EUROPEAN
COMMISSION

Brussels, 18.12.2023
SWD(2023) 924 final

COMMISSION STAFF WORKING DOCUMENT

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

Accompanying the document

COMMISSION RECOMMENDATION

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

{C(2023) 9614 final}

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1 SUMMARY

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

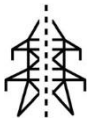
The European Green Deal, the fast-evolving geopolitical context and the energy crisis have led the EU and its Member States to accelerate the energy transition and set up more ambitious energy and climate objectives, including objectives to diversify energy supplies. These developments are reflected in the legislative framework adopted under both the Fit for 55 package and the REPowerEU plan.

Slovenia's draft updated national energy and climate plan ('the draft updated NECP' or 'the plan'), submitted on 29 June 2023, partially takes into account this new geopolitical and legislative framework.

Table 1: Summary of key objectives, targets and contributions of Slovenia's draft updated NECP

		2020	Progress based on latest available data	2030 national target and contributions	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions (GHG) compared to 2005 under the Effort Sharing Regulation (ESR) (%)		2021: -11.9% 2022: -6.1%[1]	-27%	NECP: -28.8%
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of -3.11 Mt CO_2 eq. in 2021 and reported approximated net removals of -2.71 Mt CO_2 eq. in 2022	- 212 kt CO_2 eq. (additional removal target) - 146 kt CO_2 eq. (total net removals)	Unclear as policies and measures were not provided.
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	25% (SHARES and target)	25%	30-35%	SI contribution of 30-35% is significantly below the 46% required pursuant the formula set out in Annex II of the Governance Regulation

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

	National contribution for energy efficiency:				
	Primary energy consumption	7.1 Mtoe	6.34 Mtoe	6.03 Mtoe	SI primary energy consumption contribution is 6.03 Mtoe. EED recast Annex I formula results: 5.79 Mtoe
	Final energy consumption	5.1 Mtoe	4.72 Mtoe	4.43 Mtoe	SI final energy consumption contribution is 4.43 Mtoe. EED recast Annex I formula results: 4.29 Mtoe
	Level of electricity interconnectivity (%)	78.9%	82.1%	15%[2]	

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

1.2 Summary of the main observations[3]

Slovenia's draft updated NECP refers to the revised energy and climate targets recently agreed under the **Fit for 55 package** and the **REPowerEU plan.** However, it does not fully include those new elements, nor does it include any updated policies and measures to effectively reach those targets. Slovenia's draft updated NECP is a very preliminary update of its 2019 NECP. Hence, it is not possible to perform a comprehensive assessment of the draft updated plan, its level of ambition and overall coherence.

Regarding the **reduction of greenhouse gas emissions under the Effort Sharing Regulation**, the plan provides emission projections to demonstrate that with the additional policies and measures put forward in the draft updated NECP, Slovenia is on track to meet its national greenhouse gas target of -27% in 2030 compared to 2005 levels. According to Slovenia's projections, they would overachieve the target by 1.8 percentage points.

On **Land Use Land Use Change and Forestry (LULUCF)**, although the projections submitted show that Slovenia will achieve its 2030 target, it is unclear which measures and data these are based on since Slovenia does not include any national policies and measures in its draft updated plan. It also lacks information on the status and progress in ensuring

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

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

higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

On **Carbon Capture Utilisation and Storage (CCUS)**, the plan does not identify annual CO_2 emissions that can be captured. As CO_2 storage is prohibited in Slovenia, no estimations of the CO_2 storage capacity have been made. No details on CO_2 transport are provided.

The draft updated plan reflects **some progress towards international commitments** under the Paris Agreement. While Slovenia is in line with the commitments to phase out coal use in the power sector by 2033, it states that fossil fuel subsidies will be phased out by 2030 without giving details on the steps.

Regarding **adaptation to climate change**, the draft updated NECP does not contain adequate analysis of the relevant climate vulnerabilities and risks for the achievement of the national objectives, targets, and contributions and the policies and measures in the individual dimensions of the Energy Union. The link to the specific Energy Union objectives and policies, which adaptation policies and measures should support, is not specified and quantified. Adaptation policies and measures, to support Slovenia´s achievement of national objectives, targets and contributions under the Energy Union, are not properly described in terms of their scope, timing and expected impacts. The only quantitative target is linked to the security of supply and distribution of electricity. Policies and measures in sectors important for decarbonisation and removals such as agriculture or forestry are not outlined.

For **renewable energy**, Slovenia puts forward a contribution within a range of 30-35% of its gross final energy consumption, which is significantly below the share of 46% resulting from the formula in Annex II of the Regulation (EU) 2018/1999 on the Governance Regulation of the Energy Union and Climate Action ('Governance Regulation'). Overall, the draft updated NECP includes indicative trajectories for renewables in the electricity, transport and heating and cooling sectors that takes into account Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413 ("revised REDII"), to some extent; however, it fails to provide the share of renewables for industry, buildings sectors and Renewable fuels of non-biological origin (RFNBO). At the same time, the plan states that Slovenia cannot fully take into account Fit for 55 package and the REPowerEU plan because of its national circumstances including an increase of energy consumption in the transport sector; environmental and other constraints due to NATURA 2000 sites; energy efficiency improvement in heating and cooling; and a higher share of energy-intensive industry than the EU average.

The ambition of the draft updated NECP on the 2030 **energy efficiency** targets is higher compared to Slovenia's previous submission in the 2020 NECP. However, the contribution seems to be lower compared to the results applying the formula in Annex I of Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955[4] ('EED recast'). In relation to **buildings**, the draft updated NECP does not update its ambition for the 2020 long-term renovation strategy ('LTRS'). For example, Slovenia's draft updated NECP does not provide information on updated indicative milestones (for 2030, 2040, 2050) linked to the LTRS such as building renovation targets, energy savings or CO_2

[4] OJ L 231.

emission reduction. There are also inconsistencies between the LTRS and the draft updated NECP in terms of indicators and baseline.

On the **energy security dimension**, the draft updated NECP broadly lacks detail on security of its energy system. On the **gas sector**, the draft updated plan does not describe the measures that will allow Slovenia to reach its targets. The plan also does not show how the measures adopted following Russia's invasion of Ukraine (in particular gas demand reduction measures) are integrated into the mid-term planning. On the **electricity sector**, the construction of new nuclear power plant should contribute to improving the national security of power supply. However, the draft updated NECP does not include neither a comprehensive strategy nor measurable targets for the deployment of power storage. As for the **oil sector**, the draft updated plan does not assess the adequacy of oil infrastructure (oil stocks) against the backdrop of an expected decline.

On the internal energy market, the draft updated NECP sets high-level objectives to bring the benefits of renewables and low-carbon technologies to consumers through **electricity interconnections**, markets integration, and targets on promoting flexibility services and storage systems. However, these new objectives are not underpinned with any policies and measures. The plan does not assess any need for flexibility or provide any clear targets in that regard.

On **energy poverty**, the draft updated NECP acknowledges that energy poverty worsened in 2022 and introduces two national targets by 2030 (reduction in the share of energy poor households and for investments in energy efficiency and renewable energy solutions by households experiencing energy poverty). Furthermore, the draft NECP highlights several relevant measures, including a national energy poverty action plan but without providing specific details on the latter.

On the **research, innovation, competitiveness and skills dimension,** the plan sets out objectives for the development of research and activities, competitiveness and skills, including a competitive workforce in green jobs. However, it does not make a strong and clear link with the clean energy sector and omits to give details on the more specific measures and financial support that will be put in place. On top of this, there is a lack of detailed information about the investments needed for the manufacturing of key components and equipment for net-zero technologies, and how Slovenia will ensure the resilience of its supply chains to reach its climate and energy targets. Similarly, the draft updated NECP identifies the digitalisation of the energy system as an objective without giving further details.

Just transition is addressed in a very limited manner in the draft updated NECP. Overall, the plan does not assess or quantify the social, employment and skills impacts of the climate and energy transition and lacks information on concrete policies and measures to address these except, to some extent, social measures targeting the most vulnerable. In addition, it does not detail the resources dedicated for supporting a just transition. Finally, the draft plan does not provide sufficient information for the preparation of the Social Climate Plan and how the consistency of the two plans would be ensured.

On its **strategic alignment with other planning instruments**, the draft updated NECP does not refer to any of the reforms and investments in the **recovery and resilience plan (RRP)** that contribute to implementing its objectives, targets and contributions. The objectives set out in the draft updated NECP are broadly aligned with the latest **European**

Semester country-specific recommendations and reflect the challenges to be addressed by the country.

The draft updated NECP does not include any information on the expected **investment needs and financing sources.**

Regarding its **analytical basis**, the draft updated NECP is based on quantitative analysis, using a combination of energy, environmental and macroeconomic models. However, an impact assessment on the expected impacts of targets and policies is still missing.

2 PREPARATION AND SUBMISSION OF THE DRAFT UPDATED NECP

2.1 Process and structure

Slovenia's draft updated NECP was notified on 29 June 2023. It is generally not very well developed, although it follows the structure set out in Annex I of the Governance Regulation. While it covers all five dimensions, and includes objectives, targets or contributions for each, it is not backed by any policies and measures, and is underpinned by a limited analysis and no impact assessment. The plan announces an ongoing environmental impact assessment, but it is not clear if this exercise constitutes a Strategic Environmental Assessment (SEA).

The draft updated NECP describes the national context in which it was developed, focusing on affordability and strategic autonomy and competitiveness. It mentions the need to increase the share of underground grids to increase energy security in the context of accelerating frequency of extreme weather conditions.

The draft updated plan provides evidence that, in line with the whole-of-government approach, Slovenia has established a cross-sectoral working group which has been performing various tasks linked to its preparation and implementation. In 2022, Slovenia has developed a "Public Engagement Framework" plan to ensure a comprehensive multilevel climate and energy dialogue in informing the draft updated NECP.

Organisations representing local communities and municipalities were engaged on key topics such as transport, energy use, energy poverty and renewable energy. However, there is no reference to the large community of local and regional authorities in Slovenia involved in the Covenant of Mayors for Climate and Energy (covering more than 50% of the country's population in 2022).

2.2 Public consultation

The public was consulted on the draft updated NECP in the framework of the Public Engagement Framework Plan mentioned earlier twice (between August-December 2022 and April-May 2023). The public participation procedure, spread over several phases, ensured early public participation before decisions were taken and throughout the decision-making process. A wide range of interest groups were identified and encouraged to take part (including social partners and local and regional authorities), as well as ordinary members of the public. Sufficient communication channels and mechanisms to notify and reach the general public regarding their participation in the NECP update process were used, including a dedicated website, and the time frame given for consultations was sufficient.

Information was provided on the NECP's key objectives, targets and contributions. Both the public and stakeholders were informed about the regulatory context for the review as well as the planned the decision-making process for the draft updated NECP. However, the draft updated NECP does not contain a clear and detailed summary of how the public's views were considered and addressed, or why they were not. Another round of public consultations is scheduled to take place in spring 2024, including on the results of the comprehensive environmental impact assessment report (first draft is expected in autumn 2023). This consultation is expected to feed into the final NECP, before its approval by the Slovenian government and before it submits to the Commission by June 2024.

2.3 Regional consultations for preparing the draft updated NECP

No consultations with neighbouring countries on the draft updated NECP have taken place yet. Slovenia is waiting for the results of the analysis on the opportunities for cooperation with neighbouring countries to be delivered under the Commission's technical assistance.

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

3.1 Decarbonisation dimension

3.1.1 Greenhouse gas emissions, removals and storage

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

The draft updated plan confirms Slovenia's commitment to achieve climate neutrality by 2050. It includes a pathway to 2030 but only graphical projections for 'with existing measures' (WEM) and 'with additional measures' (WAM) up to 2040. These projections were not updated since submission in March 2023. The draft updated plan states that data on the evolution of GHG emissions until 2050 will be outlined in the final NECP. Projections submitted in March 2023 under Art. 18 of the Governance Regulation show net GHG emissions (including LULUCF and excluding international aviation) of 16 million tonnes of CO_2 equivalent (CO_2 eq.) by 2050 based on existing measures and of 0.05 million tonnes of CO_2 equivalent with additional measures. This is equivalent to a projected increase of 12% (WEM) and a projected decrease of 99.7% (WAM) by 2050, compared to 1990. Despite the commitment to achieve climate-neutrality by 2050, the information provided in the draft updated plan does not allow for a full assessment as to whether progress by Slovenia is consistent with the achievement of the EU climate-neutrality objective. However, based on all the available information, progress by Slovenia is likely to be consistent with the achievement of the EU climate-neutrality objective.

The draft updated NECP reflects the required ambition under the **ESR** with the WAM scenario. The ESR sets Slovenia's 2030 emissions reduction target at -27% by 2030, compared with 2005 levels. In its draft updated NECP, Slovenia sets itself a more ambitious national target of reducing greenhouse gas emissions in the ESR sectors between 28-31% by 2030. The draft updated plan projects emissions from the effort sharing sectors

in Slovenia to be below their 2030 target with existing measures (-9.1%) but above the target with additional planned measures (-28.8%), highlighting that planned climate measures need to be effectively implemented. To achieve this Slovenia also sets sectoral targets. In 2021, Slovenia's ESR emissions were below the Annual Emission Allocations (AEA) by 0.98 Mt CO_2 eq.

Member States have flexibilities under the ESR to comply with their targets. No specific use of ESR flexibilities is mentioned by Slovenia. To assess whether Member States comply, the use of saved AEAs from previous years is taken into account.

Table 2: ESR target and projections in Slovenia's draft updated NECP

ESR target and projections[5]					
	2030 target*	**2021 performance (inventory data) ***	**2022 performance (approximated data) ***	**2030 WEM projection***	**2030 WAM projection***
Slovenia	-27%	-11.9%	-6.1%	-9.1%	-28.8%
EU	-40%	-14.5%	-16.9%	-27%	-32%

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

The draft updated plan does not fully reflect the increased ambition of the **LULUCF Regulation** and in particular the 2030 national target requiring Slovenia to deliver additional - 212 kt CO_2 eq. net removals to reach the total value - 146 kt CO_2 eq. in 2030.Although the projections submitted show that Slovenia will achieve its 2030 target in the LULUCF sector, it is unclear which measures and data these are based on since Slovenia does not include any national policies and measures in its draft updated plan.

The draft updated plan does not clearly set out a pathway to increase the contribution of the land sector to the overall EU's enhanced climate target and does not quantify the mitigation impacts of the planned measures in terms of removals or emissions in the LULUCF sector.

The draft updated plan does not provide information on the status and progress to be made in ensuring the improvements to higher tier levels/geographically explicit datasets for the monitoring, reporting and verification (MRV), in line with Regulation (EU) 2018/1999.

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

Although there is a target in 2030 related to **transport decarbonisation** and some mention of possible measures linked to rail transport, public transport and sustainable mobility, there are no details about measures related to electro-mobility (both vehicles and charging infrastructure). Slovenia does not develop specific measures to support the production and deployment of sustainable aviation fuels to contribute to the ReFuelEU Aviation

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

Regulation and also does not include measures to reduce maritime transport GHG emissions in line with the requirements set by the Fuel EU Maritime Regulation. Overall, given that policies and measures are not quantified and are under review it is not possible to assess their impact.

No annual emissions that could be captured from ETS and non-ETS sources have been identified, nor any plans related to CO_2 transport capacity development are reflected in the draft updated plan. Although the draft updated plan mentions some potential opportunities for **carbon capture and storage** (e.g., process emissions, carbon contracts for difference), it states that, in line with current national legislation, it is prohibited to inject and store carbon dioxide in Slovenia. Finally, the draft updated plan recognises that, in the context of the Net Zero Industry Act, a scheme to promote the development of CCS projects in hard-to-abate sectors would be needed.

Overall, the draft updated NECP does not credibly demonstrate commitment to mitigating **non-CO_2 emissions** in the different sectors. While Slovenia sets a high target for emissions reduction from waste (–67%), the national target of 1% reduction of agricultural emissions by 2030, compared with 2005, is unambitious. In addition, the draft updated plan does not include sufficient information on policies and measures, including the use of the existing common agriculture policy (CAP) measures and additional measures under the review process for the CAP strategic plan in view of the new LULUCF and ESR, nor does it quantify their mitigation impacts in agriculture. These shortcomings are problematic, because non-CO_2 emissions accounted for 27% of all greenhouse gas emissions within the Effort Sharing sectors in 2021.

Although the draft updated plan points to some relevant **policies and measures** needed to reach the ESR targets, it is not possible to assess their ambition nor their expected impact because no details or quantifications have been provided given that they are all under review.

The draft updated plan reflects some progress towards **international commitments** under the Paris Agreement. It mentions the commitment to phase out coal use in the power sector by 2033 at the latest, albeit without referring to the 2022 National Strategy for exit from coal and concrete steps. Furthermore, Slovenia states that fossil fuel subsidies will be phased out by 2030 but does not explain how this will be done.

On 19 July 2021, Slovenia submitted to the Commission its **national long-term strategy**. The strategy aims to achieve climate neutrality by 2050. The target is not legally binding. In March 2023, Slovenia reported on the status of implementation of its initial NECP, where the climate-neutrality objective was confirmed. This climate-neutrality goal is reiterated in the draft updated NECP.

3.1.2 Adaptation

Slovenia does not correctly identify/sufficiently the relevant climate vulnerabilities and risks that may threaten the achievements of national objectives, targets and contributions in the draft updated NECP. Impacts on the electricity system due to extreme weather conditions will be tackled by developing regional electricity crisis scenarios and by increasing the share of underground grids (current 35% to at least 50%). This is however mentioned only in the context of security of supply dimension.

Slovenia has identified adaptation goals in its initial NECP from 2019 by referring to its 2016 Strategic Framework on Climate Adaptation (long-term vision and adaptation goal 2050). The plan hardly describes concrete actions to achieve these objectives, and do not even address the resilience of specific infrastructures, such as hydro power plants. Compared with the 2019 NECP, the formulation of adaptation goals has progressed somewhat by including the adaptation goal for agriculture (in line with 2021 Resolution and preparation of the CAP strategic plan) for the Energy Union dimension of decarbonisation.

Slovenia considers adaptation in policies and measures in agriculture and forestry and electricity sectors. However, overall, there is a lack of detail in the plan on national adaptation policies and measures to support the achievement of national objectives, targets and contributions under the Energy Union.

The planned and implemented nature-based solutions are not described. Emphasis is lacking on water management, notably on the resilience of energy systems to structural or seasonal water scarcity. Innovative approaches such as insurance policies and fiscal measures addressing the climate protection gap are not considered. Investments aimed at minimising environmental impacts, such as biodiversity loss, are not considered in the context of climate adaptation.

3.1.3 Renewable energy

The renewable energy contribution proposed in the draft updated NECP ranges between 30 and 35% (a point value of 34.3% is also mentioned) of the national gross final consumption of energy in 2030. The renewable energy contribution is based on the WAM scenario and absolute values in terms of energy in GWh were also included. This contribution is significantly below the share of 46% resulting from the formula in Annex II of the Governance Regulation. Slovenia also indicates that its share of renewables was below its 2020 target of 25% in 2021, and that the gap was closed by means of a statistical transfer of 208 GWh. The scenarios provide yearly overall renewable energy contribution trajectories, up to 2030, as well as technology-specific projections for 2040. The indicative trajectory to reach the 34.3% contribution in 2030 is provided, including specific reference points for 2022 (renewables share of 25.1%), 2025 (26.4%) and 2027 (29.2%).[6] The reference point for 2022 does not reach the trajectory (of 27%) calculated in line with the EU 2030 renewable energy target of 32%, which was in force at that time. The reference points for 2025 and 2027 stand below the trajectory (34% and 39% respectively) calculated in line with the increased EU 2030 renewable energy target of 42.5%.[7]

The renewable electricity generation is projected to reach 52.3% in 2030, with hydropower constituting the main source of renewable electricity (50%), followed by solar power (40% share). Bioenergy is expected to represent 3% share, which is similar to today's level. The wind power generation share is projected to slightly increase to around

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[6] Reference points of 18% by 2022, 43% by 2025 and 65% by 2027 pursuant to Article 4(a)(2) of Regulation 2018/1999 pursuant to Article 4(a)(2) of Regulation 2018/1999.

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

4% by 2030 compared with the current negligible level. The plan provides yearly trajectory in GWh by technology and by sector (transport and heating and cooling) only up to 2030, and not with an outlook towards 2040. However, it does not include the total planned installed capacity per technology. The plan does not contain the indicative target for innovative renewable energy deployment.

The use of renewable energy in the heating and cooling sector is projected to reach a share of 41.5% by 2030. The average annual increase of the share of RES in heating and cooling provided in the draft plan is below the mandatory increase set out in the revised RED (1.1 and 0.8 percentage points as an annual average calculated for the periods of 2021 to 2025 and 2026 to 2030 respectively) and significantly below the indicative top up resulting in a 1.6 percentage point average increase over 2021-2030. This is linked to the decrease in the use of woody biomass, which remains dominant with 4,708 GWh in 2030, is projected to decrease by 15% compared with 2020. Most of the increase will come from ambient heat (heat pumps) with an increase of 147% between 2020 and 2030 and other sources of renewable heat (100% increase). The plan does not provide detail on the role of waste heat and cold, nor the accounting of renewable electricity in the trajectory, and their impacts on the target setting and achievement remains unclear.

Slovenia has set the objective of at least 30% share of renewable energy use in industry, including waste heat, and an objective of 2/3 renewable energy share in buildings, in terms of final use, excluding electricity and district heating. Slovenia has set the objective of an annual average increase of at least 2-3% in the share of renewable energy and waste heat and cold in district heating and cooling aiming to achieve at least 25-40% share by 2030. However, for both industry and buildings targets, no disaggregation of the calculation to check the impact of the role of waste heat and renewable electricity accounting in the calculation of the targets was provided.

In the transport sector, the share of renewable energy is projected to reach 26.4% in 2030. Slovenia has not provided the target in GHG reduction. The draft plan does not describe in detail, which measures will be applied to achieve the targets set out for transport. However, the figures provided indicate that advanced biofuels will play and increasing role while the contribution of conventional biofuels is limited. This limitation allows to meet the targets set out in Directive (EU) 2018/2001 as amended by Directive (EU) 2023/2413 ("revised REDII") for the transport sector with a lower share than 29%. Multipliers are included in the calculation of this trajectory. The plan refers to the challenges related to accelerated development of e-mobility. However, it does not contain any specific target on electric vehicles nor on the recharging infrastructure by 2030. Also, it does not provide information on specific measures in this area. But it does refer to the national plan for transport development in 2030, whose objectives are broadly aligned with the EU and the national plan for alternative fuel infrastructure. Basic data and description of the measures are however missing, and so is the policy on subsidies to fossil fuels. No information is on rail electrification, alternative fuels, electricity to ports, and sustainable aviation fuels.

The plan does not provide information on the capacity of electrolysers in 2030, apart from a reference on Slovenia's intention to construct two major electrolysers for storing surplus electricity as **hydrogen**. It also does not set out measures for RFNBO use in transport and industry sectors. No target has been set for industry. The draft updated plan does not contain information about **international partnerships** such as an agreement, memorandum of understanding or bilateral talks to facilitate imports of renewable

hydrogen. It only refers to Slovenia's intention to setting up two hydrogen corridors with Hungary, Italy, Croatia and Austria, consisting partly of the existing gas infrastructure and partly of new hydrogen infrastructure. The plan contains little information on the pathway for oil-based transport fuel substitution through electrification and renewable hydrogen in land transport but points to the projected increase in energy consumption in the transport sector by 2030. Slovenia indicates that the deployment of renewables in the transport sector will be challenging.

Moreover, the plan does not include any **policies and measures** to support the achievement of the proposed objectives and contributions for renewable energy. For example, in the **electricity sector,** the objective is to accelerate the production of electricity from renewable energy through the multiple use of space and the deployment of solar and wind in areas with a different primary purpose (such as in agricultural areas or on water), increase the deployment of renewable energy also in Natura 2000 areas and promote the accelerated solarisation of roofs in the public sector. On guarantees of origin, Slovenia does not include any specific additional measures that aims to boost the current system to improve consumer information or facilitate their transfer between energy purchase agreements. Slovenia aims to continue actively promoting the development of **renewable energy communities** and target investments in renewables in areas where no further major investments in networks are needed without providing any further details on specific measures. The draft updated plan does not contain any information on **joint projects**. The plan lacks information on measures to ensure an accelerated deployment of solar energy contributing to the EU Solar Energy Strategy objectives. Slovenia refers to the need to improve conditions to accelerate integration of renewable energy installations, demand response, increased connectivity and integration of heat pumps, e-mobility and other elements without providing further details or setting out a clear a path on energy system integration. When it comes to storage, the plan refers to a sub-target of ensuring the installation of battery storage systems for new photovoltaic plants, corresponding to at least 25% of their capacity.

The plan states that the increase in the share of renewable energy in **heating and cooling** will be lower compared with the increase in the electricity sector. The plan refers to a draft heating and cooling strategy, which aims to improve local planning of efficient heating and cooling and to create better conditions to accelerate renovation and expand the new district heating and cooling systems in areas with a higher heat and cold demand density. However, no specific corresponding measures for renewable heating and cooling or measures linked to the industry have been included in the draft updated plan. The plan lacks information on measures to be implemented under Article 23(4) of the revised REDII or the framework to enable sector integration between energy networks. Measures to promote renewable-based electrification of **industrial processes** have also not been included in the draft updated plan.

On **bioenergy**, the updated draft NECP, Slovenia plans to increase the share of gaseous renewable fuels (hydrogen, biomethane and other gases) to reach at least 10-30% of the share of renewable fuels in the total gas supply by 2030. Slovenia also plans to increase the share of advanced biofuels. National scenarios project a 0.23bcm of biomethane by 2030. Slovenia has included in its draft updated NECP the estimated trajectories per renewable technology that will be used to achieve the overall and sectoral trajectories for renewable energy from 2020 to 2030. Slovenia reports that no significant imports of woody biomass for energy needs are envisaged and that the use of woody biomass is aligned with

the LULUCF targets and does not reduce sinks. However, the plan does not include estimated trajectories for biomass supply by feedstock and origin, differentiating between domestic production and imports. Moreover, the draft updated NECP does not include a more detailed assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the revised sustainability criteria and of the compatibility of the projected use of forest biomass for energy production with Slovenia's new obligations under the revised LULUCF Regulation, particularly for 2026-2030, together with national measures and policies ensuring compatibility with the revised REDII**.**

The plan does not include a **mapping of the areas** necessary to achieve the national contribution to the Union's 2030 renewable energy target or on the designation of renewables acceleration areas and dedicated infrastructure areas. It however explains that since Natura2000 sites cover 37% of Slovenia's territory, the current possibilities for deploying wind energy are limited. For this reason, achieving Slovenia's contribution to the EU renewable energy target will not be possible by only deploying projects outside Natura2000 areas. Similarly, the plan states that Slovenia has no possibility to install offshore wind farms. The plan also does not include any measures on streamlining administrative procedures for granting permits or information on additional human resources for these purposes. In the draft updated plan comprehensive information on policies and measures to streamline administrative procedures for renewable energy deployment or additional human resources dedicated to permitting were not included.

3.2 Energy efficiency (including buildings) dimension

Slovenia is targeting a reduction of final energy consumption of 49 ktoe/year until 2030 compared with the 2017-2019 average as presented in the draft updated NECP[8]. This is equivalent to a corrected national contribution of 4.43 Mtoe for final energy consumption (compared with 4.29 Mtoe according to the EED recast Annex I formula results) and 6.03 Mtoe for primary energy consumption (compared with 5.79 Mtoe according to the EED recast Annex I formula results). Slovenia's reported 2030 contributions for primary and final energy consumption deviate from the theoretical results stemming from the formula in the EED recast Annex I by 4.1% and 3.25% respectively.[9]

The targets for 2030 are also set at a lower level compared with Slovenia's 2020 energy efficiency targets[10] that were -15% and -13% for primary and final energy consumption respectively.

The target on reducing total final energy consumption of all public bodies is not described in the plan and information on the planned measures, including on the exclusion/inclusion of public transport or armed forces are not reported. The total 2021-2030 energy savings requirement (cumulative savings) according to **Article 7 EED (Article 8 EED recast)** is 39296 GWh (+35.7% in comparison to 2020 NECP value of 25230 GWh) and savings are consistently expressed in final energy. The annual energy savings requirement ranges from 458 GWh to 1089 GWh, increasing towards the end of the obligation period.

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[8] The 2017-2019 average has been calculated based on the EED recast FEC definition, and the savings per year have been calculated for the period 2021-2030.

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

[10] The Slovenian 2020 energy efficiency targets were 7,100 ktoe PEC and 5,100 ktoe FEC.

The plan does not provide any information on what measures will be used to deliver the savings required post-2020 under Article 7 EED (Article 8 EED recast). For this reason, it is not possible to evaluate the contribution of the policies and measures to the target, nor if it is likely that Slovenia will reach its targets. Moreover, the draft updated NECP does not include measures reflecting the energy efficiency first principle.

The plan does not provide an updated ambition of the 2020 **long-term renovation strategy (LTRS)** and its key elements, targets and milestones. The draft updated NECP lists some targets and milestones relevant to buildings such as the 2030 targets of energy savings and GHG emissions and renovation rates. However, the value of these targets is not consistent with the figures provided in the 2020 LTRS For example, the draft updated NECP indicates energy reduction targets of 20% compared with 2020, while the LTRS indicates a target of 25% for the residential sector, 7% for the public sector and no targets for non-residential buildings compared with 2020. The reduction in CO_2 is 70% in the draft updated NECP compared with 2005, and 45% compared with 2020 in the LTRS. In addition, the plan does not mention buildings related measures.

3.3 Energy security dimension

Fossil fuels remain an important part of the Slovenian energy mix. In 2021, they still accounted for 61% of gross available energy[11]. This share is however expected to decrease since under the WAM scenario it stands at around 51% by 2030 (compared with 62% under the WEM scenario). According to the draft updated plan, Slovenia's key objectives in terms of energy security are to reduce energy needs and **energy import dependency**, which stands at around 49% today. Yet the plan does not indicate forecasts for this. Furthermore, Slovenia seeks to increase its diversification of energy sources, technologies, locations of production, and supply routes. It also aims to increase its energy storage capacities, and to manage risks to energy market. However, the risks have not been further developed. The Slovenian **energy import dependency on non-EU countries** is very low and has decreased in the mid-term, from 26% in 2013 to 15% in 2021[12].

Natural gas covers 12% of the country's energy mix and 3% of the electricity mix, both being well below the EU27 average[13]. Before the Russian war of aggression on Ukraine, Slovenia was effectively reliant on Russia as its single natural gas supplier, directly (14%) or indirectly through Austria (85%)[14]. Since the war, Russian imports have been partially replaced by Algerian gas imports transiting through Italy.

In the context of ensuring its gas security of supply, Slovenia also intends to further strengthen its gas interconnections with other Member States, adopt energy efficiency measures and promote the domestic production of renewable gases. The draft updated NECP refers to 2030 targets of at least a 5% share of gaseous fuels and a 1% share of renewable liquid fuels from sources located in Slovenia. Decarbonisation of gas supply will be achieved by replacing gas with renewable and other low-carbon gases, highlighting

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11 https://ec.europa.eu/eurostat/databrowser/product/view/nrg_ind_ffgae.

12 Eurostat data

13 https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en.

14 https://economy-finance.ec.europa.eu/system/files/2023-05/SI_SWD_2023_624_en.pdf.

hydrogen – produced by electrolysis of water using electricity from renewables and nuclear power (sector coupling)

Aside of these targets, the draft updated plan does not specify other measures to strengthen the Slovenian security of gas supply. Furthermore, the draft plan does not provide a target date for the complete phase-out of Russian gas.

The draft updated plan recognises that the relative proportion of short-term contracts compared with long-term ones, which has increased with the EU market liberalisation, is a potential risk for national gas security of supply if there are gas shortages. Slovenia managed to cut its gas consumption by 11% between August 2022 and August 2023, below the 15% indicative target and the EU average (18%)[15]. Yet, the draft updated NECP does not provide details on the impact of the opening of a new combined heat and power plant and district heating in Ljubljana in 2024 on the national security of gas supply. More generally, the draft updated plan does not show how the emergency measures adopted in response to Russia's war on Ukraine, in particular those on gas demand reduction, are integrated into the medium-term planning to 2030. It is worth noting that Slovenia does not have any underground gas storage capacity, and the draft updated NECP does not mention any change in that regard.

On the **electricity sector,** the draft updated NECP states a number of key objectives, including to maintain a high level of electricity interconnection over 85% by 2030; continue the use of nuclear energy; increase the share of the underground medium-voltage network; and accelerate the development of system services and the active role of consumers. The plan does not refer to a specific strategy nor to measurable targets to deploy power storage, while power storage capacity is around 198 MW (mainly pumped hydro). Also, no particular barrier to deploy storage capacities were identified[16]. Overall, the specific measures and policies are still marked as not having been updated yet.

Slovenia supports the further exploitation of nuclear energy to produce electricity, including through the construction of a new nuclear power plant or small modular nuclear reactors (SMR). It is assumed that the existing Krško nuclear power plant (jointly owned in equal shares with Croatia) will operate up to the end of its extended lifespan (2043) subject to obtaining the appropriate environmental permit. Slovenia maintains the safe operation of nuclear installations and explores the possibility to introduce new nuclear technologies. Specifically, Slovenia is carrying economic and other expert analyses and activities to enable a decision to be taken on the construction of a new nuclear power plant by 2027 at the latest. It is recognised, however, that implementation will depend on the social acceptability of the project. After 2030, the plan outlines two alternative options for large electricity generation facilities in Slovenia. First, to using nuclear energy with the construction of a new unit and second, the 100% renewables scenario. The draft updated

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[15] DG ENER Chief Economist Team based on ESTAT NRG_CB_GASM (sub-series IC_CAL_MG subtracted by TOS) in TJ (as of 29 September 2023, 11:00).

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

NECP does not report details on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services.

In addition, the draft updated plan only briefly describes measures related to the security of supply in crises by referring to the methodology being developed by ENTSO-E for identifying regional electricity crisis scenarios under Regulation (EU) 2019/941 on risk-preparedness in the electricity sector. The draft updated NECP primarily assesses the risks related to rare and extreme natural hazards, malicious attacks and fuel shortages.

Oil is the first energy source (34%) in the energy mix in 2021[17]. Oil products are mainly used for domestic transport and industry [18]. Slovenia has no refinery and imports all its oil products from diversified sources. In 2021, top suppliers were Egypt, Turkey and Saudi Arabia[19]. The country has direct access to the sea and is consistently well above the EU requirements on emergency oil stocks. According to the draft updated NECP, oil is expected to remain a substantial part of Slovenia's energy mix until 2030 (24-32% of the energy mix depending on whether additional measures are taken or not) and could fall sharply by 2040 (10-24%) mainly due to electrification. The plan does not assess the adequacy of the oil infrastructure (oil stocks) with the projected decline in its demand.

Digitalisation and corresponding **cybersecurity** risks are only mentioned under research, innovation and competitiveness, and therefore not explicitly within an energy security context. Among the measures mentioned that could be relevant for security of electricity supply, the draft updated plan refers to promoting and accelerating digitalisation, emphasising increasing cybersecurity and reducing the vulnerability of all key strategic systems in the country. The plan does not, however, address the resilience of the energy infrastructure against climate change nor strategic autonomy in terms of the critical raw materials needed for the energy transition.

The draft updated plan does not describe the measures in the event of security of supply crisis for natural gas that are detailed in the Emergency Plan that Slovenia submitted to the Commission in 2019 and which is currently under revision. Slovenia still needs to submit its updated final Preventive Action Plan (for which only a draft version was received), which was due by 1 March 2023. However, the Emergency Plan, the National Risk Assessment and the Common Risk Assessments at regional level for Ukraine, Algeria, Libya and the Caspian risk groups have been submitted, and are currently being assessed by the Commission.

3.4 Internal energy market dimension

On **infrastructure,** Slovenia intends to maintain a high level of electricity interconnection with neighbouring countries with a target of more than 80%. Slovenia's electricity interconnection was 75% in 2021, well above the 10% target for 2020 and the 15% target for 2030. With construction of 400 kV interconnector to Hungary the Slovenian power system is interconnected on a high voltage level with all neighbouring countries. The draft

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[17] https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en.

[18] Eurostat : https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_OIL__custom_7357781/default/table?lang=en

[19] Eurostat : https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_OIL__custom_7357781/default/table?lang=en

updated NECP also includes information on electricity and gas projects of common interest (PCI).

On natural gas, the draft updated plan indicates that the transmission system operator (TSO) plans to increase transmission capacity at the border point with the Italian transmission system as a matter of priority. Such a move would significantly improve the security of supply and market integration in the region. Still, the interconnection point with Austria continues to serve as the main natural gas entry point. However, it is not possible to reverse the flow in direction from Slovenia to Austria. Natural gas projects currently having the status of PCI are part of the cluster Croatia - Slovenia. If the Croatian section of the Croatia - Slovenia interconnection (PCI project) is realised, it would enable Slovenia to get access to the Croatian Krk LNG terminal by establishing new interconnection between the two countries.

In addition, Slovenia is planning two bidirectional hydrogen corridors: Hungary – Slovenia – Italy and Croatia – Slovenia – Austria, which will consist partly of existing gas and partly of new hydrogen infrastructure aiming at two parallel transmission systems, one for gas and one for hydrogen. Against this background, the draft updated plan does not reflect the necessary cooperation with adjacent TSOs as well as hydrogen producers and off-takers to match reliable hydrogen sources with consumption sectors is not reflected in the plan.

On market integration, the plan provides some objectives to incentivise flexibility services and storage systems in order to meet the increase in the renewable energy target, and the need to enable the consumers to rapidly reap the benefits of it. However, it does so without providing specific measures and policies to achieve them. Such policies and measures are currently under review and are therefore not included in the plan. Moreover, the plan does not indicate specific targets to engage the system operators in facilitating the penetration of flexibility services; nor incentivise demand response solutions. Similarly, the plan does not quantify flexibility needs, and, therefore, does not set clear targets and objectives for demand response, storage or flexibility.

The alleviation and reduction of **energy poverty** is one of the key objectives of Slovenia's draft updated NECP. It identifies that 7.2% of households were experiencing energy poverty in 2022 (according to national statistics – details not provided) and includes two specific national targets. A first target is directly linked to reducing the share of households in energy poverty, between 4.6% and 3.8% by 2030. The other target for 2030 concerns an investment of 3,500 units (representing a less ambitious objective) or 10,500 units (indicating a more ambitious aim) in the adoption, among others, of renewable energy solutions by households affected by energy poverty.

Although the draft plan does not mention the adopted regulation in 2022 which tries to define and assess the number of households in energy poverty, both the definition and criteria used seem aligned with the recently adopted EU definition of energy poverty set out in the Energy Efficiency Directive (EED), as well in the Social Climate Fund Regulation (SCF) and Energy Poverty Recommendation[20].

Slovenia aims to launch a specific energy poverty alleviation scheme, including several measures (e.g., information campaign, incentives for building renovations, integrated

[20] Commission Recommendation (EU) 2023/2407 of 20 October on energy poverty, C:2023/4080, OJL 2023/2407, 23.10.2023.

advisory services) in 2024 and to roll out the Energy Poverty Action Plan. While Slovenia highlights the prioritization of implementing and monitoring the latter, no specific details are provided in the draft updated NECP. In addition, there are multiple national measures (e.g., Action Plan for Energy Efficiency, impact assessment of the cost and benefits of additional measures, Strategic Energy Poverty Council etc.) in Slovenia that specifically aim to improve the energy situation of vulnerable households. Nonetheless, the draft plan does not mention these policies and measures.

3.5 Research, innovation, competitiveness and skills dimension

3.5.1 Research and innovation

Slovenia's draft updated NECP indicates that a new scientific research and innovation (R&I) strategy with a 2030 horizon (ZRISS 2030) was adopted in March 2022. The strategy considers the transition to a climate-neutral society.

Several activities are envisaged in the draft updated NECP to achieve **the objectives regarding research and innovation**. Slovenia aims to deploy multidisciplinary R&I programmes in all areas related to energy management, and particularly in sustainable energy use. It also intends to implement targeted R&I programmes and demonstration projects in energy efficiency, circular economy and green energy technologies. Slovenia also emphasises its support to upgrade and deploy research infrastructures in public research organisations. The investments aim to deploy technologies, systems and infrastructures for affordable clean energy and to reduce GHG emissions (including energy storage technologies, energy poles and nuclear research infrastructure). However, the draft updated plan does not provide a quantitative target regarding these specific types of support.

The plan put forward the following main areas of energy research for the future: renewable energy sources; energy efficiency in buildings; hydrogen use; nuclear energy; electricity from RES and electricity systems; green gas technologies; heat and heat systems; and the circular economy. Moreover, it also puts emphasis on promoting the development of technologies such as the upgrade of gasification and waste processing technologies for energy purposes, Power-to-X (PtX) technologies, hydrogen technologies, digitalisation of energy, cybersecurity, nanotechnologies, energy storage, emission capture and alternative fuels technologies. The draft updated plan does not include any specific support measures, including funding, to achieve these objectives.

The draft updated NECP mentions the objective to increase the participation of Slovenian R&I institutions and industry in **international projects**. Moreover, the involvement of Slovenia in EU initiatives to promote innovation in the field of climate neutral society is also highlighted, without identifying the relevant ones.

Slovenia set a target to increase its annual spending on R&I related to clean energy and climate, from the current investment level of 2.13% of GDP in 2021, of which public funding amounted to 0.53% of GDP (SURS, 2023) to at least 3.5% of GDP by 2030 (of which at least 1.25% of GDP is public money). This is in line with ZRISS 2030. Overall, Slovenia aims to link the content of ZRISS 2030 with the NECPs to boost the financing of the climate transition. The plan also highlights the link with the Resolution on the long-term climate strategy for Slovenia to 2050 (ReDPS50) through the promotion and strengthening of new and existing research and development (R&D) programmes focusing

on research on hydrogen utilisation technologies and green electricity generation and use technologies.

The draft updated NECP provides a comprehensive overview of Slovenia's funding allocation through the Cohesion Fund, the RRP, the Climate Change Fund programme and the Innovation Fund. In addition to public research funding and private sector investments, these funding sources are highlighted as playing a crucial role in financing R&I and demonstration in the field of energy. This includes participation in the SET plan and the European technology and innovation platforms (ETIPs).

The draft updated plan also sets as an objective to establish systematic monitoring of research, development and innovation projects and funds for the green transition. However, it does not clearly **analyse the allocation of R&I funding** to clean energy and climate technologies and does not further detail how funding will be allocated to achieve the objectives set by the country.

3.5.2 Competitiveness

In the draft updated NECP, Slovenia provides some measures to boost the country's competitiveness in clean energy technologies. Slovenia plans to promote targeted research projects, multidisciplinary R&I programmes and demonstration projects to achieve a climate-neutral society and circular economy. These projects are of direct interest to the economy or the public sector and meet national development objectives, in particular in energy efficiency, circular economy, and green energy technologies. Through active tax policy, Slovenia is planning to incentivise companies to finance and engage in R&I programmes and demonstration projects. Slovenia also aims to create a competitive and socially responsible industry and research sector with three strategic objectives, in line with its 2030 development strategy and its objectives:

- achieve 95% of average productivity in the EU by 2030;
- rank in the group of EU innovation leaders by 2030 (European Innovation Index at least 125 in S5);
- rank in the top third of EU countries across all five core components of the Digital Economy and Society Index (DESI) by 2030 (at least 9th in S5).

The specific link with climate and energy related competitiveness objectives are not sufficiently detailed. Moreover, the plan is lacking measures to support research, innovation and investments in manufacturing and scaling-up of commercially available clean energy technologies, equipment and components. The plan does not provide information on how Slovenia will ensure the resilience of its supply chains to reach its climate and energy and targets.

The draft updated NECP does mention the aim to strengthen competitiveness and technological development in the energy sector and to develop new products, production processes, services and solutions suitable for transfer to the economy, in particular in relation to energy efficiency and RES and the climate-neutral and circular economy. However, it does not provide any concrete envisaged way to achieve this objective.

The draft updated NECP highlights the fact that Slovenia's economy is above-average based on the use of raw materials, which is reflected in its lower material efficiency and reduces its competitiveness.

Slovenia aims to promote the use of digitalisation in climate action and increase cybersecurity in all strategic systems. In particular, the draft updated NECP puts emphasis on the use of advanced methods and technologies (including supercomputing capacities) in modelling, simulating and monitoring climate change and finding solutions to reduce emissions, transition to a low-carbon circular economy and adapt to climate change.

3.5.3 Skills

Slovenia intends to invest in a competitive workforce in green sectors. In its Sustainable Smart Specialisation Strategy to 2030, Slovenia plans to support development of smart skills to achieve an innovative, low-carbon, digital and knowledge-based transformation of the economy and society. Slovenia also plans to devote additional financial resources to transform educational content to create a digital and research-driven society of the future. Compared with other sections, where the circular economy is presented as key, the draft updated NECP does not provide enough details on skills development in this domain. Overall, the plan does not include information on skill gaps nor concrete measures and investments to achieve these objectives and to boost European competitiveness in clean energy technologies, equipment and components, connecting for instance with the SET plan revision, relevant European Year of Skills initiatives, Pact for Skills large scale partnerships, and the New Innovation Agenda.

4 JUST TRANSITION

Just transition aspects are addressed in a very limited manner in the draft updated NECP. The plan does not assess nor quantify the social, employment and skills impacts of the climate and energy transition, including distributional impacts on vulnerable households. However, as assessed in Chapter 7, it does mention the first steps relevant for the preparation of the Social Climate Plans, and commitment to address mobility poverty in the final updated NECP.

While the plan refers to the overall strategic framework which aims to ensure a just transition to a low carbon economy by referring to the objectives of the Resolution on Slovenia's long-term climate strategy to 2050 (ReDPS50) adopted in July 2021, it does not elaborate on concrete actions and commitments. It also does not mention the National Strategy for exit from coal adopted in 2022 nor makes explicit link to Territorial Just Transition Plans (TJTPs). Furthermore, while Slovenia puts forward the objective to increase investment in the development of human resources and new skills needed for the transition to a climate-neutral society, policies and measures addressing employment, education and training are not included in the draft updated plan. As assessed in Chapter 3, the draft update plan mentions several relevant social and affordability measures to support vulnerable households and actions to address energy poverty, future energy price spikes and income redistribution but does not elaborate in detail on those. Finally, the draft updated plan does not detail the resources specifically devoted to supporting the just transition but only refers to the resources available via the Cohesion fund.

5 REGIONAL COOPERATION

Overall, the draft updated NECP does not sufficiently cover the regional cooperation dimension. It does not contain measures or initiatives under some of the available regional cooperation mechanisms in renewables, including in the margins of the regional fora, such as the High-Level Groups which the European Commission has set up with a scope of providing political support and direction to assist infrastructure and regulatory development[21]. While Slovenia is a member of the Central and South Eastern Europe energy connectivity (CESEC) and its entities, for instance gas and electricity transmission system operators have contributed to the several regional actions under CESEC, the draft updated plan does not contain any information about priorities of Slovenia in this regional High-Level Group does not reflect relevant policy considerations and regional initiatives that Slovenia or Slovenian entities are part of.

Slovenia has made the positive move to sign two of the four solidarity arrangements for the security of gas supply respectively with Italy and Croatia[22], (the two remaining arrangements are with Hungary and Austria). However, this information is not reflected in the draft updated plan.

6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP

The draft updated plan reflects key synergies within and between the five dimensions of the Energy Union, including the deployment of renewables to decarbonise the economy on the one hand, and to increase energy security and reduce dependency from fossil fuel imports, on the other.

However, because of the lack of any policies and measures included, the draft updated NECP does not include any analysis in the consistency of policies and measures in each dimension and a quantitative analysis between the interactions of certain objectives.

7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS

Slovenia formally **submitted an amended RRP and an amended REPowerEU chapter** to the European Commission on 14 July 2023.On 29 September the Commission gave a positive assessment of Slovenia's amended RRP, including the REPowerEU chapter and the Council approved it on 17 October. The draft updated NECP does not mention the REPowerEU chapter. It also does not outline the main RRP reforms and investments that contribute to implementing the objectives, targets and contributions. Chapter 3 (Policies and measures) is not yet updated and the RRP consistency cannot be carried out as the RRP is only referenced in the context of Chapter 4 (State of play and projections with existing policies and measures), Dimension 4.6: research, innovation and competitiveness.

The draft updated plan recognises air pollution challenges linked to bioenergy use but does not explain how these will be concretely addressed. Further, it lacks an assessment of the

[21] https://energy.ec.europa.eu/topics/infrastructure/high-level-groups_en.

[22] The solidarity agreement with Croatia is not mentioned in the draft updated NECP, since it was publicly signed after the submission of the draft updated NECP.

clean air implications of policies and measures, projections for the main air pollutants regulated under Directive 2016/2284 and an explanation of how the **National Air Pollution Control Programme** (NAPCP) and the draft NECP are aligned.

The draft updated plan is consistent with the **Territorial Just Transition Plans** ("TJTPs") in terms of coal phase out date and use of coal, but the link between the two plans is not explicitly explained.

The draft updated NECP refers to the first steps in the analysis needed to prepare the **Social Climate Plan** (SCP) that will address the impacts of the new emissions trading system for fuel combustion in buildings, road transport and additional sectors (ETS2) on vulnerable households, transport users and micro enterprises. This includes a definition of energy poverty and commitments to work on mobility poverty. However, Slovenia has not provided the methodology and indicators to identify the future recipients of the Social Climate Fund (SCF), taking into account the distributional effects arising from the future ETS2. Therefore, the draft updated plan does not explain how the SCP will build on the NECP update nor how the consistency between the two plans will be ensured.

In the draft updated plan, Slovenia does not provide the quantification of the climate impacts of measures currently included in the **CAP Strategic Plan** (CSP), thus the plan does not explain whether the CSP is in line with the new LULUCF and ESR targets and whether additional measures are necessary.

Compared with the **National Adaptation Strategy** (NAS), the plan is more ambitious on providing support functions, to strengthen policy and measures in this area (establishment of the Centre for Adaptation to Climate Change and local points for regions and municipalities), including research and the creation of expert bases. For the rest, the draft updated NECP refers to the already approved adaptation policies.

The objectives set out in the draft updated NECP are broadly in line with the **country-specific recommendations ('CSR')**, although the section on policies and measures which should provide an explanation on how the recommendations will be addressed, is missing. The ambition of the draft updated plan towards accelerating the deployment of renewable energy and increasing the energy efficiency measures, covered in CSR 2022 and CSR 2023, seems to be limited. Due to the fact the key pieces of information are missing, the Commission could not perform a comprehensive assessment.

8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS

8.1 Investment needs

The draft updated NECP does not include any information on the expected investment needs to implement the planned policies and measures for any of the five dimensions. Also, there is no breakdown between public (EU and national) and private funds as well as by energy segment (e.g., RE, EE R&I, grids, energy and heat storage, etc.).

8.2 Funding sources

Since the section on policies and measures is not yet updated an assessment of the funding is not possible at this stage. The draft updated NECP only outlines the budget allocated to energy relevant projects in Slovenia's RRP and the 2021-2027 cohesion policy programme. No information on a National Energy Efficiency Fund is provided.

9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP

The draft updated NECP is based on quantitative analysis using the REES-SLO model which allows for empirical assessment of energy, economic and environmental impacts. The methodologies used for the projections (WEM and WAM) are explained and referenced.

The plan describes both WEM and WAM scenarios, with projections for key energy variables in the transport, industry, and residential sectors. The projections cover the period until 2040. The analysis is based on the Slovenian energy model REES-SLO, and on the parameters recommended by the Commission. Overall, the projections are analytically sound. The base year figures for projections are in line with ESTAT and both the WEM and WAM projections contain an ETS/ESR split. The new ETS for buildings, road transport and additional sectors (ETS 2) has not been considered in the plan nor in projection scenarios. The impact of individual policies and measures are unclear from the projections and data presented. In addition, the assumptions used in the analysis are not summarised in detail under each heading and for each sector. This top-down analysis does not appear to be complemented with a bottom-up analysis.

The draft updated plan does not yet include an assessment of the expected impacts of targets and policies. However, it states that will be included in the final updated NECP.

There is no macro-economic assessment provided, which under the Energy Union Regulation is a mandatory requirement. A brief description of historical GDP developments is included; however, key drivers such as investment (public and private), exports, and imports are missing.

In general, the plan does not contain enough information to fully assess the robustness of the modelling.