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COMMISSION STAFF WORKING DOCUMENT

Assessment of the final national energy and climate plan of Poland

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1. SUMMARY

Poland's final integrated national energy and climate plan (NECP)¹ shows that significant additional measures are required to achieve its 2030 **greenhouse emissions** target – for sectors not covered by the EU Emissions Trading System – of 7% below 2005 levels (as set in the Effort Sharing Regulation (ESR))².

The plan describes qualitatively some planned climate policies and measures, mostly in the transport and buildings sector, to cover the gap of 18 percentage points with existing measures, though scarce information is provided on emissions reduction measures in agriculture.

Poland intends to use the flexibilities available under the Effort Sharing Regulation³, if necessary. However, the NECP provides little information on policies and measures to generate the **land use, land use change and forestry** (LULUCF) credits that could potentially be used to comply with the non-ETS target.

On **renewable energy**, the NECP includes an explicit contribution to the 2030 EU target in a range between 21-23%⁴. This would still be unambitious, as an increase of 2 percentage points compared to the 21% put forward in the draft plan would still be 2 percentage points under the 25%, based on the formula in Annex II of the Governance Regulation⁵. The NECP does not outline a plan for reducing the country's dependence on coal and lignite, which still accounts for roughly 80% of electricity generation.

For **energy efficiency** Poland's contribution to the EU target is of modest ambition⁶ and amounts to 91.3 Mtoe of primary energy and 67.1 Mtoe of final energy consumption. The 'energy efficiency first' principle is not well reflected in the plan, even if the positive impacts of energy efficiency on competitiveness and reduction of greenhouse gas emissions are acknowledged. Poland has provided some useful elements on buildings policy in the NECP. It has not yet submitted its long-term renovation strategy.

In its plan, Poland set objectives for **energy security** on diversification and reduction of energy dependency. The plan also includes further policy objectives to the **internal electricity market**, notably to ensure (i) non-discriminatory participation for new market participants and (ii) market flexibility. The planned **interconnection level** for 2030 is 8.7%. The plan addresses the need to reach 70% available capacity on interconnections and reports on specific projects which will help achieve this target.

¹ The Commission publishes this country-specific assessment alongside the 2020 Report on the State of the Energy Union (COM(2020)950) pursuant to Article 13 of Regulation (EU) 2018/1999 on Governance of the Energy Union and Climate Action.

² Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

³ Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

⁴ With a 23% renewable energy target possible, subject to additional EU funding being granted to Poland, including for a just transition.

⁵ The Commission's recommendations regarding Member States' renewables ambitions are based on a formula set out in this Regulation, which uses objective criteria.

⁶ In accordance with the methodology illustrated in SWD(2019) 212 final.

Poland aims to increase **expenditure in research and development** to 2.5% of GDP by 2030. The plan remains rather descriptive and still needs to be complemented by concrete measures, mentioned throughout the plan. Specific 2050 national objectives related to promoting clean energy technologies are still missing.

The NECP estimates overall **investment** needs of around EUR 195 billion for 2021-30, annually around 3.5% of GDP, to modernise the energy producing and energy-using sectors, to achieve the energy objectives. In 2021-30, more than half of this investment would be directed at the energy-using sectors. The investment needs are further broken down per sector. The plan makes an attempt to address the impacts of planned policies and measures and reflect on opportunities for **modernising the economy**.

According to the plan, Poland aims to have 1 million electric vehicles by 2025. While **electrification of transport** is covered well as a cross-cutting issue in various sections of the plan, the plan provides limited information on the implications of this target in the different dimensions of the Energy Union. Moreover, with a planned renewable electricity share of only 32% for 2030, less than a third of electricity used in transport can be counted as renewable.

A list of **energy subsidies** is included in the final plan. Information on fossil fuel subsidies is included, although further subsidies appear to have been identified in recent Commission analyses on energy subsidies. Information on action and plans to introduce new fossil fuel subsidies is mentioned in the final plan.

The plan mentions several measures with a potentially synergetic impact on **air quality** and climate, especially in the domestic heating and transport sectors. It includes a quantitative analysis of air pollution impacts in monetary terms, but not of the impacts on air pollutant emissions themselves. Neither does it include milestones for the implementation of certain programmes related to e.g. the replacement of boilers in the housing sector.

The **just and fair transition** aspects are not sufficiently detailed in the plan. The plan considers these aspects and provides information on the employment impacts of the transition, albeit not in a comprehensive way. The NECP notably lacks details on the impacts of the transition in coal and carbon-intensive regions.

The NECP takes a qualitative approach to **climate adaptation**, listing elementary policy measures in urban planning, transport, agriculture, biodiversity and forestry, but proposes no specific objectives for 2021-30. Many of the listed measures are based on analytic and strategic planning work yet to be delivered.

The **circular economy** model is referenced in the context of water management, agriculture, research & innovation measures and waste, but its potential to foster emissions reductions is neglected.





Measures to protect **biodiversity** are briefly described, mainly for forests, but the plan does not cover interactions with climate and energy policies.

An impact assessment of planned policies and measures on **energy poverty** levels has been carried out, and initiatives to alleviate energy poverty are described – but Poland needs to develop a more comprehensive policy with specific objectives.

There are **some examples of good practices** in Poland's final NECP. In particular for the transport sector, it provides a good overview of the policy measures, tools and resources that will support the sector's development in line with the Green Deal objectives. Investment needs have

been considered extensively in the WAM scenario, broken down per sector, with priority investment objectives listed, and there is a sophisticated macroeconomic analysis.

The following table presents an overview of Poland's objectives, targets and contributions under the Governance Regulation⁷:

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR)	21%	14%	-7%	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy	11.3%	15%	21%-23%	Unambitious (25% is the result of the RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe)	100.9 Mtoe	96.4 Mtoe	91.3 Mtoe	Modest
	Final energy consumption (Mtoe)	71.8 Mtoe	71.6 Mtoe	67.1 Mtoe	Modest
	Level of electricity interconnectivity (%)	4%	4%	8.7%	N.A.

Sources: European Commission, Energy statistics, Energy datasheets: EU countries; European Semester; Poland's final national energy and climate plan.

2. FINALISATION OF THE PLAN AND CONSIDERATION OF COMMISSION RECOMMENDATIONS

Preparation and submission of the final plan

Poland notified its final NECP on 30 December 2019. Poland has not submitted its long-term strategy.

⁷ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

A **public consultation** on the NECP was carried out between 14 January and 18 February 2019. By the end of March 2019, the Ministry of Energy had received around 1,100 comments from 80 stakeholders.

Poland has not submitted a detailed summary of the public's views and of how they have been taken into account in the NECP, although it states that the plan implements the conclusions drawn from the public consultation process. Most of the comments concerned emissions reductions, renewables, energy efficiency and security of supply. The importance of investing in networks (especially at distribution level) as well as energy storage were also highlighted. Finally, there is no indication that a strategic environmental assessment (SEA) has been performed on the NECP, as per Directive [2001/42/EC](#).

Poland shared its draft plan with 8 Member States: Czechia, Slovakia, Hungary, Germany, Sweden, Denmark and Romania for comments. Consultations took place between the 8th and 30th of August 2019. Only Hungary submitted comments. The draft plan was also subject to consultations with the Baltic energy market interconnection plan (BEMIP) High Level Group in 2019.

Consideration of Commission recommendations

In June 2019 the Commission issued ten recommendations for Poland's final plan⁸. Annex II below offers a detailed account of how each has been addressed in the final NECP. Overall, the NECP **partially addresses** most of the Commission recommendations. The main changes introduced in the final plan are the following:

On **greenhouse gas emissions in non-ETS sectors**, Poland **partially addressed** the recommendation by providing more information on planned policies and measures in relevant sectors to address the projected gap to its greenhouse target. In particular, Poland focused on the transport sector, providing detailed information on planned measures. Separate strategies will specify measures in other sectors, including buildings, district heating, agriculture and LULUCF, although the plan provides only a general perspective.

On **renewables**, Poland **partially addressed** the recommendation to increase its level of ambition to at least 25% as the country's contribution to the EU target for 2030, by including an indicative trajectory and detailed policies and measures. But, applying the formula in Annex II of the Governance Regulation, Poland's level of ambition is still below the 25% indicative target. An indicative trajectory that reaches all reference points is provided, based on the value of 23%. According to the plan, the renewables share is expected to reach 16.4%, 18.4% and 20.2% respectively in 2022, 2025 and 2027. But the plan lacks details regarding policies and measures for delivering this development.

Poland **partially addressed** its contribution on **energy efficiency**. Some new policies were presented, but they do not change the overall level of ambition. In particular, Poland has indicated new measures on energy efficiency in transport. The underlying analysis used for setting the contributions has not been presented. On buildings, the information in the NECP is much improved. The plan includes targets for increasing the share of thermally insulated

⁸ Commission Recommendation of 18 June 2019 on the draft integrated national energy and climate plan of Poland covering the period 2021-2030, [C/2019/4421](#).

residential buildings in the total housing stock in 2030 and decreasing the number of people living in sub-standard conditions. The long-term renovation strategy has not been submitted yet.

On **energy security**, Poland **largely addressed** the recommendation to specify the measures supporting the objectives on diversification and reduction of energy dependency, including measures ensuring the energy system is flexible enough to accommodate the planned changes up to 2030 and beyond. The plan contains a sound and well-structured description of measures on security of supply. However, it does not make adequate links with the emergency plans for gas, electricity and oil, outlined in the sectoral rules. Moreover, in the view of the Commission, the obligation on companies importing gas to Poland to stockpile gas, and the related requirements, goes against the sectoral rules on security of supply and have adverse effects on the internal market for gas.

Related to the **internal energy market**, Poland **partially addressed** the recommendation to define forward-looking objectives and targets for market integration, in particular measures to assess how public service obligations (and specifically gas storage and price regulation) impact the functioning of the gas and the electricity markets. Poland defines forward-looking objectives and targets for market integration related to implementing existing internal market legislation, albeit not always specifying the targeted dates or specifying which concrete steps will be taken to mitigate the negative effects of the current measures on the full implementation of the market legislation. The plan also lacks clarity on the impacts of proposed measures on e.g. market functioning.

On **research, innovation and competitiveness**, Poland **partially addressed** the recommendation to clarify its national objectives and funding targets, and to underpin these with policies and measures. Poland aims to increase expenditure in R&D to 2.5% of GDP by 2030. However, the plan remains descriptive and still needs to be complemented by concrete measures. Specific 2050 national objectives for promoting clean energy technologies are also still missing.

Poland **fully addressed** the recommendation to reinforce **regional cooperation**. In particular, Poland is building on good existing levels of cooperation with the other members of the ‘Visegrad 4’ countries (Hungary, Czechia and Slovakia). The policies and measures outlined show a willingness to further integrate energy markets in the region and increase cross-border energy flows, notably to increase energy security. However, the plan lacks details on cooperation in decarbonisation and just transition policies.

Poland **partially addressed** the recommendation to provide a list of all energy subsidies and action undertaken, and plans to **phase-out energy subsidies, in particular for fossil fuels**. Phase-out plans for certain fossil fuel subsidies are included, namely state aid for closing coal mines. A new capacity mechanism is also mentioned in the plan.

Furthermore, Poland received a recommendation to complement its **analysis of air quality**, which it has **partially addressed**. In particular, the interaction of proposed policies and measures between e.g. electricity, heating, transport and spatial planning are not thoroughly described and their impact on air pollutant emissions is not detailed.

Finally, Poland **partially addressed** the recommendation to better integrate **just and fair transition** aspects and **energy poverty**. While the just transition aspects are not assessed thoroughly in the NECP, the plan recognises this fact and indicates that a proper analysis of the social dimension “*will be carried out as part of the restructuring plan for hard coal and lignite mining regions envisaged in 2020*”.

Energy poverty is covered more substantially in the NECP, with the document reporting on the ongoing work on various initiatives to address this challenge. However, also in this area, the analysis lacks depth, as the work is still ongoing. In particular, the extent of the challenge has not yet been quantified, and the work on indicators has not been finalised.

Links with the European Semester

In the context of the European Semester framework for the coordination of economic policies across the EU and of the country report 2019⁹, Poland received one country-specific recommendation¹⁰ in relation to climate and energy – to invest in *‘transport, notably on its sustainability, energy infrastructure and cleaner energy’*. In the 2020 country report¹¹ (adopted on 20 February 2020), the Commission assessed that on this recommendation, Poland achieved limited progress.

Due to the COVID-19 crisis, the European Semester country-specific recommendations for 2020 addressed Member States’ responses to the pandemic and made recommendations to foster economic recovery. In particular, they focused on the need to front-load mature public investment projects and promote private investment, including through relevant reforms, notably in the digital and green sectors. In this context, Poland received a country-specific recommendation¹² stressing the importance of focusing investment on *‘the green and digital transition, in particular on digital infrastructure, clean and efficient production and use of energy, and sustainable transport, contributing to a progressive decarbonisation of the economy, including in the coal regions’*.

The Governance Regulation encourages Member States to ensure that their national energy and climate plans take into consideration the latest country-specific recommendations issued through the European Semester. Poland’s national energy and climate plan can support the implementation of the recommendations formulated in the context of the European Semester, in particular by identifying necessary investment needs and the financial sources to deliver them.

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

Decarbonisation

Greenhouse gas emissions and removals

The NECP refers to the national **7% greenhouse gas emission reduction target by 2030** (compared to 2005) for sectors not covered by the EU ETS under the Effort Sharing Regulation

⁹ The Annex D to the 2019 Country report also sets out priority investments for the 2021-2027 cohesion policy, substantially contributing to the clean energy transition.

¹⁰ Recommendation for a Council Recommendation on the 2019 National Reform Programme of Poland and delivering a Council opinion on the 2019 Stability Programme of Poland, COM(2019) 521 final.

¹¹ Commission Staff Working Document Country Report Poland 2020, SWD/2020/520Final.

¹² Recommendation for a Council Recommendation on the 2020 National Reform Programme of Poland and delivering a Council opinion on the 2020 Stability Programme of Poland, COM(2020) 521 final.

(ESR)¹³. The plan describes this target as ambitious. While it indicates that emissions in those sectors will decrease, the rate of these changes will depend on the additional measures being deployed.

The scenario ‘with existing measures’ (WEM) shows an emissions increase of 11% and a gap-to-target in 2030 of 18 percentage points. The ‘with additional measures’ (WAM) scenario puts Poland on track to achieving the 2030 target, showing an emissions reduction of 7.4%. But the plan does not give detail on either the estimated Annual Emission Allocations 2021-2030 or the projected performance over this period.

If necessary, to achieve its 2030 non-ETS target Poland intends to use the LULUCF flexibility (up to 21.7 Mt CO₂eq for the whole 2021-2030 period), the Article 10(2) adjustment (one-off 7.5 Mt CO₂eq added in the first year of the reference period 2021-2030), and transfers from other Member States, as well as the safety reserve.

The plan describes some existing policies and measures, while including few additional elements. A more detailed approach to reducing emissions in the ESR sectors will be presented in a dedicated national strategy, due for completion by 2022.

Transport is the second biggest effort-sharing sector, with a share of 27% of ESR emissions in 2016. The plan refers to an intermediate target of reducing the average level of emissions from new passenger cars and delivery vans by 15% by 2025 (relative to 2021 levels), as well as the main target of 37.5% for passenger cars and 31% for delivery vans by 2030, under the Sustainable Transport Development Strategy 2030.

The expected emissions saving contributions are not detailed. Considerable investment is planned to establish an infrastructure for liquefied natural gas. Decarbonisation of the transport sector is expected through the use of alternative fuels including electrification (with conventional biofuels representing the largest share), a shift to public and low-emission transport, and other measures.

Such measures are financed by the Low-Carbon Transport Fund (providing some EUR 1.5 billion over ten years). Details are lacking however on how related policies will be developed in future for all alternative fuels.

Electric vehicles and the related charging infrastructure are supported by an Act on electromobility. Measures presented should stimulate the implementation of the specific goals at national level for 2025; the concrete status of the 2030 targets in the NECP is not clear.

Measures for other modes of transport, besides road, are addressed mainly for **maritime** – measures in **rail** and **aviation** lack specific targets and measures. The contribution of biofuels to reducing emissions will be supported via investment related to producing biocomponents, liquid biofuels and other renewable fuels, though the Low-Emission Transport Fund (PLN 6.7 billion) over the next 10 years.

Buildings are, with a share of 30% of ESR emissions in 2016, the largest effort sharing sector. The plan refers to existing national and EU-level policies and measures listed under the energy efficiency dimension of the Energy Union. An example of such a measure related to buildings is Poland’s white certificate scheme.

¹³ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

The plan considers **LULUCF and agriculture** in Poland and includes policies and measures for the two sectors including measures for soil protection, fertilisation and manure management, promoting the use of energy from biomass, fire prevention, and afforestation where possible. But it does not define targets or specific measures for any of these. It references objectives included in the Strategy for Sustainable Development of Agriculture and Fisheries, but does not give details on the action to be taken. The plan also refers to the Common Agricultural Policy, with a focus on environmental interventions.

On **forests**, the plan mentions improved forest management as a means for increasing carbon removals (Forest Carbon Farm pilot project, 2017-2026) and outlines multiple measures aimed at promoting the use of energy from biomass, fire prevention and afforestation where possible. The expected impact of these measures is not quantified. Information on trajectories for bioenergy demand and supply by feedstock is very limited.

The plan lists the numerical adaptation goals included in the State Environmental Policy 2030. The NECP takes a qualitative approach to climate adaptation, listing elementary policy measures in urban planning, transport, agriculture, biodiversity and forestry. But it proposes no specific objectives for 2021-30. Many of the listed measures rely on analytic and strategic planning work yet to be delivered.

As of 1 September 2020, Poland had not notified its national long-term strategy to the Commission as required under Article 15 of the Governance Regulation.

Renewable energy

The national contribution to the 2030 EU renewable energy target is specified in the plan and the **renewables share** is set at 21-23% in gross final consumption of energy by 2030. This is still considered unambitious, as it is below the share of 25% by 2030 based on the formula in Annex II of the Governance Regulation. The indicative trajectory reaches all reference points¹⁴.

The plan includes year-on-year pathways for the three sectors (electricity, transport and heating/cooling) on how to achieve the final contribution, but not for the individual technologies in these sectors. For individual technologies, values are only provided for the years 2020, 2025 and 2030. In some instances, the plan lacks detail as regards the planned policies and measures that will allow the contribution to be achieved.

Overall, biomass (incl. municipal renewable waste) plays a decisive role in the renewables share (25% electricity, 86% heating and cooling, 83% transport). Poland provides an estimate of the energy potential of biomass of agricultural origin, including both deliberate crops as well as the by-products from agriculture and food processing as around 900 PJ/year.

In the **electricity** sector, Poland aims to cover 32% of its electricity consumption from renewable sources by 2030. This will be achieved by support provided by auctions, feed-in tariffs and feed-in premiums. Support will be based on the type of source and its size. The plan indicated that the Renewable Energy Act will remain the main legislative tool. For 2030 the plan envisages photovoltaic (PV) capacity increasing to around 7.3 GW, offshore wind farms to 3.8 GW and onshore wind energy remaining around its current level of 9.6 GW. Hydropower potential is to be increased, as well as biomass and biogas, but without providing specific policy measures. These

¹⁴ Pursuant to Article 4(a)(2) of Regulation 2018/1999.

policies and measures are only considered sufficient to achieve part of the intended increase in renewables.

In **heating and cooling**, solid biomass will remain very dominant (with increases in absolute terms). However, there will also be steep increases, from a low starting point, for geothermal, solar thermal, biogas, municipal renewable waste and especially heat pumps (increasing compared to 2015 by almost 30x). Poland estimates the increase in the share of renewables in heating and cooling to be 1.1 percentage points per year, moving from 17.4% in 2020 to 28.4% in 2030. There is however no information on the planned increase in renewables in district heating and the role of waste heat. The plan mentions funding in form of grants, repayable instruments, guarantee funds, without providing more details. However, there is a specific program for geothermal in place (Poland Geoltera Plus) with a budget of PLN 600 million, but no further information is provided on the running time or expected outcome. These policies and measures are considered insufficient for achieving the target.

In the **transport sector**, Poland has set a 2030 target of 14%, incl. 7% conventional biofuels. The key policies and measures to achieve this are the 2018 Law on electro-mobility and a Low Emission Fund (2018-2027), with PLN 6.7 billion of financing. Further legislation will follow, to reach 1 million electric vehicles by 2025. However, with only 32% renewable electricity share planned for 2030, less than a third of the electricity use in transport can be counted as renewable. These policies and measures are considered insufficient for achieving the target.

Energy efficiency

The plan indicates Poland's national contribution for energy efficiency in 2030 as 91.3 Mtoe for primary energy and 67.1 Mtoe for final energy consumption. The contributions have not been revised compared to the draft plan and remain of modest ambition compared to the level of efforts needed at the EU level. However, compared to the 2020 target, the 2030 effort has clearly increased.

The plan provides descriptive information on **policies and measures** beyond 2020 targeting all sectors. The main focus is on the supply side, transport and buildings. These policies and measures are considered sufficient for achieving the target, because they address various sectors and are reflected in the scenario used to define the contributions. However, their credibility is more difficult to assess, given that no clear estimates of impacts and related budgets are provided.

Poland presents the **cumulative savings** to be achieved under Article 7 of Energy Efficiency Directive¹⁵ as 69.741 Mtoe. This will be achieved mainly by an energy obligation scheme, accompanied by financial support for upgraded thermal insulation of buildings and expanding public transport in cities. These policies and measures are considered sufficient for achieving the target, but it remains uncertain whether Poland will be able to deliver the estimated savings through the energy efficiency obligation scheme.

On **buildings**, the NECP includes useful information. The majority of measures are a continuation of existing ones. Poland has estimated the expected savings from the building measures for the period 2021-2030. The plan outlines a number of specific measures, with a quantitative objective to increase the share of thermally insulated residential buildings to 70% in 2030 (as compared with 58.8% in 2015), to decrease the number of people living in sub-standard conditions due to overpopulation, poor technical conditions or absence of technical facilities to

¹⁵ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency as amended by Directive (EU) 2018/2002.

3.3 million in 2030 (from 5.36 million in 2011). The long-term renovation strategy has not been submitted yet.

However, the listed measures are often still generic and lacking in detail. Financing mechanisms for building renovation in line with Article 2a of the Energy Performance of Buildings Directive are broadly outlined in the NECP, but lack the specific information and figures (e.g. m² of buildings, energy savings/m², investment) that would enable a comprehensive evaluation.

Regarding central government buildings (Article 5 of the Energy Efficiency Directive), Poland has opted for an alternative approach. The 2021-2030 target energy savings expected as a result of measures improving the energy performance of buildings should amount to 43,440 MWh.

Energy security

The plan contains a well-structured description of measures on **security of supply**, in particular for electricity. Maintaining a high level of supply security is a priority in the ongoing transformation of the electricity system. In general the plan recognises that, with a growing share of **renewables** (from 14% now to 32% in 2030) and the closure of coal power plants, new capacity (mostly gas) will be necessary to provide secure supplies in times of unfavourable weather conditions. For this purpose, a capacity mechanism has been adopted.

The implementation of **nuclear** electricity in Poland is indicated in the national plan as important for ensuring a stable and zero-emission electricity supply, as well as diversifying energy sources. This would require a fuel procurement policy – to enable secure, diversified deliveries of nuclear materials and the licensing of at least two alternative fuel assembly producers.

To **diversify** sources of gas, the plan points out investment in LNG and new pipelines sourcing gas from other sources than the East, the maintenance of domestic gas production, investment in the Baltic gas pipeline and LNG terminals and the promotion of alternative transport fuels. Decarbonised gases such as biogas and renewable hydrogen are not mentioned in this context.

Poland plans to increase crude **oil** storage capacity (by 2024, 90 days' supply in above-ground tanks and 90 days in underground tanks).

The plan does not address cybersecurity in the energy sector.

The plan does not make adequate links with the emergency plans for gas, electricity and oil set out in the sectoral rules, nor does it address the incompliance of the security of supply measures (storage obligations) with both Regulation (EU) 2017/1938 on security of gas supply and the emergency plan.

The planned policies and measures are considered insufficient for achieving the objectives.

Internal energy market

The NECP assesses Poland's current and intended levels of electricity **interconnectivity** for 2030 as 4% and 8.7%, respectively. It also addresses the need to reach 70% available capacity in interconnectors. The NECP reports on specific projects that will help achieve this objective. It refers to a number of gas Projects of Common Interest to strengthen the country's security of supply and diversify resources.

The plan recognises a gradual change in the country's energy mix, as well as diversification projects related to oil and gas infrastructure. A cut in the coal-based share of electricity generation to 57-60% in 2030, and more in the longer term, will be supplemented by a growing share of renewables (from 14% now to 32% in 2030), gas-based generation and (after 2030)

nuclear (the first unit of 1-1.5 GW in 2033, followed by another 5 units over a 10-year period) and a growing share of alternative gases (e.g. syngas, biogas, hydrogen).

The plan includes further policy objectives and measures related to the **internal electricity market**, e.g. measures to ensure the non-discriminatory participation of new market participants and different flexibility sources in all time dimensions of the electricity markets, which aim to help integrate new renewable sources e.g. electricity from off-shore wind.

In broad terms the final plan refers to liberalising gas market prices, but it leaves open the issue of liberalisation for electricity prices. However the measures are insufficient for achieving the outlined objectives.

The plan further defines forward-looking objectives and targets concerning **market integration**, related to implementing existing internal market legislation, although not always specifying the targeted date. For example, Poland plans to introduce flow-based capacity allocation (no target year) and intraday market coupling (no target year), remove price caps in the balancing market from 2019, and introduce marginal price-based pricing in the balancing market from 2021.

Despite these descriptions, the plan does not contain a concrete assessment of impacts, so we cannot assess the contribution of these measures and their consistency with the changes in the energy mix. Poland should ensure the removal of export and import restrictions as soon as possible, and in any event no later than the beginning of 2021, when it will introduce the new balancing capacity procurement process. Congestion management in Central Europe needs a solution at regional level that facilitates cross-border electricity flows, while ensuring system security.

Poland's plan does not address the key aspect of the recommendation on the internal energy market dimension – namely to assess the impact of public service obligations, in particular gas storage and price regulation, on market functioning, and to clarify how negative consequences will be mitigated.

Given the electricity sector target of 32% from renewables by 2030, the plan does provide an overview of the envisaged development of the different sources of **flexibility** needed to integrate this rising share of renewables into Poland's electricity system.

Regarding **energy poverty**, Poland does not report in the NECP on the number of households affected. No specific indicators/models are used, as the work on energy poverty is still ongoing. The assessment concerns a broad range of issues (e.g. defining energy poverty, indicators to be used, measures to address the challenge directly and indirectly), but is not completed yet.

The NECP does not provide a clear definition of a vulnerable electricity consumer and a vulnerable gas consumer. There is still a lack of quantitative indicators and clear targets, especially the energy poor as a share of total population. The energy poverty mitigation policies and measures are not clearly defined. These policies and measures are considered insufficient for achieving the target.

The level of detail in the plan about implementing the **Just Transition Fund** in Poland remains insufficient and lacks detail on each of the coal mining regions affected, especially how the plan will be tailored to the needs of each region, depending on progress with decarbonisation and the levels of energy transition. Nevertheless, the NECP highlights that the amount allocated to Poland under the Just Transition Fund will be a crucial factor in the country's ability to reach its renewables target share. In fact, the NECP states that 23% target for renewables by 2030 is achievable only if Poland is granted additional funds, including those for just transition.

Research, innovation and competitiveness

The plan identifies relevant areas where **research and innovation** efforts aim to increase the competitiveness of economy. These efforts are considered partially credible for achieving the target. This needs to be complemented by a timeframe, the sources of funding and the main instruments to adopt, and fine-tuned by additional measures, in order to deliver results.

The plan does not provide clear quantitative objectives for 2021-2030, although information on research, innovation and competitiveness was provided. The main objective is to reduce the gap between Poland and more prosperous Member States and to improve the quality of life in Polish society. Poland plans to increase the competitiveness of the economy by making better use of social and regional resources, increasing renewable resources, and through automation and digitalisation of industry. Although the plan indicates Poland's ambition to gradually increase its share of renewables, promote advanced biofuels, hydrogen and micro-renewable installations, there is no explicit objective in the document for promoting or deploying low-carbon technologies.

The NECP highlights Poland's great potential in the hydrogen economy and refers to the upcoming Hydrogen Technology Development Programme, where hydrogen generation, transport, storage, distribution and end-use are addressed. Poland is interested in injecting hydrogen produced from electricity into the natural gas network, to produce synthetic methane. According to its NECP, Poland will support national research on clean coal technologies and will promote the use hydrogen as an alternative fuel in the transport sector.

The plan mentions the **Strategic Energy Technology (SET) Plan** and provides a complete and consistent overview of its participation in the different working groups, which are (1) energy efficiency in industry and (2) nuclear safety. However, there is no allocation of national funds or activities and no information on how SET Plan contributes to achieving Poland's energy and climate objectives.

While funding targets for general research and innovation are set (1.7% of GDP in 2020 and 2.5% in 2030), there is no specific target for Energy Union-related research and innovation. The NECP does not include specific national objectives for 2050, such as promoting clean energy technologies.

4. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

The **interactions** between and within different dimensions of the Energy Union are described, but not comprehensively discussed. The coverage of interactions between existing and planned sectoral policies and measures is fragmentary, in particular for research, innovation and competitiveness.

On **investment needs**, the plan forecasts the necessary capital expenditure in the energy supply sector (electricity, heat, gas, mining and liquid fuels) up to 2040 to be EUR 245.5 billion (around 4% of current GDP annually) – of which some 60% will be in 2016-2030. Investment needs in the electricity generation sector in 2021-2030 are detailed, and estimated at EUR 23.9 billion (around 0.4% of GDP annually), of which 17.6 billion for renewable sources, 2.2 billion for coal and 3.1 billion for gas. High expenditure after 2030 is related to the planned investment in nuclear energy.

The NECP identifies priority investment areas and the **funding sources**, but provides limited information on market barriers and risks. Concerning cohesion policy, the plan does not provide a

comprehensive analysis of potential areas to be supported in the next programming period. Some national and other EU funding sources are mentioned e.g. the Modernisation Fund, the EU's Framework Programme for Research and Innovation and free allowances from the EU ETS. The identified investment needs set out in annex II are generally also not matched with a funding analysis. In particular, the funding analysis for additional public financial support is not sufficiently detailed.

Various **energy subsidies**, including fossil fuels, are listed and quantified in the final plan under several forms of support measures. The plan does not appear to fully reflect internationally used definitions. There is no concrete timeline for phasing out fossil fuel energy subsidies.

The plan mentions several policy measures to improve **air quality**, but does not refer to specific emission reduction scenarios, nor are emissions projections provided. With the Clean Air Programme for buildings, the plan provides examples of synergies between energy efficiency, energy poverty, decarbonisation and energy security. Tensions between these areas might occur if the inefficient coal boilers are replaced by new ones, risking locking in coal as a heating fuel. The National Air Pollution Control Programme (NAPCP) states that it will only be possible to fully reflect the impact of NECP measures on air emission projections once the final NECP is adopted. Impacts of the draft NECP do not seem to have been included in the air pollutants emission scenarios in the NAPCP.

The plan observes the issue of the **just and fair transition**, identifying as priority aspects economic competitiveness, security of energy supply as well as cost-effectiveness and social acceptance of planned policies and measures. It emphasises the difficult starting point for Poland's transformation, compared to other EU Member States, and argues that the cost of the transition is likely to be one of the highest. Delivering the low-carbon transition in a socially fair manner will depend on a comprehensive adaptation policy and effective use of national and EU funds. No specific funds, e.g. the Modernisation Fund, are earmarked for the just transition. Also, the impacts of the transformation on coal regions, in terms of social issues, employment and skills/training are yet to be analysed.

Considering the relevance for greenhouse gas emissions reductions, the plan references the **circular economy** model for water management, agriculture, coal resources (exploitation of coal-bed methane), research & innovation measures and waste. Potential for greenhouse emissions reduction is barely touched on and could have been more detailed. Measures to protect **biodiversity** are succinctly described, mainly for forests, but the plan does not cover interactions with other policies.

While the plan includes some indication of the availability of different feedstocks for bioenergy, it lacks clear trajectories on **bioenergy demand and supply**, by feedstock and origin, an assessment of the sources of forest biomass and the impact of this on the LULUCF sink. The main energy sources from forest biomass include round or cleft wood, rootwood and wood residues from forests and tree stands, as well as by-products from the wood-processing industry. The energy potential of agricultural biomass in Poland is estimated at ca. 900 PJ annually.

Measures to address climate risks to energy security and supply are listed under **climate change adaptation** measures in the Decarbonisation Dimension, including various relevant issues such as the cooling of power plants, resilience of power networks or increases in peak load. The plan does not address the decommissioning of old and obsolete coal-fired and lignite plants. Information is lacking on the adaptation co-benefits and trade-offs for energy efficiency, such as in the thermal management of buildings.

The application of the ‘**energy efficiency first**’ principle is not explained in the plan. Co-generation and demand response are mentioned among the relevant measures for energy security, but in general energy efficiency is not considered for the energy security and internal market dimension, with priority given instead to grid and capacity expansion. The impact assessment takes more of a holistic look at the impacts of the scenarios, without any more detailed analysis of co-benefits of energy savings.

The macro-economic assessment of the proposed policies and measures presents a sophisticated, in-depth analysis of the situation. However, the plan may need to clarify in more detail some aspects of the methodology used for modelling, e.g. for fixed sectoral productivity trends, investment volumes and household consumption. In addition, the population projections are not aligned with Eurostat, but rather assume a steady population increase over the forecast horizon. This could suggest that the GDP forecasts are overestimated, which may also affect the forecasts on energy consumption. Furthermore, the plan could benefit from more analysis as regards the regional and inequality aspects of the transition to a greener economy, particularly to the population living in coal regions.

The plan fully complies with **data transparency** requirements and the use of European statistics.

5. GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN AND THE LINK TO THE RECOVERY FROM THE COVID-19 CRISIS

Poland needs to swiftly proceed with implementing its final integrated national energy and climate plan, as notified to the Commission on 30 December 2019. This section provides some guidance to Poland for the implementation phase.

This section also addresses the link between the final plan and the recovery efforts from after the COVID-19 crisis, by pointing at possible priority climate and energy policy measures Poland could consider when developing its national recovery and resilience plan in the context of the Recovery and Resilience Facility¹⁶.

Guidance on the implementation of the national energy and climate plan

Poland’s energy and climate plan shows that significant additional measures are required to achieve its 7% **greenhouse gas emissions** reduction target by 2030 (compared to 2005), set in the Effort Sharing Regulation (ESR). These additional measures would need to cover a gap of 18 percentage points, compared to the likely reduction with existing measures. The plan would need to clearly outline how it aims to reduce the country’s dependence on coal.

The plan indicates additional measures mostly in the transport and buildings sectors, and points to the possibility to use of available flexibilities and credit transfers from other Member States, as well as the safety reserve for compliance. The plan announces a more detailed approach to reducing ESR emissions in a national strategy by 2022. This strategy will provide the opportunity

¹⁶ On 17 September 2020, the Commission has put forward the Annual Sustainable Growth Strategy 2021 (COM(2020) 575 final), as well as guidance intended to help Member States prepare and present their recovery and resilience plans in a coherent way, without prejudice to the negotiations on the proposal for a Regulation on the Recovery and Resilience Facility in the European Parliament and the Council (Commission Staff Working Document. Guidance to Member States – Recovery and resilience plans, SWD (2020) 205 final).

to define more ambitious policies for emission reductions, also giving broader consideration to relevant sectors such as agriculture.

Poland's contribution to the EU 2030 renewables target is unambitious when compared to the share resulting from the formula in Annex II of the Governance Regulation, whereas the contribution for energy efficiency is of modest ambition. Poland's plan therefore still leaves scope to further develop and reinforce policies and measures on both renewables and energy efficiency, so as to contribute more to the EU climate and energy targets and strengthen the green transition.

On **renewables**, Poland committed to achieve 21-23% share of renewables in its final energy consumption by 2030. Additional policies and measures are needed to ensure the renewables target will be achieved, especially when it comes to heating/cooling and transport. Given the reduction of costs in renewable technologies, Poland could assess the option of further increasing the share of renewables in its power mix. Its implementation capacities would be strengthened by exploring the right enabling frameworks for renewable self-consumption and energy communities, simplifying administrative and regulatory frameworks and promoting market-based direct contracts (PPAs). Strengthening the independence of the energy market regulator would promote stable regulatory and investment conditions, which will promote private finance for investments in renewable energy infrastructure. Renewables use in the heating sector could be increased by focusing more on the link between modernising district heating networks, maximising waste heat and renovating buildings, as well as by harnessing domestic renewable sources other than those based on biomass.

On **energy efficiency** Poland would benefit from adopting and implementing additional policies and measures to deliver steeper energy savings by 2030. To ensure effective implementation and progress towards the energy saving obligation under Article 7 of the Energy Efficiency Directive, it would be useful for the plan to include a detailed assessment of the impacts of the proposed measures and a detailed description of all the aspects required by Annex III of the Governance Regulation.

Also important for delivering the expected savings would be allocating sufficient resources to monitoring and verifying the energy savings under the obligation scheme, and making sure that available funding is well allocated and leads to implementation of the identified measures. Significant investments would need to be directed to the replacement of around 3 million boilers for heating, which are behind a sizeable part of pollution in cities, as well as to establish financial instruments for energy efficiency in the residential sector and single-family dwellings. The plan would need to clearly state milestones for the implementation of these measures. Poland is also invited to implement the 'energy efficiency first' principle across the whole value chain of its energy system, taking into account co-benefits of energy saving measures.

Improving energy efficiency in buildings has much potential for speeding up energy savings and contributing to the recovery of the economy after the COVID-19 pandemic. Building on the momentum of the **Renovation Wave** initiative¹⁷, there is scope for Poland to intensify efforts to improve the energy performance of the existing building stock with specific measures and

¹⁷ Communication 'A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives', COM(2020)662 and SWD(2020)550.

targets, while giving due attention to energy poverty. Further support for renovating public and private buildings could be provided through increased public funding and by leveraging EU and national budgets with private money, combining grants, lending, guarantees and loan subsidies. Poland is expected to provide a robust and comprehensive long-term renovation strategy, in accordance with Article 2a of the Energy Performance of Buildings Directive. The long-term renovation strategy is required to set out a roadmap for decarbonisation by 2050 with ambitious milestones for 2030 and 2040 and 2050, measurable progress indicators, expected energy and wider benefits, measures to renovate the building stock, and a solid finance component with mechanisms for mobilising public and private investment.

In terms of **energy security**, Poland is invited to modify its requirements for gas storage, to comply with Regulation 2017/1938¹⁸, to allow more diversification of suppliers and domestic production of bio methane. Regarding the plan for new nuclear capacity, Poland would benefit from implementing a fuel procurement policy, to enable secure, diversified deliveries of nuclear fuels from alternative fuel assembly producers.

Concerning the **internal energy market**, Poland is encouraged to take steps to move away from regulated prices in gas and electricity, since market price signals are an important driver for EU energy policy objectives. Poland is also encouraged to streamline the use of and market access for renewable sources in heating and cooling and in district heating, and to facilitate the injection of bio methane into its transmission and distribution networks for gas.

Poland has introduced a capacity mechanism to address concerns about the adequacy of its generation capacity. In line with Article 20 of Regulation (EC) No 2019/943, Poland has proposed measures to improve market functioning, in a dedicated implementation plan notified to the Commission. A swift follow-up on such measures and the Commission's opinion¹⁹ on this plan are crucial to support the required reforms.

Poland would benefit from defining clear indicators to track the achievement of milestones towards its **research and innovation and competitiveness** objectives. Over time, this process would be helped by gathering more granular data on innovation and competitiveness. Poland needs to ensure there is a link with the activities it has undertaken under its strategic energy technology plan. Poland would also benefit from further strengthening the link between the competitiveness objective and the policies and measures to put in place for the different sectors by 2030.

The NECP estimates Poland's overall **investment needs** for modernising the energy-producing and energy-using sectors to be around EUR 291 billion for 2016 to 2030, averaging annually at 3.5% of GDP. Just over a half of this would be directed at the energy-using sectors: industry, transport, housing, services and agriculture.

Of these, the investment needs are highest in the transport sector - railway infrastructure, intermodal transport network, charging infrastructure for electrification, as well as development of airports, ports and inland waterways. The plan would also benefit from measures promoting

¹⁸ Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010 (Text with EEA relevance).

¹⁹ C(2020) 1564 final.

collective transport, in particular in rural areas, with the aim of reducing the dependency on individual transport modes.

In the energy-producing sectors, the highest volume of investment is needed in electricity generation and distribution. In the heating sector, more investment would be directed at households than systemic heating networks, which may impair integrated decarbonisation.

The implementation of the NECP would be helped if it could include estimates of investment needs for specific objectives and projects, including under the sectoral policies and programmes referenced in the plan (e.g. in the housing and transport sectors). At present, priority investment in sectors other than electricity generation is not singled out. Even these investment would need to be updated to reflect changes in Poland's sectoral approaches. For example, although the NECP states that renewable energy projects will be frontloaded up to 2030, investment in nuclear power generation is forecast to start later than in the recently published national nuclear energy programme.

On **regional cooperation**, Poland has been rather pro-active, notably in the context of the Baltic Energy Market Interconnection Plan (BEMIP) High Level Group. Poland is invited to continue these ongoing efforts to intensify exchanges and initiatives that will facilitate the implementation of its national energy and climate plan, in particular as regards relevant cross-border issues²⁰. Poland is also invited to better exploit the potential of the **multilevel climate and energy dialogues** to actively engage with regional and local authorities, social partners, civil society organisations, business community, investors and other relevant stakeholders, and to discuss with them the different scenarios envisaged for its energy and climate policies.

In the light of the transformation of the energy system towards low-carbon sources and related challenges with the **just and fair transition**, Poland is invited to propose a more ambitious approach, which would address the socio-economic aspects of the energy transition and diversification of the economy, focusing also on local and regional challenges. Therefore, it is essential for Poland to develop a more comprehensive assessment of the social, employment and skills impact of planned objectives, policies and measures, especially in coal regions. It is strongly recommended for Poland to provide further detail and analysis of specific measures to mitigate the impact of the transition. In this context, the Just Transition Mechanism, part of the European Green Deal, can provide an opportunity to intensify efforts by providing financial and technical assistance.

Poland would benefit from designing a dedicated regulatory framework to address **energy poverty**. The country has made commendable efforts over the last 10 years to reduce the number of people not able to keep their home adequately heated. However the main tool Poland has used for this purpose is electricity tariff regulation. While this might keep consumer prices in check, it also limits competition in the sector. Poland is encouraged to consult the Commission Recommendation of 14 October 2020 on energy poverty and its accompanying staff working document providing guidance on the definition and quantification of the number of households in energy poverty and on the EU-level support available to Member States' energy poverty policies and measures. Energy poverty could be, among other measures, addressed through

²⁰ In this context, the Commission will help address related issues in a strategic manner in its upcoming Strategy for Offshore Renewable Energy by identifying key actions in the area of maritime planning, upscaling technologies, and a new approach to infrastructure planning and offshore renewables capacity building.

specific support to socially innovative solutions and social enterprises that work on addressing this challenge (e.g. energy-awareness campaigns, retraining unemployed as energy advisors, supporting green installations by co-operatives, buying energy-saving appliances for social enterprises to rent out).

Dedicated support is needed for the energy poor, focusing on heating, which is the main problem in this respect in Poland. In this regard, the Renovation Wave initiative under the European Green Deal is an opportunity to intensify efforts by applying dedicated measures to improve the energy performance of the existing housing stock. It may be also necessary to envisage support in cases where insulating buildings raises costs for consumers.

Poland is invited to extend and update reporting on **energy subsidies** and intensify action to phase them out, in particular for fossil fuels. The green transition in Poland would receive a further boost from rapid phase-out of the fossil fuel subsidies identified in the NECP and recent Commission analyses. This would involve the further development and implementation of concrete plans with associated timelines, coupled with measures to mitigate the risk of households' energy poverty.

For all investments implementing the national energy and climate plan, Poland is invited to ensure these are in line with national, regional or local plans for **air pollution reduction**, such as the National Air Pollution Control Programme (NAPCP), and relevant air quality management plans.

In implementing its plan, Poland is invited to make the **best possible use of the various funding sources available**, combining scaled-up public financing at all levels (national and local, as well as EU funding) and leveraging and crowding in private financing.

Tables 1 and 2 of Annex I provide an overview of EU funding sources which should be available to Poland during the forthcoming multiannual financing period (2021-2027) and EU funding addressed to all Member States and companies.

For the forthcoming period, the European Council has committed to incorporating climate action into all EU programmes and instruments ('mainstreaming') and to an overall target of at least 30% of EU funding to support climate objectives. At the same time, EU expenditure should be consistent with the Paris Agreement and the 'do no harm' principle of the European Green Deal. At EU level, funding will be available for Poland from the Innovation Fund and the Modernisation Fund, and will also be based on revenues from the auctioning of allowances under the EU Emissions Trading System.

Link to the recovery from the COVID-19 crisis

The vast majority of Member States' final national energy and climate plans were drafted before the COVID-19 crisis, and the present Staff Working Document assesses Poland's plan in that context. Nevertheless, the implementation of Poland's final integrated national energy and climate plan will need to fully take into account the context of the post-COVID-19 recovery.

In the context of the Recovery and Resilience Facility, which is expected to be operational on 1 January 2021, **the final plan constitutes a strong basis for Poland to design climate and energy-related aspects of its national recovery and resilience plan**, and to deliver on broader European Green Deal objectives.

In particular, **mature investment projects outlined in the plan, as well as key enabling reforms that address inter alia, investment-barriers, would need to be frontloaded as much as possible.** The link between investments and reforms is of particular relevance for the national recovery and resilience plans, to ensure a recovery in the short to medium term and strengthening resilience in the longer term. In particular, Member States' recovery and resilience plans should effectively address the policy challenges set out in the country-specific recommendations adopted by the Council.

In addition, **the Commission strongly encourages Member States to include in their recovery and resilience plans investment and reforms in a number of 'flagship' areas**²¹. In particular, the 'Power up', 'Renovate' and 'Recharge and refuel' flagships are directly related to energy and climate action and to the contents of the final national energy and climate plans. Measures under the 'Reskill and upskill' flagship are also essential to foster the climate and energy transition in all Member States.

In turn, the Recovery and Resilience Facility will provide opportunities to accelerate Poland's green transition while contributing to economic recovery. In order to follow the commitment of the European Council to achieve a climate mainstreaming target of 30% for both the multiannual framework and Next Generation EU, Poland's recovery and resilience plan will have to include a minimum of 37% expenditure related to climate. Reforms and investments should effectively address the policy challenges set out in the country-specific recommendations of the European Semester, and will have to respect the principle of 'do no harm'.

Based on Poland's final national energy and climate plan, and on the investment and reform priorities identified for Poland in the European Semester, **the Commission services invite Poland to consider, while developing its national recovery and resilience plan, the following climate and energy-related investment and reform measures:**

- Measures supporting investments in renewable energy to reduce dependency on coal, and in energy efficiency in buildings and industry;
- Measures enhancing energy system integration and promoting the decarbonisation of gas consumption, including by developing the market for storage technologies and clean hydrogen;
- Measures fostering sustainable transport, including developing and modernising the public transport infrastructure, promoting intermodal transport networks and electromobility.

The above mentioned measures are indicative in nature and not meant to be exhaustive. They aim to orient reflections in the development of the national recovery and resilience plan. They do not prejudice the position of the Commission on the actions to be proposed. This position will, inter alia, need to comply with the agreed legislative text on the Recovery and Resilience Facility.

²¹ Cf. Annual Sustainable Growth Strategy 2021 (COM(2020) 575 final), pp. 9-12.

ANNEX I: POTENTIAL FUNDING FROM EU SOURCES TO POLAND, 2021-2027

Table 1: EU funds available, 2021-2027: commitments, EUR billion

Programme	Amount	Comments
Cohesion policy funds (ERDF, ESF+, Cohesion Fund)	72.2	In current prices. Includes funding for European territorial cooperation (ETC). Does not include amounts transferred to the Connecting Europe Facility.
Common agricultural policy – European Agricultural Fund for Rural Development, and direct payments from the European Agricultural Guarantee Fund.	31.2	In current prices.
Recovery and Resilience Facility	23.1	In 2018 prices. Indicative grants envelope, sum of 2021-2022 and estimated 2023 commitments. Based on the Commission's summer 2020 GDP forecasts.
Just Transition Fund	3.5	In 2018 prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU.
Modernisation Fund	1.9	Approximation: 7/10 of the allocations of ETS allowances to provide revenue to the Modernisation Fund tentatively allocated to Member States for 2021-2030 and assuming a carbon price of EUR 20 per tonne.
ETS auction revenue	1.9	Indicative: average of actual 2018 and 2019 auction revenues. The amounts in 2021 to 2027 will depend on the quantity and price of auctioned allowances.

Table 2: EU funds available to all Member States, 2021-2027, EUR billion

Programme	Amount	Comments
Horizon Europe	91.0	In current prices. Includes Next Generation EU credits.
InvestEU	9.1	In current prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU. Includes the InvestEU fund (budgetary guarantee to public and private investment) and the advisory hub (technical advice). Does not consider appropriations available to beneficiaries through implementing partners, such as the European Investment Bank.
Connecting Europe Facility <ul style="list-style-type: none"> • Transport • Energy 	24.1 5.8	In current prices. The commitment for transport includes the contribution transferred from the Cohesion Fund. Excludes Connecting Europe Facility Military Mobility funding for dual use infrastructure.
Recovery and Resilience Facility	360.0	In 2018 prices. Non-allocated commitments for loans. Loans for each Member State will not exceed 6.8% of its gross national income.
Technical Support Instrument	0.9	In current prices.
Programme for Environment and Climate Action (LIFE)	5.4	In current prices.
European Agricultural Fund for Rural Development	8.2	In current prices. Commitments under Next Generation EU.
Innovation Fund	140.0	Approximation: 7/10 of the allocations of ETS allowances to provide revenue to the Innovation Fund for 2021-2030 and assuming a carbon price of EUR 20 per tonne.

Note to both tables

The figures provided by programmes under the EU budget include both the proposals under the forthcoming multiannual financial framework, and the reinforcement of these under the Next Generation EU instrument outside the EU budget.

The figures quoted in this document are based on the conclusions of the European Council of 17-21 July 2020. They however do not prejudice the outcome of the ongoing discussions between the European Parliament and the Council on the elements of the recovery package, such as the Multiannual Financial Framework, the sectoral programmes, their structure and budgetary envelopes, which will be concluded in accordance with their respective adoption procedure.

For most of the above funds, support to the climate and energy transition is one objective among others. However, for the forthcoming period, the European Council has committed to the mainstreaming of climate action into all EU programmes and instruments and to an overall target of at least 30% of EU funding to support climate objectives. EU expenditure should also be consistent with the Paris Agreement and the 'do no harm' principle of the European Green Deal.

Some of the programmes listed in Table 2 provide funding through open calls to companies, not public administrations.

ANNEX II – DETAILED ASSESSMENT OF HOW COMMISSION RECOMMENDATIONS HAVE BEEN ADDRESSED

Recommendations		Assessment
Decarbonisation – GHG	<p>Provide more information on planned policies and measures to address the projected substantial gap to Poland’s greenhouse gas target for sectors not covered by the EU emissions trading system for 2030 of -7% compared to 2005. This includes more clarity on transport measures.</p> <p>More details on additional measures, notably in the building, agriculture and land use, land use change and forestry sectors.</p>	<p>Largely addressed</p> <p>Partially addressed</p> <p>The plan mentions various policies and measures for reducing emissions in the ESR sectors and provides further information on existing and planned transport measures including sectoral emission reductions as part of the ‘planned measures’ scenario. However, the concrete status of those measures is not clear.</p> <p>Concerning the buildings sector, a national renovation strategy is being developed for residential and non-residential, public and private buildings. It will be complemented by an intended improvement in district heating efficiency, under the framework of the draft Polish Energy Policy until 2040. No details are given of the potential reductions achievable through these measures.</p> <p>Regarding use of agriculture and on LULUCF - the plan offers a general perspective and describes a set of policies and measures.</p>
	<p>The application of accounting rules as set out in the Regulation (EU) 2018/841 of the European Parliament and of the Council</p>	<p>Not addressed</p> <p>The use of the units generated by the LULUCF sector to account for the achievement of the ESR objective for 2021-2030 will be assessed later.</p>
Decarbonisation - renewables	<p>Increase the level of ambition for 2030 to a renewable energy share of at least 25% as Poland’s contribution to the Union’s 2030 target, as indicated by the formula in Annex II under Regulation (EU) 2018/1999.</p>	<p>Poland’s final NECP includes an explicit contribution to the EU renewables target for 2030, but it is in the range of 21-23%, “with a 23% RES target possible, subject to additional EU funding being granted to Poland, including for a just transition”.</p> <p>This would be unambitious, as an increase of 2 percentage points compared to the 21% put forward in the draft plan and would still be 2 percentage points below the 25% calculated using the formula in Annex II of the Governance Regulation.</p> <p>The explanation of why 25% would have been too ambitious remains rather general, quoting ‘national circumstances,</p>

			<p><i>forecasts of economic development and specific sectors, the potential for the development of individual technologies, as well as the evolutionary process of a just energy transition and its socio-economic dimension</i>. Poland also refers to the low level achieved in 2018 (11%).</p>
	<p>Include an indicative trajectory in the final integrated national energy and climate plan that reaches all the reference points pursuant to Article 4(a)(2) of Regulation (EU) 2018/1999 in accordance with that share, in view of the need to increase the level of efforts for reaching this target collectively.</p> <p>Put forward detailed and quantified policies and measures that are in line with the obligations laid down in Directive (EU) 2018/2001 of the European Parliament and Council, to enable a timely and cost-effective achievement of this contribution.</p>	Fully addressed	<p>The final plan provided an indicative trajectory for reaching the 2030 shares that is exactly in line with the reference points, based on a 2030 contribution of 23%.</p> <p>RES share is expected to reach 16.4%, 18.4% and 20.2%, respectively in 2022, 2025 and 2027.</p>
	<p>Ensure that the renewable energy target for 2020 set out in Annex I of Directive 2009/28/EC of the European Parliament and of the Council is fully met and maintained as a baseline from 2021 onwards, and explain how such a baseline share will be met and maintained.</p>	Fully addressed	<p>The plan includes detailed pathways year-on-year on how to achieve the final contribution for the three sectors, but sometimes lacks detail on the planned policies and measures for achieving this contribution.</p> <p>For specific technologies within these sectors, only values for 2020, 2025 and 2030 are provided.</p> <p>The plan indicates that Poland will meet the 15% renewables target by 2020 and remain above this level throughout 2021-2030.</p> <p>The overall percentage is underpinned by yearly percentages, broken down by electricity, heating & cooling and transport. The plan lays out the measures for increasing the share from 11% in 2018 to 15% in 2020, including:</p> <ul style="list-style-type: none"> • the additional auctions for onshore wind carried out in 2019 and 2020 (volume of over 3 400 MW, but not all to be operational by 2020) • new measures to support prosumers (PLN 1 billion for PV production, with 200,000 expected beneficiaries), energy cooperatives and renewables in district heating and agriculture. <p>These policies and measures are expected to substantially</p>

			<p>increase the share of renewables by 2020, but there are doubts about whether they will be sufficient to reach to the 15% target.</p> <p>Poland estimates the increase in the share of renewables in heating and cooling to be 1.1 percentage points per year, moving from 17.4% in 2020 to 28.4% in 2030. But there is no information on the planned increase in the renewables share in district heating, nor on the role of waste heat.</p> <p>As support measures, the plan mentions funding in the form of grants, repayable instruments and guarantee funds, but does not give more details.</p>
	Partially addressed	<p>Increase the level of ambition in the heating and cooling sector to meet the indicative target included in Article 23 of Directive (EU) 2018/2001</p>	
	Partially addressed	<p>Put forward measures to meet the transport target in Article 25 of Directive (EU) 2018/2001.</p>	<p>The plan provides further information on existing and planned measures. However, the specific status of the measures is not clear. The plan lacks quantifiable indicators for transport.</p> <p>Poland expects to achieve a 14% share of renewables by 2030. Some measures are detailed (i.e., supporting investment related to the production of bio-components, liquid biofuels and other renewable fuels), but do not provide precise figures on the use of biofuels and gas fuels in transport by 2030.</p> <p>Despite the level of increased commitment, the proposed forms of support are only vaguely described.</p>
	Partially addressed	<p>Provide additional details and measures on simplification of administrative procedures, on the enabling frameworks for renewable self-consumption and renewable energy communities, in line with Articles 21 and 22 of Directive (EU) 2018/2001.</p>	<p>The plan does not provide information on how administrative procedures will be simplified.</p> <p>Regarding enabling frameworks for renewable self-consumption, the plan only lays out the intention to adopt a prosumer-friendly legal framework, without much detail.</p> <p>On energy communities, the plan underlines their importance and that legislative measures have been taken in the Renewable Energy Sources Act (2016, 2017, 2019) to support them, without going into details.</p> <p>However, Poland also focusses on 'energy clusters', which have elements of energy communities, but are broader. It is estimated</p>

			<p>that in 2030, there will be around 300 local energy sustainable areas.</p>
Energy efficiency	<p>Review its contributions.</p> <p>Identify additional policies and measures that could deliver further energy savings in view of the need to increase the level of efforts to reach the Union's 2030 energy efficiency target.</p> <p>The proposed level of ambition towards reducing the final contribution should be better justified and backed by adequate and quantified savings from policies and measures.</p> <p>Support policies and measures with an impact assessment and deliver more detailed information on the scale and timeframe of implementation. Further explore policies and measures in transport considering the expected increase in the sector's energy demand in the future.</p>	<p>Not addressed</p> <p>Partially addressed</p> <p>Partially addressed</p> <p>Largely addressed</p>	<p>The contributions indicated in the plan are slightly higher than the draft and still of modest ambition.</p> <p>Some additional policies and measures have been presented, but given that the level of ambition remains unchanged, their impact is not significant. The information provided on renovating building stock is much improved, with additional policy measures. More details will be presented in the long-term renovation strategy, not yet submitted.</p> <p>It is explained that contributions are based on the analysis of their impacts (especially on GDP) and energy savings potential, but this analysis is not presented in the plan.</p> <p>Policies are better described. Some measures in transport are proposed and the impacts in terms of savings are estimated for Article 7 measures. However, details for other measures are still missing.</p> <p>Multiple measures are presented to increase energy efficiency in transport. They include promoting new forms of transport and implementing low-emission zones (LEZ), developing inter-modal freight transport, constructing Personal Rapid Transport (PRT) systems and using new technologies, procedures and systems for railway transport (ERTMS, SDIP, CBRK) and aviation (SESAR)</p>
Energy security	<p>Specify the measures supporting the energy security objectives on diversification and reduction of energy dependency, including measures ensuring flexibility.</p>	<p>Largely addressed</p>	<p>The plan recognises gradual change in Poland's energy mix, as well as diversification projects for oil and gas infrastructure.</p> <p>A decrease in the coal-based electricity generation share to 57-60% in 2030, and further in the longer term, will be supplemented by the growing share of renewables (from 14% now to 32% in 2030), gas-based generation and after 2030 also nuclear (the first unit of 1-1.5 GW in 2033, followed by another 5 units over a 10-year period) and a growing share of alternative</p>

Internal energy market	Define forward-looking objectives and targets concerning market integration, in particular measures to assess the impact of public service obligations, in particular gas storage and price regulation on market functioning and clarify how negative consequences will be mitigated. Outline a strategy and timeline for progressing towards fully market based prices.	Partially addressed	gases (e.g. syngas, biogas, hydrogen). Some aspects have been improved. Poland defines forward-looking objectives and targets for market integration related to implementing existing internal market legislation. However, it has not addressed the key aspect of the recommendation, namely to assess how public service obligations, in particular gas storage and price regulation, will affect market functioning, and how any negative consequences will be mitigated.
Research and innovation and competitiveness	Clarify the national objectives and funding targets in research, innovation and competitiveness, specifically related to the Energy Union, to be achieved between now and 2030, so that they are readily measurable and fit for purpose to support the implementation of targets in the other dimensions of the integrated national energy and climate plan. Underpin such objectives with specific and adequate policies and measures, including those to be developed in cooperation with other Member States, such as the Strategic Energy Technology Plan.	Partially addressed	Priorities and objectives for energy and climate are presented. The policy frame for energy and climate related R&I is defined (Directions for Energy Innovation Development – DEID) and objectives set (for 2030 compared to 2018), as well as the means for achieving them, and the programmes involved (although not always for the period up to 2030). However, the plan needs to complement this information with a timeframe, sources of funding and the main instruments to adopt, as well as the detailed additional measures needed to deliver results. The competitiveness objectives need to be complemented by specific measures, mentioned throughout the plan. While Poland has joined two SET plan working groups ('Energy efficiency in industry' and 'Nuclear'), the draft plan does not specify how this participation will be implemented/supported.
Investment and funding sources	No recommendations	n.a.	-
Regional cooperation	Continue and broaden the consultation of neighbouring Member States and regional cooperation in the context of the Visegrad Group (Czechia, Hungary, Poland and Slovakia) and in the respective high-level groups.	Fully addressed	Poland added information about consulting neighbouring Member States in its final plan, compared to the draft one. The final plan shows that consultations were carried out on the NECP. Requests for written comments on the draft NECP were

			<p>sent to 8 countries, including the Visegrad countries, countries with a common border (Germany, Sweden, and Lithuania) and Denmark and Romania.</p> <p>The NECP was also discussed in 2019 by the BEMIP High Level Group, of which Poland is a member. Poland describes cooperation within the Visegrad group, highlighting that countries aim to create a regional gas market, cooperating on energy and nuclear energy, with the goal of ensuring energy security.</p>
		<p>The focus of the regional exchanges could be on further integration in the internal energy market, assessing system adequacy in light of the planned continuation of a capacity market, just transition issues, decarbonisation and renewables deployment and the impact on the energy system and cross-border electricity trade.</p>	<p>The necessity for regional cooperation, to further integrate the internal energy market, is well understood by Poland. It describes existing and planned cooperation on electricity infrastructure (increasing the transmission capacities of cross-border interconnections) and energy transmission networks (integrating the networks of the Baltic states and the North-South Corridor projects).</p> <p>Statistical transfer to/from other EU Member States and joint energy projects are also mentioned, but are still just ideas, with no concrete detail.</p> <p>Poland gives a very detailed account of the planned impact of its policies and measures on neighbouring Member States (chapter 5.4). Cooperation on decarbonisation, renewable energy deployment and just transition could have been addressed in more detail.</p>
		<p>List all energy subsidies.</p>	<p>Largely addressed</p>
Energy subsidies		<p>List in particular fossil fuel subsidies.</p>	<p>Largely addressed</p> <p>The final NECP represents an upgrade of the draft plan on energy subsidies. Poland has included a list of subsidies, with a focus on support measures and grants for renewable energy, high-efficient combined heat and power, and other environmental support schemes.</p> <p>The final plan has provided a list of subsidies related to the capacity market and aid for closing coal production units.</p>
		<p>List measures and plans to phase out energy subsidies, in particular for fossil fuels.</p>	<p>Partially addressed</p> <p>Although a timeline is mentioned for the support schemes, there is no explicit reference to specific measures or plans to phase out</p>

			energy subsidies. The plan states that a capacity mechanism in the power market will be introduced from 2020 until (at least) 2030. Auctions under this mechanism will be open to existing and new generation units.
Air quality	Complement the analysis of the interactions with air quality and air emissions policy, including from a quantitative perspective. Present the impacts on air pollution for the various scenarios.	Partially addressed	The NECP mentions several policies and measures to improve air quality (covering electricity & heat, transport, spatial planning), although not always focusing on the interaction aspect. The quantitative impacts of projected changes in air pollutant emissions on health and the environment are only provided in monetary terms, without detailing the impact on air pollutant emissions themselves. This makes it impossible to identify key measures and sectors.
Just transition and energy poverty	Integrate just and fair transition aspects better, notably by providing more details on social, employment and skills impacts of planned objectives, and policies and measures.	Partially addressed	Section 3.1.1.8 describes the challenges and action needed for a just transition in coal regions. However it is descriptive and does not provide any specific measure or policy to address the challenges. It says that a restructuring plan for hard coal and lignite mining areas, to be co-financed by EU funds, will be developed in 2020. Section 5.2.2.3 assessed the social impacts of the planned energy policies. It focuses on energy poverty levels and does not address just transition challenges linked to changing the energy mix. The document recognises this fact and indicates that a proper analysis of the social/employment/ skills dimension “will be carried out as part of the restructuring plan for hard coal and lignite mining regions envisaged in 2020”.
	Further develop the approach to addressing energy poverty issues, including by specifying objectives and intended impacts of planned policies and measures as required by the Regulation (EU) 2018/1999.	Partially addressed	Poland does not have quantified objective in energy poverty outlined in the plan. It states that a “comprehensive state policy oriented towards solving the problem of energy poverty is planned to be developed”. Section 5.2.2 assesses the impact of policy scenarios on energy

	<p>The final integrated national energy and climate plan should particularly address the impact of the transition on the populations living in coal regions, reinforcing the link to the ongoing coal regions in transition initiative and the corresponding national and regional transition plans, as well as those affected by adjustments in other energy-intensive sectors.</p>	<p>Not addressed</p>	<p>poverty levels. The energy poverty aspect should therefore be further developed, taking into account recommendations by the ‘catching-up regions’ initiative. And the energy poverty definition should be developed, using available Commission support and the National Audit Court assessment.</p> <p>The need for policy measures to address energy poverty is recognised, but no further detail on such measures is provided.</p> <p>Poland’s energy transition implies a reduction in coal extraction. However, the socio-economic impact on specific coal regions of this decrease is not described.</p> <p>Poland is going to draft a national plan for restructuring coal regions. Local and regional stakeholders/authorities will be involved in this exercise, especially from three sub-regions, as this national plan would probably serve as a national Just Transition Fund master plan, combining measures for JTF sub-regions.</p> <p>The coal restructuring plan is not included as an annex to the NECP (an enabling condition). The coal regions plan cannot be changed unilaterally, e.g. to reopen some mines or maintain the level of coal extraction (despite earlier commitments to reduce it).</p>
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