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COMMISSION STAFF WORKING DOCUMENT

Assessment of the final national energy and climate plan of Romania

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1. SUMMARY

Romania's final integrated national energy and climate plan (NECP)[1] sets a 2030 target of -2% for **non-ETS greenhouse gas (GHG) emissions.** This is in line with the legislated national 2030 target. The plan does not consider whether overachievement of the target could be cost-efficient if annual emission allocations were to be transferred to other Member States. Neither does it consider the possibility to use the flexibility from the land use, land use change and forestry (LULUCF) sector to effort sharing sectors.

Romania's **renewable energy** contribution to the 2030 EU level target is 30.7% of gross final energy consumption in 2030. This is below the 34% share 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[2]'). The plan explains the measures intended to reach the national renewable contribution for electricity, heating and transport sector, but there is no clear quantification of those measures.

On **energy efficiency**, Romania has increased the level of ambition of its national contribution to the 2030 EU level target compared to the draft plan, which is welcome. However, its contribution for primary energy consumption is still of low ambition[3] and amounts to 32.3 Mtoe, while for final energy consumption it is of very low ambition, at 25.7 Mtoe. On the positive side, the final plan includes useful information for buildings, indicating the intention to go beyond a 3-4% renovation rate. Romania has not yet submitted its long-term renovation strategy.

In its plan, Romania set more ambitious objectives for **energy security,** aiming to decrease its energy dependency to 68% by 2030 instead of the 77% aimed for previously. Objectives are also set in terms of the diversification of sources, i.e. renewable energy and energy efficiency targets, and transition from coal to cleaner sources (including nuclear).

On the **internal market**, the final plan includes further policy objectives and measures. These include measures to ensure the non-discriminatory participation of new market participants and different flexibility sources in all energy markets, and a commitment (with a clear timeline) to fully liberalise the gas and electricity markets. The planned **interconnection level** by 2030 is 15.4%. The plan lists current projects of common interest that will increase interconnectivity.

Romania does not yet have national objectives and funding targets in **research, innovation and competitiveness** for after 2020. The final plan identifies relevant areas where research and innovation efforts are needed by 2027, but with no specific timeline or quantified targets, and no concrete policy or measures proposed after 2020. No specific objectives are set for competitiveness, with few exemptions.

The estimated amount of **investment** is EUR 150 billion for 2021 to 2030 (annually around 7% of current GDP) and the main risks are listed. EUR 127 billion of the investment is for energy demand in the industry, tertiary, residential and transport sectors, while EUR 12 billion is for

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[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] The Commission's recommendations with regard to the Member States' renewable ambitions are based on a formula set out in this Regulation. The formula is based on objective criteria.

[3] In accordance with the methodology as illustrated in SWD(2019) 212 final.

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power and heat supply and EUR 9 billion is for grids. The identified sources of funding are EU programmes and ETS revenues.

The plan provides information on the overall amount of **energy subsidies, particularly for fossil fuels**. The information appears to be in line with some of the identified figures in recent Commission analyses on energy subsidies, although excise exemptions for energy products were not reported in the plan. Actions to phase out energy subsidies are presented only for the closure of economically non-viable coal mines.

The final plan does not provide sufficient information on **air quality** or on the interactions between air quality and air emissions policy. The projected increase in bioenergy would make air impacts especially important to consider.

On a **just and fair transition**, the final plan includes several references to the impacts that the transition to a greener economy may have on employment in the areas concerned, particularly in the country's coal-mining regions. On **energy poverty**, Romania provides a methodology and two indicators to measure energy poverty, but does not include any specific and measurable objective for reducing it. The plan includes a commitment to protect vulnerable consumers and reports the measures to address this issue. The main measures include: (i) developing a clear legal framework to protect vulnerable consumers and ensure financial support for the population at risk; (ii) the possibility to pay electricity bills in instalments; (iii) the implementation of a national social assistance information system; and (iv) relief grants for domestic heating.

There are **some examples of good practices** in Romania's final NECP. In particular, the plan incorporates elements of the European Green Deal for agriculture, notably by promoting organic farming and the reduced use of fertilisers.

The following table presents an overview of Romania's objectives, targets and contributions under the Governance Regulation[4]:

	National targets and contributions	**Latest available data**	**2020**	**2030**	**Assessment of 2030 ambition level**
GHG	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	14% (2018 preliminary – based on EEA estimates)	19%	-2%	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	23.9% (2018)	24%	30.7%	Unambitious (34% – result of RES formula)
	National contribution for energy				

[4] 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.

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	efficiency:				
	Primary energy consumption (Mtoe)	32.6Mtoe	43 Mtoe	32.3% Mtoe	Low
	Final energy consumption (Mtoe)	23.6 Mtoe	30.3 Mtoe	25.7 Mtoe	Very low
	Level of electricity interconnectivity (%)	9.3%	10%	15.4%	N/A

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

2. FINALISATION OF THE PLAN AND CONSIDERATION OF COMMISSION RECOMMENDATIONS

Preparation and submission of the final plan

Romania **notified** its final national energy and climate plan to the European Commission on 28 April 2020.

Three rounds of **public consultation** were held, from 29 November to 10 December 2018, from 13 February to 15 March 2019 and from 31 January to 28 February 2020. Romania submitted, in a separate document annexed to the plan, the public's views gathered during the consultation. A summary of the numerous consultations is also included in the plan, but details of how those views have been taken into account remain vague, since the plan states that the comments and the recommendations gathered have been 'partially implemented'. Apart from being mentioned in the agenda of a meeting with the European Commission during the consultation phase, there is no indication of the NECP having undergone a strategic environmental impact assessment under Directive 2001/42/EC.

Consideration of Commission recommendations

In June 2019 Commission issued 10 recommendations to be taken into account in Romania's final plan[5]. Annex II to this staff working document offers a detailed account on how the different elements of the Commission recommendations have been reflected in the final NECP. The final plan **partially addresses** most of the Commission recommendations. In particular, Romania has followed up on the Commission's recommendations on its draft plan as set out below.

On **renewables**, Romanian **partially addressed** the recommendation to increase the share of renewable energy in its energy mix. Romania's overall renewable energy contribution of 30.7% in the final plan is higher than the share proposed in the draft plan, with an indicative trajectory that reaches all reference points in accordance with the national contribution. Although this share is 3 percentage points higher, it is still below the renewable share of at least 34% in 2030 that results from the formula in Annex II to the Governance Regulation. The plan still lacks concrete information on the envisaged policies and measures, such as prioritisation, timeframes, expected impacts and investment needs.

[5] Commission Recommendation of 18 June 2019 on the draft integrated national energy and climate plan of Romania covering the period 2021-2030, C/2019/4423.

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On **energy efficiency**, Romania **partially addressed** the recommendation to update and scale up energy efficiency policies and measures. For Romania to achieve its 2030 objective, the plan relies both on new measures and on ramping up the current ones. While the final plan provides a list of current and planned policies and measures, it lacks detailed descriptions of the measures, such as implementation details, target sectors and timelines. On buildings, more information has been added to the plan, indicating that three scenarios have been analysed for the long-term renovation strategy with measures to improve energy efficiency, reduce greenhouse gas emissions and increase the renewable energy share in total energy consumption through renovation.

On **energy security**, Romania **largely addressed** the recommendation to specify the measures supporting the relevant objectives. The final plan contains stricter objectives for energy dependency in 2030, 68% in place of the earlier 77%. Clearer objectives are also set for diversification of sources, i.e. renewable energy and energy efficiency targets, and the plan includes consideration of the transition from coal to less emitting sources (including nuclear). The plan explains better the role of gas and explores the possibility of using liquefied natural gas (LNG) from different supply routes. It also covers investment priorities and information on specific infrastructure projects, and includes measures for the long-term supply of nuclear materials and fuels, as well as information on how to maintain Romania's domestic capabilities in the fuel cycle. However, the diversification of uranium supply sources has not been covered.

On the **internal energy market**, Romania **largely addressed** the recommendation to set clear objectives, milestones and timelines for full market(s) liberalisation. In particular, the final plan better outlines the reform of the electricity and gas markets. The final plan also promotes the participation of all resources, better integration of renewables, and favours the active role and protection of prosumers and consumers. Targets were also introduced on issues such as deregulation, market integration and coupling, and smart grids, with specific deregulation measures added at national level and planned measures at regional level.

On **research, innovation and competitiveness**, Romania **has not addressed** the recommendation to clarify the national objectives and funding targets. The final plan identifies relevant areas where research and innovation efforts are needed by 2027, but with no specific timeline or quantified targets, and no concrete policy or measures proposed after 2020. On competitiveness, no specific or measurable objectives have been set, apart from a qualitative target to replace natural gas by hydrogen and stimulate investment in the equipment manufacturing industry for renewables and electromobility.

Romania **partially addressed** the recommendation to strengthen **regional cooperation**. The plan mentions only a few concrete initiatives, notably projects of common interest. However, the information on regional cooperation with other Member States on renewable energy and energy security is largely unchanged from the draft plan.

Romania **partially addressed** the recommendation on **investment needs** and mechanisms and funding sources to leverage them. The information is significantly more comprehensive than in the draft plan, but some gaps remain in the investment needs and there is no detail on investments generated by the ETS allowances revenues. In particular, there is still an imbalance between areas For certain sectors such as renovation, infrastructure projects, energy and transport investment needs are clearly identified, while for others they are just broadly mentioned. The plan lacks information on the mobilisation of private sources for covering the investment gaps both in terms of amounts and of modalities.

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Romania **partially addressed** the recommendation to list actions undertaken and plans to **phase out energy subsidies.** Romania has enacted legislation to create a new commission tasked with drawing up a strategy to eliminate environmentally harmful subsidies. However, no specific subsidies have been identified at this stage. The plan provides a description of, and overall figures on energy subsidies for alleviating energy poverty, heating and the closure of coal mines. However, excise exemptions for energy products identified in the European Commission's third report on energy prices and costs in Europe[6] were not reported. The final plan reports on actions and plans to phase out fossil fuel subsidies only for the closure of economically uncompetitive coal mines.

Romania **partially addressed** the recommendation to complement the **analysis on air quality**. Reduction of NOx emissions is recognised as a policy objective; several measures aimed at increasing energy efficiency and reducing fossil fuel use will contribute positively to it. The relationship with air pollutant emissions policies is discussed, but no analysis is provided of interactions with air quality and air emissions policy.

Finally, Romania **partially addressed** the recommendation to better integrate **just and fair transition aspects**. In particular, the final plan provides for the creation of a new institution to monitor energy poverty and draw up a national strategy to fight it. The final plan considers the impact of the green transition on employment, in particular in the mining and coal regions of Hunedoara and Gorj.

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 2019[7], Romania received one country-specific recommendation[8] on climate and energy, calling on it to invest in 'transport, notably on its sustainability, low carbon energy and energy efficiency'. In the 2020 country report[9] adopted on 20 February 2020, the Commission found that Romania had achieved limited progress on this recommendation.

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 start mature public investment projects as soon as possible and promote private investment, including through relevant reforms, notably in the digital and green sectors. In this context, Romania received a country-specific recommendation[10] stressing the importance of focusing investment on 'the green and digital

[6] Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Energy Prices and Costs in Europe, COM 2019 1 final.

[7] 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.

[8] Recommendation for a Council Recommendation on the 2019 National Reform Programme of Romania and delivering a Council opinion on the 2019 Stability Programme of Romania, COM(2019) 523 final.

[9] Commission staff working document, Country Report Romania 2020, SWD/2020/522 final.

[10] Recommendation for a Council Recommendation on the 2020 National Reform Programme of Romania and delivering a Council opinion on the 2020 Stability Programme of Romania, COM(2020) 523 final.

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transition, in particular on sustainable transport, digital service infrastructure, clean and efficient production and use of energy and environmental infrastructure, including in the coal regions'.

The Governance Regulation requires Member States to ensure that their national energy and climate plans take into consideration the latest country-specific recommendations issued in the context of the European Semester. Romania's national energy and climate plan has the potential to support the implementation of the European Semester recommendations, as it identifies the necessary investment needs and financial resources to meet 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 final plan describes the 2030 non-ETS target under the Effort Sharing Regulation of -2% emissions compared to 2005. Romania estimates the gap in 2030 between the ESR target and effort sharing sector emission projections in a 'with existing measures' (WEM) scenario at approximately 5% of 2005 emissions. However, this estimate is dependent on the 2005 emission value used. Romania uses a value of 81 Mt, while the 2005 base year emissions for Romania under the Effort Sharing Decision are 75.5 Mt. Using the latter value leads to a gap of 12 percentage points. The plan indicates that with the planned measures the -2% target could be achieved, but does not provide any projection of results for greenhouse gases in a 'with additional measures' (WAM) scenario. The plan does not indicate whether Romania intends to use the flexibility from the land use, land use change and forestry (LULUCF) to the effort sharing sectors.

In the description of policies and measures, it is not entirely clear whether the included policies are firmly planned or only potential measures or objectives.

Romania has not set a specific target for emission reductions in the **transport** sector as part of the non-ETS sector target. Transport emissions, the largest effort sharing sector, are projected to increase in a with 'existing measures' scenario. Romania aims to achieve a share of 14.2% renewable energy in the transport sector. Biofuels' contribution to the reduction in emissions will be supported via investments to introduce co-processing installations in refineries. **Electromobility** is supported via tax incentives, as is the case for hydrogen and gas in transport. The plan also mentions the need to develop recharging and refuelling infrastructure and to further incentivise the uptake of sustainable alternative fuels. Details would be welcome on the scope and expected impact of future policies and measures on alternative fuels. Measures for other modes of transport are mainly addressed for **rail** and to a lesser extent for **maritime transport**. **Aviation** is not discussed in the report.

For **agriculture** (which is the second largest effort sharing sector with a share of 16% of emissions) and **LULUCF**, the plan considers the following measures: (i) the promotion of knowledge transfer; (ii) modernisation through investment support for energy efficiency and small-scale renewable energy production; (iii) reducing emissions through extensification of grazing, the use of nitrogen fixing crops and the fostering of carbon sequestration through crop residues management. Some of the described policies focus on climate adaptation. The final plan

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also includes specific measures on the promotion of the use of bioenergy from new biomass mobilisation from agricultural waste and crops. In addition, the plan reflects and incorporates elements of the European Green Deal for agriculture, such as promotion of organic farming and reduced use of fertilisers.

The final plan does not include explicit **adaptation** goals or objectives. However, specific measures for climate adaptation are announced in Chapter 3 for a number of sectors such as insurance, biodiversity, agriculture, tourism and forests.

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

Renewable energy

Romania's share of energy from renewable sources in gross final consumption of energy set for 2030 has gone up from 27.9% to 30.7%, but this is still below the 34% renewable share resulting from the formula in Annex II to the Governance Regulation. Romania's final contribution is still a conservative figure, pending: (i) ongoing development strategies and analysis of the financial resources needed to back up concrete policies and measures; and (ii) the potential adjustment of the overall renewable energy share in 2030.

Although Romania expects to reach 24.4% of renewable energy in gross final energy, this is considered as a baseline. The indicative trajectory to reach the 30.7% contribution for 2030 reaches all the required reference points of 18%, 43% and 65% of the total projected increase over the 2021-2030 period.

On the **electricity** sector, Romania aims to cover a 50% share of its electricity consumption from renewable energy sources by 2030. This will be achieved by hydro, wind, solar and other sources. Described policies and measures are considered sufficient in relation to the achievement of the target, because hydro is expected to remain stable throughout the 2020-2030 period, while wind production will nearly double and solar generation is expected to increase nearly fourfold in absolute generation.

For **heating and cooling**, the existing renewable share comes primarily from the use of biomass in boilers and a strong increase in the use of heat pumps (due to an estimated 25% cost reduction in deployment) and in the use of solar panels on roofs. The 33% renewable energy heating and cooling share projected in 2030 has been updated compared to the draft plan; however, the trajectory does not indicate that the 1.1 percentage point increase in renewables laid down in the new Renewable Energy Directive will be achieved. Romania relies heavily on biomass for its renewable contribution in this sector, with the use of biomass generally found in rural areas. The fact that the true potential of biomass is not clear at national level (due to lack of data and an unclear legal framework) makes it highly questionable whether the overall renewable energy contribution can be achieved and sustained. The plan does not provide information on the role of waste heat and on how Romania will achieve the 1 pp. renewable energy share increase for district heating and cooling, calculated according to the new Renewable Energy Directive. Nor does the plan indicate any accompanying measures in this area.

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When setting the **transport** target in the final plan, as required in Articles 25-27 of Directive 2018/2001[11], the contributions of all eligible fuels does not exceed the 7% cap. Renewable electricity in transport is set to increase substancially compared to 2020, with around 700 000 private electric cars (including hybrid) and approximately 650 000 charging points (approximately 40 000 of which will provide fast and semi-fast charging) expected to be in circulation in 2030. The key policies and measures to achieve this are the rollout of electric vehicles and further uptake of advanced biofuels. These policies and measures are considered sufficient in relation to the achievement of the target.

The final plan explains that official data on the actual potential of biogas and biomass resources at national level are not available. Moreover, the legislative framework in this area is unclear, hindering clear classification of certain natural resources in the biomass category. Biomass, in the form of firewood, is a widely used heating fuel.

Romania's final plan includes details on the consumption of biomass by volume. A system of certificates of origin is in place for biomass from agriculture and forestry but is not linked to LULUCF and no sustainability criteria are set out. In addition, there is no indication of bioenergy demand disaggregated between heat, electricity and transport, or of biomass supply by feedstock and origin (distinguishing between domestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink and biodiversity is still largely lacking. This is especially important given the prominent role of bioenergy in the final plan.

Energy efficiency

Romania's **national contribution for energy efficiency** in 2030 is 32.3 Mtoe for primary energy and 25.7 Mtoe for final energy. Targets and indicative trajectories are provided for both primary and final energy production. The primary energy target is more ambitious than in the draft plan, as it has been revised from 36.7 Mtoe to 32.3 Mtoe for 2030 (-45.1% compared to the PRIMES 2007 projections). Although the final energy target (25.7 Mtoe for 2030) is 40.4% below the PRIMES 2007 projections, it cannot necessarily be regarded as ambitious because it is above the level observed in recent years (average of 22.9 Mtoe in 2016-2018).

The plan provides descriptive information on **policies and measures** beyond 2020 targeting the building sector, but some policies and measures also target transport, industry and the supply sectors. It remains unclear if the policies and measures can be considered sufficient and credible in relation to the achievement of the target, because Romania does not give any detailed descriptions of their policies and measures, in particular regarding policies and measures beyond 2020, for which the information provided is even more limited, with only general actions rather than concrete and well-defined measures. The contribution of policies and measures in terms of energy savings is not covered in the final plan.

Romania presents **cumulative savings** to be achieved under Article 7 of the Energy Efficiency Directive[12] of 10.12 Mtoe. This will be achieved by alternative policy measures. The proposed annual energy savings rate implies a very strong increase in new annual energy savings in the last years of the obligation period, especially over 2027-2030, when required annual savings would be three times higher than those planned for 2021-2022. It remains unclear if the policy measures

[11] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

[12] 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.

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can be considered sufficient and credible to achieve the target because Romania does not provide a clear list of alternative measures to be implemented. In addition, the plan is lacking important elements per policy measure, as required by Annex III to the Governance Regulation.

With regard to buildings, the plan indicates that three scenarios have been analysed to support the long-term renovation strategy, which has not been submitted yet[13]. Romania indicates intentions for going beyond a 3-4% renovation rate (the baseline is 0.5%). The scenario preferred at this stage by the Romanian authorities would lead to a reduction of 0.83 Mtoe in final consumption in 2030 and 3.38 Mtoe in 2050, a 66% reduction compared to the same year in the baseline scenario and a reduction in CO_2 emissions of 2.34 million tonnes by 2030. To implement that scenario, investments of EUR 12.8 billion will be needed. EUR 3 billion is envisaged to come from grants from the state budget or from EU funds, while between EUR 6 billion and 8 billion would be financed through repayable financial mechanisms including repayable grants, and 1.8 billion would be secured by the owners of buildings to be refurbished under a co-financing regime.

Energy security

Concerning gas supplies, Romania envisages developing its national gas transport system as part of the Bulgaria-Romania-Hungary-Austria corridor and the Romanian section of the Southern transport corridor, to carry natural gas from the Black Sea. Legislation is being amended to facilitate investments in the Black Sea in line with the Commission's recommendations.

Measures are planned to make sure that climate impacts are taken into account in risk prevention and management. However, information is lacking on adaptation co-benefits and trade-offs for energy efficiency, such as in the thermal management of buildings.

The final plan also explores the possibility of using LNG from different supply routes. The role of gas for energy security is better explained in the final plan, and the use of hydrogen and of the current networks for injecting bio-methane are also considered. However, the measures are not described in detail.

The final plan addresses the production of nuclear energy. It contains measures for the long-term supply of nuclear materials and fuels and information on how to maintain its domestic capabilities in the fuel cycle. It mentions that the development of new nuclear and storage capacities will contribute to the stability of the national energy system considering that by the end of 2030 some end-of-life coal-fired power plants will be withdrawn from operation. The new generation capacity will thus contribute to the diversification of electricity supply sources. Romania also envisages replacing several coal-fired power stations with combined cycle units powered by natural gas, retrofitting two nuclear units (unit 1 by December 2028 and unit 2 as of 2037), and constructing at least one new nuclear unit by 2030.

As regards the **diversification of sources and routes,** the final plan takes into account the Commision's recommendations, including on the Bulgaria-Romania-Hungary-Austria corridor and the Southern corridor and interconnections. Romania has an indicative trajectory for installed net capacity, which suggests a 32% increase between 2020 and 2030, largely due to increases in solar, wind and hydropower capacity.

[13] Romania submitted only a draft long-term renovation strategy in accordance with Article 2a of the Energy Performance of Buildings Directive, with indicative milestones for the renovation of the building stock and relevant measures and financing instruments to support renovations.

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An overall increase in the energy production is expected by 2030 due to production from renewable sources and nuclear energy (yet to be built nuclear power units 3 and 4 of Cernavoda), but also because of the potential of gas exploitation in the Black Sea. Nuclear production is expected to increase also after 2030. However, the overall gas production is expected to decrease in 2035-2040 time horizon (most probably due to the expected depletion of the natural gas resources in the Black Sea). Romania is projected to remain a net exporter of electricity though, even though at a much lower level than now. Imports of crude oil and petroleum products are expected to remain high, to meet demand. Overall, import dependence is projected to grow in the context of growing primary energy consumption and declining output.

To increase the flexibility of the national energy system, the plan indicates the need for additional electricity storage capacities. The plan recommends the integration of battery energy storage systems. However, it refers to a study only, and there is no objective or target for additional **storage** capacity.

To protect critical infrastructure against physical, computer-related and other disasters, Romania envisages policies and measures such as physically securing critical infrastructure against terrorist acts, enhancing the **cybersecurity** of energy network control systems by stronger protection barriers, and pursuing international cooperation. However, the planned policies and measures are considered insufficient because they are lacking in detail.

Internal energy market

The plan envisages an **interconnectivity level** of 15.4% for 2030, which is in accordance with the target set at EU level. The plan lists current projects of common interest which will increase interconnectivity, and includes analysis of how the rising electricity demand affects the level of electricity interconnectivity and the need for infrastruture.

For the electricity sector target of 15.4% renewable electricity in 2030, the plan reviews the different sources of **flexibility** needed to integrate the rising share of renewable energy into the electricity system.

The final plan includes further policy objectives and measures related to the internal energy market (e.g. measures to ensure the non-discriminatory participation of new market participants and flexibility sources in all energy markets). Those measures are considered important in relation to the achievement of the objectives.

In its plan, Romania cites the high share of households affected by **energy poverty**. In 2018, 14.4% of Romanian households were unable to pay their energy bills on time (EU average: 6.6%). The European Energy Poverty Observatory data are presented to assess the significance of the level of energy poverty in the country. The final plan indicates several dedicated policies and measures to address energy poverty, notably the regulation and definition of vulnerable consumers and the provision of targeted financial support. Other measures are also outlined, such as implementing the national action plan with respect to energy poverty objectives and relief grants for domestic heating. The final plan also elaborates on the intended use of policy measures under Article 7 of the Directive 2018/2002 to alleviate energy poverty, but does not set out any further concrete measures or a clear timeframe to address these issues.

Research, innovation and competitiveness

Romania does not indicate national objectives and funding targets in **research, innovation** and competitiveness for the period beyond 2020. For 2020 to 2027, the plan identifies areas where

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research and innovation (R&I) efforts are needed. As the 2021-2027 National Strategy for Intelligent Specialisation is under preparation, it remains to be seen whether the R&I efforts identified in the plan will be fully aligned with the Strategy. A specific timeline, quantified targets, and concrete policies and measures beyond 2020 are not provided.

As regards **competitiveness**, the final plan does not set out any specific or measurable objectives, apart from a qualitative target to replace natural gas by hydrogen and to stimulate investment in equipment manufacturing for renewables and electromobility. The main challenges appear to be insufficient funding and human resources, as well as the reduced absorption of European research funds and the heavy bureaucracy. Cooperation with the **strategic energy technology (SET) plan** is mentioned, but with no reference to specific actions within the implementation working groups.

The measures under this dimension are condidered insufficient and not detailed enough. Moreover, they relate mainly to the current period, instead of looking at beyond 2020 on the way to achieving the 2030 targets.

4. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

A large number of policies and measures are listed in the final plan. These cover all the dimensions of the Energy Union and are structured in line with them. As such, the policies and measures appear to be fairly comprehensive and consider interlinkages between the dimensions, with the exception of accounting for the 'energy efficiency first' principle.

The assessment of **interlinkages** between policies and measures from different dimensions was further developed compared to the draft plan. Detailed interlinkages for policies and measures in different dimensions are described, as are synergies between energy efficiency measures and the decarbonisation, energy security and internal market dimensions. However, there is no explicit discussion of the 'energy efficiency first' principle. In the description of measures under each dimension, measures with cross-sectoral impacts are highlighted and interactions with other dimensions are briefly described.

The mismatch between the **objectives of decarbonisation and continued use of coal** and gas is not thoroughly addressed; interactions between energy security and decarbonisation are discussed briefly.

The final plan discusses the **resilience capacity** of the national energy system (including against natural disasters) and outlines a set of adaptation policies and measures on energy security. The main dimension of energy security refers to trans-sectoral policies and measures that include: (i) the development and decarbonisation plan for the 'CE Oltenia' power plant; (ii) projection of a sustainable transition from 2024 onwards by developing new gas-fired capacities and integrating more RES into the energy system; (iii) maintaining the mandatory crude oil and natural gas stocks; (iv) increasing the natural gas storage capacity; (v) developing high-efficiency cogeneration capacities/integration of RES in the production of heat for centralised heating systems; (vi) encouraging the development of energy storage capacities. The secondary dimension of energy security includes decarbonisation by promoting investments and developments relevant to the internal market. Other dimensions include system adequacy and flexibility, diversification of energy sources and reduction of dependency on non-EU countries including by adjusting the existing legal framework to make it possible to exploit resources in the Black Sea, refurbishment of nuclear units, and risk prevention and management.

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The impact of the increased use of biomass in electricity and heat production on the LULUCF carbon sink is not developed.

The final plan does not address the intrinsic tension between the decarbonisation objective and the apparent intent to maintain the use of coal and gas beyond 2030, leaving questions of competitiveness in the context of rising carbon prices, and of air pollution impacts.

The interaction between maintaining all energy sources by 2030 and the rollout of low carbon technologies is not sufficiently considered in the research, innovation and competitiveness dimension. Also lacking are clear objectives and the specification of the necessary funds for timely deployment.

In the **energy security** dimension, measures are planned to mainstream climate impacts into risk prevention and management. However, information is lacking on adaptation co-benefits and trade-offs for energy efficiency, such as in the thermal management of buildings.

The plan provides information on several policies and measures for **biodiversity** conservation, from more sustainable agrarian practices, and to increase the biodiversity's capacity to adapt to climate change. The plan would benefit from greater emphasis on the synergies between these policies and climate mitigation and adaptation. Biodiversity preservation is acknowledged as a priority in several policies, but the plan does not describe concrete measures, synergies or trade-offs. The emphasis on bioenergy continues to be worrying, because the plan recognises many data gaps and uncertainties about biomass stocks and supply, as well as as current deforestation and illegal logging issues in the country.

The plan lacks quantitative information and analysis about the interactions with **air quality and air emissions policy**, while the projected increase in bioenergy would make air impacts especially important to consider. There are inconsistencies between air pollutant and GHG emission projections due to different starting points, and that no coherent analysis of the interactions between air quality, air emissions and energy and climate policies can be carried out at this point in time.

The final plan presents interactions between the **circular economy** and energy efficiency, as well as targets in the waste sector. However, the plan would benefits from more details about concrete policies and measures, as well as a quantification of their impacts on GHG emissions reduction, in line with the most recent scientific literature.

The description of existing **energy subsidies, in particular for fossil fuels** does not appear to fully reflect internationally used definitions. A timeline to phase out energy subsidies, in particular fossil fuel subsidies, is mentioned only for the closure of coal mines.

The plan lacks a complete **macroeconomic assessment** of the impact of the planned policies and measures. While it provides estimates for the impact on GDP, GVA and households' disposable income, the impact on employment and the impact of the transition on specific economic sectors is not determined in the plan.

The final version of the plan largely complies with **data transparency** requirements and partially complies with the use of European statistics.

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

Romania needs to swiftly proceed with implementing its final integrated national energy and climate plan, as notified to the Commission on 28 April 2020. This section provides some guidance to Romania 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 Romania could consider when developing its national recovery and resilience plan in the context of the Recovery and Resilience Facility[14].

Guidance on the implementation of the national energy and climate plan

The plan describes the 2030 non-ETS target under the ESR of -2% emissions compared to 2005. The gap in 2030 between the ESR target and effort sharing sector emission projections with existing measures appears to correspond to approximately 5% of 2005 emissions. The plan indicates that with planned measures the ESR target could be achieved domestically without the use of the LULUCF flexibility. Therefore, it is important for Romania to proceed with implementing the measures for reduction in GHG emissions, in particular for transport and district heating, and to create the proper fiscal environment for the green transition by phasing in green taxation and budgeting.

The Romanian contribution to the EU 2030 renewables target is unambitious when compared to the share resulting from the formula in Annex II to the Governance Regulation. Similarly, the Romanian contribution to the 2030 energy efficiency target is assessed to be of low ambition (in primary energy consumption) and of very low ambition (in final energy consumption). Romanian's plan therefore leaves plenty of space to further develop and strengthen 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**, Romania committed to increasing the share of renewables in gross final energy consumption to 30.7% in 2030. In this context, Romania would benefit by developing further policies and measures. Finalising ongoing development strategies would help investment certainty. Particular attention would need to be paid to: (i) improving accounting of bioenergy to ensure its sustainability, especially given the current high use of bioenergy; and (ii) diversifying the energy mix in heating and cooling away from forest biomass. Illegal logging is indeed an issue to be addressed.

On **energy efficiency**, Romania would benefit from the introduction of additional policies and measures that would deliver additional energy savings by 2030. More detailed policies and measures would help ensure effective implementation and monitoring of the proposed measures,

[14] 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).

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in particular with regard to energy savings and requirements on central government. Romania is also invited to ensure that the 'energy efficiency first' principle is properly implemented in energy-related policy and investment decisions.

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**' initiative[15], there is scope for Romania to intensify efforts to improve the energy performance of the existing building stock with specific measures, targets and actions, while giving due attention to energy poverty. Further support for the renovation of public and private buildings, including the residential sector with a focus on affordable and social housing, could be provided through increased public funding and by leveraging EU and national budgets with private money, combining grants, lending, guarantees and loan subsidies. Romania is expected to provide a robust and comprehensive long-term renovation strategy that is required to set out roadmaps for decarbonisation by 2050 with ambitious milestones, measurable progress indicators, expected energy and wider benefits, measures and actions to renovate the building stock, and a solid finance component with mechanisms for mobilising public and private investment.

On **energy security**, concrete actions are recommended to address cooperation with neighbouring countries at EU and regional level to ensure the diversification of sources and routes. This could harness Romania's solar, wind and hydropower potential. On the protection of critical infrastructure against physical, computer-related and other disasters, Romania could benefit by providing specific details of the envisaged measures. Finally, Romania would gain from taking concrete measures on the flexibility of the national energy system, including setting a target for additional storage.

On the **internal energy market**, Romania is encouraged, after recently adopting legislation in this field, to take further steps towards market-based prices and a competitive retail market. Romania is encouraged to envisage supporting the development of the retail electricity market by developing policy measures on storage and smart grids, and present detailed measures on system flexibility, real-time price signals, demand response and aggregation, prosumers and energy communities. Consumer protection measures could also be strengthened further.

Romania would benefit from setting clear indicators to track achievement of milestones towards its **research and innovation and competitiveness** objectives. Over time, the gathering of granular research, innovation and competitiveness data will strengthen this process. Equally important is the strengthening of Romania's institutional capacity and governance for designing, implementing and monitoring research, innovation and competitiveness policies in support of energy and climate objectives. Romania would need to ensure the link with SET Plan activities, and would 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 estimated amount of **investment** is about EUR 150 billion for 2021 to 2030 (annually around 7% of current GDP). EUR 127 billion is earmarked for energy demand in the industry, tertiary, residential and transport sectors, EUR 12 billion for power and heat supply, and EUR 9 billion for grids. Romania would specifically benefit from focusing investment on: (i) developing and

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

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implementing its long-term building renovation strategy; (ii) supporting improvements in the energy efficiency of district heating networks; (iii) upgrading railway infrastructure including rolling stock; and (iv) developing alternative fuels infrastructure, in particular electric recharging infrastructure.

Romania is invited to continue ongoing efforts on **regional cooperation** with a view to intensifying exchanges and initiatives that will facilitate the implementation of its national energy and climate plan. This applies in particular to relevant cross-border issues, including those in the context of the Central and South-Eastern Europe Energy Connectivity (CESEC) High-Level Group[16]. Romania 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.

Romania is invited to strengthen the analysis of **just and fair transition** aspects. This should include a more detailed analysis of the quantifiable social and labour market impact of the just energy transition in certain regions, as well as more information on measures proposed to mitigate it.

Likewise, Romania is encouraged to address **energy poverty** by providing a detailed assessment of the estimated number of energy poor households and setting an indicative target to reduce this number. The policies and measures dedicated to achieving this objective would be strengthened by the inclusion of clear legislative and regulatory steps and more detailed information on the implementation timeline in the period 2021-2030. In this regard, the momentum of the 'Renovation Wave' initiative of the European Green Deal is an opportunity to intensify efforts to tackle energy poverty by improving the energy performance of the existing building stock with dedicated measures and specific actions. Romania 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 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 cooperatives, buying energy-saving appliances for social enterprises to rent out).

Romania is invited to extend and update the identification of and reporting on **energy subsidies** and intensify action to phase them out, in particular for fossil fuels. The green transition in Romania 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 further development and implementation of concrete plans with associated timelines, coupled with measures to mitigate the risk of households' energy poverty.

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[16] The Commission will adopt in November 2020 a strategy on Offshore Renewable Energy, which will provide a vision and a series of policy initiatives for steering up to 2050 a massive, cost-effective and sustainable scale up of offshore renewable energies and related value-chains in the whole EU.

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For all investments implementing the national energy and climate plan, Romania 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, Romania 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 Romania 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 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. 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 Romania 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 Romania's plan in that context. Nevertheless, the implementation of Romania'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 Romania 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**[17]. 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 Romania'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

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

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

- Measures boosting renewable energy generation; measures aimed at fostering the renovation of buildings and the energy efficiency of district heating networks;
- Measures improving transport infrastructure and sustainable mobility, including reforming the transport agencies and supporting the deployment of recharging and refuelling infrastructure;
- Measures supporting the phase-in of green taxation and green budgeting.

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 prejudge 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.

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

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

Programme	Amount	Comments
Cohesion policy funds (ERDF, ESF+, Cohesion Fund)	29.2	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.	20.6	In current prices.
Recovery and Resilience Facility	13.8	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	1.9	In 2018 prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU.
Modernisation Fund	3.0	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	0.7	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.

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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 • Transport • Energy	 24.1 5.8	In current prices. The commitment for transport includes the contribution transferred from the Cohesion Fund. Excludes Connecting Europea 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 prejudge 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.

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

Recommendations		Assessment	
Decarbonisation – GHG	No recommendation	n.a.	-
Decarbonisation - renewables	Significantly raise the level of ambition for 2030 to a renewable share of at least 34% as Romania's contribution to the Union's 2030 target for renewable energy, as indicated by the formula in Annex II under Regulation (EU) 2018/1999.	Partially addressed	Romania's share of energy from renewable sources in gross final consumption of energy set for 2030 has gone up from 27.9% to 30.7%, but this is still below the 34% renewable share resulting from the formula in Annex II to the Governance Regulation. Romania's final contribution is still a conservative figure awaiting: (i) ongoing development strategies and analysis of financial resources needed to back up concrete policies and measures; and (ii) potential adjustment of the overall renewable energy share in 2030.
	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.	Partially addressed	Although Romania expects to reach 24.4% of renewable energy in gross final energy consumption, this is considered a baseline. The indicative trajectory to reach the 30.7% contribution reaches all the reference points of 18%, 43% and 65% of the total projected increase over the 2021-2030 period.
	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.	Partially addressed	The main policies and measures addressed by Romania in reaching the 30.7% target for renewable energy in 2030 will focus on adapting the primary and secondary legislative framework. The plan lists a series of policies and measures to achieve the RES target, some set in legislation but others not, and some dependent on being able to use ETS funding or EU structural funds. On alternative fuels for road transport, these are quite detailed and seem realistic, for example, how charging points for electric cars will be built and financed. Measures to promote the use of biofuels are vague and still need to be developed concretely, as are those aimed at replacing existing fossil fuel power plants with new renewable energy capacities. In the heating and cooling sectors, renewables will be promoted

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			through amendment of Law No 372/2005, which will aim to increase primary energy consumption from RES to 30%. Further policies and measures are included in the long-term renovation strategy, albeit with limited detail included on the renovation packages to promote other renewable technologies such as solar panels, solar thermal and heat pumps.
	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 and put in place adequate measures to meet the transport target set in its integrated national energy and climate plan and in line with Article 25 of Directive (EU) 2018/2001.	Partially addressed	For H&C: The 33% renewable energy heating and cooling share projected for 2030 has been updated compared to the draft plan. However, the final plan does not indicate that the 1.1 percentage point renewable increase will be achieved, as provided for in the Recast Renewable Energy Directive. In addition, the plan does not provide any information on the role of waste heat or on how Romania will implement the 1 pp. renewable energy share increase for district heating and cooling, calculated according to the Recast Renewable Energy Directive and accompanying measures. For transport: Road and rail energy consumption and the split between Annex IX part A and part B feedstocks was not provided, which makes it difficult to assess whether the advanced biofuel sub-target will be fulfilled.
	Put in place measures to simplify the licensing and permitting procedures and provide additional details on the enabling frameworks for renewable self-consumption and renewable energy communities, in line with Articles 21 and 22 of Directive (EU) 2018/2001.	Partially addressed	Law No 184/2018 on promoting the production of energy from renewable energy resources also regulates the situation of prosumers in Romania, e.g. prosumers are exempt from the payment of excise duties on the amount of electricity produced from renewable sources for own consumption, as well as on the surplus sold to suppliers. They also have the right to sell electricity to suppliers at a protected price. However, there is a lack of clarity on licensing and permitting. Further measures are set out in the draft long-term renovation strategy (e.g. which new buildings are required to meet the 30% renewable energy consumption from on-site or nearby renewable resources from 1 January 2021). Smart metering will be developed but no timetable is given.

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	Provide additional details on the specific measures to ensure sustainability for biomass supply and use in the energy sector, given the important contribution of biomass to Romania across the energy mix, especially in heating and cooling.	Partially addressed	Reliable national data on biomass and a clear legal framework are needed. The system of certificates of origin for biomass from agriculture and from forestry needs to be linked to LULUCF and must include sustainability criteria. For forest biomass in particular, a full assessment of its source and impact on the LULUCF sink is still required.
Energy efficiency	Substantially increase the ambition for reducing both final and primary energy consumption in 2030 in view of the need to increase the level of efforts to reach the Union's 2030 energy efficiency target.	Partially addressed	The primary energy target was lowered from 36.7 to 32.3 Mtoe. No information was given for the final energy target in the draft plan so no comparison can be made. Despite the final plan having lower values than in the draft plan, the ambition remains low in relation to the WEM projections as final energy consumption under WAM (i.e. the target value) is higher by 8.5% than final energy consumption under WEM projections.
	Propose more ambitious policies and measures that would deliver additional energy savings by 2030. Provide more clarity on existing policies and measures and provide more detailed information on the planned policies and measures for the whole 2021 to 2030 period, in particular on their expected savings and impacts as well as timeline for implementation.	Partially addressed	The Romanian NECP presents a list of 12 current and 40 planned policies and measures (PaMs). Planned PaMs include building renovation passports, restrictions on the sale or lease of buildings in the lowest energy performance classes, energy or CO_2 taxes and transport fleet renewal programmes. Many of the planned PaMs focus on the building sector, but some measures also target transport, industry and the supply sector. The NECP does not give any detailed descriptions of PaMs (e.g. type of policy, sector, implementation period, status, description, etc.). In terms of future PaMs, the information is even more limited, with only general actions rather than concrete and well-defined measures. The PaMs' contribution to energy savings is not covered in the NECP. The information provided in the final plan is much improved and useful. The long-term renovation strategy has not been submitted yet.
Energy security	Specify the measures supporting the energy security objectives on diversification and reduction of energy dependency, in particular measures ensuring flexibility and a robust gas diversification strategy including relevant underlying infrastructure projects and the elimination of the undue restrictions to investments in gas production considering the regional potential of the reserves in the Black	Largely addressed	Romania increased the ambition in the final plan from 77% to 68% energy dependency in 2030. Clearer objectives are also set for diversification of sources, i.e. renewable energy and energy efficiency targets, and the transition from coal to cleaner sources (including nuclear) was addressed. The final plan covers investment priorities for nuclear, natural gas, hydropower, wind and photovoltaic sources, and provides information on specific

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	Sea.		infrastructure projects.
	Detail the strategy to ensure the long-term supply of nuclear materials and fuel in view of the enlargement of the nuclear generation capacity and detail information concerning the strategy to maintain its domestic capabilities in the fuel cycle.	Partially addressed	The strategy identifies the need to ensure long-terms supply of nuclear, gives details about the life-cycle of the two existing reactors and mentions the construction of two new reactors. However, the time horizon is not known yet. Romania should diversify uranium supply sources in the form of uranium octoxide qualified for production of nuclear fuel for CANDU reactors.
Internal energy market	Define forward-looking objectives and targets concerning market integration, in particular measures to develop liquid and competitive wholesale and retail markets, both by fostering competition within the country and by eliminating barriers to cross-border trade, including export restrictions.	Largely Addressed	The final plan better outlines the reform of the electricity and gas markets. The final plan also promotes the participation of all resources, better integration of renewables, and favours the active role and the protection of prosumers and consumers. Targets were also introduced (e.g. for deregulation, for market integration and coupling and for smart grids). Specific deregulation measures at national level and planned measures at regional level were also added.
	Address the negative impact of wholesale price regulation and provide a clear outlook to ensure compliance of national legislation with Union law with respect to open and liberalised markets and free price formation by including a strategy and timeline for progress towards fully market-based prices, while including targeted measures to protect vulnerable customers.	Largely Addressed	The plan indicates a phase-out of price regulation on both the gas and electricity markets (30 June 2020 for gas and 31 December 2020 for electricity). However, the legislation is still to be implemented. The final plan provides several measures to address energy poverty, notably by developing the legal framework needed to protect vulnerable consumers.
Research, 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 2020 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.	Not addressed	Romania does not yet have energy and climate-related national objectives and funding targets for research, innovation and competitiveness for any period beyond 2020, or any concrete policy or measures beyond 2020. As regards competitiveness, no specific or measurable objectives have been laid down, apart from a qualitative target to replace natural gas by hydrogen and stimulate investment in the development of the equipment manufacturing industry for RES and electromobility. The revised document takes the recommendation into

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			consideration only to a very limited extent.
	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.	Not addressed	Cooperation with the SET Plan is mentioned, but with no reference to adequate policies or measures to be developed in this context.
Investments and funding sources	Extend its analysis of investment needs and risks provided for its Energy strategy objectives, to a general overview of investment needs to reach the objectives of its integrated national energy and climate plan.	Partially addressed	The plan contains a partial assessment of investment needs and expenditures, funding sources and other relevant information. Total investment needs to achieve the objectives of the Romanian energy strategy are estimated at EUR 150 billion for 2021 to 2030 (annually around 7% of current GDP) and the main risks are listed. EUR 127 billion of the investment needs relate to energy demand in the industry, tertiary, residential and transport sectors, EUR 12 billion for power and heat supply, and EUR 9 billion for grids.
	Provide a general assessment of the sources of that investment, including appropriate financing at national, regional and Union level.	Partially addressed	The information is significantly more comprehensive than in the draft plan, but there are still some gaps. It is stated in the plan that Romania could transfer part of its annual emission allocations under Regulation (EU) 2018/842, but no information is provided on possible investments that would help generate such transfers. The plan provides specific information per dimension and per policy and measure, as well as investment sources broken down by fund.
	Consider also the cost-effective generation of transfers to other Member States under Regulation (EU) 2018/842 of the European Parliament and Council as funding source.	Partially addressed	It is stated in the plan that Romania could transfer part of its annual emission allocations under Regulation (EU) 2018/842, but no information is provided on possible investments that would help generate such transfers.

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Regional cooperation	Intensify regional cooperation with neighbouring Member States and within established regional cooperation frameworks such as the Central and South-Eastern Europe Energy Connectivity (CESEC) High-Level Group including in gas and electricity infrastructure, renewables, energy efficiency and research, innovation and competitiveness, and taking into account common challenges and shared objectives.	Partially addressed	Regional cooperation is mentioned, and contacts with the neighbouring countries took place, but there is a lack of clear action or indication on how specifically to address existing issues at borders, i.e. interconnections. The information on regional cooperation with other Member States on renewable energy and energy security including via CESEC remains largely unchanged from the draft plan.
	There is significant potential to further cooperate with a view to achieving the planned developments in the electricity sector, including the need to accommodate higher shares of renewables and clean transport, which could impact electricity interconnections and trading in the region.	Partially addressed	The plan refers to the statistical transfer mechanism that provides for the transfer of a surplus of RES produced in one EU country to other Member States, as laid down in Directive 2009/28/EC. These instruments (statistical transfer or co-financing by two or more Member States of RES production projects) may represent an opportunity to increase the RES installed capacity in Romania provided that the statistical transfer in question is not at the expense of meeting national RES targets and that there is no negative impact on the safe operation of the energy system. Romania also proposes measures to reduce red tape through transparency, digitalisation and the introduction of a 'one-stop shop'.

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Energy subsidies	List all energy subsidies.	Partially addressed	The final NECP represents a partial update of the draft plan on energy subsidies. Romania has provided overall figures for: (i) aid for alleviating energy poverty; and (ii) energy subsidies for heating.
	List in particular fossil fuel subsidies.	Partially addressed	The final version has also provided overall figures for subsidies for the closure of coal mines.
	List actions and plans to phase out energy subsidies, in particular for fossil fuels.	Partially addressed	Actions and plans to phase out energy subsidies, in particular fossil fuel subsidies, are mentioned for State aid closure of economically uncompetitive coal mines.
Air quality	Include an analysis of the interactions with air quality and air emissions policy with the required information about the projected air pollutants emissions under the planned policies and measures.	Partially addressed	The plan lacks quantitative information and analysis about the interactions with air quality and air emissions policy, while the projected increase in bioenergy would make air impacts especially important to consider. The relationship with air pollutant emissions policies is discussed. There are inconsistencies between air pollutant and GHG emission projections due to different starting points, and that no coherent analysis of the interactions between air quality, air emissions and energy and climate policies can be carried out at this point in time.
Just transition and energy poverty	Integrate just and fair transition aspects better, notably by considering social and employment impacts, listing more concrete measures and timeframes to address energy poverty, as required by Regulation (EU) 2018/1999.	Partially addressed	The plan provides some elements on a socially just energy transition. These could, however, be better integrated throughout by considering social and employment impacts related to the green/circular economy. The plan contains detailed modelling of the envisioned future mix of resources to be used in electricity production. The document also makes several references to the impact this would have on employment in the areas affected by the transition to a greener economy. These references also identify the main regions where negative social impacts are expected. The counties of Hunedoara (which currently holds 90% of the mining jobs in Romania) and Gorj (which has the biggest coal-fired power plant that is currently functioning) are expected to be the NUTS 3 regions most impacted by job losses due to the energy transition. The NECP does not quantify the number of jobs expected to be

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			lost (considering that there seems to still be scope for electricity generated from coal in the future) or the envisioned resources needed to mitigate the negative social impact. In the absence of this modelling, it would be difficult to determine the scope and target group of interventions needed to deal with the social impact. This in turn makes it difficult to estimate the necessary funding required for this purpose and develop a clear action plan.
	Discuss the needs and measures addressing the structural changes entailed by the clean energy transition for mono-industrial regions such as those depending on the coal industry or other energy-intensive sectors.	Partially addressed	The final plan addresses the needs and measures addressing the structural changes entailed by the clean energy transition for mono-industrial regions such as those depending on the coal industry. Specific mono-industrial regions are discussed as well, but only for the Jiu Valley does the plan point out measures for structural changes. For all the other regions, the measures are much more generic.

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