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**COMMISSION STAFF WORKING DOCUMENT**

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

*Accompanying the document*

**COMMISSION RECOMMENDATION**

**on the draft updated integrated national energy and climate plan of Poland covering the  
period 2021-2030**

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# 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 to set more ambitious energy and climate objectives, with a strong focus on diversifying energy supplies. These developments are reflected in the legislative framework adopted under the ‘Fit for 55’ package and the REPowerEU plan.

Poland’s draft updated national energy and climate plan (‘the draft updated NECP’ or ‘the plan’), submitted on 1 March 2024, partially takes into account this new geopolitical and legislative framework.

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

|   |   | 2020                               | Progress based on latest available data   | 2030 national targets and contributions  | Assessment of 2030 ambition level   |
|---|---|------------------------------------|---|--|---|
|  | Binding target for greenhouse gas (GHG) emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)                          |                                    | 2021: +8%<br>2022: +4.2% <sup>1</sup>   | -17.7%   | NECP:<br>-14.1%   |
|   | Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)                               |                                    | Reported net removals of -20 095 kt CO <sub>2</sub> eq. in 2021, and reported approximated net removals of -20 285 kt CO <sub>2</sub> eq. in 2022 | -3 278 kt CO <sub>2</sub> eq. (additional removal target)<br><br>-38 098 kt CO <sub>2</sub> eq. (total net removals) | Insufficient ambition and not reaching target based on projections  |
|  | National target/contribution for renewable energy:<br><br>Share of energy from renewable sources in gross final consumption of energy (%) | 15.6% (SHARES)<br><br>15% (target) | 2022: 16.9%   | 29.8%  | PL contribution of 29.84% is below the 32% required according to the formula set out in Annex II to the Governance Regulation |
|  | National contribution for energy efficiency:  |                                    |   |  |   |
|   | Primary energy consumption  | 96.4 Mtoe                          | 2021: 103.95 Mtoe   | 79.9 Mtoe  | primary energy consumption contribution is  |

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

|   |  |           |                  |                  |  |
|---|--|-----------|------------------|------------------|--|
|   |  |           |                  |                  | 79.9 Mtoe. EED recast Annex I formula results: 79.93 Mtoe  |
|   | Final energy consumption                   | 71.6 Mtoe | 2021: 75.15 Mtoe | 58.5 Mtoe        | PL final energy consumption contribution is 58.5 Mtoe. EED recast Annex I formula based on updated 2020 reference scenario results: 58.53 Mtoe |
|  | Level of electricity interconnectivity (%) | 3.9%      | 5.1%             | 15% <sup>2</sup> |  |

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

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

Poland submitted its draft updated NECP more than 8 months after the deadline of 30 June 2023<sup>4</sup>. As a result, the European Commission had limited time to draft its assessment in this staff working document, with Poland needing to submit its final updated NECP by the legal deadline of 30 June 2024.

**Poland's draft updated NECP refers to the revised energy and climate targets recently agreed under the 'Fit for 55' package and the REPowerEU plan.** However, it does not sufficiently elaborate on how these targets will be effectively reached.

**On the reduction of greenhouse gas emissions under the Effort Sharing Regulation (ESR),** the plan provides emission projections demonstrating that, in the scenario with existing measures put forward in the draft updated NECP, Poland is not on track to meet its national greenhouse gas target of -17.7% in 2030 compared to 2005 levels. According to the plan's projections, Poland would fall short of the target by 3.6 percentage points.

**On the Regulation on Land Use, Land Use Change and Forestry (LULUCF)<sup>5</sup>,** the projections in the plan indicate that Poland will fall significantly short of the 2030 target, highlighting the need for strengthened climate action. The draft does not clearly set out a

<sup>2</sup> Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2023-2024). 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.

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

<sup>4</sup> Article 14(1) of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1.

<sup>5</sup> Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU (OJ L 156, 19.6.2018, p. 1).

pathway to increase the land sector's contribution to the EU's overall enhanced climate target. Despite identifying few relevant policies and measures, net removals are projected to decrease significantly by 2030. The draft does not provide a clear implementation timeframe or a quantification of the impact of specific policies and measures. It also lacks information on the status and progress in ensuring the higher tier levels and geographically explicit datasets that are needed to ensure the robustness of net removal estimates.

**On carbon capture, use and storage (CCUS)**, the plan does not identify any annual CO<sub>2</sub> emissions that can be captured or any geological CO<sub>2</sub> storage capacity. No details on CO<sub>2</sub> transport are provided. Nonetheless, the plan mentions the importance of carbon, capture and storage (CCS) and the need to estimate the CO<sub>2</sub> storage capacity to assess CCS potential.

The plan also refers to the **circular economy**, but focuses mainly on waste management, without detailing specific policies and measures and their expected impact on decarbonisation, resilience and strategic autonomy.

The draft updated NECP reflects **partial progress in meeting international commitments under the Paris Agreement**. Poland confirms the commitment to phase out coal use for power generation but only by 2049. While the draft updated NECP explains how fossil fuels subsidies will be phased out, it does not explain by when.

**On adaptation to climate change**, the draft updated NECP does not contain adequate analysis of the relevant climate vulnerabilities and risks to achieving 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 Poland's achievement of national objectives, targets and contributions under the Energy Union are not properly described in terms of their scope, timing and expected impact.

**For renewable energy, Poland's draft updated NECP puts forward a contribution to the overall EU target of 29.8%** of renewables in the country's gross final energy consumption by 2030. This is below the share of 32% resulting from the formula in Annex II to Regulation (EU) 2018/1999 on the Governance Regulation of the Energy Union and Climate Action (the 'Governance Regulation'). The draft plan includes annual trajectories for renewables in the electricity, transport and heating and cooling sectors but only gives values for 2025 and 2030 for the overall share of renewable energy sources. The draft updated plan includes values for the overall use of renewable fuels of non-biological origin (RFNBO), but it provides no trajectory indications for their use in industry. On transport, the plan does not provide certainty that the country will achieve the minimum targets set. Poland's plan provides several lists of measures that it has adopted – or intends to adopt – to support the deployment of renewable energy in line with Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413 (the 'revised RED II').

**On energy efficiency**, the Polish draft updated NECP is a partial update of the 2020 NECP. It only provides a with-existing-measures (WEM) scenario, which is not in line with the ambitious 2030 targets indicated (set according to the updated EU reference scenario). The with-additional-measures (WAM) scenario will be presented in the final updated NECP in June. Poland includes the results of the formula in Annex I to Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 (recast) ('EED recast') as national contributions to the 2030 energy efficiency targets but does not list the planned

policies to achieve them. The new ambition of the EED recast is also considered in the cumulative energy savings target for 2021-2030 but not for other obligations, such as those on the public sector.

**On buildings**, the draft updated NECP does not set out more ambitious targets than those included in the Polish 2020 long-term renovation strategy but only recalls its main elements. The plan mentions that priority will be given to phasing out coal from households and reducing thermal needs, detailing some measures. It is unclear if these are additional measures compared to the 2020 strategy.

**On the energy security dimension**, Poland shows a high level of ambition. It emphasises the importance of energy sovereignty and resilience to geopolitical disturbances and includes detailed objectives and measures across sectors. In the **gas sector**, Poland, in particular, aims to strengthen its infrastructure (such as storage or LNG import capacity), develop the use of renewable and low-carbon hydrogen, and keep domestic production stable. All these measures will be important for the security of gas supply in a context where gas imports are expected to increase, especially because of the coal phase-out. **On electricity**, Poland presents an ambitious plan to shift from coal to renewables. It describes plans to make the system more flexible, including grid planning, demand side response and storage. However, a coherent strategy and indicative targets for storage are not provided. Another dimension of Poland's security of supply is the development of **nuclear** energy in the medium (from 2030-2035). The draft NECP assesses the future nuclear fuel dependencies, but does not refer to nuclear waste management.

**On oil**, the plan anticipates a small decrease in consumption by 2030. However, it does not assess the adequacy of the oil infrastructure in the long term (refinery, oil stocks, pipelines) given the expected decline in oil demand.

**On the internal energy market**, Poland's draft updated NECP highlights the importance of supporting consumer empowerment, energy communities, demand response for balancing the energy system, and the penetration of renewable energy sources. However, these general policies are not accompanied by clear objectives or sufficiently detailed measures to support them. Moreover, the plan lacks a clear definition of the role of flexibility in the energy system and does not provide a clear assessment of flexibility needs or a related objective.

The draft updated NECP does not provide much information on progress in the **retail** market regarding the regulatory framework. In addition, it does not describe the current measures in place to alleviate the impact of high energy prices on households. Only some measures are mentioned, such as support for energy communities. There are some **energy poverty** targets, but they are not based on a thorough analysis, and most measures target the general public without specifically addressing people affected by energy poverty.

**The research, innovation, competitiveness and skills dimension** of Poland's draft updated NECP only contains some measures to support research, innovation and investment in clean energy technologies. The plan refers to an expected increase in public spending on research and innovation (R&I) to 2.5% of GDP by 2030. However, the plan lacks an estimated breakdown of specific R&I investments in the energy sector for 2030 and 2050, and it does not refer to a specific fund or set out clear competitiveness targets.

The plan does not provide sufficient information on measures and investments needed to support the manufacturing capacities for net-zero technologies to strengthen the resilience

of supply chains. The plan refers to the importance of having a skilled workforce but does not provide measures to overcome the identified skills gaps for clean energy technologies.

The **just transition** is addressed in the draft updated NECP to a very limited extent, concentrating mostly on energy poverty, State aid schemes the coal phase-out and green skills. Neither an analysis of the impact of the transition on employment and skills nor an assessment of the distributional effects is available. The coal phase-out, planned to be completed by 2049, is accompanied by social acceptance measures, such as a social contract and a law on the social protection of workers in the electricity sector and the lignite mining industry, and by funding from the Just Transition Fund. However, an assessment of other resources for a just transition is missing.

Furthermore, the draft plan does not provide sufficient information to prepare the **social climate plan** or describe how the consistency of the two plans will be ensured.

**On its strategic alignment with other planning tools**, the draft updated NECP covers only to a very limited extent the implementation of the measures in Poland's recovery and resilience plan (RRP). Only a few measures are mentioned, but the plan does not elaborate on how they will contribute to achieving the targets set out in the NECP. The measures in the draft updated NECP do not reflect the 2023 European Semester country specific recommendations on energy security and energy efficiency that will help Poland reduce its dependence on fossil fuels.

**The investment needs** are not quantified. The draft updated NECP does not provide details on the investment needs and funding sources for the specific policies and measures proposed. It is therefore not possible to identify potential gaps in terms of funding.

The draft updated NECP is based on a **quantitative analysis**, covering all five dimensions of the Energy Union. However, only the WEM scenario is included in the plan, and projections are only available until 2030. Moreover, the interpretation of the definition of the WEM and WAM scenarios is not fully in line with the Governance Regulation.<sup>6</sup> The methodologies used for the projections are explained in general terms. The draft updated NECP does not provide details on the macroeconomic assessment.

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

### **2.1 Process and structure**

Poland submitted its draft updated NECP on 1 March 2024, more than 8 months after the legal deadline. Overall, the plan is not well developed and does not follow the structure in Annex I to the Governance Regulation. Nonetheless, it does cover all five dimensions of the Energy Union. For each dimension, the plan provides targets and actions rather than detailed measures. However, the objectives are described in very general terms, and there are no specific and measurable goals. Policies and measures are presented as a simple list of actions with no further context or details provided on their scope, timing and expected impact. The description of the WEM scenario is provided as an annex and does not follow the structure recommended in Annex I. The WAM scenario, although announced in the

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<sup>6</sup> Regulation (EU) 2018/1999

plan's introduction, is missing. No impact assessment of the policies and measures is provided.

The specific policy needs of cities and local authorities are only partially included in the draft updated NECP. The urban context is mainly mentioned in relation to measures on district heating and cooling, urban transport and air quality. Local authorities are identified as recipients of some national financing instruments and investments. However, the draft plan does not include strategies to support multi-level governance. There is no mention of initiatives such as the Covenant of Mayors for Climate and Energy (which involves more than 50 cities and local authorities, covering about 17% of the country's population) or the 100 Climate-neutral and Smart Cities Mission (involving Kraków, Łódź, Rzeszów, Warsaw and Wrocław).

## **2.2 Public consultation**

The draft updated NECP does not provide information on the process for its preparation. It only states that an updated version of the plan will be presented for public consultation and sectoral arrangements around Q2/Q3-2024. It is also unclear if a Strategic Environmental Assessment has been conducted or if it is planned.

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

No regional cooperation is mentioned by Poland in preparing the draft NECP.

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

## **3.1 Decarbonisation dimension**

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

The draft updated NECP recognises the increased climate targets included in the ESR and the LULUCF Regulation as part of the 'Fit for 55' legislative package but only embeds them partially.

**The draft updated plan does not include any indication of when and if Poland intends to achieve climate neutrality.** Poland is the only Member State that still has to submit its long-term strategy, which was due by January 2020. The plan does not include emissions projections to 2050 under either a with-existing-measures (WEM) or with-additional-measures (WAM) scenario. Projections submitted in March 2023 under Article 18 of the Governance Regulation show that Poland's net greenhouse gas emissions (including LULUCF and excluding international aviation) are set to reach 331 million tonnes of CO<sub>2</sub> equivalent by 2050 with existing measures and 272 million tonnes of CO<sub>2</sub> equivalent with additional measures. This is equivalent to projected reductions by 2050 of 30% and 43% of 1990 levels, respectively.

The updated projections in the draft updated plan point to more ambitious greenhouse gas emission reductions by 2030 (i.e. 35%). However, the information it provides does not enable the Commission to fully assess whether Poland's progress is consistent with the EU's climate-neutrality objective. Based on the available information, progress by Poland towards this objective appears to be largely insufficient.

**The draft updated NECP does not reflect the required ambition under the ESR** as the policies and measures in the plan are not collectively sufficient to reach the country’s obligation for the effort sharing sectors. The ESR sets Poland’s 2030 emissions reduction target at -17.7% compared to 2005 levels. The plan projects emissions from the effort sharing sectors to be above this target in the WEM scenario, suggesting the need for more ambitious climate action. In the WEM scenario, Poland would reduce ESR emissions by 14.1%, falling short of its 2030 ESR target by 3.6 percentage points. The draft plan does not include WAM projections. In 2021, Poland’s ESR emissions were below the annual emission allocation by 7.2 Mt CO<sub>2</sub> eq.

Member States have **flexibilities under the ESR** to comply with their targets. No specific use of ESR flexibilities is mentioned, but the draft NECP states that Poland will use the flexibility mechanisms if necessary. To assess whether Member States comply, the use of saved annual emission allocations from previous years is taken into account.

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

| <b>ESR target and projections<sup>7</sup></b> |                     |   |  |                             |                             |
|---|---------------------|---|--|-----------------------------|-----------------------------|
|   | <b>2030 target*</b> | <b>2021 performance (inventory data)*</b> | <b>2022 performance (approximated data)*</b> | <b>2030 WEM projection*</b> | <b>2030 WAM projection*</b> |
|   | -17.7%              | +8%                                       | +4.2%  | -14.1%                      | -                           |
| <b>EU</b>                                     | -40%                | -14.5%                                    | -16.9%                                       | -27%                        | -32%                        |

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

**The draft updated NECP does not reflect the increased ambition of the new LULUCF Regulation** and the 2030 national target requiring Poland to deliver an additional -3 278 kt CO<sub>2</sub> eq. of net removals. According to the projections submitted in its plan, Poland will only achieve -6 891 kt CO<sub>2</sub> eq. by 2030 compared to 2005 levels. This is significantly short of the 2030 target of -3 278 kt of additional removals, which should lead to a total value of -38 098 kt CO<sub>2</sub> eq. of net removals in 2030. This highlights the need for additional measures and much more ambitious climate action. Poland even projects a sharp slowdown in net removals already in 2025 (compared to 2005 levels) due to the ageing of stands and destructive or forest-disrupting biotic and abiotic factors (p. 37). Moreover, Poland’s plan does not set a clear pathway to increasing the contribution of the land sector to the EU’s overall enhanced climate target. **The plan does not provide a scenario with** additional measures.

**The draft updated NECP describes policies and measures to support the LULUCF sector only briefly and generically.** It does not provide information on the timeframe for their implementation, the source of funding, and, most importantly, the quantification of the impact.

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<sup>7</sup> The comparison between the ESR target and emission projections does not take into account the flexibilities available for Member States under the ESR to comply with their 2030 targets. The ESR emissions will be comprehensively reviewed in 2027 (for 2021-2025) and 2032 (for 2026-2030).

The plan lacks information on the status of and progress to be made in ensuring improvements to higher tier levels/geographically explicit datasets for monitoring, reporting and verification, in line with Regulation (EU) 2018/1999. Overall, the draft updated NECP does not clearly present how its policies and measures for Poland's LULUCF sector will contribute to the long-term transition to climate neutrality by 2050.

**Poland's draft updated NECP refers to the circular economy, but only focusing on waste management, and without recognising its importance for climate mitigation and adaptation.** The policies and measures do not seem to go beyond awareness raising, vague references to waste management plans and the valorisation of bio-waste. There is no mention of upstream measures in areas such as circular design or circular business models. The circular economy and its potential for reducing GHG emissions, resilience and strategic autonomy in the supply of raw materials is therefore neither quantified, nor well integrated in the draft NECP.

**The draft updated NECP includes policies and measures for improved access to zero- and low-emission transport.** It refers to provisions for low- and zero-emission fleets across transport modes; it also refers to infrastructure, such as for electric vehicle and hydrogen charging but without aligning it with the new Alternative Fuels Infrastructure Regulation specific targets. The plan includes a number of measures to promote sustainable urban mobility, public transport and low-emission transport modes, and active mobility in large municipalities with specific planning and support.

Other measures in Poland's draft updated plan are focused on the transport of goods (such as incentives to promote a shift from road to rail, inland waterways and multimodal transport). There are also measures to bring in zero-emission technologies and related infrastructure in the rail sector through electrification and hydrogen for non-electrified railroads.

**The draft updated NECP does not include measures to produce and deploy sustainable aviation fuels** (to contribute to the ReFuelEU Aviation Regulation) or sustainable maritime fuels, or the production and deployment of rewable and low-carbon fuels for the FuelEU Maritime Regulation.

On **carbon capture, use and storage (CCUS)**, the draft updated plan does not identify annual emissions that could be captured by 2030 from emissions trading systems (ETS) and non-ETS sources, and does not provide any concrete estimation of geological CO<sub>2</sub> storage capacity. To assess the potential of CCS in Poland, the plan mentions the need to estimate CO<sub>2</sub> storage capacity; however, no particular action or timeline is set out in this respect. It also mentions social acceptance as a key challenge for the development of CO<sub>2</sub> storage. The plan does not anticipate deploying any dedicated CO<sub>2</sub> transport capacity. Nonetheless, the importance of CCS deployment is mentioned, with a focus on developments at EU level. The focus on CCS deployment in Poland, as shown in the plan, is decarbonisation of heating. The main applications for CCS could be for waste thermal treatment installations and gas and coal-fired power plants. An action is vaguely mentioned to develop 'research and scientific, educational and commercial projects on CCS and CCUS'; however, no additional details are provided.

Shortcomings in the draft updated plan on tackling **non-CO<sub>2</sub> emissions** are problematic because these emissions accounted for 33% of all greenhouse gas emissions in the effort sharing sectors in 2021 and because of the gap towards the ESR target. The plan provides neither specific nor measurable objectives to reduce methane emissions from the energy system, the largest source of non-CO<sub>2</sub> emissions, mainly from fugitive emissions. For

instance, it does not address methane emissions from fuel combustion and is not specific about fugitive emissions: the plan merely mentions some recent policy developments at EU and international levels without describing their national implementation. The plan also fails to prioritise action to reduce emissions from the agricultural sector despite acknowledging that existing measures have not had a significant impact in the past decade. This is reflected in Poland's projections, which show a further increase in greenhouse gas emissions from agriculture by 2030. The draft updated NECP recognises the value of organic waste management and turning it into biomethane but does not follow this up with concrete measures. On F-gases, the draft updated NECP refers to: (i) restrictions on the placing on the market of bulk HFCs and those contained in equipment; (ii) a record-keeping order; (iii) an order to recover F-gases; (iv) the obligation to certify personnel and economic operators; (v) the prohibition of the use of primary F-gases with GWP of 2 500 or more for servicing or maintenance of refrigeration equipment; and (vi) restrictions on the placing on the market of passenger vehicles equipped with air-conditioning systems containing F-gases with GWP of 150 or more. However, none of these measures are substantiated, and the plan does not give projections for the future development of F-gas emissions.

**The analytical basis of the draft updated NECP includes an assessment of the impact of policies and measures on achieving greenhouse gas emission mitigation targets,** even though their individual impact is not always quantified. However, the policies and measures are generally not described in any detail in terms of scope or likely impact, and no timing is provided.

The draft updated NECP reflects partial progress towards **international commitments** under the Paris Agreement. The plan refers on several occasions to the need to phase down the use of fossil fuels by 2049 when the country's last mine will cease to function. A support system for hard-coal mining regions is in place, based on a social contract, which includes a mechanism to finance subsidies to reduce the production capacity of mining companies and defines social protection for employees of closed mines. The system provides subsidies where costs are greater than revenue, and a reference price mechanism and extraction limits are set. The phasing out of fossil fuel subsidies is not discussed in the draft updated plan.

### *3.1.2 Adaptation*

Poland did not include adaptation goals in its first NECP in 2019, and they are missing again in the draft updated NECP. The country recognises climate change risks in the decarbonisation dimension when related to agriculture, as agriculture and food supply could be affected by droughts and climate change. Poland does not indicate in the plan any climate vulnerabilities and risks that may threaten achieving national objectives, targets and contributions in the other Energy Union dimensions. Furthermore, it does not specify policies and measures in place or planned (nature-based or otherwise) to address climate risks. Innovative approaches, such as insurance policies or fiscal measures addressing a climate protection gap, are not included. Poland mentions programmes on preserving natural water conditions and increasing water resources and water retention, such as the construction and restoration of small water bodies, the restoration of wetlands and floodplains and the creation of water storage conditions. However, there is no further information provided on their goals and concrete implementation (funding, timeline). The plan does not describe actions and investment aimed at minimising environmental and climate impacts. It mentions the relevance of biodiversity also in relation to climate

adaptation, but hardly describes measures to tackle its loss. The draft plan indicates that the potential for hydropower is limited, but also mentions actions to promote it. The impact of water stress or scarcity due to climate change, seasonal or regional, is not assessed.

### 3.1.3 Renewable energy

**According to the draft updated NECP, Poland expects to reach a renewable energy share of 29.8% in 2030.** However, Poland provides projections for the expected share of renewable energy in 2030 based on the WEM scenario and indicates that a WAM scenario is still under development.

Absolute energy values are also included in the draft updated NECP. This contribution is below the minimum 32% based on the formula in Annex II to the Governance Regulation. The scenarios set out in the draft updated NECP provide yearly values for the power, heating and cooling, and transport sectors. However, only values for the overall renewable energy contribution are given for 2025 and 2030. The plan includes little information for beyond this period until 2040. It only mentions a projected renewable electricity share of 59% for 2040. Information on the indicative trajectory to reach the 29.8% contribution in 2030 is limited. The specific reference point for 2027 is missing. **The achieved share of renewable energy sources for 2022 (16.9%) is above the trajectory (16.4%)** and calculated in line with the EU 2030 renewable energy target of 32%, based on Poland contributing a share of renewable energy sources of 23%. The value for 2025 of 20.9% is below the trajectory following the formula in Annex II (22.4%) and is calculated in line with the higher EU 2030 renewable energy target of 42.5%<sup>8</sup>. It means that more effort is required to reach the trajectory in the last years before 2030.

**Renewable electricity generation is projected to reach 50.1% of all electricity generated in 2030 and 59.1% in 2040.** Poland explicitly states that this is an estimate and not a target. Wind power (onshore and offshore) will become the main source of renewable electricity with more than 30% of electricity production and almost 22 GW (including 5.9 GW offshore) installed by 2030. This is more than a tripling of its installed capacity in 2020 (when wind power accounted for only 8.5% and 6.5 GW of installed capacity). Solar power generation will increase to 12.6% with 29.3 GW installed, up from only 1.2 GW in 2020). Bioenergy is expected to account for 5.8% of electricity generated (1.7 GW installed), compared to 5% and 0.8 GW installed in 2020. Hydropower is projected to account for 3% of renewable electricity generation and 3.6 GW of installed capacity (compared to 1.8% and 2.7 GW of installed capacity in 2020). There is little information on innovative renewable energy innovative technologies, and there is no target for developing **innovative renewable energy** technologies. While referring to the objective to achieve an efficient and sustainable development of offshore wind energy, the draft NECP does not describe the way offshore renewable development is addressed in the maritime spatial plan and how marine environmental objectives will be taken into account.

**The draft updated NECP sets a target of a 32.1% renewable energy share in final energy consumption in heating and cooling,** with indicative levels projected to reach

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

26.1 in 2025 and 31.6% in 2030. 32.1% corresponds to an average annual increase of 1 percentage point from 2021 to 2030, exceeding the target set in the revised RED II. However, Poland does not clearly describe whether it will comply with the mandatory average annual increase of 1.1 percentage points from 2026 to 2030. Nor does the country provide a target for increasing renewables in district heating and cooling (DHC). It only mentions that it will be very difficult achieving the indicative target increase of 2.2 percentage points in district heating and cooling without any detailed explanation and that the final value for that sector will be determined at a later stage. Moreover, Poland does not indicate the share of renewable energy use in buildings for 2030.

While waste heat is mentioned in the plan, it remains unclear to what extent it will contribute to heating and cooling targets. The plan also lacks information on whether renewable electricity will count towards those targets. The share of biomass (solid and gaseous biomass) will decrease in the overall renewables share in heating and cooling, from 93% in 2020 to 75% in 2030, and will remain by far the main source of renewable heat (around 7 800 ktoe). The use of heat pumps is expected to grow quickly and represent 1 800 ktoe by 2030 compared to 300 ktoe in 2020. Solar thermal energy (4.2%, an increase of more than 3 percentage points) and heating from incineration (2.5%) will also contribute to the overall heating and cooling targets.

**In the transport sector, the share of renewable energy is projected to reach 17.7% in 2030 energy terms.** The plan stipulates that achieving the 29% target is not possible in Poland. The country has not specified what this target would mean in terms of reducing greenhouse gas emissions by 2030. Poland would rely on a range of renewable energy sources in transport, including biofuels, biogas, renewable and low-carbon hydrogen and renewable electricity. In particular for public transport, Poland intends to promote a mix of measures, such as electromobility and fuel cell technologies. However, the potential for using biomethane in transport is limited. The main measures included in the plan to promote renewable fuels are regulatory preparation, financial instruments and awareness-raising. Other measures outlined in the plan aim to improve energy efficiency in transport and increase the use of renewable electricity in road and rail.

Poland expects renewable electricity in transport to more than triple between 2020 and 2030 (rising from 88 ktoe in 2020 to 272 ktoe in 2030 without multipliers). This will mostly be driven by a greater uptake of electric vehicles and an increased electrification in the rail sector. The draft plan includes several measures to promote electrification in different transport modes, for example, by improving the recharging infrastructure, making subsidies available for electric cars and buses and electrifying railways. Poland considers that it is not possible to meet the **combined target for renewable fuels of non-biological origin (RFNBOs) and advanced biofuels** of 5.5% and the 1% sub-target for RFNBOs set out in the revised RED II for 2030. The country projects that more than 1.46 million electric and plug-in hybrid vehicles could be registered in 2030. For hydrogen-powered vehicles, projections indicate that around 6 000 vehicles could be registered in Poland in 2030 compared to 183 467 battery electric vehicles registered in March 2023. Poland also introduced mandatory quotas for clean vehicles in public procurement and promotes the purchase and use of electric vehicles for public transport. The contribution of electrification to decarbonise road transport is expected to reach 0.095 Mtoe by 2030. The need to expand the electric vehicle recharging infrastructure is mentioned but without giving specific figures.

Poland's draft updated NECP states that the country could have 2 GW of hydrogen electrolyzers in 2030. This is based on the country's 2021 national hydrogen strategy,

which Poland is set to revise according to the draft NECP. This would enable the production of almost 0.2 Mtoe of RFNBOs: the overall needs correspond to about 0.3 Mtoe, requiring imports to cover a part of the national target. The plan also sets out some measures for the use of RFNBO in demand sectors, particularly transport and industry, but states that a policy to achieve the binding level of 42% in industry still needs to be set out. Poland estimates that if RFNBOs achieved a 42% share of final energy consumption in the industry sector stemming from the revised RED II, this would correspond to 0.27 Mtoe. The plan lists measures to help achieve the industry target but does not describe them in detail. These measures include support to develop hydrogen valleys, R&D investment, contracts for difference for hydrogen production, support to build renewable and low-carbon hydrogen generation capacity and implementation of the Nordic-Baltic Hydrogen Corridor.

The draft plan mentions that work will continue on preparing a comprehensive legislative package that will set out the operational rules for the hydrogen market and support instruments for producing zero-carbon hydrogen based on a contract for difference model.

The draft updated NECP does not list **international partnerships** between Poland and future exporters of RFNBOs. It only mentions that there would be a need to import some RFNBOs to meet the national and sectoral consumption targets under the revised RED II.

On **policies and measures**, the draft NECP lists these alongside some priority areas. However, due to the insufficient detail of those measures, in particular the timeframes and budget, it is difficult to assess their expected impact on achieving the national contribution.

On electricity, Poland intends to continue promoting the deployment of renewable energy through long-term support schemes. In the **electricity sector**, support includes auctions, contracts for difference, feed-in-tariffs and feed-in-premiums. While the increasing importance of power purchase agreements is acknowledged in the plan, it does not include specific support measures for promoting such agreements. On guarantees of origin, Poland has not identified any measures to promote an extended use of this instrument.

Poland prioritises the phasing out of coal from *centralised heating*. In district heating, measures will include the promotion of biomass in cogeneration plants, electric boilers powered by renewable electricity, large heat pumps, geothermal and heat recovery, and waste to energy. The draft NECP indicates that, in addition to renewables and low-carbon solutions, investments in gas-fired cogeneration plants will still be necessary.

The draft plan also refers to **energy system integration** in the context of district heating. This involves the expansion of heat and cold distribution systems, including developing smart networks, promoting thermal storage and better linking the electricity and heating sectors.

Poland plans to adapt the legislation on rules setting heat tariffs. This aims to use the additional free emission allowances resulting from the reform of the EU emissions trading system (ETS) to accelerate decarbonising the heating and cooling sector.

Other reforms will tackle barriers to using renewables in heating, promote renewables-based district heating and cooling systems and support thermal storage; however, the plan lacks details on these measures.

The draft updated NECP does not provide any information on the possibility of setting up **joint projects** with other Member States. The plan also does not refer to the possible use of the EU's Renewable Energy Financing Mechanism and financing renewable energy projects via the Connecting European Facility.

The draft updated NECP lacks information on measures to accelerate the deployment of solar energy in line with the EU's solar energy strategy, such as by simplifying and accelerating permit-granting procedures. There is only a reference to continuing existing support schemes for smaller and bigger installations. The issue of the intermittency of solar (and wind) is underlined in several places, and the need to upgrade and further develop the electricity grid is highlighted. The NECP also refers to energy communities and their importance in the energy transition. However, it only focuses on support to rural communities and providing information via a handbook.

Poland has not indicated in its draft updated NECP whether it has put in place a strategy on **energy system integration**. However, it has introduced several measures aimed at promoting demand response and storage. These will increase the flexibility of the grid, which is needed for better integrating renewables into the electricity grid.

**On the industry sector**, a few measures are mentioned in the draft updated NECP aimed at increasing the use of renewables via contracts for difference and support for hydrogen as described above. Those measures lack sufficient detail to ascertain to what extent they could lead to an increased use of renewables by industry.

The draft plan states that solid biomass, sustainable or not, will play the largest role to achieve the renewable energy target, especially due to its relevance for heating, and this despite efforts to deploy other renewable energy sources. The draft plan considers that compliance with the RED II sustainability criteria with installations above 20 MW for solid biomass and 2 MW for gaseous fuels will create feedstocks supply and costs problems. This statement is not supported by a quantitative analysis, and the draft NECP has not updated the text to the revised RED, which reinforces the sustainability criteria and apply them to installations of at least 7 MW in the case of solid biomass. Similarly, the draft NECP does not refer to the cascading principle, which must be taken into account by Member States in their public support schemes under the revised RED. Biomethane is mentioned as a complementary source of energy, but the draft plan hardly mentions measures for its deployment.

**On bioenergy**, Poland's draft updated NECP acknowledges the significant technical potential of biomass, yet it notes several challenges that may hinder the growth of biomass and biogas capacity. The obligation to use sustainable biomass in units above 20 MW for solid fuels and above 2 MW for gaseous fuels, the limited availability, and the underdeveloped biogas market might affect the relatively low development rate of biomass and biogas capacity in the coming years. The ambition to leverage sustainable biomethane as a way to reduce natural gas imports is low. The draft updated NECP includes: (i) some projections on biomass and biogas generation capacity up to 2030; (ii) the projected shares of bioenergy (generation and consumption) by sector (electricity, heating and cooling, and transport); (iii) projections on bioenergy supply by fuel type (differentiating between biofuels, biomethane and solid biomass); and (iv) limited data for imports by fuel type. However, the draft plan does not include the estimated trajectories for biomass supply by feedstock and origin, failing to differentiate domestic production from imports. The draft updated NECP lacks information on the source of forest biomass used for energy. The draft updated NECP has not highlighted exhaustively the cascading principle. In addition, there is no assessment of the domestic supply of forest biomass for energy purposes in 2021-2030, in line with the strengthened sustainability criteria of the revised RED II. The plan also does not assess the compatibility of the projected use of forest biomass for energy production with Poland's obligations under the revised LULUCF Regulation, particularly for 2026-2030.

Although Poland's draft updated NECP highlights the need for **accelerating permitting procedures** to deploy renewables, it underlines that this will require some effort. The plan mentions setting up a contact point for information on renewable energy procedures. However, it is not clear whether this will grant project developers the right to only have to deal with one contact point throughout the whole administrative procedure.

### 3.2 Energy efficiency (including buildings) dimension

**Energy savings are presented as a central part of the draft plan, with Poland targeting to reduce final energy consumption by 1.3 Mtoe per year until 2030** compared to the 2017-2019 average<sup>9</sup>. This corresponds to a corrected national contribution of 79.9 Mtoe for primary energy consumption (compared to 79.93 Mtoe according to the EED recast Annex I formula based on the updated EU reference scenario) and 58.5 Mtoe for final energy consumption (compared to 58.53 Mtoe according to the EED recast Annex I formula based on the updated EU reference scenario). Poland's targets are set in line with the results of the EED recast Annex I formula. The targets for 2030 are also lower than the country's 2020 energy efficiency targets (-17.11% and -18.3% for primary and final energy consumption respectively)<sup>10</sup>. However, the Polish draft updated NECP does not provide any WAM scenario projections, stating that those will be included in the final plan. It is expected that these projections will include additional measures that will cover the current energy savings gap, although Poland already considers it very challenging to achieve further reductions.

The target on reducing the total **final energy consumption of all public bodies** is not well described in the plan. In addition, it does not include enough information about the planned measures or on exempting public transport and the armed forces. On the obligation to renovate 3% of public body buildings each year, the draft updated NECP lacks information about the targets and the total floor area to be renovated in line with Article 5 EED (Article 6 EED recast) on the **exemplary role of public bodies' buildings**.

The draft updated NECP provides satisfactory information on what measures will be used to deliver the **energy savings required** post-2020 under Article 7 EED (Article 8 EED recast). The total requirements for the 2021-2030 cumulative end-use energy savings are 44 870 ktoe, and the savings are consistently expressed in final energy.

The Polish draft updated NECP adopts a mixed approach, including an **energy efficiency obligation scheme** and alternative policy measures. The expected contribution of the scheme is 21 197 ktoe, while that of the alternative measures is 27 967 ktoe. In total, the expected contribution of the mixed approach is enough to ensure the targets are met. For most of the alternative measures, Poland reported the **expected cumulative savings**, the annual savings, the type of measure, the obliged bodies and the legal basis. For all of them,

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<sup>9</sup> Calculations by the Commission's Joint Research Centre (JRC): The 2017-2019 average has been calculated based on the EED recast FEC definition, and the savings per year have been calculated for 2021-2030.

<sup>10</sup> The comparison has been done with the 2020 targets included in the final NECPs 2020 JRC assessments (96.4 Mtoe PEC, 71.6 Mtoe FEC).

a short description of the mechanism to avoid any double counting of savings is also provided. Moreover, for all the measures, the plan describes the methodology to calculate the energy savings and a monitoring system after implementation. All the alternative measures are financial mechanisms, except the ‘fuel charge and issue charge’, which is a tax measure.

The policies and measures contained in the draft plan under the energy efficiency dimension are well described and include an **adequate estimation of energy savings**. Sufficient details are provided in order to understand how these measures contribute to achieving the 2030 energy efficiency contributions. The Polish draft updated NECP presents a range of measures covering all sectors. However, the main focus is on the buildings sector, which is expected to bring the largest share of energy savings. The draft NECP mentions the ‘**energy efficiency first principle**’ but does not mention any specific policies pertaining to it.

The Polish draft updated NECP does not raise the ambitions of the **long-term building renovation strategy** submitted in 2020 but recalls its key parts, targets and milestones. The strategy sets maximum energy consumption limits that buildings must comply with by 2027, 2045 and 2050, along with the number of buildings to be renovated to meet these objectives. The goal of these measures is to reduce Poland’s total annual greenhouse gas emissions by 10% and save around 147 TWh of final energy in the residential sector.

On building policies and measures, priority will be given to **phasing out the use of coal** in households and reducing thermal needs. Other programmes and measures are listed, including clean air priority programmes and tax credits for the financial part and tightening requirements for the regulatory part. However, the draft NECP does not explicitly mention Cohesion policy instruments which play predominant role among the other instruments. It is unclear if these are additional measures on top of those in the 2020 long-term renovation strategy.

### **3.3 Energy security dimension**

**Energy security and energy sovereignty** are highlighted as priorities for Poland’s energy policy. The country’s goals are to be achieved, in particular, through diversification (of the energy mix and of countries supplying energy) and low import dependence. **Fossil fuels** still play a major role in the Polish energy mix, accounting for 87% of gross available energy in 2022, down by 4 percentage points compared to 2013. However, this reliance on fossil fuels contributes to a relatively low level of energy import dependence on non-EU countries, due to the continued importance of domestic coal. Nevertheless, Poland’s import dependence on non-EU countries did increase from 33% in 2013 to 41% in 2021<sup>11</sup>. The draft updated plan does not provide any future trends in fossil fuel use or dependence on non-EU countries.

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<sup>11</sup> Eurostat.

**Natural gas** accounted for 17% of the primary energy mix and 10% of the electricity mix in 2021<sup>12</sup>. Poland has some domestic gas production (3.3 Mtoe in 2021), but most consumption relies on imports (87% in 2022 according to the plan). In 2021, dependence on Russian gas was 57%<sup>13</sup>. However, the country has **now entirely phased out its dependence on Russian imports**, replacing them with supplies from Norway, Germany, the USA and Qatar.

The country can particularly rely on: (i) an onshore LNG terminal in Świnoujście with a capacity of 6.2 bcm/y, operational since 2016 (which received financial support from European Regional Development Fund) ; (ii) an underground gas storage capacity of 3.7 bcm distributed between 10 different sites; and (iii) the Baltic Pipe interconnector that transports gas from the North Sea to Poland via Denmark.

Poland's draft updated plan aims to further strengthen the country's security of gas supply. This includes commissioning a floating storage regasification unit in the Gulf of Gdańsk; however, no estimated first day of operation or the envisaged capacity is specified. The plan also sets out to ensure the adequate protection of its infrastructure and the obligation for energy companies to diversify their gas portfolio (i.e. limiting the share of imported gas from a single source in a given calendar year to a maximum of 33% by 2026). The country also aims to keep domestic natural gas production stable until 2030 (around 3 300 ktoe per year), which will require continuing exploration and making existing reservoirs more efficient. While national production contributes to the security of supply of the country and consequently of the EU, it is important that such projects do not jeopardise the EU objective of reaching carbon neutrality by 2050. The draft plan does not assess the compatibility of these measures with this long-term objective. Lastly, the plan refers to an increase in gas storage capacity although without providing further details.

On low-carbon and renewable gases, the draft updated plan estimates that around 2 GW of electrolyser capacity should be in operation by 2030, enabling the production of 193.5 thousand tonnes of renewable hydrogen per year. To support this deployment, Poland aims to develop the required infrastructure, particularly by supporting the creation of the Nordic-Baltic Hydrogen Corridor. There are also plans to create hydrogen storage capacity, taking advantage of the country's estimated storage potential of 10 000 TWh in salt caverns.

As a consequence of Russia's unprovoked war of aggression against Ukraine, Poland managed to reduce its demand for gas by 8% between August 2022 and January 2024, far below the 15% voluntary objective and the EU average (18%)<sup>14</sup>.

There are no nuclear power reactors currently in operation in Poland. However, the country has been working intensively on embarking on a nuclear programme. Nuclear energy is expected to be one of the key tools in reducing greenhouse gas emissions and ensuring an adequate energy system in the long term. As part of its national nuclear energy programme, Poland is considering constructing six large-scale nuclear reactors (built in pairs) with a total capacity of 6-9 GWe located at two nuclear power plants. The first pair is planned to

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<sup>12</sup> Eurostat.

<sup>13</sup> [https://economy-finance.ec.europa.eu/document/download/9eab3bf2-b809-4bd9-b185-0e97ed436f69\\_en?filename=PL\\_SWD\\_2023\\_621\\_1\\_en.pdf](https://economy-finance.ec.europa.eu/document/download/9eab3bf2-b809-4bd9-b185-0e97ed436f69_en?filename=PL_SWD_2023_621_1_en.pdf)

<sup>14</sup> Directorate-General for Energy's Chief Economist unit, based on Eurostat data.

be commissioned between 2030 and 2035, after which the other reactors would follow. By 2040, the installed capacity of the nuclear fleet is expected to reach 7.4 GWe in total.

Several companies in Poland are also expressing interest in developing small modular reactors. To ensure security of fuel supplies, Poland is envisaging several options. Long-term supply contracts will be concluded with reliable suppliers (mainly from EU Member States and OECD countries) to cover all front-end nuclear fuel cycle services. The country plans to build up a sufficient reserve of fresh fuel (enough for at least several years). Poland is also considering analysing the amount of available uranium deposits (particularly unconventional) and commercialising these resources. In the area of nuclear research and development, the country will focus its efforts on GEN III and GEN IV nuclear reactor technologies – small modular reactors or high-temperature solutions. Security of electricity supply is broadly covered in the plan, including: (i) focusing on the impact of moving away from coal-fired generation; (ii) introducing nuclear into the Polish energy system; (iii) rapidly increasing renewable energies; and (iv) developing electricity interconnections and innovative solutions, such as demand side response, electricity and heat storage, and other flexibility instruments. However, the draft plan does not assess the management of nuclear waste.

The plan envisages significant changes to Poland's electricity generation mix. This is because the share of solid fuels (lignite and coal together), which accounted for 69% of total electricity generation in 2020, will drop to 57% in 2025 and to 29% by 2030. Coal is to be completely phased out from the Polish energy system (both from household use and electricity and heat generation) by 2049 at the latest. This is significant from an energy security perspective as solid fuels are mainly produced in the country (83% of the total consumption). The share of natural gas will grow from 11% to 16% between 2020 and 2030. The share of variable renewables will increase more significantly: wind (onshore and offshore) is expected to increase from 10% to 30% from 2020 to 2030, and solar power from 1% to 13% over the same period. This is a major shift in the country's clean energy transition. The total share of renewables will be around 50% in 2030, up from barely 18% in 2020.

Electricity generation in Poland is expected to increase to 197 TWh in 2030, which is an increase of 39 TWh compared to 2020. This will be principally due to an increase in wind, solar and gas-fired generation, with a diminishing use of solid fuels. New generation capacities are expected to double, reaching 92 GW in 2030, mainly due to higher contributions from photovoltaics (28 GW), wind (15 GW) and gas (8 GW), in contrast to a reduction in solid fuel capacity (-6 GW). However, the draft plan does not provide a detailed trajectory of electricity production from lignite and hard coal for 2025 and 2030, nor does it relate it to the decommissioning of existing power blocks..

The draft updated NECP mentions the need for more effort to integrate wind and solar into the national energy system given the rapid increase in their use. In terms of energy storage, the plan goes beyond hydro and pumped hydro plans to include batteries and storage technologies based on decarbonised gas (e.g. renewable hydrogen). The plan also features the promotion of demand side response (DSR). The significant role of storage and DSR in capacity markets is recognised. Even if hydro in Poland has geographical limitations,

pumped hydro storage technology is expected to undergo a promising increase (from the current capacity of 1.4 GW to 4.6 GW by 2040). Two particular storage projects are mentioned: one on heating and cooling solutions and the other on recycling primary battery fuel cells. The plan sees promising potential for DSR, with the total DSR capacity set to rise from 0.6 GW to 2.4 GW by 2030. However, despite these remarkable figures, the plan does not set out an overall strategy or measurable objectives for improving flexibility and energy storage.

The plan recognises that the integration of more renewables into the system requires not only more flexibility and balancing activities but also a substantial development of the transmission and distribution grids. The plan gives details of particularly important developments: the synchronisation of the Baltic area with continental Europe (including the construction of the Harmony link between Poland and Lithuania) and improving flows with Germany, Czechia and Slovakia without mentioning Cohesion Policy support to onshore interconnector between Poland and Lithuania. The development and integration of local energy communities and smart solutions are also touched upon in the plan as tools to promote security of electricity supply.

In 2020, **oil** represented 28.8% of Poland's energy mix. The domestic sectors with the largest oil consumption are transport and industry respectively, representing 82% and 16% of all final oil consumption. To cover national demand, the country is almost fully dependent on deliveries from non-EU countries. Poland was dependent on Russian crude oil for 47% of its imports in early 2022. In 2023, Poland fully replaced Russian crude oil with imports from Saudi Arabia and Norway. For oil products such as petrol and diesel, Germany is now a major supplier. Poland is a major oil transit country as the North Druzhba pipeline is used for crude oil deliveries to Germany.

Poland has one oil port in Gdańsk, two major oil pipelines and two major refineries. The draft updated NECP outlines investments to increase the capacity of the Pomeranian pipeline that connects the Gdańsk oil terminal to the Plock refinery and to provide an alternative supply route to refineries in eastern Germany. The plan also recognizes the role of EU oil stockholding obligations.

According to the draft NECP, crude oil consumption is expected to decrease by 11% by 2030, and the consumption of oil products is expected to decrease by 7%<sup>15</sup>. Import dependence is expected to remain unchanged. The draft plan does not include any projections on oil consumption beyond 2030. It also lacks measures to ensure the suitability of the oil infrastructure in the long term (refinery, oil stocks, ports) with the expected fall in the demand for oil.

The Commission notes that the draft plan only briefly considers the adaptation of the energy system to climate change and critical infrastructure protection when referring to the **resilience of energy infrastructure** to extreme weather events. However, the draft plan does not assess the impact of water stress on e.g. hydropower or nuclear. The protection of

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<sup>15</sup> In comparison to 2020 figures.

energy infrastructure (e.g. the Baltic Pipe) is also mentioned as part of ensuring the diversification and, consequently, the security of gas supplies. Strengthening cybersecurity in the energy sector, through awareness-raising and education or drawing up contingency and recovery plans, is also mentioned as a positive step towards this objective. The resilience of critical raw materials supply chains is, however, only briefly touched upon as part of waste management policy. It is not discussed in the wider context of competitiveness and the required sourcing of these materials for manufacturing certain strategic technologies. The circular economy, which is a key component to ensure security of supply of raw materials, is hardly developed and the few references focus on waste management.

The draft plan sufficiently describes the measures to be taken if there is a security of gas or electricity supply crisis, with references to the national gas preventive action plan and emergency plan. Poland has submitted its preventive action plan, emergency plan and updated national risk assessment. The country has also submitted the common risk assessments for the Ukraine, Belarus (which it coordinated), Norway and Denmark regional risk groups. The common risk assessment has been partly updated for the North-Eastern regional risk group, which was due on 1 October 2022.

The updated plan also makes the link to the Polish risk preparedness plan in the electricity sector. This has the aim of ‘reducing the risk of a situation resulting in a curtailment of electricity supply to customers or to prevent a crisis in the electricity sector, by enabling preventive, mitigating or restoring electricity supply and the proper operation of the electricity system’.

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

On **infrastructure developments**, the REPowerEU plan identifies the LNG terminal in Gdańsk as being beneficial for the Baltic Sea region and Southeast Europe. The project received funding from the Connecting Europe Facility of around EUR 19.6 million in 2022 to develop technical specifications and carry out engineering works. The construction of this terminal is also reflected in the draft plan with an objective to diversify gas supplies. Poland has already managed to significantly diversify its gas supplies with the construction and expansion of the LNG terminal in Świnoujście, the completion of the Baltic Pipe, the Poland-Slovakia and Poland-Lithuania gas interconnectors and internal network reinforcements.

Poland puts a strong focus on renewable/low-carbon hydrogen in several of the plan’s actions, such as support to R&I, production, transmission, distribution and end-use sectors. On infrastructure investments, the plan mentions the Nordic-Baltic Hydrogen Corridor (which has been included in the first list of projects of common and mutual trust). However, the draft updated NECP does not present a robust plan on hydrogen infrastructure needs. Specific projects (to be identified in the upcoming update of the national hydrogen strategy) are also missing along with a clear justification for them and timelines.

Implementation of the hydrogen backbone in Europe and investments in infrastructure supported by the Important Projects of Common European Interest have already been approved. As a result, the plan would benefit from clearer information on how and when this infrastructure at European level will be linked with the planned infrastructure in Poland.

The draft plan acknowledges that deploying renewable energy sources requires a well-developed and adapted infrastructure. It also describes how developing transmission and distribution grids has become a priority in the transformation of the electricity sector. However, the specific measures to address this challenge are not explained in detail in the plan. The low interconnectivity is mainly to be tackled by optimising the use of existing connections and removing bottlenecks in individual national systems. For cross-border connections, the focus is on finalising the Baltic synchronisation and completing the Poland-Lithuania cross-border link (the Harmony Link).

**On the integration of the internal energy market**, the draft updated NECP includes policy objectives and measures to foster the uptake of an enabling framework for prosumers and self-consumption. Measures to promote demand response and smart solutions that help balance the energy system, such as billing at hourly prices and some financial instruments, are also mentioned without great detail. The draft plan also puts forward key priorities to develop energy clusters and energy cooperatives in the energy system, giving an estimate of the number of expected energy communities in 2030. Support programmes to improve the investment process and the financing of such projects is mentioned but is not supported by clear objectives or detailed measures. Moreover, the overall role of flexibility for the system is not clearly mentioned and, therefore, no clear objectives for the deployment of flexibility sources or a sound assessment of the flexibility needs is included.

To protect **vulnerable and energy-poor customers**, the draft updated NECP does not refer much to the progress made on the retail market as regards the regulatory framework. It also does not refer to the current measures in place to alleviate the burden of high energy prices on households or give the status of these measures. The plan includes some general to deploy flexibility options, support for demand side management mechanisms and a gradual roll out of smart metering; however, it gives no concrete targets. On the other hand, the draft NECP sets an objective to develop and integrate local energy communities into the energy system, aiming to set up 300 energy communities by 2030. Poland admits that speeding up the issuing of permits for new investments will be challenging and will require many fundamental organisational and administrative changes to national legislation.

**On energy poverty**, the draft updated NECP provides an estimate that on average 9.05% of the population is affected, based on four indicators from the EED (data from 2019). This issue is linked to the need to reduce final energy consumption through energy efficiency and decarbonisation measures. The plan also quantifies the expected energy savings. Reducing energy poverty is one of the draft updated NECPs' objectives, including through initiatives such as the Renovation Wave. The plan sets a target to lower energy poverty to 11% by 2030 and 7% by 2040. The draft NECP does not explain the methodology behind these estimates, and the former does not seem to improve on the 2019 data. In addition, the action proposed to tackle energy poverty is not very detailed – there is only one specific tailor-made measure focusing on people affected by energy poverty with no further explanation or quantification<sup>16</sup>. All the other measures do not specify whether they target the general public or people affected by energy poverty.

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<sup>16</sup> Action 131 Reducing energy poverty and protecting vulnerable customers.

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

#### 3.5.1 Research and innovation

The Polish draft updated plan includes national objectives for research and innovation (R&I) in **clean energy technologies** in qualitative terms only (e.g. in terms of priority technology areas and objectives, such as energy efficiency, energy storage, renewable technologies, low- and zero- emission transport, hydrogen technologies, digitalisation and smart grids, nuclear energy and carbon management and social aspects of the energy transition). However, there are no specific objectives for the medium (2025-2030) or long-term (2050) nor funding associated with these priority areas. For instance, there are no estimated **annual spending allocations for R&I** by priority areas such as clean energy and climate technologies. The plan sets as a target to increase **public spending on research and development (R&D)** to 2.5% of GDP by 2030 for all sectors, which is a major increase compared to the current spending. However, the target is not energy and climate specific.

In the field of nuclear energy, Poland mentions R&I on high-temperature gas-cooled reactors and small-scale modular reactors. There is also **R&I activity** related to mine drilling of coal beds. On Poland's intention to end coal extraction in the longer term, the NECP explains that R&I should not lead to a technology lock-in. The draft updated NECP mentions CCUS technologies as an action but gives no details. Nevertheless, the plan lacks forward looking policies and measures in support of R&I.

On participation in and the use of **EU funding programmes**, the plan refers to further participation in the Horizon Europe programme, which is a very relevant objective. The plan does not mention existing funding possibilities, such as the Innovation Fund. The institutional capacity building and increased expertise in the technical and financial preparation of projects to use these EU funding programmes could be further explained.

The National Centre for Research and Innovation is mentioned as a coordination point. Participation in the Strategic Energy Technology Plan (SET Plan) is not highlighted, and there are no details on aligning its key research objectives with national strategies.

#### 3.5.2 Competitiveness

The plan lacks **strategic objectives, concrete measures and actions** of the competitiveness dimension. A broader analysis of the business environment and conducive support, such as access to finance and credits, is not specifically mentioned.

The plan does not explain Poland's position on investments in and targets for specialised manufacturing of certain strategic technologies, such as those described in the Net-Zero Industry Act. Given the prominent role of renewable and low-carbon hydrogen, there are insufficient details on the industry's competitiveness (decarbonisation of the industrial sectors) and Poland's objectives for the sectors. There is also no mention of the resilience of the supply chains for the main technologies for the clean energy transition and the importance of sourcing critical raw materials.

The draft updated NECP does not specifically address environmental sustainability, recyclability and circular economy, and the need to reduce dependence and effectively diversify the **sourcing of imported raw materials** and components required to

manufacture clean energy technologies. The situation could lead to technological dependence and growing trade deficits in high-tech products.

The plan mentions a smart meter implementation plan for the electricity sector but does not provide any further information on measures and investments related to the Digitalisation of the Energy System EU Action Plan.

### 3.5.3 Skills

The draft updated NECP acknowledges the issue of skills shortages for the energy and digital transition. However, it does not set out clear and quantifiable objectives or measures to support skills development, such as specialisation in certain areas of skills, or participation in the **Net-Zero Academies** and there is no specific mention of public-private collaboration. Moreover, vocational training curricula for the strategic technologies needed for the digital and green transitions are not addressed. The plan also does not specify any links with other initiatives such as Pact for Skills.

## 4 JUST TRANSITION

The draft updated NECP addresses just transition aspects only partially, concentrating mostly on energy poverty, State aid schemes and coal phase out regions. The plan lacks a comprehensive and territorially-focused analysis of economic, social, employment and skills impact of the climate and energy transition, including distributional effects on vulnerable groups.

Although the plan mentions that skills are essential in the energy transition, it does not include measures supporting access to and maintaining employment during the transition. The plan lists measures to adapt education profiles, skills and competence development, although without quantifying their impact. Moreover, the draft updated NECP does not provide sufficient information about the preparation of the social climate plan, as assessed in Section 7.

Poland commits to end all mining activities by 2049 and has concluded two social agreements for this reason. The first regional social contract for the Śląskie Province was concluded in 2021, with social protection measures for employees of the closed mines. This was followed by the Social Agreement on the transformation of the electricity and lignite mining sectors in 2022 aiming to facilitate the energy transition by phasing out electricity generation in carbon-intensive regions and developing low- and zero-carbon sources. According to the plan, the decommissioning will follow a fixed timetable, and coal and lignite-based blocks will be gradually removed from the energy-capacity structure by 2049. The trajectories for phasing out coal and lignite are partially aligned with the decarbonisation commitments set in the territorial just transition plans.

Lastly, the draft updated NECP does not describe the resources and measures specifically devoted to supporting the just transition, as outlined in the Polish Territorial Just Transition Plan and the Partnership agreement, except for briefly mentioning the Just Transition Fund for the coal phase-out regions.

## **5 REGIONAL COOPERATION**

The plan does not set out a strategic role for regional cooperation, but it does mention some interconnection projects with other Member States. The plan mentions regional cooperation projects in the internal energy market and energy security dimensions. These projects aim, in particular, to ensure connections fully function with neighbouring countries' systems (Germany, Lithuania, Czechia, Slovakia and Ukraine) and the Baltic Pipe pipeline. Moreover, the country plans to continue supporting the Ukrainian electricity system and increase the use of cross-border transmission capacity, including by building a Poland-Lithuania link.

Poland has yet to sign any solidarity agreement for the security of gas supply with its neighbours, even though it needs to sign such an agreement with five countries: Slovakia, Czechia, Germany, Denmark and Lithuania. There appears to be little regional cooperation with other Member States in the field of R&I and competitiveness, especially considering some of the common challenges and shared objectives. The draft updated plan does not include any measures or initiatives under some of the existing cooperation mechanisms in the area of renewables, including in the margins of regional fora, such as political high-level groups. The participation in the BEMIP High-Level Group is mentioned briefly but only in relation to the Baltic synchronisation project.

## **6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP**

In terms of interaction between the different dimensions, renewable energy is one of the main ways that Poland intends to achieve its decarbonisation goals. Hydropower has not been considered so far because of its low potential in the country. Poland plans instead on developing a new nuclear programme and expand its wind and solar power plants. The country also expects to accelerate the decarbonisation process through the wider adoption of energy self-production and consumption by energy communities and fostering the electrification of transport and heating and cooling by improving and modernising its energy systems.

By 2040, the draft updated NECP sets the ambition of covering all the economy's heating needs through district heating and low- and zero-emission sources.

The role of CCUS technologies in achieving decarbonisation targets has not yet been assessed. Poland also reports that LULUCF will not significantly contribute to achieving these targets. The energy efficiency dimension is not properly integrated into the other dimensions, and its description mainly consists of projections. While the energy efficiency first principle is mentioned, the plan does not explain how it has been integrated into national legislation and planning. The plan reports on some targets for the renovation of existing buildings and requirements for new buildings, mainly in the form of deadlines for renovating and starting construction of net-zero buildings. However, the plan does not explain how these measures will help achieve the targets.

Overall, the interaction among policies cannot be assessed because of the lack of information about them and related measures and no thorough analysis of the consistency, complementarity and synergies across different dimensions and among them. In fact,

policies and measures are presented as a mere list of actions, with no context, timeline, scope, targets, budget, responsible bodies or specific action.

## 7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS

**Poland formally submitted an amended recovery and resilience plan (RRP) and REPowerEU chapter on 31 August 2023.** They further strengthened the focus on the green transition, devoting 46.6% of available funds to measures that support climate objectives (up from 42.7% in the original plan).

The draft updated NECP mentions covers only very vaguely the amended RRP including the REPowerEU chapter. The draft updated NECP acknowledges that implementation of the REPowerEU chapter investments in expanding and modernising the transmission and distribution grid (G 1.2.3 and G1.2.4 in the REPowerEU Chapter) will contribute to addressing current grid constraints that limit the expansion of renewable energy sources. The plan mentions the Recovery and Resilience Facility as one of the EU and national funds earmarked to develop public transport. In particular, it includes a general mention of what the plan devotes to Poland's 'green and smart mobility'. However, the figure reported – EUR 6 million – appears to be significantly underestimated. There are only three explicit mentions to measures under the Polish RRP across the 146 actions in the NECP. This includes around 13 actions outlined in the NECP that relate to one of the 36 climate relevant investments in the RRP, but the measures that are reflected lack granularity and detail to allow for a full comparison with those in the RRP. Major financial instruments for the green and energy transition (B3.4.1 or G3.1.4) do not feature in the plan. The draft updated NECP also mentions the RRP in the context of financing sources for the stop smog programme, which will contribute to improving the energy efficiency of residential buildings. While not specified, the RRP measure concerned is probably B1.1.2 (Replacement of heat sources and improvement of energy efficiency in residential buildings). No mention of reforms to the national clean air programme included in the Polish RRP is made.

The few references to RRP measures (including those in the REPowerEU chapter) do not explain – in qualitative or quantitative terms – how the RRP will help achieve the targets set out in the NECP. This also makes it hard to evaluate the consistency between the NECP and the RRP. Overall, the consistency between NECP and RRP is vague and the NECP does not cover to a sufficient extent the reforms and investments planned under the Polish RRP.

The draft plan establishes a link between the NECP and the NEC Directive, as well as the updated **National Air Pollution Control Programme (NAPCP)**. The impact of planned policies and measures on the main air pollutants for which Directive 2016/2284 sets emission reduction commitments is quantified (at least for the WEM scenario, while the WAM scenario is not yet available and will be finalised only in Q2/Q3 of 2024). In cities, air pollution is planned to decrease through the expansion of electric and zero-emissions (RFNBO-fueled) vehicles, for both private and public transport, supported mainly by financial support and direct incentives.

The draft updated NECP is also only partially consistent with the adopted **territorial just transition plans (TJTPs)**. The plan refers to phasing out coal by 2049, which coincides with the TJTPs' commitments, but does not describe the intermediate path or a timeline to phase out coal and lignite-based power plants. Furthermore, the plan does not include

information on closing extraction sites and only states that it will follow a fixed schedule according to the social contract.

The plan does not give a sufficient analytical basis to prepare the **social climate plan** (SCP). The SCP will tackle the impact 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. The draft updated NECP does not provide any assessment of the potential impact of the ETS2 on the most vulnerable groups, and measures are not planned to identify transport poverty. The plan contains no information on the governance of the Social Climate Fund (SCF), the process to draft the SCP, the methodology to identify potential beneficiaries or anything else useful to effectively implement the SCF. Although the plan contains several measures that could be, in principle, eligible under the SCF, such as the ‘reducing energy poverty and protecting vulnerable customers’ programme, no specific link is made between the two. Therefore, the current draft updated NECP does not explain how the SCP will build on the NECP and how the consistency between the two plans will be ensured.

In the draft updated plan, Poland does not quantify the climate impacts of measures currently included in the **CAP strategic plan** (CSP) and does not explain whether the CSP is in line with the new LULUCF and ESR targets and whether additional measures are necessary.

**Compared to Poland’s national adaptation strategy**, the plan is less detailed and less ambitious on the respective actions.

**In the draft updated NECP, Poland only partially addresses the 2023 country specific recommendation** to accelerate the phase-out of fossil fuels and the deployment of renewable energy. Reform the legal framework for grid connection permitting and for renewable energy sources, including energy communities, biomethane and renewable hydrogen. Implement measures to promote energy savings and reduce gas demand. Scale up investment in energy efficiency for buildings and decarbonise the heat supply in district heating to address energy poverty. Further promote sustainable public transport modes. Step up policy efforts aimed at providing and acquiring the skills needed for the green transition, including for building renovation. The target Poland puts forward for the expected share of renewable energy sources in 2030 is below what is required under the formula set out in Annex II to the Governance Regulation. Although Poland sets a higher target for the share of renewable energy sources in final energy consumption in heating and cooling for 2030 than the one set in the RED II, it does not indicate the share of renewable energy use in buildings in 2030. The draft updated NECP underlines the need to accelerate permitting procedures but does not explain how this will happen or provide information on designating renewables acceleration areas. However, the Polish draft updated NECP outlines energy efficiency targets, which are in line with the EU 2030 targets, and sets out the policies and measures to achieve them.

On skills, the draft updated NECP acknowledges the issue of skills shortages for the energy and digital transitions but does not set out clear and quantifiable objectives or actions. The plan includes a number of measures to promote public transport and low-emission transport modes.

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

### **8.1 Investment needs**

The draft updated NECP does not include quantified information on the expected investment necessary to implement Poland's updated planned policies and measures.

### **8.2 Funding sources**

The draft updated NECP occasionally outlines when EU sources are used or will be used to finance Poland's planned key policies and measures. However, this is not done in a consistent way. There is also no consolidated overview at NECP level. It is therefore not possible to identify potential gaps in funding, given also the lack of a quantitative assessment of investment needs. The draft updated NECP mentions the use of public funds and the contribution required from private investment, particularly in R&I and in self-consumption installations, but it does not quantify them or differentiate public sources of funding from private sources. The plan also fails to specify the duration of the measure and the share of funding that will come from the EU budget. Cohesion policy support is almost completely neglected despite substantial allocation of EUR 10bn for energy transition by 2030.

Lastly, the plan does not outline the type of support schemes that will be applied to the different measures. No information on the sources of financing for each policy and measure was provided in the draft updated plan, on the public and private part, the lifetime of the measure and the share coming from the EU budget or NextGenerationEU.

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

The draft updated NECP is based only on a WEM scenario. However, it describes Poland's interpretation of both WEM and WAM scenarios. The plan states that the WEM scenario assesses the situation 'with implemented and planned policies and measures', and the WAM scenario is described as 'theoretical' and based on 'technically immature technologies, the availability of which is not currently known'. This seems to be at odds with the definition of the WEM and WAM scenarios in the Governance Regulation<sup>17</sup>.

The projections only cover the period until 2030 but include good sectoral disaggregation and a very good disaggregation by gas (including non-CO<sub>2</sub>) and air pollutants.

The projections of electricity demand are based on the bottom-up model STEAM-PL (set of tools for energy demand analysis and modelling). This model is based on a scenario encompassing macroeconomic and demographic variables, projected technological progress and the associated rate of improvement in energy efficiency. It is complemented by MESSAGE-PL\_Ind for the analysis of the manufacturing sectors covered by the EU ETS because that model is better suited for analysing CO<sub>2</sub> emission reduction strategies. The results have been compared to those of other well-established modelling suits<sup>18</sup>. For both models, the plan provides a general description of the characterising features.

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<sup>17</sup> Regulation (EU) 2018/1999.

<sup>18</sup> The MAED and BALANCE models by the Argonne National Laboratory, Chicago (USA), which are part of the ENPEP – Energy and Power Evaluation Program energy sector analysis package.

The WEM scenario is largely based on the parameters recommended by the Commission although with few discrepancies (e.g. population projections and ETS prices were adjusted upward). Data sources are well documented.

The WEM projection covers the five dimensions of the Energy Union, with most of the required variables present and well documented. The new ETS 2 has not been considered in projection scenarios.

The draft updated NECP does not contain an assessment of the macroeconomic impact of the policies and measures proposed. Poland plans to submit the WAM scenario in Q2/Q3 2024 to public consultation. The draft updated NECP lacks quantitative assessment of the impact of climate and energy policies (WAM scenario) on GDP. Moreover, the channels through which GDP would be affected are not well identified. There is no assessment of the impact on the public budget.