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**COMMISSION STAFF WORKING DOCUMENT**

**Assessment of the final national energy and climate plan of Slovakia**

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## 1. SUMMARY

Slovakia's<sup>1</sup> national 2030 target for **greenhouse gas emissions in sectors not covered by the EU Emissions Trading System (non-ETS)** is -20% compared to 2005, while the reduction target set in the Effort Sharing Regulation (ESR)<sup>2</sup> is -12%. Reaching the national target will require additional policies. The plan lacks information on how Slovakia intends to achieve the no-debit commitment for the land use, land use change and forestry (LULUCF) sector (i.e. that accounted emissions do not exceed accounted removals).

Slovakia sets a **contribution of 19.2% in the renewables** share of gross final consumption by 2030. This is 1.2 percentage points more than the contribution proposed in the draft NECP but is still considered unambitious, as it is well below the 24% renewable share for 2030 that results from the formula in Annex II of the Governance Regulation<sup>3</sup>.

For **energy efficiency**, the Slovak contribution to the EU target is of low ambition<sup>4</sup> and amounts to 15.7 Mtoe for primary energy and 10.3 Mtoe for final energy consumption. Energy efficiency is identified as a priority, and energy savings measures on the supply side are also sought to reduce greenhouse gas emissions as well as energy security objectives. However, there are limited details on how the energy efficiency first principle is applied in practice. Slovakia provides limited elements on the energy efficiency of buildings. It has not yet submitted its long-term renovation strategy.

Slovakia states in its final plan that diversification and the reduction of energy dependency are key areas to be worked on but does not set any concrete national objectives for **energy security**.

Regarding the **internal energy market**, the final plan better outlines concrete objectives for further electricity market integration, although the plan often relies on the transposition of the new Electricity Directive (EU) 2019/944 into Slovak law to address the remaining issues. Slovakia plans to have an **interconnection level** of 52% by 2030.

On **research, innovation and competitiveness**, Slovakia identifies key areas where funding is needed. However, these insights have not been translated into national objectives for research, innovation and competitiveness.

Information is provided on the country's **investment needs** by sector, by policy, and these needs are compared to a business-as-usual scenario. The identified investment needs are not matched up with potential **funding sources** in a comprehensive manner.

The NECP only provides qualitative information on the **impacts of air pollutants**, acknowledging the link with air policy and stating that relevant sectoral plans and programmes

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<sup>1</sup> 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.

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

<sup>3</sup> 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.

<sup>4</sup> In accordance with the methodology as illustrated in SWD(2019) 212 final.

were taken into account during its preparation. The plan refers to the trade-off with increased biomass, but only from a qualitative point of view.

A list of both renewable and fossil fuel **energy subsidies** has been included in the plan, without further detail about what these amount to. The list of subsidies is in line with the categories identified in recent Commission analyses on energy subsidies. Actions undertaken and planned to phase out energy subsidies, in particular for fossil fuels, have not been included in the plan.


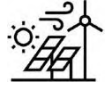

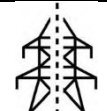
On the socially **just and fair energy transition** to a climate neutral economy, the plan is not comprehensive, with employment impacts addressed in more detail than social impacts and impacts on skills. Employment impacts are assumed only after 2040, with limited analysis or measures planned for the coming years. There is no analysis on the skills needs or on measures to address these needs. On **energy poverty**, Slovakia does not report the number of households affected nor any measures to reduce energy poverty.

There are several examples of **good practices** in Slovakia's final plan; in particular, the NECP highlights the relationship between climate change impacts and energy efficiency and the focus on developing and implementing the policies and measures at local level by establishing a network of regional (sustainable) energy centres.

The following table presents an overview of Slovakia's objectives, targets and contributions under the Governance Regulation<sup>5</sup>:

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<sup>5</sup> 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.

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-5	13	-12	Ambitious (national target of -20%)
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	11.9	14	19.2	Unambitious (24% is the result of the RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe)	15.8	16.4	15.7	Low ambition
	Final energy consumption (Mtoe)	11.1	9.0	10.3	Low ambition
	Level of electricity interconnectivity (%)	43	59	52	N.A.

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

## 2. FINALISATION OF THE PLAN AND CONSIDERATION OF COMMISSION RECOMMENDATIONS

### Preparation and submission of the final plan

Slovakia **notified** its final national energy and climate plan (NECP) to the Commission on 20 December 2019.

A **public consultation** on the plan was carried out on several stages. The NECP is based on the Slovakian energy policy (Energetická politika) approved in 2014 by the Slovak government, which sets priorities for the energy sector for 2035, with a view to 2050. The NECP was prepared by the Ministry of Economy in cooperation with an inter-ministerial working group. Other ministries were consulted on the plan, and companies and associations from the energy sector were able to provide their input as well. The draft plan was also available to the public as part of the standard governmental approval process. Slovakia has not submitted a summary of the public's views and of how those views have been taken into account in the NECP. Finally, after the plan was submitted, a strategic environmental assessment (SEA) was conducted on it under Directive 2001/42/EC.

### Consideration of Commission recommendations

In June 2019, the Commission issued 10 recommendations on Slovakia's draft national energy and climate plan for consideration in the final version<sup>6</sup>. Annex II to this staff working document

<sup>6</sup> Commission Recommendation of 18 June 2019 on the draft integrated national energy and climate plan of Slovakia covering the period 2021-2030, C/2019/4425.

offers a detailed account of how the different elements of the Commission recommendations have been reflected in the final NECP. Overall, the NECP **partially addresses** most of the Commission recommendations. The main changes introduced in the final plan are the following:

On **renewables**, Slovakia **partially addressed** the recommendation to raise the level of ambition for the contribution to the Union's 2030 target for renewable energy and the other requested requirements of the Renewable Energy Directive. Slovakia has increased its 2030 renewable energy contribution from 18% in the draft NECP to 19.2% in the final NECP, which is still below the 24% resulting from the formula in Annex II to the Governance Regulation.

On **energy efficiency**, Commission's recommendation was **partially addressed**. In particular, Slovakia has proposed to substantially scale up voluntary agreements, which should substantially contribute to the country's overall energy savings. It has also further developed the support to guaranteed energy services, and it plans to establish a network of regional (sustainable) energy centres. However, the NECP does not quantify all the impacts of the measures set in the plan. Furthermore, Slovakia only partially addressed the recommendation to increase the level of ambition, as its energy efficiency contributions are only slightly lower than in the draft plan.

On **energy security**, Slovakia only **partially addressed** the recommendation to specify the measures supporting the energy security objectives on diversification and the reduction of energy dependency. On measures ensuring the long-term supply of nuclear materials and fuel in order to develop Slovakia's capacity to generate nuclear energy, the plan only refers to discussions on alternative nuclear fuel supplies, but it does not provide concrete details.

Related to the **internal energy market**, Slovakia **partially addressed** the recommendation to define forward-looking objectives and targets concerning market integration, sources of flexibility and smart meters. In particular, the final plan outlines concrete objectives for further electricity market integration. As for objectives and measures, the plan often makes reference to the new electricity Directive (EU) 2019/944, stating that its transposition into Slovak law will fully address the recommendations. However, clear and concrete steps to achieve those objectives have not been specified.

On **research, innovation and competitiveness**, Slovakia **partially addressed** the recommendation to clarify the national objectives and funding targets. The plan includes relevant areas for additional research and innovation efforts. However, measurable objectives and accompanying policies are not included. Clear and measurable objectives for competitiveness are also missing. Cooperation with the SET plan is referenced, but it is not explained how this helps Slovakia reach its national energy and climate objectives.

Slovakia **largely addressed** the recommendation to continue **regional cooperation** in the relevant regional fora and also to strengthen the bilateral cooperation with its neighbours to reinforce the internal energy market. Slovakia has continued the regional consultations and strengthened the cooperation with Czechia and Hungary.

Concerning **investment needs**, Slovakia has **largely addressed** the recommendation. Slovakia provided quantified information on investment needs for energy efficiency, as well as for individual sectors, and selected policies and measures. However, the identified investment needs are not matched with potential funding sources in a comprehensive manner, and there is no consideration of cost-effective generation of transfers to other Member States as a funding source.

Slovakia **partially addressed** the recommendation to list actions undertaken and plans to **phase out energy subsidies**, in particular for fossil fuels. An extensive list of subsidies has been provided in the plan; however, further information on actions and plans to phase them out has not been included.

Regarding air quality, Slovakia **has not addressed** the recommendation on complementing the analysis of the interactions with **air quality and air emissions policy** with more quantitative information. Slovakia is preparing multiple strategic documents related to air quality, but at this stage the information in the NECP remains only qualitative.

Furthermore, Slovakia **partially addressed** the recommendation to better integrate **just and fair transition** aspects. Overall, the analysis remains superficial, with the impacts on employment addressed relatively better than those on skills and social impacts. Regarding **energy poverty**, Slovakia does not report the number of households affected but provides the number of households considered at risk of poverty. Slovakia did not include any policies or measures targeted specifically at fighting energy poverty in the plan.

#### *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<sup>7</sup>, Slovakia received one country-specific recommendation<sup>8</sup> on climate and energy, calling on it to invest in ‘transport notably on its sustainability’ and in ‘energy efficiency’. In the 2020 country report<sup>9</sup> adopted on 20 February 2020, the Commission found that Slovakia had achieved limited progress and some progress on these recommendations respectively. The report recognises that Slovakia’s NECP supports the recommendations, but remains abstract in how it will achieve this.

Due to the COVID-19 crisis, the European Semester country-specific recommendations for 2020 addressed Member States’ responses to the pandemic and made recommendations to foster economic recovery. In particular, they focused on the need to front-load mature public investment projects as soon as possible and promote private investment, including through relevant reforms, notably in the digital and green sectors. In this context, Slovakia received a country-specific recommendation<sup>10</sup> stressing the importance of focusing investment on ‘the green and digital transition, in particular on clean and efficient production and use of energy and resources, sustainable public transport, and waste management’.

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. In turn, Slovakia’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 sources to meet them.

<sup>7</sup> 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.

<sup>8</sup> Recommendation for a Council Recommendation on the 2019 National Reform Programme of Slovakia and delivering a Council opinion on the 2019 Stability Programme of Slovakia, COM(2019) 525 final.

<sup>9</sup> Commission staff working document Country Report Slovakia 2020, SWD/2020/524 Final.

<sup>10</sup> Recommendation for a Council Recommendation on the 2020 National Reform Programme of Slovakia and delivering a Council opinion on the 2020 Stability Programme of Slovakia, COM(2020) 525 final.

### **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**

Slovakia has increased its ambition for emissions reductions under the Effort Sharing Regulation (ESR) for sectors outside the EU Emissions Trading System (**non-ETS sectors**) from -12% (binding target set at EU level) to -20% by 2030 set nationally compared to 2005. Slovakia does not provide an assessment of whether or not the reported policies and measures are sufficient to reach its targets. The existing measures projections imply a reduction of 12% by 2030 compared to 2005<sup>11</sup>, achieving the ESR target of -12% compared to 2005. The achievement of the -20% remains in question.

In the plan, Slovakia has endorsed climate neutrality. A 2050 low-carbon strategy was adopted in February 2020. The final plan indicates that Slovakia may apply flexibility instruments if there is a surplus of emission allocations, e.g. by transferring allocations to other Member States.

This assessment does not take into account possible credits or debits in the **LULUCF** sector, as no information is provided on how Slovakia will meet the no-debit commitment or use the flexibility from the LULUCF sector to the effort sharing sectors. Slovakia has listed some measures in relation to biomass availability (fast growing trees), implementation of second-generation biofuels (waste residues, biomass) and agriculture practices (fertilisers, manure, climate-friendly practices). The plan proposes that 20% of agricultural land be farmed to promote biodiversity, soil and water resources.

Most of the policies and measures lack details on the exact scope of the measure. Many of the policies and measures reported under the Monitoring Mechanism Regulation are not mentioned.

The plan provides the impact on greenhouse gas emissions of only a few policies and measures (7 of 81). It is not clear if a consistent methodology has been applied. Moreover, there is not enough information on the tools used and methodologies applied to assess the plan's robustness.

Slovakia has not expressed a specific target in the plan for reducing emissions in the transport sector. The plan identifies some of the measures in the transport sector for reducing CO<sub>2</sub>: a 10% share of RES in energy demanded and soft measures for greater electricity efficiency in the transport sector; environmental design and use of products to reduce transport; promotion of biofuels (8.2% mix by 2022-2030). For electromobility, the share of electric vehicles and fuel cell vehicles is projected; however, no clear target is included.

Neither quantitative targets for further emission reductions nor key actions for the buildings sector have been described.

The plan refers to the national adaptation strategy, with the main objective of improving Slovakia's preparedness to face the adverse impact of climate change. Sectoral objectives are not yet specified in the plan, but these are likely to be set when the related action plan is adopted.

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<sup>11</sup> This estimate is based on the 2005 base year of Slovakia under the Effort Sharing Decision of 22.96 Mt, as e.g. published in SWD(2019)396, which takes account the ETS scope extension in 2013.



## Renewable energy

Slovakia increased its planned contribution to renewables to 19.2% from 18% in its draft NECP, but this is still unambitious, as it falls short of the **renewable share** of 24% calculated according to the formula in Annex II of the Governance Regulation. In its final NECP, Slovakia has improved the information on renewables. The indicative trajectory reaches all reference points<sup>12</sup>. Yearly trajectories for each of the sectors are also provided. The final plan includes an overview on existing and planned policies and measures for RES which was not the case for the draft. The basis of this information is a reformed Renewable Energy Law that entered into force in 2019. Measures are described briefly, and for some measures it is also indicated how long they will be in force. However, the impact of these measures on national sectorial targets is not always quantified, and it is also not clear which measures were added or increased to provide the additional 1.2% in the final plan.

In the **electricity sector**, the final plan proposes a renewable energy share target of 27.3% (compared to 21.5% in 2018 and 25% in the draft NECP). The main increase is expected in onshore wind (from 3 MW in 2018 to 500 MW in 2030), but also in photovoltaics (PV) which is expected to generate more than double the amount of electricity (from 470 MW in 2018 to 1200 MW in 2030). The NECP assumes already 30 MW in wind by 2020. However, based on the plan, it is unclear where the capacity would come from. For PV, the starting point in 2020 is 680 MW. Electricity from biomass and biomethane are projected to rise modestly over the decade, and geothermal energy is being phased in as of 2024.

The use of **renewable energy in heating and cooling** is planned to increase from the expected 13% in 2020 to 19% in 2030, an increase of 1.4% compared to the draft NECP (compared to 10.60% in 2020). The annual average increase is 0.68 percentage points for 2020-2025, and 0.58 percentage points for 2025-2030, hence below the 1.3 percentage point average annual increase enshrined in the Renewable Energy Directive. For district heating and cooling, a mandatory 1 percentage point average annual increase will be set as of 2021. The NECP recognises the need to invest in new district heating and cooling infrastructure. Slovakia expects bioenergy to account for 75% of renewable heat in 2030, with the remaining renewable heat coming from solar thermal, ambient energy from heat pumps and geothermal energy.

The final plan includes a sectoral share of **renewable energy in transport** of 14% in 2030 (compared to 8.9% in 2020) with close to 90% based on biofuels. The role of advanced biofuels will increase in 2030, and the final NECP announces a blending obligation for fuel suppliers as of 2019 and measures to support second-generation biofuels, alternative fuel infrastructure and support for purchasing e-vehicles. Breakdown of the renewable energy contribution by fuels in the transport sector is included.

## Energy efficiency

Slovakia's **national contribution for energy efficiency** in 2030 is 15.7 Mtoe for primary energy and 10.3 Mtoe for final energy. These contributions are slightly higher compared to the draft, but their overall level of ambition is low compared to the level of efforts need at EU level.

The plan provides information on **policies and measures beyond 2020** targeting buildings (residential and non-residential), the public sector, industry, and transport. The contribution of

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<sup>12</sup> Pursuant to Article 4(a)(2) of Regulation 2018/1999.

measures to reaching the proposed targets is not explicitly assessed, but it seems that substantial efforts might be required to implement the currently planned measures and scale them up, and potentially new measures may have to be taken up.

For the **cumulative savings** to be achieved under Article 7 of the Energy Efficiency Directive, Slovakia gives the figure of 4.1 Mtoe. This will be achieved through alternative measures, focusing mainly on economic measures (including investment subsidies, loans in the building sector, and in industry). It is difficult to assess whether these policies and measures are sufficient to achieve the target, because not all impacts have been quantified (specifically, the impacts of building measures are missing) and currently quantified impacts reach about 53% of the targeted energy savings.

On **buildings**, the information in the NECP remains limited: milestones, measurable progress indicators, expected energy and wider benefits, and the contribution of the building sector to achieving the energy efficiency target are still missing. The NECP provides measures for the building sector (including for the public sector), but without quantification of impacts. The long-term renovation strategy has not been submitted yet.

### **Energy security**

Maintaining a high level of security of supply is a priority for Slovakia due to the high dependency on energy imports. Slovakia plans to further extend its **gas storage** capacity and increase the diversification of its gas supply sources to help increase its security of gas supply.

For the **oil** sector, the Slovak plan addresses relevant issues (including oil stocks, origin of supply, stockholding obligations as well as reporting and emergency procedures) and mentions the extension of the current pipeline network to connect it better to the European oil transit routes. The plan refers to the emergency plans for gas, electricity and oil provided for by the applicable sectoral rules.

On the security of supply of **nuclear fuels**, Slovakia states that diversification and the reduction of energy dependency are key areas to be worked on, but does not set any concrete national key objectives. Energy security information is provided, but no specific targets have been set.

The plan outlines energy security policies and measures, which are considered sufficient; however, the contribution of these policies and measures to the overall decarbonisation objectives needs to be elaborated further.

### **Internal energy market**

The electricity **interconnectivity level** of Slovakia of 43% in 2017 is well above the EU cross-border transmission capacity interconnection target of 15% by 2030.

In view of the target for electricity of having 27.3% renewables for 2030, the plan has provided an overview of the development of the different sources of **flexibility** needed to integrate the rising share of renewable energy into the electricity system. With regard to the non-discriminatory market participation of renewable energy, the plan refers to discussions with stakeholders supporting the implementation of the clean energy package. Considerations include auctions for the procurement of renewable electricity production. As an important step towards increasing the flexibility of the electricity system, there are plans to build a new cross-border transfer line between Slovakia and Hungary in 2021, making the Slovak electricity system robust and ready for the integration of new renewable electricity generation.

The overview of current **market conditions** for gas and electricity is not sufficiently detailed, in particular when it comes to levels of competition and liquidity of markets. Forward-looking objectives and targets for electricity market integration are missing, in particular measures to increase the competition in the wholesale and retail markets, including progressing towards fully market-based prices.

The NECP includes concrete objectives for further electricity **market integration**, but lacks timeframes and concrete steps for reaching them. The plan does not provide clear timing for the steps to implement the market design elements of the clean energy package. Congestion management in Central Europe needs a solution at regional level that facilitates cross-border electricity flows while ensuring system security.

Regarding **energy poverty**, Slovakia does not report the number of households affected but provides the number of households considered at risk of poverty. Slovakia did not include any policies and measures targeted specifically at fighting energy poverty, as it cannot be addressed through energy policy but only through social policy.

### **Research, innovation and competitiveness**

The plan identifies the key areas and funding needs for research and development for 2019-2023 with an outlook to 2028. National budgets dedicated to research are also identified; however, there are no specific targets for research and innovation.

Slovakia recognises that having the technological lead in alternative energy and reducing energy consumption will create huge export and industrial opportunities, helping to boost growth and jobs. It acknowledges that renewables will play a major role in the transition to a clean energy system, and identifies many opportunities of which Slovakia could take advantage. It also states that the objective of state R&D programmes is to support competitiveness. Nonetheless, none of these messages are translated into objectives or measures in subsequent sections of the plan.

In its NECP, Slovakia considers the use of decarbonised gases and hydrogen as a way to ensure environmental sustainability. According to its NECP, Slovakia estimates that by 2030 around 1% of its renewable target for the transport sector will be covered by the direct use of hydrogen (2 ktoe hydrogen out of a total of 229 ktoe renewable fuels). A national hydrogen strategy is expected to be approved in 2021.

The plan mentions **the strategic energy technology (SET) plan**. However, it only outlines the participation in the working groups on nuclear safety, whereas there is also participation in positive energy districts and energy efficiency in industry working groups. Further, Slovakia does not allocate funding programmes under each implementation plan (IP) and fails to explain how the SET plan contributes to reach the national energy and climate objectives.

## **4. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS**

Slovakia's final national energy and climate plan does not provide much detail on **interlinkages** between policies and measures. The plan highlights the relationship between climate change impacts and energy efficiency. However, climate change impacts are not mentioned as risks for energy security, although the country's national adaptation plan will include such measures for the energy sector. While there are plans to increase the use of biomass for energy, the plan has little detail on the origin and sustainability of this biomass and does not yet include information on its potential impact on the carbon sink in the LULUCF sector, nor on biodiversity.

In the plan, Slovakia has provided an overview of **investment needs** structured by sector, by policy, and the needs are compared to a business-as-usual scenario. There is a detailed breakdown for investment needs per industry, sectors of the economy, transport as well as for selected policy measures such as the national action plan for renewable energy or the implementation of the European greenhouse gas emissions trading system. The plan also contains an overview of investment needs for the four sectors analysed (transport, industry, services, households) in terms of costs, such as capital costs, fuel costs or emissions and energy taxes. In addition, according to the plan, to attain the 19.2% RES target for 2030, the Ministry of Economy calculated the investment costs for electricity generation at EUR 180 mn and for heat generation at EUR 250 mn per year. The NECP also provides a good summary of the macroeconomic impact of the planned policies and measures.

A list of both renewable and fossil fuel **energy subsidies** has been included in the final plan without providing further detail to what these subsidies amount to. The list of subsidies is in line with the categories of subsidies, as identified in the European Commission's third report on energy prices and costs in Europe (COM 2019 1 final). Actions undertaken and planned to phase out energy subsidies, in particular for fossil fuels, have not been included in the plan.

The plan considers the **just and fair transition** aspects of decarbonisation and provides information on the social, employment and skills impacts of a transition to a climate-neutral economy. The impact on employment notably in the period 2040-2050 is analysed. A 1% drop in employment in the industry sector in general is projected as a result of the economic transition. This outcome does not appear to be specific to the climate transition, as it is more of a general assumption on longer-term developments. There is no analysis on skills needs or measures that could address these, and apart from recognising that population ageing will be an important factor in the coming decades, social impacts are not discussed.

Slovakia recognises the potential of the **circular economy** to reduce greenhouse gas emissions in its national 2030 economic policy strategy. Waste measures have been complemented with preventive measures and design for circularity. Key sectors are also mentioned, but concrete measures remain to be defined.

The plan stresses the importance of **air quality and air emissions policy** with other policies, as most air protection measures cannot be implemented alone without coordination with the affected sectors. At the same time, many targets and tools of other policies have great potential in helping to meet air protection targets. The plan recognises the need to coordinate to ensure the affected policies are consistent with clean air policies and objectives and to maximise synergy effects. In accordance with the above, the relevant sectoral plans and programmes were taken into account when preparing the national emission reduction programme and selecting measures to ensure the achievement of reduction commitments, in particular in the fields of climate change and energy, transport, industry and agriculture.

The application of **the energy efficiency first principle** is acknowledged as an important element that could lead to some additional measures, especially for the reduction of greenhouse gas emissions, but the principle's concrete application has not been elaborated in the plan. Support to energy-efficient architecture is also mentioned as a means to increase energy security, but there is no consideration of co-benefits of energy efficiency measures or their role for reaching objectives in the internal market dimension.

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

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

Slovakia needs to swiftly proceed with implementing its final integrated national energy and climate plan, as notified to the Commission on 20 December 2019. This section provides some guidance to Slovakia 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 Slovakia could consider when developing its national recovery and resilience plan in the context of the Recovery and Resilience Facility<sup>13</sup>.

### **Guidance on implementation of the national energy and climate plan**

In 2019 Slovakia committed to achieve carbon neutrality by 2050. For non-ETS greenhouse gas emissions reductions, Slovakia has a target of -12% compared to 2005 under the Effort Sharing Regulation, but Slovakia has increased its national ambition to -20% in the final plan. Existing measures, the planned policies and measures would still need to be assessed to establish whether they are sufficient for the attainment of -20%.

The Slovak contribution to the EU 2030 renewables target is not ambitious when compared to the share resulting from the formula in Annex II of the Governance Regulation. Similarly, the Slovak contribution to the 2030 energy efficiency target is of low ambition. Slovakia's plan leaves scope to increase its ambition on both renewables and energy efficiency, to contribute more to the EU climate and energy targets and speed up the green transition.

On **renewables**, Slovakia committed to increasing the share of renewables in gross final energy consumption to 19.2% in 2030. Achieving a higher share of renewables in gross final energy consumption for 2030 would necessitate additional policies and measures to reinstate investor certainty, based on more specific and detailed planning of the sources for generation of renewable energy. Currently, the main source is bioenergy, while the potential of the electricity and transport sectors remains untapped. An important element for exploiting this potential would be to relaunch the auctions to support large-scale renewable energy installations, promoting market-based direct contracts (PPAs) and reducing investors' risk by re-installing the right to grid connection. In the other sectors, additional reforms and investments for e-mobility and for upgrading district heating and cooling could allow for more ambition beyond the NECP.

On **energy efficiency**, Slovakia would benefit from adopting and implementing additional policies and measures that would deliver additional energy savings by 2030. Proper implementation of the numerous measures proposed will be key for the delivery of the expected energy savings. A detailed elaboration of all the elements required by Annex III of the Governance Regulation would be beneficial for ensuring achievement of the energy-saving

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<sup>13</sup> 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).

obligation target under Article 7 of the Energy Efficiency Directive. Slovakia is also invited to apply the ‘energy efficiency first’ principle in all the dimensions of the energy system planning, taking into account the co-benefits of energy efficiency measures, and to make use of the funding dedicated to green transition to finance energy efficiency policy.

Improving energy efficiency in buildings – especially public buildings and single-family dwellings – 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<sup>14</sup>, there is scope for Slovakia 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 could be provided through increased public funding and by leveraging EU and national budgets with private money, combining grants, lending, guarantees and loan subsidies. Slovakia is expected to provide a robust and comprehensive long-term renovation strategy, in accordance with Article 2a of the Energy Performance of Buildings Directive. The long-term renovation strategy is required to set out a roadmap for decarbonisation by 2050, with ambitious milestones for 2030, 2040 and 2050, 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.

As regards **energy poverty**, Slovakia 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).

Regarding **energy security**, Slovakia would benefit if it clarified measures on electricity security of supply, in particular a) on the implementation steps of the clean energy package provisions, including electricity system adequacy and b) on storage and production capacity as well as timing of main steps of the planned construction of a new pumped storage power plant. Moreover, Slovakia is invited to include in the NECP specific measures to preserve and strengthen cybersecurity in the energy sector. Finally, in view of the greater role that nuclear energy production is to have, Slovakia would benefit if it implemented a long-term strategy for diversification of the supply of nuclear fuels.

Concerning the **internal energy market**, Slovakia would benefit from measures to increase competition in the wholesale and retail markets, including progressing towards fully market-based prices and reforms that reduce the relative price of electricity compared to gas (due to the G-charge component). Slovakia would need to ensure consistency between internal energy market measures and the overall decarbonisation objectives, with particular regard to the planned extension of fossil fuel production and consumption.

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<sup>14</sup> Communication ‘A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives’, COM(2020)662 and SWD(2020)550.

Slovakia would benefit from defining 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 be useful to strengthen this process. Slovakia would need to ensure the link with the activities of the SET plan that are undertaken. Slovakia would also benefit from further strengthening the link between the competitiveness objective and the policies and measures to put in place for the different sectors by 2030.

Slovakia estimates that when it comes to **investment** costs, it will need to invest EUR 4.3 billion over 10 years to achieve its renewable energy contribution, while for the other dimensions Slovakia provides only selected investment needs for certain policies and measures. Slovakia would benefit from finalisation of the quantification of its investment needs and from complementing it with a comprehensive assessment of overall investment needs to achieve the objectives of the final NECP. Slovakia's approach to investment in the green transition is focused on renewable energy, energy efficiency and transport. As regards energy efficiency by households and enterprises, the investments will increase rapidly after 2030. Slovakia's analysis reveals a positive impact on GDP of the investments, particularly in the long term. However, the decline in energy consumption is expected to be largely stimulated by emission-mitigation policies outside the country. Forward-looking and stable policy frameworks would help guide enterprises' and households' investment decisions and incentivise frontloading investment also in the private sector. This is valid in particular for the renewable energy sector, where the first auction for support from February 2020 was cancelled and the private investments in the sector are stagnating. The investment efforts for green transition could also be linked with the action plan for the transition of the Horná Nitra region that envisages phasing out coal mining and coal-fired electricity generation by 2023.

Slovakia 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, in particular as regards relevant cross-border issues, including those in the context of the Central and South-Eastern Europe Energy Connectivity (CESEC) High Level Group. Slovakia 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, non-governmental organisations, the business community, investors and other relevant stakeholders and to discuss with them the different scenarios envisaged for its energy and climate policies.

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

For all investments implementing the national energy and climate plan, Slovakia 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, Slovakia 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 Slovakia during the forthcoming multiannual financing period (2021-2027) as well as an overview for project proposals for EU funding addressed to all Member States and companies. For the forthcoming period, the European Council has committed to the mainstreaming of climate action in 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 Slovakia 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 Slovakia’s plan in that context. Nevertheless, the implementation of Slovakia’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 Slovakia 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**<sup>15</sup>. 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 Slovakia’s green transition while contributing to economic recovery**. In order to follow the commitment of the European Council to achieve a climate mainstreaming target of 30% for both the multiannual framework and Next Generation EU, Slovakia’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 Slovakia’s final national energy and climate plan, and on the investment and reform priorities identified for Slovakia in the European Semester, **the Commission services invite**

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<sup>15</sup> Cf. Annual Sustainable Growth Strategy 2021 (COM(2020) 575 final), pp. 9-12.



**Slovakia to consider, while developing its national recovery and resilience plan, the following climate and energy-related investment and reform measures:**

- Measures fostering energy efficiency in buildings, in particular by investing in the renovation of buildings and the replacement of domestic heating systems, and by reforming the social housing investment framework;
- Measures to promote the development of renewable energy, invest in energy infrastructure, and advance the coal phase out by speeding up the implementation of the action plan for the transformation of Horná Nitra and other regions in transition;
- Measures modernising the mobility system, including by fostering investments in sustainable mobility infrastructure and urban transport.

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.

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

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

<b>Programme</b>	<b>Amount</b>	<b>Comments</b>
Cohesion policy funds (ERDF, ESF+, Cohesion Fund)	12.4	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.	4.7	In current prices.
Recovery and Resilience Facility	5.8	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	0.4	In 2018 prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU.
Modernisation Fund	0.8	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	0.2	Indicative: average of actual 2018 and 2019 auction revenues. The amounts in 2021 to 2027 will depend on the quantity and price of auctioned allowances.

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

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

*Note to both tables*

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

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

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

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

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

Recommendations		Assessment	
<b>Decarbonisation - GHG</b>	No recommendation	n.a.	–
<b>Decarbonisation - renewables</b>	Significantly raise the level of ambition for 2030 to a renewable share of at least 24% as Slovakia's contribution to the Union's 2030 target for renewable energy, as indicated by the formula in Annex II under Regulation (EU) 2018/1999 and after due consideration of relevant circumstances and national constraints.	Partially addressed	Slovakia proposes a 19.2% renewable share in gross final consumption of energy for 2030 as opposed to the 14% target for 2020. The overall contribution remains below the result of the formula contained in Annex II of the Governance Regulation which estimates a 24% renewable share in 2030 for Slovenia. Following up on the Commission recommendation to provide explanations for the low ambitions, the final plan refers to the PRIMES modelling producing a 19% share for SK and indicates that 5 departments of the SK government opposed a higher ambition of 20%. SK does not consider RES cooperation mechanisms to use the 'better potential elsewhere in EU'.
	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.	Fully addressed	The indicative trajectory to reach the 19.2% contribution in 2030 is included and satisfies the reference points in 2022, in 2025 and 2027.
	Put forward detailed and quantified policies and measures that are in line with the obligations laid down in Directive 2018/2001.	Partially addressed	The final plan includes an overview on existing and planned policies and measures for RES which was not the case for the draft. Basis is a reformed RES law that entered into force in 2019 as well as some other measures that seem to be included in the transposition of the RES Directive for which not much more detail is provided. Measures are described briefly; for some measures, the plan also indicated how long they will be in force. However, the impact of the measures is not quantified and, for example, the plan does not describe how capping for own consumption is in line with the RES target. It is also not clear which measures were added or increased to provide the additional 1.2% in the final plan. The plan also does not explain how in the short term a

			<p>turnaround in trend can be achieved (stagnation for 5 years at around 11%), when for example all of 2019 did not see an auction for big-scale RES, unlike what was originally planned.</p> <p>Regarding the heating and cooling sector, the final NECP includes some policy measures to achieve the objective of increasing renewable energy in heating and cooling; however these measures remain insufficient to deliver the required increase.</p> <p>For transport, the main measure is fuel obligation and future support for biomethane and advanced fuels, although it is not specified.</p> <p>Measures on self-consumption included, but not for RES communities PPA repowering.</p>
	<p>Increase the level of ambition in the heating and cooling sector to meet the indicative target included in Articles 23 of Directive (EU) 2018/2001 and put in place adequate measures to meet the transport target in Article 25 of Directive (EU) 2018/2001.</p>	<p>Partially addressed</p>	<p>The use of renewable energy in heating and cooling is set to increase from the expected 13% in 2020 to 19% in 2030 and increase by 1.4% compared to the draft NECP (the current share is only 10.60%). The annual average increase for 2020-2025 is 0.68 percentage points per annum, while for 2025-2030, the increase is 0.58 percentage points per annum, hence not in line with the 1.3 percentage points per annum enshrined in the Directive. A brief description of the amount of additional renewable heat production and demand needed to reach the 1.3% is given.</p> <p>For district heating and cooling, a mandatory 1 percentage point per annum will be set as of 2021, with the NECP basically repeating obligations from the Renewable Energy Directive for transposition. The NECP states that there is a need to build new DH and DC infrastructure but does not quantify it or address it. The plan mentions single measures such as VAT reduction, but does not put forward a comprehensive strategy for the sector.</p> <p>Slovakia expects biomass/biomethane to account for 75% of renewable heat in 2030, with the remaining renewable heat coming from solar thermal, ambient energy from heat pumps and geothermal energy.</p> <p>The final plan includes a sectoral share of renewable energy in transport</p>

			of 14% in 2030 (vs a baseline of 8.9% in 2020) vs the current share of 6.96%, thus reaching the minimal obligation. Close to 90% is bioenergy-based in 2030, with low levels of electricity penetration, especially in road transport. The role of advanced biofuels will increase in 2030 (and the final NECP announces a blending obligation for fuel suppliers as of 2019 and mentions measures for second generation with no details about the type of support and scope nor about the entry into force). Although a breakdown of the renewable energy contribution by fuels in the transport sector is included, Slovakia does not provide the detailed calculation of the transport target as required in the Renewable Energy Directive, taking into account the contributions of all eligible fuels as well as the applicable multipliers and caps. The final NECP announced measures as of 2019/2020 on alternative fuel infrastructure and support for e-vehicles purchase, with no information on overall amount and duration or expected economic impact.
	Put forward concrete measures to reduce administrative burden and in relation to the enabling frameworks for RES self-consumption and RES communities in line with Articles 21 and 22 of Directive 2018/2001/EC.	Partially addressed	The plan describes the SEIA agency as the one-stop shop to be set up, but no measures on easier permitting/grid connection, which was an issue in the past. No measures on repowering rules, even though the NECP states that by 2025/2026, 500 Mwe of PV is expected to fall out of the support and be disconnected. Measures on self-consumption are included and described, e.g. continuation of Green Households scheme (< 10 kw) and local power generation (< 500 kw). The final NECP states that there are no barriers to self-consumption other than financial ones. No information on an enabling framework for RES communities and PPAs.
	Provide additional details on specific measures to ensure sustainability for biomass supply and use in the energy sector, given the important contribution of biomass to SK energy mix and especially in heating and cooling.	Partially addressed	Bioenergy is expected to account for 75% of the renewable heating supply by 2030 and close to 90% in transport. In electricity, 11% firm biomass and 14.9% biogas/methane by 2030. The final NECP includes trajectories for bioenergy use and an indication of the fuel source for heating and cooling (all forest biomass), but not for transport and electricity. The NECP states that current use of forest biomass is at 51% of potential and there should not be an issue with sustainability until 2030. No information on imported bioenergy nor sustainability of non-forest biomass. It is not clear how much waste heat will be used over the decade. NECP announces new measures as of 2022 to support

			biomethane and hydrogen and waste recovery but no details about scope, duration or economic assessment.
<b>Energy efficiency</b>	Increase its ambition regarding both final and primary energy consumption in view of the need to increase the level of efforts to reach the Union's 2030 energy efficiency target.	Partially addressed	The NECP indicates a slightly higher level of ambition compared to the draft, but this is still low for PEC and modest for FEC. Slovakia claims its contributions are ambitious already.
	Support it with policies and measures that would deliver additional energy savings by 2030. Provide a proper quantification of the energy savings expected from the planned policies and measures as part of a more detailed impact assessment.	Partially addressed	While there are new measures added to the final NECP (e.g. regional energy centres), it seems that overall the policies and measures build on the basis set out in the draft NECP. The measures under Article 7 are described in a much higher level of detail, but not all policy measures are set out, and details about energy savings are missing - currently quantified impacts reach about 53% of targeted energy savings. The information provided on the renovation of the building stock remains limited in the absence of the long-term renovation strategy.
<b>Energy security</b>	Specify the measures supporting the energy security objectives on diversification and reduction of energy dependency, including measures ensuring flexibility and the long-term supply of nuclear materials and fuel in view of the development of the nuclear generation capacity.	Partially addressed	On energy security, Slovakia received a recommendation to specify the measures supporting the energy security objectives on diversification and reduction of energy dependency, including measures ensuring flexibility and the long-term supply of nuclear materials and fuel in view of the development of nuclear generation capacity. This recommendation was partially addressed. The plan refers to discussions on alternative nuclear fuel supplies, however, without providing concrete details.
<b>Internal energy market</b>	Define forward-looking objectives and targets concerning market integration, in particular measures to enhance competition in the wholesale and retail markets, including progressing towards fully market based prices.	Partially addressed	The plan improves the outline of concrete objectives for further electricity market integration. Slovakia also received a recommendation to set clear objectives, milestones and timelines related to sources of flexibility and smart meters. Such a recommendation was partially addressed. Nevertheless, the description stays generic. As for objectives and measures, the plan often makes reference to the new Electricity Directive 2019/944 stating that its transposition into Slovak law will address the issue.
<b>Research innovation and competitiveness</b>	Clarify the national objectives and funding targets in research, innovation and competitiveness, specifically related to the Energy Union, to be achieved between 2023 and 2030, so that they are readily measurable and fit for purpose to support the implementation of targets in the other dimensions of the integrated national energy and climate plan. Underpin such	Partially addressed	There are no specific targets for research and innovation. The plan includes relevant areas where research and innovation efforts are identified for 2019-2023 with an outlook to 2028. National budgets dedicated to research are also tentatively identified and there is an indication of possible private investments. However, these efforts may be insufficient in relation to the achievement

	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.		of the target, as measurable objectives and accompanying policies are not included. Although Slovakia refers to the importance of developing a competitive advantage for alternative energy technologies and in particular for some identified areas, it lacks clear and measurable objectives for competitiveness. Cooperation with the SET plan is referred to but there is no description of funds allocated per implementation plan, and it does not explain how the SET plan helps Slovakia reach its national energy and climate objectives.
<b>Regional cooperation</b>	Continue the consultation of neighbouring Member States and regional cooperation in the context of the Visegrad Group involving Czechia, Hungary, Poland and Slovakia, and of the Central and South-Eastern Europe Energy Connectivity (CESEC) High Level Group, as well as bilateral cooperation, such as with Czechia on electricity distribution systems. The focus of regional exchanges could be on further integration in the internal energy market, assessing system adequacy, just transition issues and decarbonisation and renewables deployment and its impacts on the energy system.	Largely addressed	Slovakia has continued its exchanges with other countries in the relevant regional fora. A ministerial-level declaration of support for the implementation of the ACON (Again COnnected Networks) project aimed at fostering the integration of the Czech and the Slovak electricity markets was signed between the two countries in June 2019. There is also additional information on a similar InGrid project between Slovakia and Hungary.
<b>Investments and funding sources</b>	Extend its analysis of investment needs and sources, including appropriate financing at national, regional and Union level, which is currently provided only for energy efficiency and research, to a general overview of investment needs to reach its energy and climate objectives. 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.	Largely addressed	The extension of the analysis of investment needs and sources has been fully addressed. Slovakia provided quantified information on investment needs for energy efficiency, as well as for individual sectors, and selected policies and measures. However, the identified investment needs are not matched with potential funding sources in a comprehensive manner. The consideration of cost-effective generation of transfers to other Member States as a funding source has been partially addressed. Slovakia has not directly responded to this part of the recommendation, but it mentions that it may apply flexibility instruments (borrowing, banking and transferring allocated emission allowances to other Member States as an option), without further detail.
<b>Energy subsidies</b>	List all energy subsidies.	Largely addressed	In comparison with the draft plan, the final plan represents an upgrade. The plan now includes a list of both renewable and fossil fuel energy subsidies, although without providing further detail on the amount of the subsidies. The list of subsidies is in line with the categories of subsidies, as identified in recent Commission analyses on energy subsidies.



	List in particular fossil fuel subsidies.	Largely addressed	In comparison with the draft plan the final plan represents an upgrade. The plan now includes a list of fossil fuel energy subsidies, although without providing further detail on the amount of the subsidies. The list of subsidies is in line with recent Commission analyses on energy subsidies.
	List actions undertaken as well as plans to phase them out.	Not addressed	Actions and plans to phase out energy subsidies have not been included in the final plan.
<b>Air quality</b>	Complement the analysis of the interactions with air quality and air emissions policy, presenting and quantifying the impacts on air pollution for the various scenarios providing underpinning information, and considering synergies and trade-off effects.	Not addressed	The NECP only provides qualitative information on the air pollutant impacts by acknowledging the link with air policy and stating that relevant sectoral plans and programmes were taken into account during its preparation. The plan refers to trade-off with increased biomass but only from a qualitative point of view.
<b>Just transition and energy poverty</b>	Integrate just and fair transition aspects better, notably by providing more details on social, employment and skills impacts of planned objectives, policies and measures. The final integrated national energy and climate plan should address the impacts of the transition of the population living in the coal region of Horna Nitra and make the link to the government's Action plan for the transition there, as well as of adjustment in other energy-intensive sectors.	Partially addressed	Overall the analysis is rather superficial, with the impacts on employment addressed somewhat better than those on skills and social impacts. The impact on employment seems to be assumed only for the period after 2040, with hardly any analysis or measures planned for the coming years. Ministry of Labour activities focusing on the reskilling of workers in structurally disadvantaged industries (including in Horna Nitra) are not reported in the document. Apart from recognising that ageing of population will be an important factor in the coming decades, social impacts are not discussed. Specifically, the issue of better integrating the just and fair transition aspects has been partially addressed. In particular, the plan provides an assessment of macroeconomic effects, including employment and private consumption. However, the focus of this is not on a just and fair transition. The impacts of the transition on the populations living in the coal region of Horna Nitra and the link to the government's action plan for the transition there have been partially addressed. The action plan is referred to in the plan, but without any detail on what it entails. Energy poverty issues are also partially addressed. Specifically a dedicated assessment of energy poverty has not been provided, and Slovakia refers to its status as a country with a comparatively low energy poverty rate. The elimination of unemployment by means of employment measures is seen as the key driver of solving related problems.

	Further develop the approach to addressing energy poverty issues, including by providing a dedicated assessment of energy poverty as required by the Regulation (EU)	Not addressed	Slovakia does not report the number of households affected but provides the number of households considered at risk of poverty. Slovakia did not include any policies and measures targeted specifically at fighting energy poverty.
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