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COMMISSION STAFF WORKING DOCUMENT

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

Accompanying the document

COMMISSION RECOMMENDATION

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

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1 SUMMARY

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

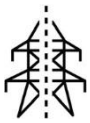
The European Green Deal, the fast-evolving geopolitical context and the energy crisis have led the EU and its Member States to accelerate the energy transition and set up more ambitious energy and climate objectives, with a strong focus on the diversification of energy supplies. These developments are reflected in the legislative framework adopted under the Fit for 55 package and the REPowerEU Plan.

Romania's draft updated national energy and climate plan ('the draft updated NECP' or 'the plan'), submitted on 31 October 2023, partially takes into account this new geopolitical and legislative framework.

Table 1: Summary of key objectives, targets and contributions of Romania'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: +6% 2022: +1%[1]	-12.7%	NECP: No ESR projections included. NECPR: +4.4%
GHG	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -49.26 Mt CO_2 eq. in 2021 and reported approximated net removals of -50.51 Mt CO_2 eq. in 2022	- 2 380 kt CO_2 eq. (additional removal target) - 25 665kt CO_2 eq. (total net removals)	Romania is not on track to reach the target taking into account updated GHG inventories; Insufficient ambition
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	24.5% (SHARES)	2021: 23.6%		Romania's contribution of 34% is below the 41% required according to the formula set out in Annex II of the Governance Regulation
	National contribution for energy efficiency:				
	Primary energy consumption	43 Mtoe	2021: 33.1 Mtoe	31.4 Mtoe	Romania's primary energy consumption contribution is 31.4

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

					Mtoe. EED recast Annex I formula results: 30.16 Mtoe
	Final energy consumption	30.3 Mtoe	2021: 25.37 Mtoe	23.2 Mtoe	Romania's final energy consumption contribution is 23.2 Mtoe EED recast Annex I formula results: 22.76 Mtoe
	Level of electricity interconnectivity (%)	9.3%	18.3%	15%[2]	

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

1.2 Summary of the main observations[3]

Romania submitted its draft updated NECP more than three months after the deadline of 30 June 2023[4]. Therefore, the European Commission had limited time to draft its assessment in this Staff Working Document, in order to enable Romania to submit its final draft updated NECP by the legal deadline of 30 June 2024.

Romania'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.

Regarding the reduction of GHG emissions under the **Effort Sharing Regulation (ESR)**, the plan does not provide evidence and emission projections to demonstrate that Romania is on track to meet its national GHG target of -12.7% in 2030 compared to 2005 levels. According to Romania's projections submitted in March 2023, there is a gap of over 17.1 percentage points, highlighting the need for more ambitious climate action.

It is unlikely that the existing policies and measures as described in Romania's draft updated NECP will be enough to reach Romania's target under the **Land Use Land Use Change and Forestry (LULUCF) Regulation**. The projections in the draft updated NECP indicate that Romania will fall short in terms of the additional net sink required for 2030 compliance when the current revision of the GHG inventory is taken into account, highlighting the need for enhanced climate action. The plan does not clearly set out a pathway to increase the land sector's contribution to the EU's overall enhanced climate target. Despite identifying several relevant policies and measures, net removals in forests are projected to decrease by 2030. The draft does not provide a clear implementation

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

[3] 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.

[4] 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. 1–77.

timeframe nor quantification of the impacts of specific policies and measures. It also lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

Furthermore, the plan's assumptions are based on an abrupt increase in renewable energy sources for electricity and an extremely fast penetration across the sectors of the Energy Union due to more electrification. While this is in line with the EU strategy, the trajectory seems very steep. The draft updated NECP also fails to identify additional measures to underpin this very high ambition on electrification. It also fails to address the compatibility of the ESR target in the transport sector with the ESR overall target. The plan does not consider adaptation policies in all the relevant dimensions of the Energy Union. Policies and measures are not always properly described across these dimensions in terms of their scope, timing and expected impacts. The plan also lacks actions for some of the Energy Union dimensions.

On **carbon capture and storage (CCS)**, the plan does not identify annual CO_2 emissions that can be captured, nor geological CO_2 storage capacity. No details on CO_2 transport are provided. The plan mentions challenges for CCS deployment in Romania, including public acceptance and lack of institutional capacity. The plan would benefit from adding considerations how these challenges are planned to be overcome. The draft updated NECP reflects partial progress towards **international commitments** under the Paris Agreement. Romania commits to phase out coal for power generation, but it doesn't provide clear timeline, especially post-2025, or information on the closure of extraction sites to support this. Moreover, the plan has no commitments or measures to phase out fossil fuel subsidies or energy subsidies.

Regarding **adaptation to climate change**, the draft updated NECP does not contain adequate analysis of the relevant climate vulnerabilities and risks for the achievement of the national objectives, targets, and contributions and the policies and measures in the individual dimensions of the Energy Union. The link to the specific Energy Union objectives and policies, which adaptation policies and measures should support, is not specified and quantified. Adaptation policies and measures, to support Romania´s achievement of national objectives, targets and contributions under the Energy Union, are not properly described in terms of their scope, timing and expected impacts.

On renewable energy, the draft updated NECP puts forward a contribution to the overall EU target of 34% of renewables in the country's gross final energy consumption by 2030. This is below the share of 41% resulting from the formula in Annex II to Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action ('the Governance Regulation'). The draft updated NECP includes trajectories for renewables in the electricity, transport and heating and cooling sectors. However, the plan does not provide trajectories for renewable fuels of non- biological origin (RFNBOs) for both transport and industry sectors. At the same time, it provides, for the most part, a comprehensive list of measures that Romania has adopted to support the deployment of renewable energy but lacks information on measures that the country plans to adopt. Overall, the plan takes into account Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413 ('revised RED II') to some extent.

On energy efficiency, the Romanian draft updated NECP is comprehensive and informative. The increased ambition in Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 ("EED recast") has been taken into account for some

requirements, notably in setting the 2030 national contribution for final energy consumption and in revising the cumulative savings target under the energy savings obligation. However, the EED recast requirements have not been considered for other obligations such as the **reduction of energy consumption** in public bodies and the renovation of public buildings. The draft updated NECP includes national contributions to the EU's 2030 energy efficiency targets of 23.2 Mtoe in the final energy consumption, and of 31.4 Mtoe in the primary energy consumption. Only the national contribution for final energy consumption is in line with the target under the EED recast. The draft updated NECP includes new measures addressing different sectors. However, the lack of quantification of energy savings makes it difficult to estimate the contribution to the energy efficiency targets.

On buildings, the Romanian draft update NECP does not increase the ambition of the 2020 long-term renovation strategy but recalls its key elements. The long-term renovation strategy sets a reduction of final energy consumption of 9% and 65% respectively by 2030 and 2050. However, these unchanged 2030 milestones for energy consumption in buildings are not in line with the overall increased national energy efficiency ambition. The draft updated NECP includes several measures that Romania plans to adopt to address energy efficiency in the building sector. However, the expected energy and emission savings of the proposed measures are not presented. The policies and measures outlined in Romania's plan are underpinned with financing sources and, in some limited cases, the plan elaborates on the available budget.

On energy security, the draft updated NECP sets out targets and policies to enhance Romania's supply of gas, electricity and oil. Specifically in the gas sector, the plan focuses on improving the gas network, including cross-border interconnections, and expects a stable domestic extraction until 2030. However, the plan does not include a clear description of measures that Romania plans to implement the reduction of gas. It does not explain how the measures are integrated into the medium-term planning towards 2030. This is particularly pertinent as the plan projects an increase in the consumption of natural gas due to the construction of new gas-fired power plants.

On the **electricity sector**, the draft updated NECP emphasises the promotion of renewables and decentralised generation and underlines the importance of improving interconnections with neighbour countries to support the flexibility of the energy system. However, the outlined short-term objectives for energy storage are not ambitious. The plan does not include a long-term strategy nor clear targets for storage.

In the **oil sector**, the draft updated NECP includes oil projections for 2030 but does not provide a detailed assessment of the adequacy of the oil infrastructure (refinery, oil stocks, pipelines) in the region with the expected decline in oil demand.

On the internal energy market, the plan is not ambitious in setting objectives and measures related to the completion of the internal energy market, in particular on increasing the flexibility of the energy system.

On energy poverty, the draft updated NECP provides a good overview of the policies and measures currently in place to protect and support both vulnerable consumers of energy and energy poor households in Romania. These policies and measures mainly address the expenses on energy of households. However, the plan does not include a specific target to reduce energy poverty and the only reference to the number of energy poor households is

the EU statistic on income and living conditions (SILC), i.e., an indicator on the inability to keep households adequately warm.

As regards the research, innovation, competitiveness and skills dimension, the draft updated NECP is largely lacking concrete qualitative and quantitative measures and targets to support research and innovation in clean energy technologies. However, general areas of intervention are mentioned in relation to the national strategies, such as the national strategy for research and innovation in energy and water (2021–2030) and the smart specialisation strategy 2021–2027. The draft updated NECP does not include a concrete breakdown of priorities coupled with funding targets or implementation milestones that are planned for research and innovation (R&I) actions specific to the energy sector for 2030 and 2050. The plan does not provide information about the investments needed for the manufacturing of key components and equipment for net zero technologies and how Romania will ensure the resilience of its supply chains to reach its climate and energy targets. In addition, the plan provides only limited information on measures and investments to overcome the identified skills gaps. **Just transition is addressed in a limited manner in the draft updated NECP**. There is no information on employment, skills and social impacts of the energy and climate transition, including distributional impacts on vulnerable groups, except the number of green jobs to be created by 2050. Overall, a strategic approach to just transition is lacking and the information provided is very genera. Namely, apart from presenting the latest legislation to support the coal phase out, it does not include concrete social, employment and skills policies and measures to tackle these issues more widely. Given that the draft updated NECP is only partially aligned with the adopted Territorial Just Transition Plans, it is not clear what impact this could have on the related measures. In addition, it does not elaborate on how the various resources will be used to support the just transition, except up-and reskilling measures co-funded by EU funds. Finally, the draft updated NECP does not provide sufficient information for the preparation of the Social Climate Plan and how the consistency of the two plans would be ensured.

On the strategic alignment with other planning tools, Romania's draft updated NECP covers the implementation of the measures included in the **recovery and resilience plan ("RRP")** and notably those in the new REPowerEU chapter which, at the time of writing is still under assessment by the European Commission. Furthermore, the measures in the plan reflect the 2023 **European Semester Country Specific Recommendations**, in particular with regard to energy security and energy efficiency that will allow to reduce Romania's dependency on fossil fuels.

Romania's draft updated NECP does not provide details on the **investment needs and funding sources for the specific policies and measures proposed.** The source of funding, including national, EU and private funding, is not properly specified and quantified. It is important to underline that the **analytical base** of the draft updated NECP is based on a quantitative analysis, generally covering all five dimensions of the Energy Union, without always providing the necessary details. There is no macro-economic assessment provided, which under the Energy Union Regulation is a mandatory requirement.

National **research and innovation (R&I)** policies in Romania's draft updated NECP focus on energy. Furthermore, the funding sources envisaged for addressing the identified priorities are presented in a general manner. Romania's NECP would benefit from providing operational details on the R&I national actions on energy, such as priorities and objectives for R&I in energy coupled with financial allocations or funding targets, and

implementation milestones that could demonstrate quantitative pathways to reaching the 2030 and 2050 objectives for energy. The draft updated NECP does not include: specific details on the competitiveness in R&I; manufacturing; scaling up and diversifying commercially available clean energy technologies; equipment and components; and low carbon technologies relevant for the energy intensive industry.

2 PREPARATION AND SUBMISSION OF THE DRAFT UPDATED NECP

2.1 Process and structure

The Romania draft updated NECP was submitted to the European Commission on 31 October 2023, 4 months after the legal deadline. The plan is generally well developed and follows the structure provided in Annex I of the Governance Regulation. It covers all five dimensions of the Energy Union. In addition, the plan includes general objectives, targets or contributions for each of these objectives, including general policies and measures that are underpinned analytically on the basis of an impact assessment.

The draft updated NECP does not provide evidence that, taking a whole-of-government approach, Romania reached out to and worked together with relevant authorities to update the draft updated NECP, taking account of synergies and trade-offs across different polices.

The draft updated NECP states that local and regional authorities were involved in an inter-institutional working group on the NECP. However, its working modalities are not described, so it is unclear to what extent local authorities were able to contribute to the elaboration on the draft updated NECP.

On some policies and measures, the draft updated NECP mentions cities and local authorities. For instance, cities and local authorities are mentioned as implementing entities for measures targeting public buildings, public lighting, heating, public transport, alternative mobility and the waste sector.

2.2 Public consultation

The draft updated NECP does not include information or details on a public participation or consultation processes in the process of developing the draft updated NECP. The plan states that stakeholders will possibly be involved in the post-draft consultation and revision of the draft updated NECP. On CCS, local communities and NGOs have only limited and unsatisfactory opportunities to participate in the decision-making process, according to Romania's draft updated NECP.

In particular, the draft updated NECP does not present information on a concrete public participation procedure. It does not include information on whether the public could participate before, throughout or after the decision-making process. It is therefore considered that interest groups were not identified, communication channels and mechanisms to notify and reach the public were not implemented, and there was no facilitation for participation of the public in a sufficient timeframe. Furthermore, the plan does not provide evidence that any information was provided to the public on the NECP's key objectives, targets and contributions, and that the public and stakeholders were informed on the regulatory context of the drafting of the plan and the upcoming decision-making process of the final NECP. Given that the public was presumably not consulted on

its views, the draft updated NECP does not include a summary on how the public's views were addressed.

2.3 Regional consultations for preparing the draft updated NECP

According to the draft updated NECP, some of its parts were subject to joint or coordinated planning with other Member States. However, the plan does not specify how and when this collaboration took place. Additional details on regional consultation were only provided on specific electricity and gas projects.

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 'Fit for 55' package but does not fully embed the increased climate targets (ESR and LULUCF Regulation).

According to the draft updated NECP, Romania aims at "around 100% emission reduction" by 2050. The plan shows concrete pathways to 2030 and to 2050. In its draft updated NECP, Romania does not distinguish ESR emissions from emission trading system (ETS) emissions. Romania has set a national economy-wide GHG emission reduction target of 78% by 2030 compared to 1990. Both the with existing measures (WEM) and with additional measures (WAM) projections are performed with a timeframe up to 2050. The projections show net GHG emissions, including LULUCF and excluding international aviation, of 34 million tonnes of CO_2 equivalent (CO_2 eq.) by 2050 considering existing measures and of 3 million tonnes of CO_2 equivalent with additional measures. This is equivalent to projected reductions in 2050, compared to 1990, of 85% and 99%, respectively. These projections represent a clear improvement over the projections submitted in March 2023 under Art. 18 of the Governance Regulation, which showed net GHG emissions (i.e., including LULUCF and excluding international aviation) of 79 million tonnes of CO_2 equivalent by 2050 considering existing measures and of 58 million tonnes of CO_2 equivalent with additional measures, equivalent to projected reductions in 2050, compared to 1990, of 65% and 75%, respectively. Overall, the information provided in the draft updated NECP, including the improved projections and all other available information, show that Romania's progress is likely to be consistent with the achievement of the EU climate-neutrality objective.

The **ESR** sets Romania's 2030 emissions reduction target at -12.7% by 2030 compared to 2005 levels. It is not possible to fully assess the level of Romania's ambition based on the draft updated NECP because it does not refer to the ESR target and does not provide emissions projections from the effort sharing sectors. In 2021, Romania's ESR emissions were within the annual emission allocation by 4.9 Mt CO_2 eq.

Based on the latest data that had to be reported by Member States by 15 March 2023 under the Governance Regulation, Romania provided an ESR 2030 WEM projection of 7.1% and WAM of 4.4% increase in emissions compared to 2005. Even with additional planned

measures from the March 2023 ESR projections, Romania would be above their 2030 target by over 17 percentage points, highlighting the need for more ambitious climate action and the need for updated ESR projections to be provided in the final NECP.

Member States have flexibilities under the ESR to comply with their targets. No specific use of ESR flexibilities is mentioned by Romania. 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 Romania's draft updated NECP

ESR target and projections[5]					
	2030 target*	**2021 performance (inventory data) ***	**2022 performance (approximated data) ***	**2030 WEM projection***	**2030 WAM projection***
Romania	-12.7%	6%	1%	-	-
EU	-40%	-14.5%	-16.9%	-27%	-32%

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

Romania submitted a revised LULUCF inventory in 2023, for the period 1990 through to 2021. Some elements of this are explained in the draft plan; however, the plan does not fully reflect the increased ambition of the **LULUCF Regulation** and in particular the 2030 national target requiring Romania to deliver additional -2380 Kt CO_2 eq. of net removals. According to the projections submitted, LULUCF will provide a sink of 32,136 kt CO_2 eq. in 2030 with existing measures, which remains below the additional sink required for compliance when the current revision of the GHG inventory is taken into account.

Moreover, Romania projects in the plan a modest decrease in forest carbon removals (-24,342 kt of CO_2 eq.) in 2030, when compared to those reported in the latest 2022 National Inventory Submission. This decrease will in fact make the achievement of the 2030 target more difficult. However, this issue is not discussed in the draft NECP.

Given that, in addition to cropland and grassland, the two dominant land uses in Romania are managed and unmanaged woodland Romania has rightly placed a focus on policies and measures in this area. Several additional policies such as the 2030 National Forest Strategy is aimed at establishing integrated management of forest fires. However, the draft plan does not provide the implementation timeframe, the source of funding and, most importantly, the quantification of the impacts of the stated policies and measures. No information is provided for any other policies and measures for the LULUCF sector.

The draft plan does not provide sufficient information on the status and progress to be made in ensuring the enhancements to higher tier levels/geographically explicit datasets for the monitoring, reporting and verification, in line with the provisions under Regulation (EU) 2018/841.

[5] 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 the years 2021-2025) and 2032 (for the years 2026-2030).

Overall, Romania does not clearly present how its policies and measures for the LULUCF sector will contribute to the long-term transition to climate neutrality by 2050.

The plan contains policies and measures related to **transport decarbonisation**. There is a particular focus on increasing the share of hybrid, plug-in hybrid and electric vehicles in road transport and expanding public transport.

The plan includes policies and measures for improved access to zero- and low-emission mobility, transport and vehicles such as: investments in the construction of new/upgraded operational railway infrastructure, in new electric trains in railway transport, new fleets in naval transport and new aircrafts; measures related to electro-mobility, both relating to electric vehicles and to recharging infrastructure, however those relate mostly to existing measures. There is missing the targets for the uptake of zero emissions vehicles and the deployment of recharging infrastructure and refuelling station for hydrogen. In 2022, according to European alternative fuels observatory, 1,484 recharging points were deployed and 31,595 electric vehicles were registered and there is a long way to go to approach the targets defined by the Regulation (EU) 2023/1804 on Alternative Fuels Infrastructure Regulation (AFIR).

The plan also proposes measures to promote active mobility and micro mobility (walking and cycling, e-scooters) as well as ride-sharing mobility and mobility as a service through subsidies, communication campaigns and adapted parking policy in urban areas.

The plan does not include specific roadmaps and measures for the production and deployment of sustainable aviation fuels and sustainable maritime fuels.

The draft updated NECP does not identify any annual emissions that could be captured from ETS and non-ETS sources, nor any concrete estimation of **geological CO_2 storage capacity.** Similarly, no plans related to CO_2 transport capacity development are reflected in the plan. The plan makes an inventory of existing national legislation on CCS: Romania has transposed the CCS Directive into primary national legislation and has developed secondary legislation for permitting and decommissioning. According to the details on the secondary legislation provided in the plan, there is a process in place for the direct award of a CO_2 storage permit to the titleholder of a petroleum licenses. At the same time, a guideline has been adopted Secondary legislation on well decommissioning aims at providing a framework for the reuse of offshore hydrocarbon wells for CO_2 injection. Current national legislation focuses on onshore CO_2 storage. The draft updated NECP also refers to challenges for implementing CCS in Romania, including the lack of institutional capacity and social acceptance.

The plan pays limited attention to mitigating **non-CO_2 emissions** in different sectors. In energy, the plan includes the phase-out of lignite-powered thermal power plants (i.e., PAM 1), but does not cover fugitive emissions from the oil, gas and coal sectors, including methane emissions from abandoned underground mines, which represented 21% of Romania's total net methane emissions in 2021.

In agriculture, the plan covers to some extent methane emissions from enteric fermentation (i.e., PAM 9) and manure management (i.e., PAM 11), but does not mention N_2O from agricultural soils, which was Romania's top source of non-CO_2 emissions in 2021.

In waste management, the plan addresses methane emissions from organic waste at different points of the waste stream, including a general reduction of municipal waste (i.e., PAM 17) and an increased composting of biodegradable waste (i.e., PAM 18). The plan

also aims to increase landfill gas flaring (i.e., PAM 20). However, this contradicts Annex I of Council Directive 1999/31/EC, which considers flaring as a last resort if the gas collected cannot be used to produce energy. Furthermore, the plan addresses methane emissions from wastewater (i.e., PAM 21), but it does not include the production of biogas and bio-methane as part of sludge management.

On F-gases, the plan includes the implementation of the Kigali Amendment of the Montreal Protocol (i.e., Pam 6). Finally, the plan does not provide quantified projections, which makes it difficult to assess the impact of the policies. The above shortcomings are problematic, because methane emissions and N_2O represented 41% of the 2021 value defined in Regulation (EU) 2018/842.

Romania proposes a national target of 47% reduction of agricultural emissions by 2030 compared to the reference year 1990. However, the plan concentrates largely on efficiency measures such as livestock diet and feed management as a way to reduce emissions from the agricultural sector. In the detailed projections for aggregated agricultural emissions Romania shows an only marginal decrease up until 2030 if additional measures are applied.

The draft updated NECP reflects partial progress towards **international commitments** under the Paris Agreement. The draft updated NECP mentions that coal will be phased out in the power sector by 2032 without clearly describing the intermediate trajectory after 2025 Moreover, there is no information on the closure of extraction sites nor on the phasing out of coal and lignite power plants. In addition, the plan has no commitments or measures to phase out fossil fuel subsidies or energy subsidies.

Romania has not yet submitted to the Commission its **national long-term strategy**. In March 2023, Romania reported on the status of implementation of its initial NECP, including progress towards the Union's climate-neutrality objective. However, Romania did not indicate a target year to achieve its climate-neutrality objective.

3.1.2 Adaptation

Romania did not include adaptation goals in its initial NECP of 2019. Adaptation goals are not included in the draft updated NECP either. Romania has not identified in its plan relevant climate vulnerabilities and risks that may threaten the achievement of national objectives, targets and contributions in any of the five Energy Union dimensions. Furthermore, it does not specify policies and measures in place or foreseen (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 in the draft updated NECP. The plan does not address investments aimed at minimising environmental impacts, such as biodiversity loss when contributing to climate adaptation.

Adaptation goals (objectives) for specific sectors, including agriculture, environmental management, natural resources, transport, infrastructure, industry, energy, and forestry are laid out in detail in the national adaptation strategy, which is referenced in the draft updated NECP.

3.1.3 Renewable energy

The renewable energy contribution proposed in the draft NECP is a share of 34% of the national gross final consumption of energy in 2030 and based on the WEM scenario including absolute values in terms of energy. This contribution is below the share of 41% resulting from the formula in Annex II of the Governance Regulation. The overall renewable energy trajectories do not take into account the projected shortfall to the 2020 target (baseline) and do not give an indication of the effort required to catch up, without explicitly indicating whether Romania intends to close this gap e.g., through statistical transfers or investments in the renewable energy financing mechanism. The draft NECP also provides indicative projections of renewables share in gross final energy consumption for 2040 and 2050, based on the WEM scenario. The scenarios provide yearly overall renewable energy contribution trajectories and respective technologies, up to 2030, and trajectories for every five years up to 2050. The indicative trajectory to reach the 34% contribution in 2030 is provided, including specific reference points for 2022 (renewables share of 29.5%), 2025 (32.3%) and 2027 (33.9%).

The submitted reference point for 2022 reaches the trajectory (of 26%) calculated in line with the EU 2030 renewable energy target of 32%, which was in force at that time. The reference point for 2025 is above the trajectory (31%), while that for 2027 is below (35%) calculated in line with the increased EU 2030 renewable energy target of 42.5%.

Renewable electricity generation is projected to reach 55.8% in 2030, with wind power becoming the main source of renewable electricity (35.1% share and 6.9 GW of installed capacity), followed by hydropower (35.1% share and 6.9 GW of installed capacity), and solar power (23.5% share and 8.3 GW of installed capacity). The information on how the share of renewable electricity in final energy consumption per different sectors and technology will evolve by 2050 is provided, based on the WEM scenario. However, the updated draft plan does not include information on the innovative target for renewable energy deployment.

The use of renewable energy in the heating and cooling sector is projected to reach a share of 33.1% in 2025 and 36.3% by 2030. However, the estimations in the updated NECP do not reach the binding target of 1.1 percentage points as an annual average for the second target period 2026 to 2030 and is significantly below the indicative target of 1.6 percentage point average increase. The role of waste heat and cold and the accounting of renewable electricity in the trajectory and their impacts on the target setting and the achievement remain unclear. Biomass will remain dominant with around 3.2 Mtoe in 2030, although its share in gross final energy consumption in the heating and cooling sector is projected to decrease from 81.7% in 2023 to 64.3% in 2030. Heat pumps will see their share in the gross final energy consumption almost doubled by 2030, reaching a 25% (up from a 14.2% in 2022).

The use of **renewable energy in the industry and in buildings** was not provided. However, Romania has included policies and measures to promote the installation of renewable sources in residential buildings. The use of renewable energy in district heating and cooling is set to reach 8.5% in 2030, up from a 7.6% share in 2021. No information on the role of waste heat and renewable electricity accounting and their impacts on the target setting and achievement for the calculation was provided.

In the transport sector, the share of renewable energy is projected to reach 29.8% in 2030 energy terms and Romania has not provided the equivalence of the target in GHG reduction by 2030. An advanced biofuel target was included with a share of 3,5% in 2030. The draft plan does not include any sub-target for RFNBOs. It also lacks details when it comes to limitation of the contribution of conventional biofuels, in accordance with Article 27 of the Directive 2018/2001/EC on renewable energy and the related Delegated Regulation. Romania indicates that the target for renewable energy share in transport will mainly be achieved through renewable electricity which will represent a share of more than 70% in 2030 and via biofuels with a share of 19% in 2030. The entry into force of ReFuelEU Aviation does not allow for national mandates on aviation fuel suppliers. The draft updated NECP does not explain to what extent electric vehicles will be produced in the EU, and how the raw materials needed (e.g., batteries) will be supplied.

The draft updated NECP does not provide information on the capacity of electrolysers in 2030 but includes the recently adopted Hydrogen Law (Law no. 237/2023), aimed at integrated hydrogen from renewable and low-carbon sources in the industry and transport sectors, which sets out measures for RFNBOs use in demand sectors mostly in transport and industry. For transport, until 2030, the energy value from the amount of RFNBOs supplied to the market in Romania and used in the transport sector in a year must be at least equal to 5% of the energy content of all fuels supplied for consumption or market use in Romania. No target for RFNBOs in industry was included in the draft updated NECP.

The draft updated NECP does not provide information on any international partnerships to facilitate imports of **renewable hydrogen**. Information regarding the pathway for oil-based transport fuel substitution through electrification and renewable hydrogen in land transport is provided to some extent without specific details. Romania includes policies and measures to increase the share of alternative fuelled cars (passenger cars, buses, trains, trucks), including estimated shares by fuel by 2050 for all these categories.

On **policies and measures**, in the **electricity sector** the objective is to accelerate the production of electricity from renewable energy sources through the use of reverse auctions. There are no measures specified to facilitate the uptake of long-term power purchase agreements or additional measures on Guarantees of Origin to enhance the current system to improve consumers' information. No information was provided on **joint projects**, the Renewable energy financing mechanism or CEF RES. The draft updated NECP provides information on measures to ensure an accelerated deployment of solar energy (PV and solar thermal), mainly in the residential sector, including deployment targets contributing to the EU Solar Energy Strategy objectives. The measure to support the installation of solar thermal collectors in the residential sector lacks information on the steps taken and envisaged to support it, and information has not been provided on measures to simplify and accelerate permit-granting procedures for solar energy. Individual and collective self-consumption of renewable energy as well as renewable energy communities is considered as a means to achieve the objectives but will be promoted only through the Greenhouse photovoltaic program. Quantitative targets goals for self-consumption are included in the draft plan, but not for energy communities, and the draft updated NECP does not contain sufficient and well-described measures for promoting individual and collective self-consumption as well as renewable energy communities.

Romania has not indicated in its draft updated NECP whether it has put in place a strategy on **energy system integration**, but indicates that it is actively promoting demand response to address energy fluctuations effectively and the deployment of electricity storage

solutions in order to reach at least 240 MW or 480 MWh by 2025, through measures aimed at introducing dynamic price electricity contracts and smart meters, and measures as part of its national Recovery and Resilience Plan.

Measures for **renewable heating and cooling** include the construction of new biomass and biogas combined heat and power and power plants, the replacement of biomass with heat pumps for space heating and cooling, the installation of solar thermal collectors in the residential sector mainly for water heating, and the implementation of energy efficiency policies and measures to reduce the final energy consumption of this sector. Measures related to industry are aimed at replacing conventional fuels with renewables in manufacturing industries. The draft updated NECP includes policies and measures to replace fossil fuels via electrification, hydrogen, waste heat and renewables, including those used for industrial heating in manufacturing industries. but information is missing on specific targets as well as on steps taken and envisaged to fulfil this objective. A fuel supplier obligation is ensured through the Hydrogen Law introduced in 2023. The draft updated NECP lacks information on measures to ensure the framework to enable sector integration between electricity and heating and cooling networks.

Measures to promote **bioenergy** availability and bioenergy sustainability have been included. The draft NECP includes projections till 2030 for bioenergy demand for the electricity, heating and cooling and transport sectors, but does not include projections on biomass supply by feedstocks and origin. and highlighting a national bio-methane target substantiated by an action plan). The cascading principle has not been highlighted exhaustively. The draft updated NECP has included an estimated trajectory on forest sinks in the forestry LULUCF sector but has not assessed exhaustively the impact that bioenergy trajectories may have on LULUCF sinks, biodiversity and air quality; in addition, the draft updated NECP does not include the assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria in line with the revised REDII, and of the compatibility of the projected use of forest biomass for energy production with Romania's obligations under the revised LULUCF Regulation, particularly for 2026-2030. Regarding biomethane, the draft updated NECP mentions only biogas to be used in combined heat and power) plants for electricity production to increase flexibility, coupled with CH4 emission reduction from manure. Progressively, by 2050, biogas production capacity would increase by 10 MW per year, resulting with 70 MW of installed capacity by 2030. As such, draft NECP did not provide an action plan on biomethane till 2030.

The plan does not include a **mapping of the areas** necessary to achieve the national contribution to the Union's 2030 renewable energy target or on the designation of renewables acceleration areas and dedicated infrastructure areas. For the streamlining of administrative procedures and time limits for granting permits, the draft updated NECP does not include a reference to a contact point for project promoters or to any measures streamlining administrative procedures. The draft plan does not make a reference to the way offshore renewable development is addressed in the maritime spatial plan, neither it has elaborated on the additional human resources dedicated to permitting.

3.2 Energy efficiency (including buildings) dimension

Energy savings are presented as a pillar of the draft updated NECP, with Romania targeting to reduce final energy consumption by 48 ktoe per year until 2030 compared to the 2017-

2019 average. This equals to a corrected **national contribution** of 31.4 Mtoe for primary energy consumption (compared to 30.2 Mtoe according to the EED recast Annex I formula results) and 23.2 Mtoe for final energy consumption (compared to 22.8 Mtoe according to the EED recast Annex I formula results).

Romania´s reported 2030 contributions for **primary and final energy consumption** deviate from the theoretical results from the use of formula in the EED recast Annex I by 4.1% and 1.95% respectively.[6] The target for 2030 is also set at a lower level as compared to Romania's 2020 energy efficiency targets that is -27% for primary and -23.4% for final energy consumption.[7] Overall, Romania's current contribution for final energy consumption is in line with the level of ambition set by the EED recast, whereas this is not the case for the national contribution for primary energy consumption. In fact, the latter seems to be set slightly above the 2030 projections for primary energy consumption under the WAM scenario (31.4 Mtoe compared to 30.4 Mtoe). Aligning the **national contribution** with the WAM scenario would reduce the gap from 4.1% to 1%, thereby making both contributions in line with the EED recast ambition.

The target on reducing total final energy consumption of all **public bodies** is not described in the draft updated NECP and the plan does not include enough information on the measures planned, nor on the exclusion of public transport or armed forces.

The draft updated NECP provides satisfactory information on what measures will be used to deliver the savings required post-2020 under Article 7 EED (Article 8 EED recast) on **energy savings obligation**. The policies and measures contained in the draft updated NECP under the energy efficiency dimension are sufficiently well described, but do not include estimation of energy savings. Furthermore, the potential overlapping of measures and how the double counting of the impacts is avoided, is not addressed. More details are needed to understand how recent measures contribute to the achievement of the 2030 energy efficiency contributions. Romania implements **alternative policy measures** to fulfil the energy savings obligation. The draft updated NECP did not revise the cumulative end-use energy savings target of 10.1 Mtoe over 2021-2030, thus not taking into account the new ambition of the EED recast.

The draft updated NECP presents in details new measures to achieve the 2030 energy efficiency targets, but the **expected energy savings** are not included. It is important to note that the new measures are designed within the frame of existing measures. However, the level of ambition of the new measures compared to the existing ones is not clear as the existing measures are described in a broader way. The draft updated NECP includes measures reflecting the '**Energy Efficiency First principle**', emphasising that all measures adhere to the fundamental principles of energy efficiency. The policies and measures aimed at improving building energy efficiency and promoting the use of more efficient technologies will significantly impact household energy consumption in both

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

[7] The comparison has been done with the 2020 targets as included in the Romanian factsheet on 2020 NECP: 43.0 Mtoe PEC, 30.3 Mtoe FEC.

scenarios (WEM and WAM) across sectors. Relevant final energy savings can be achieved in the WAM scenario thanks to the electrification of the transport sector.

The Romanian draft updated NECP does not increase the ambition of the 2020 **long-term renovation strategy** but recalls its key elements. In particular, as per the 2020 long-term renovation strategy, the annual renovation rates are projected to increase gradually from 0.69% in 2021 to 3.39% by 2030, to 3.79% in the period 2031-2040, eventually reaching 4.33% in the period 2041-2050. These progressive renovation rates are expected to lead to a 9% reduction of final consumption and a cumulative 24% GHG emission reduction by 2030, and a 65% reduction of final energy consumption and an 80% cumulative GHG emission reduction by 2050 (6.14 Mtoe). The unchanged 2030 milestone for energy consumption in buildings is not in line with the overall identified increased ambition to reduce primary and final energy consumption.

The draft updated NECP includes various future measures addressing building sector, both enhancing its **energy performance** and deploying renewable energy consumption. The proposed measures to reduce energy consumption and related emissions of buildings, include renovation of the building shell, further deployment of solar-thermal collectors, rooftop PVs and an increased use of heat pumps. Nevertheless, the expected energy and emission savings of the proposed measures are not presented. In this respect, the level of ambition of newly proposed measures is not clear compared to existing measures.

Policies and measures have identified financing sources and, in some limited cases, also the available budget.

3.3 Energy security dimension

Fossil fuels make up the bulk of the energy supply in Romania, accounting for 72% of the energy mix in 2021.[8] According to the draft updated NECP, share of fossil fuels in primary energy mix is expected to fall to a level between 56% (WEM scenario) and 53% (WAM scenario) by 2030, and between 50% (WEM scenario) and 31% (WAM scenario) by 2040. Despite this high use of fossil fuels, Romania's **energy import dependency** on third countries is relatively low at 32% in 2021 which is substantially below the EU27 average.[9] In terms of energy security, Romania focuses mainly on increasing domestic energy supply and on diversifying its fuel imports, in particular for natural gas. Demand response and energy storage are also emphasised as key elements of Romania's energy security strategy.

Natural gas plays a critical role in the Romanian energy system, accounting for 29% of the energy mix and 17% of the electricity mix in 2021, thus representing the second largest energy source in the country. Romania is one of the few EU Member States with a substantial domestic production of natural gas and is the second largest gas producer in the EU after the Netherlands. This means that Romania has a low dependence on imports (around 23% in 2021[10]) to satisfy its gas consumption. However, 78% of the gas import was supplied by Russia in 2021.[11].

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8 Eurostat.
9 Eurostat.
10 Eurostat.
11 https://economy-finance.ec.europa.eu/system/files/2023-05/RO_SWD_2023_623_en.pdf.

Romania can count on 7 **gas storage facilities** with an operational capacity of 3.4 bcm, which represents between a quarter[12] of usual annual consumption. According to the plan, annual gas consumption is expected to increase slightly from 9.9 bcm in 2021 to 10.4 bcm in 2030, as will gas import dependency which is expected to reach 26% by 2030. This is mostly due to the construction of new gas-fired power plants. In these projections, domestic production of natural gas is expected to remain unchanged until 2030.

In terms of **security of gas supply**, Romania primarily focuses on the improvement of its gas network, including cross-border interconnections. Among the highlighted priority projects is the development of the BRUA pipeline, which aims to develop the Romanian gas transmission grid along the Bulgaria-Romania-Hungary-Austria corridor. Furthermore, the project Eastring will connect Slovakia with the external border of the EU in Bulgaria through Romanian and Hungarian territories, with an annual capacity of 20-40 bcm.

As a consequence of Russia's invasion of Ukraine, Romania reduced its gas demand by 21% between August 2022 and August 2023, more than the -15% voluntary objective and slightly more than the EU27 average (-18%)[5]. Nevertheless, the draft updated NECP does not describe the implemented gas demand reduction measures, nor does it explain how these are integrated in the medium-term planning towards 2030.

On **electricity**, Romania's principal security of supply objective is to preserve domestic generation and the diversity of the generation mix (at least in the short run), which currently includes various energy sources such as coal, gas, nuclear, hydro, wind and solar. The country has set an objective for 2030 to install 30.4 GW of renewable capacity and for 76% of power to be generated by renewables. The plan provides an overview on developments of the electricity wholesale and retail markets, energy efficiency, renewables, GHG emissions per sector, interconnection capacities and flexibility instruments, aiming at helping the integration of increasing share of variable renewable sources.

According to the draft updated NECP, **coal** for electricity production will be phased out by 2030 at the latest.

Romania operates two nuclear reactors with a total capacity of 1400 MWe located at the Cernavodă nuclear power plant. Both of these CANDU design reactors contribute substantially to electricity generation, and Romania plans to expand its nuclear power programme further. Two nuclear power reactors (CANDU design with 700 MWe capacity each) are being considered for construction in Q4 2030 and in Q4 2031, respectively. Additionally, the draft updated NECP foresees Small Modular Reactor (SMR) technology with an installed capacity of 462 MWe, planned for Q4 2029. The repowering of existing reactors in 2027-2029 (Unit 1) and 2036-2038 (Unit 2) is also planned.

At the same time the plan specifies that Romania has significant renewable energy potential: there are a number of rivers appropriate for **hydro and pumped hydro** installations, the number of sunny hours is above 2,000 on average per year, wind installations can also play important role and there is potential for geothermal energy. The share of renewables is set to increase to 59% by 2030 in electricity generation.

Coordination and cooperation with neighbouring countries is presented as key for **grid resilience and electricity security of supply**. Romania has electricity interconnections

[12] https://economy-finance.ec.europa.eu/system/files/2023-05/RO_SWD_2023_623_en.pdf.

with all of its neighbours (Hungary, Ukraine, Moldova, Bulgaria, Serbia). There are number of projects foreseen until 2030 to reinforce interconnection capacities with Romania's neighbours. There is also a project to establish a link across the Black Sea to electricity sources in the Caucasus. The draft update plan mentions that reinforcing interconnection is strongly related to phasing out coal and increasing variable resources to ensure adequate system stability and reliability. Expanded interconnection capacity and increased system flexibility can support the integration of renewable energy. Flexibility will e.g., be provided through the construction of new gas fired facilities (2.6 GW CCGT and 947 MW gas fired co-generation by 2030). However, there is no information on how these additional capacities will at the same time contribute towards recently agreed targets under the 'Fit for 55' package and the REPowerEU Plan, and in particular on how this new gas infrastructure is compatible with the 2050 climate neutrality objective.

Energy storage also plays an important role in terms of providing **flexibility**. According to a study on storage commissioned by the European Commission, the current operational Romanian power storage capacity is around 174.6 MW (mainly pumped hydro)[13]. Even if the plan does not refer to a dedicated roadmap or strategy for the deployment of energy storage, by 2025 the country aims at installing 240 MW or 480 MWh battery storage to help foster the integration of renewables (combined RES and battery projects), and in the future hydrogen will also play an important role in storing electricity and serving as feedstock for the industry. While the ambition level for 2025 appears low, the plan notes that battery storage will play a pivotal role in the country's electricity system by 2030, and that storage technology developments will help decarbonise, decentralise and digitalise the electricity sector, promoting prosumers. Prosumer capacities reached 1.1 GW in 2023, and the target for 2030 is 2.5 GW.

In 2022, **oil** represented the 34% in the Romanian energy mix, 4% more than in 2020, due mostly to the reduction of gas imports. In 2021 the import share of crude oil was 68%. Romania aims to reduce this share to 54% in 2030. In 2021, 46% of imported oil came from Kazakhstan, 27% from the Russian Federation, and 11% from Iraq. After the EU ban on Russian oil, the main oil suppliers are now Kazakhstan, Azerbaijan, and Iraq. In 2021, oil demand came mostly from the transport (77%) and industry sectors (21.5%). Romania is the main oil producer in Southern Eastern Europe and also contains the largest processing capacity with 3 refineries. The country's main oil hub is in the Constanta port in the Black Sea.

Romania does not have oil pipeline infrastructure to the regional oil market, however. According to the draft updated NECP, oil demand is expected to decrease slightly to around 29% of the energy mix by 2030. This decrease will be driven by electrification of the transport sector and the investment in energy technologies to improve energy efficiency. Renewable energy sources are expected to satisfy 26.6% of energy needs in the transport sector. The draft updated NECP does not assess the adequacy of the oil

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

infrastructure (refinery, oil stocks) with the expected oil demand decline. and the move toward biofuels.

Digitalisation and **cybersecurity** are partly addressed in the plan in the context of the broader deployment of smart technologies and digital innovations. However, the draft updated NECP does not address neither **critical infrastructure protection**, nor the **resilience of the supply chains** in terms of access to critical raw materials needed for the green transition, nor the implications for energy security of **climate change** (for instance in terms of hydropower or nuclear output).

The draft updated NECP does not describe the measures in the **event of security of supply crisis** for electricity and for gas. Romania submitted its National Risk Assessment, and its Emergency Plan, as well as the Common Risk Assessments for Ukraine, Trans-Balkan, and Caspian regional risk groups. At the time of writing, they are all being assessed by the European Commission. However, the final version of the Preventive Action Plan still needs to be submitted (only a draft was received), while it was due by 1 March 2023.

3.4 Internal energy market dimension

Romania's draft updated NECP estimates an **electricity interconnection** level of 21% for 2030. Romania reports in its draft updated NECP that the realisation of the interconnection level would be reached through projects of common interest and the completion of other projects specified in the RET development plan.

The draft updated NECP lacks information on investments in infrastructure to enable the penetration of hydrogen into the energy market. It also lacks a planned timeline to deploy infrastructure, if relevant in a cross-border perspective.

During the energy crisis, Romania has adopted a number of emergency ordinances that introduced measures that could be viewed as potentially interfering with the liberalization of Romania's energy market and a fair competition among different energy technologies. Those measures appear to go beyond the scope of the Council Regulation 2022/1854 adopted on 6 October 2022 which introduced exceptional, targeted and time-limited common measures to reduce electricity demand and to collect and redistribute the energy sector's exceptionally high revenues to final customers. One of these measures is currently being examined by the Commission. The European Commission decided to open an infringement procedure by sending a letter of formal notice to Romania (INFR(2023)2032) for restricting the export of electricity through a measure that is incompatible with Articles 35 and 36 of the Treaty of the European Union, Directive (EU) 2019/944 and Regulation (EU) 2019/943.

Romania's draft updated NECP refers to a binding of the national RRP that aims at a minimum total **electricity storage** capacity of 240 MW by 31 December 2035. However, the plan does not indicate specific measures to: accelerate the deployment of electricity storage; engage the energy system operators in facilitating the penetration of flexibility services. The draft updated NECP does also not set clear targets and objectives for demand response, storage and flexibility. No specific policies and measures were included to enhance flexibility and enable a non-discriminatory participation of new flexibility services.

Romania has not indicated any specific objective to increase the **flexibility of the energy system** through policies and measures related to market-based price formation. The plan also lacks national objectives for the deployment of demand response.

On **energy poverty**, Romania's draft updated NECP addresses energy poverty and identifies it as the most relevant policy. The draft plan identifies a number of 15.2% of Romanian households that are concerned of energy poverty. This number is based on one single indicator referring to the inability to keep homes adequately warm, measured annually by ESTAT, and does not reflect the significant difference to the EU average. Furthermore, the plan mentions a national objective to reduce energy poverty, but this objective does not appear to be measurable. The description of the current status quo concerning energy poverty in the country is not very detailed. The plan does not explore synergies between energy poverty and measures to develop demand response, accelerate building renovation and energy savings in a targeted manner to have direct effect on households and to empower vulnerable consumers.

3.5 Research, innovation, competitiveness and skills dimension

3.5.1 Research and innovation

Romania's draft updated NECP does not present national targets and spendings for research and innovation (R&I) in specific clean energy technologies. It only refers to an overall target for R&I set out in the country's national strategy for research, innovation, and smarts specialization 2022-2027 (NRIS3). Romania's draft updated NECP sets out the overall objective to move up from the status of 'emerging innovator' (and the least performing in the EU) to 'moderate innovator' (according to the European Innovation Scoreboard). The plan reports that Romania has consistently ranked last in the EU for R&I expenditures between 2016-2022. According to the NRIS3, Romania aims to increase public expenditures on R&I to 1% of its GDP by 2027 compared with 0.47% total (public and private) in 2021, and gross expenditure to 2% of GDP by 2030, compared to 1.1% in 2021. The NRIS3 also includes a number of priority areas for R&I that are relevant for energy, e.g., renewable energy generation, digitalisation, energy storage, and green mobility.

Romania's draft updated NECP mentions several funding sources that are available for future R&I actions, including co-funded EU programmes, centrally managed EU programmes and nationally funded programmes[14]. However, the plan does not describe in more detail the direct correlations between the identified R&I priorities for the energy sector and the associated funding sources. Moreover, no funding targets for energy priorities are envisaged for 2030 and 2050.

More details, targeting a longer-term perspective in a programmatic manner, could include specific priorities for R&I in energy with corresponding financial allocations and funding targets, and implementation milestones for 2030 and 2050.

The draft updated NECP indicates that Romania cooperates with other EU Member States on R&I in the area of energy. The cooperation mainly seems to focus on participation in

[14] National programmes include: the National Innovation Program, the National Research and Development Programme, the Start-Up Romania Programme, and the Entrepreneurship and Competitiveness Program.

and funding through EU initiatives including Horizon Europe, the European Innovation Council, the European Research Council, and the European Institute of Innovation and Technology. The plan does not mention any activities related to the strategic energy technology plan. The draft updated NECP presents that Romania has concluded bilateral agreements with other countries on the cooperation on R&I but it does not provide information as to which countries such agreements are concluded with, on what energy-related topics, and the priorities to be jointly pursued. The draft updated NECP does also not clarify what specific objectives and projects are being pursued through such cooperation agreements.

3.5.2 Competitiveness

Romania's draft updated NECP describes its objectives on competitiveness in a general and cross-sectoral manner. According to the plan, Romania aims to increase its competitiveness through the objectives and measures included in its NRIS3 strategy. However, the draft updated NECP does not include information on targets, policies, measures and investments to support the manufacturing of clean energy technologies, equipment and components that are essential to reach the objectives on decarbonization. It does also not include information on how Romania plans to ensure the resilience of supply chains for clean technologies.

Similarly, Romania has not provided any targets or measures to address circularity and recyclability. In Romania's NRIS3 strategy, digitalisation is acknowledged as a priority. Nonetheless, no further information is provided on the operational aspect (e.g., specific objectives or actions envisaged, and funding sources identified).

3.5.3 Skills

Romania's draft updated NECP contains general information on measures to support the skills necessary for the energy transition. The plan mentions Romania's programme 'smart growth, digitalisation and financial instruments programme', co-funded by the EU, as a supporting instrument for the upskilling and reskilling of workers. The draft updated NECP also mentions Romania's plan for the implementation of the 'national strategy for research, development and innovation 2021-2030', which includes measures to advance the skills and training of researchers. However, the plan lacks specific information on the skill gaps and the measures and investments to overcome them for advancing the energy transition, including national objectives and targets.

4 JUST TRANSITION

The draft updated NECP addresses the just transition aspects in a limited manner. The plan lacks a comprehensive analysis of social, employment and skills impacts, including distributional effects on vulnerable groups, of the climate and energy transition, although there is an estimation of new green jobs which will be created up to 2050. The draft updated NECP does not provide sufficient information for the preparation of the social climate plans, as assessed in Chapter 7.

The plan presents the legislation adopted in 2022 to phase out of coal in 2032 and the adoption of a law on just transition which will include concrete measures to minimise the adverse social effects in the affected regions but only partially explains what the numerous

legislative changes entail and does not specify the adoption timeline for the latter. Linked to coal and carbon intensive regions, the transition path is not accurately substantiated with information on the timeline for phasing out the extraction site nor on capacity decommissioning except for the coal phase out date (2032) which is the same as in the adopted Territorial Just Transition Plans (TJTPs). Moreover, the plan does not include information about industrial transformation (steel, fertilisers and fuel production), key areas for 3 out of 6 Just Transition territories, despite their importance in terms of expected emission reductions. Based on this, it is not clear what impact this could have on the related measures.

Overall, the draft updated NECP contains either very general information on measures, or mentions job creation and upskilling and reskilling of workers only in the context of the regions covered by TJTPs, addressing **preservation of employment and access to affordable and inclusive education, training and life-long learning** in the context of the climate and energy transition. Although the law on establishing **social protection measures** for the vulnerable energy consumers is described, the plan does not include a clear description of the measures for tackling energy poverty or for promoting energy communities among the energy poor. Overall, a strategic approach to just transition is lacking and the information provided is very general.

Finally, the draft updated NECP does not elaborate on the various resources specifically devoted to the just transition but identifies the EU co-funded national programme 'Smart Growth, Digitalisation and Financial Instruments Programme (POCIDIF)', as well as the EU's Just Transition Fund as supporting instruments for the upskilling and reskilling of workers.

5 REGIONAL COOPERATION

Romania's draft updated NECP mentions regional cooperation as a means of improving the internal energy market, in particular to address bottlenecks on connecting lines. Romania actively engages in regional cooperation with neighbouring countries in the fields of electricity and natural gas infrastructure to diversify its energy sources. In particular, Romania participates in the high-level dialogue established under the Central and South-Eastern Europe connectivity, which aims at increasing regional cooperation to achieve European strategic objectives.[15] However, the draft updated NECP does not include information, measures and initiatives in the area of renewables regarding these available cooperation mechanisms, including the Central and South-Eastern Europe connectivity. Romania participates in the planning of future natural gas infrastructure projects within the framework of the 'vertical corridor' initiative alongside Bulgaria, Hungary and Greece.

Romania has still not signed solidarity agreements for the security of gas supply, despite being required to sign two (with Bulgaria and Hungary).

[15] Four high level groups have been set up by the European Commission to provide strategic steering and policy guidance on regulatory and infrastructure development and to monitor progress of projects of common interest in priority regions. They include: The North Seas Energy Cooperation (NSEC); Interconnections for South-West Europe; Baltic Energy Market Interconnection Plan (BEMIP); Central and South Eastern Europe energy connectivity (CESEC).

6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP

Romania's draft updated NECP reflects key synergies within and between the five dimensions of the Energy Union. For instance, the plan highlights the importance of coordinating grid operation and planning with neighbour countries to respond to intermittent renewable energy sources. The plan also points out the importance of cooperation with neighbour countries in increasing energy efficiency. The plan addresses the security of the supply of electricity through a diversification of sources and increased use of nuclear energy. According to the plan, the natural gas network is extended to diversify supplies. Romania also promotes demand response consumption and energy storage. However, the plan did not provide a comprehensive analysis of consistency of policies and measures in each dimension and a quantitative analysis of interactions of certain objectives.

7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS

Romania formally submitted a **modified RRP** and **REPowerEU chapter** on 8 September 2023. The revised versions mention a large number of energy-related measures that are already included in the existing RRP, in particular measures related to energy efficiency in buildings and to green hydrogen. Moreover, Romania has submitted seven proposals for investments and two proposals for reforms for its REPowerEU chapter. The draft updated NECP does not explicitly mention the REPowerEU chapter and the amended RRP but includes various measures from them.

The draft updated NECP is also **partially consistent with the adopted TJTPs**. The plan refers to the phase out of coal by 2032, which coincides with the TJTPs commitments, but does not describe accurately the intermediate trajectory, particularly post-2025, and a timeline for the phase out of coal and lignite-based power plants. Furthermore, the plan does not include information on the closure of extraction sites. The plan presents references to a list of updated legislative acts adopted but only briefly explains the changes which the numerous legislations entail. Moreover, the plan doesn't include key interventions from the TJTP such as business and entrepreneurship development and renewable energy for energy communities and small-scale installations. Romania's draft updated NECP indicates energy efficiency as a key component and refers to programs to provide income support and healthcare measures which are not included in the TJTPs. In addition, the draft updated NECP does not include information about the industrial transformation in the steel, fertilisers and fuel production sector, which are key areas for 3 out of 6 Just Transition territories.

The draft updated NECP provides inadequate analytical basis for the preparation of the **social climate plans (SCPs)** which will address the impacts of the new emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2) on vulnerable households, transport users and micro enterprises. No specific analysis or methodology is provided on the effects of the ETS2 on vulnerable groups to be supported by the Fund. No measures are planned for the identification of transport poverty and reduction targets are not mentioned. The plan provides an overview of the national law that aims to establish social protection measures for vulnerable energy consumers. This law contains measures that could generally be eligible under the social climate fund (SCF),

including the granting of aid intended to ensure the needs of minimal energy. However, the draft updated NECP does not include an explicit link to the SCF. The plan does not contain information on the process of drafting the SCP and other information useful for the effective implementation of the SCF. No information is included in the draft updated NECP on the governance of the Fund and it does not outline reforms and policies to be included in the future SCP. Thus, the current draft does not explain how the SCP will build on the updated NECP and how the consistency between the two plans will be ensured.

In its draft updated NECP, Romania does not provide the quantification of the climate impacts of measures currently included in the CAP strategic plan. The plan does not explain whether the CAP strategic plan is in line with the new targets under the LULUCF Regulation and the ESR and whether additional measures are necessary. Compared to Romania's **national adaptation** s**trategy**, the plan is less detailed and less ambitious on the respective actions.

Romania's draft updated NECP addresses the 2022 and 2023 **country-specific recommendations** to improve diversification and reduce Romania's dependency on fossil fuels. This is envisaged in the draft updated NECP by taking specific actions such as facilitating and accelerating the deployment of renewables. According to the plan, Romania also envisages to pursue efforts on energy efficiency in buildings, including setting up one-stop-shops to provide advice and assistance for energy efficiency measures and for generation of renewable energy in manufacturing processes and decarbonisation of industry. Moreover, the draft updated NECP includes actions to: (i) upgrade Romania's electricity transmission and distribution infrastructure to enable a higher roll out of renewables; and (ii) focus on energy storage facilities to ensure flexibility and security of supply.

8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS

8.1 Investment needs

The draft updated NECP includes only very high-level estimates on the overall investment needs. Some numbers are presented, like the overall investments in the energy sector, approximately EUR 2.132 billion, with the indication that a very large part of this would actually be for a comprehensive overhaul of the transportation sector. While the transport sector is important, no details regarding the investment needs of the energy sector were identified and assessed. No detailed information is provided on the expected investment needs to implement the planned policies and measures for each of the five dimensions. The draft updated NECP does not identify the distinct need for the public sector, nor adds details on the volume of private investments to be mobilised to finance the specific measures.

8.2 Funding sources

The plan outlines for the majority of policy actions the main sources of financing used to implement the planned key policies and measures. A number of sources are mentioned, such as EU, national and local funding with a substantial reliance on private investments and public-private partnerships. However, funding needs are not specified for most of the actions. It is therefore not possible to identify potential gaps in terms of funding. It is recommended to provide information on the sources of financing of each policy and

measure in the final NECP, including information on the public and private part, the lifetime of the measure, the share coming from the EU budget, explicitly specifying the RRF contribution. An overview table gathering all the budgetary information of the different policies and measures should also be provided. Regarding energy efficiency, each policy and measure has a financing source identified and, in some limited cases, also the available budget. No information on the public-private share of investments is provided. However, it is noted that a substantial number of policies and measures rely on private investment, thereby underscoring the critical need to establish favourable conditions facilitating private investments to meet the energy efficiency targets.

9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP

The draft NECP update describes both a WEM and WAM scenarios with projections for the relevant sectors of the economy, including industry, the energy system and transport and covering the period until 2050. However, no ETS/ESR split is provided. The analysis is based on bottom-up modelling and least-cost optimization using the LEAP-RO model. Modelling details are, however, not documented in the draft NECP update. The draft NECP does not contain a systematic macro-economic assessment. It is overall not developed enough and lacks robustness with no methodology provided. There is no assessment of the impact on public budget.

The new ETS for buildings, road transport and additional sectors (ETS 2) has been considered in the projection scenarios but not in the plan.

The impact assessment of planned policies and measures is a comparison of projections of different indicators between the WEM and WAM scenarios regarding the energy system and GHG emissions and removals. Regarding the macroeconomic impacts, only projections for the creation of green jobs are presented, but it is not clear which measures were assessed nor the methodology employed.