducing electricity imports is not an objective in itself for the Netherlands. On the contrary, the draft updated NECP reads that further integration of the European electricity market can help ensure security of supply in an energy system that is transitioning to zero-emission energy supplies. The draft updated NECP does not report details on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services. It also does not elaborate on a strategy for exploitation of nuclear fuel cycle facilities existing in the Netherlands, in particular for isotope enrichment.

Oil represents a significant share of Dutch energy mix (38% in 2021¹⁸). The Netherlands was the largest crude oil importer in the EU in 2021 and is the main oil hub in Europe. Most crude oil is imported through the ports of Rotterdam/Amsterdam and suppliers are well diversified. Russian crude oil, representing 23% of crude oil imports in 2021, was replaced by additional imports from Saudi Arabia, Iraq and Kazakhstan in 2022. Half of those crude oil imports are sent directly to other countries such as Germany and Belgium. The other half is consumed by the six refineries in the Netherlands and is subsequently used mostly as a fuel in transport and as a raw material by the domestic chemical industry.¹⁹ According to the draft updated NECP, oil consumption is expected to remain broadly stable until 2030 and to overtake natural gas as the main energy carrier.

Regarding security of oil supply, the Netherlands is consistently well-above EU requirements on emergency oil stocks and plays a leading role in terms of storing oil for EU Member States, especially in north-west Europe. The draft updated NECP does not assess the impact of decarbonisation in Europe on the national oil infrastructure (refinery, oil stocks).

Regarding the resilience of the energy system, the draft updated NECP refers to the overall EU framework for **cybersecurity**. The Netherlands issued instructions to operators of essential services in the gas sector that apply since 1 January 2023 and subject the designated group of providers to a cybersecurity notification and duty of care based on the Act on security of network and information systems (WGNI). The National Digital Infrastructure Inspectorate monitors these companies on behalf of the Minister for Climate and Energy. In addition, operators of essential services are entitled to receive support from the National Cyber Security Centre (NCSC) such as cybersecurity threat information.

The draft updated NECP describes the activities related to the supply to protected customers in the Netherlands. However, beyond this information it is unclear what measures would be applied during an EU-wide or regional **emergency** related to shortages of gas, as set out in Article 11 of Regulation (EU) 2017/1938. The national risk assessment plan of the Netherlands was submitted in June 2023, as well as the common assessment for the Belarus, Norway, United Kingdom, Denmark Risk Groups in which the

¹⁸ Data from https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en

¹⁹ Data from <https://www.iea.org/reports/the-netherlands-2020>

Netherlands is participating. These plans are currently being assessed by the Commission. The Netherlands has not submitted its final Preventive Action Plan nor Emergency Plan (only draft version were received) which were due by 1 March 2023. It has also not submitted the Common Risk Assessment for the L-gas regional risk group (that it coordinates) which was due by 1 November 2022.

3.4 Internal energy market dimension

On infrastructure, the Netherlands has an electricity interconnection capacity significantly above the required 15% and will evaluate every increase on its merits. The Netherlands expects interconnection capacity to double from 5.55 GW in 2016 to 10.8 GW in 2025.

The Netherlands intends to invest heavily in hydrogen infrastructure (pipelines, electrolysers, receiving terminals and storage facilities), and has some 10 hydrogen candidate projects for the next Project of Common Interest (PCI) / Project of Mutual interest (PMI) list. It is also active in CCS with two projects for transport and storage under the Dutch continental shelf and participates in other CCS projects (see section 3.1).

To enable consumers to rapidly reap the benefits of the rising share of renewables in the energy mix, the draft updated NECP mentions key policies contained in the Dutch Energy Act. **The legislation increases access to flexibility services.** Small consumers have direct access to the market, but they can also benefit from new market entrants, such as the aggregator, which can support them. The roll-out of smart meters to most retail consumers is an important prerequisite for active consumers, with 88.5% of retail connections and about 90% of industry equipped with a smart meter. However, for the period 2021-2030, the plan does not provide clear targets or objectives for demand response, storage and flexibility, nor does it quantify flexibility needs. Instead, flexibility in the form of demand response, storage or adjustable capacity is market-driven. The assessment of flexibility needs and a clear objective to tackle it is particularly missing in light of the congestion challenges in the Dutch electricity network.

The draft updated NECP indicates that the Netherlands are still in the process of developing a specific policy aimed at the reduction of **energy poverty**, and therefore no dedicated assessment and related objective are clearly defined. The first national energy poverty monitor was published in January 2023. Besides income and purchasing power, three other indicators were used to measure energy poverty: 1. energy prices, 2. energetic quality of the building and 3. potential for investment in sustainable improvement of the building. In 2020 over 450,000 households were found to be energy poor. As part of a wider package of purchasing power support measures, specific measures were taken in 2022 to cushion the impacts of high energy prices on low-income households. Since the winter of 2022 households are also better protected against disconnection in case of arrears on energy bills. A series of other measures and initiatives were taken to increase energy efficiency in the short ('energy fixers') and medium/longer term (home insulation programme). Energy poverty budgets are being used to scale up these activities which may be especially helpful in addressing energy poverty, although they are not only targeted at energy poor households.

There is no reference to national objectives or a specific timetable to develop the specific measures announced as well as the link between energy efficiency and social policies and measures. There are few details on potential synergies with measures to develop demand

response, and to accelerate building renovation and energy savings in a targeted manner to have a direct effect on energy-poor households and empower vulnerable consumers.

3.5 Research, innovation, competitiveness and skills dimension

3.5.1 Research and innovation

The draft updated plan refers to the Multiannual mission-driven Innovation-programmes and sub-programmes as the core of the Dutch energy and climate research programme, focussing on energy R&I on achieving specific 2030 and 2050 targets for the deployment of renewable electricity, offshore, the built environment, alternative mobility, and climate neutral food and industrial processes.

The **main financing instrument** supporting energy R&I is the national growth fund, which since its creation in 2021 has made available EUR 1.1 billion for energy topics (such as renewable hydrogen and heat infrastructure). Other tools, such as the DEI +, HER +, MOOI, TSE Industrie R&D contribute approximately EUR 200 million per year for this purpose. The plan also mentions that in 2021 the Government invested EUR 421 million in energy research and innovation by knowledge institutions, universities and businesses and its focus on underlying energy themes, while the size of private expenditure for energy innovation projects has been around EUR 100-150 million per year since 2012. However, the plan is less informative on future spending for energy topics. Instead, it mentions it is working on a package of instruments aligned with the increased climate and energy ambitions of the government for 2030, 2035 and 2040, which will also involve recalibrating the main energy research instruments necessary to achieve the innovation commitments of the future.

The Netherlands has indicatively earmarked EUR 15 billion from the national climate fund to **scale up production of clean energy technologies**. Schemes for e.g., the promotion of green hydrogen production through electrolysis, production of green gas, renewable fuels through gasification, and geothermal will be developed from the allocated and earmarked resources in the draft multiannual climate fund programme for 2024. The draft updated plan does not elaborate on how the Climate Fund will be implemented or on specific objectives for 2030 and 2050.

The draft updated plan contains insufficient information to assess **regional R&I cooperation** in which the Netherlands is involved. Cooperation through the European Strategic Energy Technology (SET) Plan and its implementation working groups (IWGs), Mission Innovation, Horizon Europe, the Clean Energy Ministerial and the International Energy Agency's Technology Collaboration Programs are mentioned as important activities in the landscape of R&I, but without providing any specific targets for the future.

3.5.2 Competitiveness

The Netherlands has put in place measures intended to support research, innovation and investments in manufacturing and **scaling-up commercially available clean energy technologies**, equipment and components. The draft updated NECP mentions in particular the subsidy scheme for accelerated climate investment in industry (VEKI) and the (national investment scheme for climate projects in industry (NIKI). The aim of the VEKI is to support the acceleration of CO₂ reducing investments in industry companies and was extended to SMEs in 2023. The NIKI mirrors the European Innovation Fund and is a

subsidy scheme for investments and operating costs of large-scale innovative investments in industry. The NIKI is currently under development. The plan is less precise on how it will ensure the resilience of its supply chains for clean technologies.

The Netherlands integrated the notions of **recyclability and circularity** in its draft updated NECP. The Government sees a potential of 2 to 4 Mt of CO₂ emission reductions that can be achieved in the Netherlands by taking policy measures designed to stimulate the circular economy. The government sees several opportunities to further strengthen the link between the circular economy and climate and energy policies. Circularity will also be considered when developing the national climate fund, for example by including some tailor-made arrangements, such as measures to standardise and incentivise bio-based construction and circular demolition.

The draft updated NECP mentions **digitalisation**, including the digitalisation of labour processes and work processes. Digitalisation is also a cross-cutting theme in the National Energy System Plan published in summer 2023. This includes privacy, cybersecurity and vendor lock prevention. The Netherlands provides little information on targets related to digitalisation of the energy system, however.

3.5.3 Skills

The draft updated NECP identifies skill shortages that undermine the development of strategic sectors in the energy transition and provides an analysis of expected jobs to be created by 2030 to enable climate action in the Netherlands. In early 2023, the government published the Green and Digital Jobs Action Plan with the aim to ensure quality employment and training for the transition. The draft updated NECP did not include more information on skill gaps and measures/investments to overcome them to boost European competitiveness in clean energy technologies, equipment, and components.

4 JUST TRANSITION

Just transition aspects are addressed in the draft updated NECP in a limited manner. The plan mentions that the authorities wish to put fairness at the centre of their climate and energy policy by applying the ‘emitter’ pay principle but also accounting for the ability to pay, minimising increases in the burden on low and middle-income earners. The plan does not translate this into a quantified and granular analysis of employment, skills and social impacts of the energy and climate transition, including distributional impacts. There is also no preliminary analytical basis for preparation of the Social Climate Plan, even though the authorities are exploring the role of Social Climate Fund in the broader policy spectrum, as described in Section 7.

The tight labour market and the need for **skilled personnel** is repeatedly referred to in multiple sections of the draft updated NECP, as is the intention to engage disadvantaged groups in the labour market. The plan does not elaborate on specific targets or measures but refers to the recently launched Action Plan for Green and Digital Jobs to ensure quality employment and training for the transition. Similarly, employers are encouraged to invest in re- and upskilling via the Employers’ Awareness Plan, while the ‘Aanvalsplan Techniek’ aims to promote the uptake of technical jobs. The Just Transition Fund is described as a funding source in transition regions with the greatest challenges, but overall the plan pays little attention to the regional or local socio-economic impacts of the climate

and energy transition, including only general references to the Territorial Just Transition Plans.

As analysed in Section 3.4, the Netherlands does not yet have a strategy for addressing people specifically affected by **energy poverty**, including vulnerable customers, low-income households or people living in social housing, nor does it have concrete and targeted support measures for these vulnerable groups. The draft updated plan does not elaborate on the resources specifically devoted to supporting a just transition, other than mentioning the Just Transition Fund.

5 REGIONAL COOPERATION

The draft updated plan covers infrastructure policy considerations, objectives and envisaged action through existing cooperation platforms like the Pentalateral Energy Forum and the North Seas Energy Cooperation. However, the plan does not include joint measures or initiatives under some of the available cooperation mechanisms in renewables, including in the margins of regional fora, such as political high-level groups. On energy security, the Netherlands has still not signed any of the three pending solidarity agreements for the security of gas supply (with Belgium, Germany and Ireland), and the plan does not mention any progress or action in this regard.

6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP

The draft updated plan reflects some key synergies within and between the five dimensions of the Energy Union such as consistency between growth in electric vehicles and roll-out of charging infrastructure; opportunity for increased consistency between circular economy and climate and energy; policies (circular economy contributing to the climate goal, the restoration of biodiversity but also to security of supply of raw materials) and the inclusion of a sustainability framework to ensure that the use of biomass is sustainable and does not lead to negative environmental impacts. However, the draft updated plan does not fully analyse these consistencies, nor does it provide a quantitative analysis of interactions between certain objectives. In addition, the plan states that energy saving is an important pillar of a sustainable energy system, but overall it contains little information on the application of the ‘energy efficiency first’ principle to infrastructure deployment or diversification strategies, or on the integration of this principle into each dimension.

7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS

The Netherlands submitted its proposed amendment to its RRP on 6 July 2023, including a REPowerEU chapter. The amendment has been endorsed by the Commission on 29 September 2023 and adopted by the Council on 17 October 2023. Several reforms and investments included in the RRP and its amendment can be partially identified in the draft updated NECP. More specifically, this concerns 17 out of 21 climate relevant measures of the Dutch RRP (i.e., those with 40% or 100% climate tagging). However, measures that are reflected do lack sufficient detail to enable a full comparison with those in the RRP. This is the case for energy taxation and the Investment Subsidy

Sustainable Energy and Energy Savings (ISDE), on which limited information is provided. No milestones, targets or financial support from the Recovery and Resilience Fund (RRF) are mentioned, and there are no explicit cross-references to the RRP and its REPowerEU chapter (with the exception of a short and general reference to investments in offshore wind). Overall, the plan does not clearly specify the role of the RRP and its amendment (including the REPowerEU chapter), nor does it explain how these reforms and investments will help to implement the draft updated NECP and vice versa.

The draft updated NECP includes projected emission levels of the main air pollutants for which Directive (EU) 2016/2284 sets emission reduction commitments and recognises clean air co-benefits and risks from some policies and measures. The plan does not provide information on how the recognised air quality challenges resulting from bioenergy use are addressed, nor does it, on a more general level, address how clean air (National Air Pollution Control Programme or NAPCP) and the draft updated plan are aligned.

The draft updated plan is partially consistent with the transition process outlined in the territorial just transition plans (TJTJs). For instance, it refers to the planned phase-out of coal in electricity production by 2023. However, other measures included in the TJTJ do not figure in the draft updated NECP, such as the cessation of gas extraction in October 2023. Both measures are central in view of their possible impact on decarbonisation.

The plan does not quantify the climate impacts of measures currently included in the **CAP Strategic Plan (CSP)**. The plan therefore does not explain whether the CSP is in line with the new LULUCF and ESR targets or whether additional measures are necessary.

The plan provides an inadequate analytical basis for the preparation of **the Social Climate Plan (SCP)** that will address the impacts of the new emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2) on vulnerable households, transport users and micro enterprises. Nevertheless, a special section dedicated to the Social Climate Fund (SCF) mentions that the Netherlands is exploring how best to link the SCF with its current energy and climate targets and clarify the role of the SCF within the broader policy framework by the end of 2023. Although incomplete, this shows that a reflection at the administrative level has started ahead of finalising the NECP. The plan lists some potentially SCF-eligible measures, such as energy efficiency upgrades for vulnerable households, but stops short of making explicit links with the SCF objectives. In its current state, the plan does not outline reforms or a policy framework for the future SCP. It does not concretely explain how the SCP will build on the NECP update and how the consistency between the two plans will be ensured.

Compared to the **National Adaptation Strategy (NAS)**, the draft updated NECP is less detailed and less ambitious on the respective actions.

The draft updated NECP broadly addresses the challenges identified in the 2023 European Semester Country Specific Recommendations. The revised draft includes actions to reduce fossil fuels dependency through accelerating the deployment of renewables and extending energy efficiency measures including investment, in particular in the built environment, and step up policy efforts on the provision and acquisition of the skills needed for the green transition.

8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS

8.1 Investment needs

The draft updated NECP explicitly states that no specific analysis is available on the **investments needed to reach the 2030 targets**. A reference is only made to the yearly "Climate Note" for investment flows which provides insights into the realised and expected public investments linked to climate policy with a time horizon of five years. The draft updated plan therefore does not contain an assessment of total investment needs to achieve its targets nor does it provide a breakdown of these investments between the public (EU and national) and private sector or by energy segment (i.e., renewables energy efficiency, research and innovation, grids, energy and heat storage, etc.), which could have helped ensure consistency with investments planned under the revised RRP.

The plan only includes 'indicative pictures' of **national costs for the policies and measures** for a 49% economy-wide reduction by 2030 below 1990 levels and a 55% reduction scenario, both split by sector (built environment, mobility, agriculture and land use, industry, and electricity), even if these do not cover all five dimensions of the Energy Union. In addition, these two scenarios only provide estimates of the cumulative additional investments up to 2030 above those projected in 2017. For the 49% scenario this amount to between EUR 56 billion and EUR 75 billion (EUR 1.6 to EUR 1.9 billion in 2030), roughly half in the electricity sector. To reach the new -55 to -60% target, the cumulative additional costs to bridge the 22 Mt additional reductions would amount to between EUR 5.9 billion and 7.2 billion. The methodology for calculating these investment needs is, however, not described in detail.

8.2 Funding sources

The draft updated NECP did not provide information on the **sources of financing** of each policy and measure, including information on the public and private part, the lifetime of the measure, the share coming from the EU budget, or explicitly specifying the RRF contribution. An overview table gathering all the budgetary information of the different policies and measures was not provided.

The draft updated plan provides only a limited qualitative analysis of how additional **public finance will be mobilised** that are needed to close the investment gap, mainly stating this will be done through subsidies, standardisation and pricing. Examples include an increase in the CO₂ charging rate as of 2025, a ban on the use of fossil fuels for heating processes during expansion, new construction, and replacement of industrial production installations, and adjustments to the energy taxes to make sustainable alternatives more attractive. None of the scenarios above include information about the budget planned.

Nevertheless, the plan mentions that the **Climate Fund is one of the main instruments to enable financing** for measures contributing to the new climate target of 55-60% GHG emission reduction below 1990 levels. Other sources include the Heat Fund, the National Growth Fund and various national subsidy schemes. EU funding is less often specified, with no mention of the Cohesion Policy and with the exception of the Just Transition Fund. The programmes making these resources available have been adopted in 2022 and implementation has started.

9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP

Overall, the draft updated plan is based on solid quantitative analysis. The methodologies used for projections and the impact assessment of specific policies and measures are clearly explained and referenced. Most of the required elements of the analytical basis are present in the plan for the ‘with existing measures’ (WEM) projection. The macroeconomic, employment and skills, and environmental effects of the planned policies and measures until 2030 are briefly discussed.

The macro-economic assessment contains useful information but could be further developed. A robust and quantitative analysis has not been undertaken. The assessment contains information on the impact of the overall Fit-for-55 package on the Netherlands but is lacking an evaluation of the policies and measures proposed in the NECP itself. The assessment essentially summarises a qualitative macroeconomic analysis of the Fit-for-55 package, prepared by the Netherlands’ Bureau for Policy Analysis (CPB) in their 2022 publication entitled “*Economische beschouwing Fit for 55-pakket*”. The only quantitative GDP estimate contained in the draft update is for the EU as a whole and this is taken from the Commission’s impact assessment in 2020. The summary does not include quantitative estimates of the package’s impact on GDP growth, consumption, and employment. The assessment includes a qualitative description of the package’s impact on energy intensive sectors. The qualitative methodology employed by CPB is described in their publication. For the remaining aspects of the assessment, no methodology is described. The chapter describes a potential impact of the ETS on public finances. The estimates are not precise, ranging from EUR –10 billion to EUR +6 billion. There is no description of the financing of the proposed measures. The new ETS for buildings, road transport and additional sectors (ETS 2) has been considered in the plan but not in the projection scenarios.

There is no formal assessment of the impact of the planned policies and measures on competitiveness, but this impact is briefly described as largely preserved by the provision of free allowances under the ETS and the introduction of the European carbon border adjustment mechanism (CBAM). Projections of sectorial developments are provided for GHGs for the ETS (2030), the ESR (2030) and the LULUCF Regulation (2050), and sectorial developments with existing measures until 2040. The draft updated plan considers possible economy-wide or sectoral bottlenecks in workforce and skills availability. Emissions of air pollutants (NO_x, NH₃, PM_{2.5}, SO₂ and NMVOC) are shown comparing WEM and WAM and projected until 2030.

The WEM projection is based on official data from the annual national climate and energy outlook (*Nationale Klimaat- en Energieverkenning, KEV*) from the environmental assessment agency of the Netherlands (PBL) from 1 May 2022 (KEV 2022), including data from national statistical institute and from Eurostat. When no official data are available, other sources are used (especially post 2040 data from studies by the organisation for applied scientific research of the Netherlands (TNO). Detailed reporting on the WEM projection using the voluntary template is appreciated. The WEM projection largely covers the five dimensions of the Energy Union and most of the required variables are present. It provides an ETS/ESR split for the period until 2030. Sectoral emissions are displayed until 2040. The projections are presented in a largely transparent way.

References documenting the modelling approach and the models used are provided. Moreover, most key input parameters have been provided, including sources. According to the plan, the update in 2024 will incorporate the latest projects available in KEV 2023 and the developments from the '*Nationale Plan Energiesysteem 2050*' (NPE), after consultation with neighbouring countries. The WAM projection and the impact assessment of planned policies and measures are largely based on "planned" policies and "as on the agenda" policies. Impact assessments are based on the KEV 2022 in both cases. However, the parametrisation of the WAM scenario is missing.

According to the references provided, model sensitivity analyses have been carried out compared to the 2020 NECP, which supports the robustness of the analysis. Primary energy consumption (including non-energy use) and final energy consumption are in line with Eurostat figures. The draft updated NECP follows its own fuel and emission price assumptions.