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**COMMISSION STAFF WORKING DOCUMENT**

**Assessment of the draft updated National Energy and Climate Plan of Finland**

*Accompanying the document*

**COMMISSION RECOMMENDATION**

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

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# 1 SUMMARY

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

The European Green Deal, the fast-evolving geopolitical context, and the energy crisis have led the EU and its Member States to accelerate the energy transition and set 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.



Finland’s draft updated national energy and climate plan (“the draft updated NECP” or “the plan”), submitted on 30 June 2023, partially takes into account this new geopolitical and legislative framework.

Table 1: Summary of key objectives, targets and contributions of Finland’s draft updated NECP

		2020	Progress based on latest available data	2030 national targets and contributions	Assessment of 2030 ambition level
	Binding target for greenhouse gas (GHG) emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)		2021: -20.3% 2022: -22.5% <sup>1</sup>	-50%	NECP: No ESR projections included. NECPR: -46.4%.
	Binding target for net GHG removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net emissions of 0.49 Mt CO <sub>2</sub> eq. in 2021 and reported approximated net removals of -0.96 Mt CO <sub>2</sub> eq. in 2022	-2.9 Mt CO <sub>2</sub> eq. (additional removals target)  -17.8 Mt CO <sub>2</sub> eq. (total net removals)	NECP projection based upon outdated GHG inventory
	National target/contribution for renewable energy:  Share of energy from renewable sources in gross final consumption of energy (%)	43.9% (share) 38% (target)	43.1% <sup>2</sup>	51%	FI contribution of 51% is significantly below the 62% required according to the formula set out in Annex II of the Governance Regulation

<sup>1</sup> ESR 2021 is final and 2022 is approximated inventory data, pre comprehensive review.

<sup>2</sup> Reported to Eurostat through the SHARES tool by Member States (considering statistical transfers to other countries)

	National contribution for energy efficiency:				
	Primary energy consumption	35.9 Mtoe	31.50 Mtoe	31,100 ktoe (no target but WEM forecast)	FI primary energy consumption projection is 31,100 ktoe. EED recast Annex I formula results: 29,781 ktoe
	Final energy consumption	26.7 Mtoe	24.93 Mtoe	23,200 ktoe (no target but WEM forecast)	FI final energy consumption projection is 23,200 ktoe. EED recast Annex I formula results: 20,600 ktoe
	Level of electricity interconnectivity (%)	29%	20.1%	15% <sup>3</sup>	

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

## 1.2 Summary of the main observations

Finland's draft updated NECP is a **very preliminary update** of the final 2020 NECP from 2020 with some basic elements still missing and main measures provided including only existing measures. The draft updated NECP does not contain additional measures, and the new government that took office only on 20 June 2023 (10 days prior to the submission date) pledges to draw up a programme by the end of 2024. The programme will reverse the greenhouse gas emissions debt accumulated since the start of the decade and reflect this in the final updated NECP.

The draft updated NECP only partly includes the increased **climate targets of the Fit for 55 legislative package**. It sets out the targets under the **ESR** and **LULUCF** Regulations but does not set out the policies and measures needed to deliver on them and instead refers to the final updated NECP to be submitted in 2024. It does also not indicate whether Finland intends to use the flexibilities under the ESR and LULUCF to comply with its targets, which cannot be estimated given only basic elements are provided by Finland.

Regarding the **reduction of greenhouse gas emissions under the Effort Sharing Regulation**, the plan does not provide evidence and emission projections to demonstrate that Finland is on track to meet its national greenhouse gas target of -50% in 2030 compared to 2005 levels. According to Finland's projections submitted in March 2023,

<sup>3</sup> Calculated by the European Commission based on the ETNSO-E data (Winter Outlook 2022-2023). The 2030 level represents the general interconnectivity target of 15%. The level of ambition cannot be assessed, because the actual 2030 interconnectivity levels will depend on the implementation of the planned interconnectors and changes in the generation capacity. The 2020 figure covers also interconnectors with the neighbouring countries outside the EU.

there is a gap of 3.6 percentage points, highlighting the need for more ambitious climate action.

**On Land Use, Land Use Change and Forestry (LULUCF)**<sup>4</sup>, the draft updated plan is based on outdated projections (WEM) not taking into account recently reported emissions in the LULUCF sector (mostly linked to increased levels of wood harvesting/deforestation). Net removals have, notably, been diminishing since 2015, culminating in net emissions in 2021, underscoring the pressing need for climate action. The draft plan does not clearly set out a pathway to increase the land sector's contribution to the EU's overall enhanced climate target. It does not provide a clear implementation timeframe nor quantification of the impacts of specific policies and measures. It also lacks information on the status and progress in ensuring higher tier levels and geographically explicit datasets needed to ensure the robustness of net removal estimates.

The draft updated plan reflects **partial progress towards international commitments under the Paris Agreement**. Finland does not refer to the commitments to reduce by half peat for energy by 2030. While the draft updated NECP contains little information on how the fossil fuels subsidies will be phased out, it does not explain by when.

**On Carbon Capture Utilisation and Storage (CCUS)**, the plan does not identify annual CO<sub>2</sub> emissions that can be captured. Considering that CO<sub>2</sub> storage is prohibited in Finland, no geological storage sites have been identified inland. The possibility of transporting CO<sub>2</sub> by ship for storage in the North Sea is mentioned. Several projects on the utilisation of captured CO<sub>2</sub> are described though more details can be provided.

Regarding **adaptation to climate change**, the link to the specific Energy Union objectives and policies, which adaptation policies and measures should support, is not specified and quantified.

For **renewable energy**, Finland's draft updated NECP retains an overall target for renewables to account for 51% of the national final energy consumption by 2030, which is significantly below the share of 62% 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 plan includes indicative trajectories for renewables in the electricity, transport and heating and cooling sectors. However, the share of renewables in industry, buildings and sectoral targets such as for renewable fuels of non-biological origin (RFNBOs) are not always clearly included. The draft updated NECP includes mainly the existing policies and measures to support the achievement of the objectives and contributions for renewable energy but lack sufficient details. Some general indications on new and additional policy areas have been included but without further details. Finland indicates that national efforts needed will be carefully assessed as soon as Directive (EU) 2018/2001 on the promotion of energy from renewable

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<sup>4</sup> Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU (OJ L 156, 19.6.2018, p. 1).

sources, as amended by Directive (EU) 2023/2413 (“revised REDII”) has entered into force, and it will be considered in the final updated NECP.

On **energy efficiency**, the draft updated NECP does not report revised targets that reflect the new ambition set out in Directive (EU) 2023/1791 and amending Regulation (EU) 2023/955<sup>5</sup> (“EED recast”). Finland plans to carry out an assessment of the energy efficiency targets before submitting the final updated NECP. The updated draft NECP relies on outdated projections, while a full update of the WEM projections will only be submitted in 2024. Given that a large part of the required information is missing, a comprehensive assessment of the plan, analysing its level of ambition and coherence, cannot be provided. The application of the **energy efficiency first principle** is described in the draft updated NECP, presenting that Finland aims to pay particular attention to the development of a smart and efficient integrated energy system, linking supply, distribution and demand. In relation to buildings, the updated draft NECP does not envisage an updated ambition of the 2020 **long-term renovation strategy** (LTRS). In particular, the Finnish draft updated NECP does not provide updated indicative milestones for 2030, 2040, and 2050.

As regards the **energy security dimension**, it is positively noted that Finland has substantially improved its situation in terms of dependency on non-EU countries. Finland has considerably improved the resilience of its security of **gas** supply in the past years, thanks to the commissioning of a floating storage regasification unit (FSRU), a liquefied natural gas (LNG) terminal as well as an interconnector, and the draft updated plan provides measures to further improve security of gas supply. The plan also describes how emergency measures adopted in the aftermath of the Russian invasion of Ukraine are integrated in the mid-term planning.

In the **electricity sector**, new nuclear power in 2023 combined with high ambitions for renewable energy sets Finland on course to phase out coal by 2029 without adequacy issues. Moreover, the plan contains dedicated measures to support the deployment of energy storage and demand-side flexibility, although without specifying a concrete target for energy storage. In the **oil sector**, the plan shows high ambition and appropriate measures to reduce oil demand, but it does not assess the adequacy of the oil infrastructure (refinery, oil stocks) with this expected oil demand decline and the move toward biofuels.

On the **internal energy market**, the draft updated NECP sets out several key objectives, policies and measures to foster interconnection capacity and address price differences while reducing transmission bottlenecks. While Finland is already well advanced on consumer empowerment, the market integration will also be accompanied by several initiatives to foster the deployment of batteries and demand response. However, the draft updated NECP does not include any clear objectives or specific policies and measured on demand response or flexibility, nor any flexibility needs assessment.

The draft updated NECP does not include clear indicators or objectives to assess **energy poverty**. Finland incorporated energy affordability into its social and economic policies to protect consumers and vulnerable groups, e.g., through consumer protection legislation,

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<sup>5</sup> OJ L 231

taxes, social policy measures and by capping annual tariff increases. However, structural measures to lift vulnerable households from energy poverty are generally insufficiently developed, missing both targets and a timeline.

On the **research, innovation, competitiveness and skills dimension**, Finland has a clear target to increase annual government R&D funding, but the draft updated NECP contains very little information on measures to support research and innovation; investments in clean-energy technologies and manufacturing capacities; ensure resilience of supply chains and digitalisation of the energy value chain. While the draft updated NECP sets a clear target to increase R&D funding it fails to set out a detailed breakdown of expenditure in R&I to the energy sector for 2030 and 2050, nor does it include clear competitiveness and regional cooperation targets. More information on goals, measures and investments would be needed to better understand what Finland proposes and how it will increase resilience of its supply chains.

**Just transition** is addressed in a limited manner in the draft updated NECP. The plan lacks information on social, employment and skills consequences, including distributional impacts, of the climate and energy transition. Employment and skills policies and measures to support a just transition are lacking, while social measures are carried out as part of the general welfare policy without being specifically targeted towards vulnerable households in energy poverty or towards people living in sparsely populated areas. In addition, given that there is no information on the peat phase out commitments, it is not clear how this will impact the actions planned in the Territorial Just Transition Plans. The draft updated plan does not elaborate on the resources specifically devoted to supporting a just transition. Finally, the draft plan does not provide sufficient information for the preparation of the Social Climate Plan or on ways to ensure consistency between the two plans.

Regarding its strategic alignment with other planning tools, the draft updated NECP plan covers with reference to only 8 out of the 25 climate relevant measures only poorly the relevant reforms and investments of the **Recovery and Resilience Plan** ('RRP'). Besides, Finland submitted its REPowerEU chapter to the European Commission on 5 October 2023. The chapter was endorsed by the Commission 21 November, and it includes a reform on green transition permitting and three investments on clean transition, R&D and piloting of clean energy and material flows, such as direct funding for research organisations, and offshore wind power in the Åland Islands.

The updated draft NECP refers to the **targets set in the 2022 Climate Change Act** to reduce economy-wide greenhouse gas emissions (excluding LULUCF) by 60% by 2030, 80% by 2040 and 90-95% by 2050. It also sets out the target for becoming carbon neutral by 2035, while ensuring energy security, reducing energy import dependency, promoting a sustainable economy, and protecting biodiversity. The draft updated NECP discusses all five dimensions of the Energy Union based on the most relevant government reports.

The updated draft NECP outlines that the latest country specific recommendations (CSRs) under the **European Semester** on energy issues, decarbonisation and security of supply are “in accordance with the core principles of Finland’s climate and energy policy and that these issues are taken care of even without a separate recommendation”.

The lack of a consolidated number on **planned investments** from public and private sources, together with the missing figure on total investment needs, makes it difficult to assess whether there is still a financing gap for implementing the policies and measures in the plan. Moreover, the draft updated NECP only partially outlines the main sources of financing to be mobilised to implement the planned key policies and measures, including the fair and just transition. The sources of funding in terms of national, EU and private funding are not properly specified and quantified.

The updated draft NECP is based on an outdated **modelling exercise** that describes only a with existing measures (WEM) scenario and does not report the techno-economic parameters and variables used for the projections. There is no reference to the kind of modelling tools or methodological approaches used for the analyses. The updated draft NECP does not assess the expected greenhouse gas, energy system, macro-economic, environmental or any other impacts or policy interactions.

## **2 PREPARATION AND SUBMISSION OF THE DRAFT UPDATED NECP**

### **2.1 Process and structure**

Finland's draft updated NECP was notified to the Commission on 30 June 2023. The draft updated NECP is generally not well developed and omits important parts of the structure provided by the template set out in Annex I of the Governance Regulation. In particular, the draft updated NECP lacks updates of the objectives, targets or contributions for renewables and energy efficiency in line with the revised EU legislation. Where included, the targets such as those under the ESR and the LULUCF Regulation are not backed by additional policies and measures to fill the remaining delivery gap. Moreover, the draft updated NECP is not supported by an updated analytical basis, including an impact assessment.

The draft updated plan provides some evidence that, in line with the whole of government approach, Finland reached out and worked together with all relevant authorities to shape its climate and energy policies. However, specific consultations on the draft updated NECP were limited. Finland has developed a comprehensive set of consultation measures and local authorities were among the stakeholders engaged in this process. The role of cities and local authorities is mentioned at a high, general level and briefly described in terms of contribution to climate mitigation. Nevertheless, no information is provided on the role of local authorities for climate adaptation and energy poverty.

The draft updated NECP describes the national context in which it was developed, with attention for the new government's appointment only 10 days before the 30 June submission deadline. It refers to the significant efforts put in place to reduce to near zero historically significant energy dependency from Russia, following its invasion of Ukraine.

### **2.2 Public consultation**

No specific public consultations were organised in the context of the NECP update. The draft updated NECP recognises this shortcoming and announces that in spring 2024 Finland will organise a proper consultation on the updated final NECP.



During the preparation of the national strategies and plans factored into the draft updated NECP and that inform the update, Finland indicates that consultation was extensive and involved a wide range of interest groups. The draft updated NECP includes a detailed overview of the consultation process and summarises how the responses to consultation were taken into account. It is however unclear how social partners were consulted during the drafting process, which hinders the assessment on the fulfilment of a “whole-of-society” approach, as stated in the Council Recommendation on ensuring a fair transition towards climate neutrality.

### **2.3 Regional consultations for preparing the draft updated NECP**

While the draft updated NECP outlines the different regional cooperation fora that Finland is engaged in, notably the regional groups established under the Trans-European Energy Networks regulation (TEN-E Regulation) and the Baltic Energy Market Interconnection plan, neighbouring countries were not consulted on the measures it proposes. The draft updated NECP briefly refers to the real progress that was made on the ongoing workstreams under these fora related to offshore grid planning and the decarbonisation of gas markets. The draft updated NECP also refers to the electricity market modelling where a deeper integration and expansion of the Nordic-Baltic electricity market is mentioned.

## **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*

Finland’s draft updated NECP only partly includes the increased climate targets in the ESR and LULUCF Regulation, as part of the **Fit for 55 legislative package**.

The draft updated NECP refers to the Finnish Climate Change Act for 2030 and 2050 targets, including climate neutrality by 2035. These are in line with the national long-term strategies.

**The draft updated NECP does not include concrete pathways to 2050.** WEM projections are performed with a time horizon of 2040; there are no WAM projections (except for some data provided for the transport sector). Projections submitted in March 2023 under Art. 18 of the Governance Regulation show net GHG emissions (i.e., including LULUCF and excluding international aviation) of -9 million tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub> eq.) by 2050 considering existing measures and of -12 million tonnes of CO<sub>2</sub> equivalent with additional measures, compared to 1990. This is equivalent to projected reductions in 2050, compared to 1990, of 120% and 127%, respectively. In the most recent years, however, net GHG emissions in Finland have been rising, mainly due to a significant decline in the LULUCF sink. Despite the commitment to achieve climate neutrality by 2035, the information provided in the draft updated plan does not allow for a full assessment as to whether progress by Finland is consistent with the achievement of the EU

climate-neutrality objective. However, based on all the available information, progress by Finland is likely to be consistent with the achievement of the EU climate-neutrality objective. Since the projections do not yet cover the policies and measures suggested by the new government, Finland plans to update the projections in the final updated plan.

Finland does not provide ESR emission projections in the draft updated NECP to allow an assessment on whether Finland is on track or not to reach its 2030 **ESR target of -50% GHG emissions compared to 2005**. Based on outdated projections in the 2022 National Climate and Energy Strategy, which forms the main basis for this draft updated NECP, Finland estimates emissions from the ESR to be above their 2030 target with existing measures<sup>6</sup>. No numerical value is given in the draft updated plan. However, based on the latest data from the progress reported by 15 March 2023 under the Governance Regulation, Finland provided an ESR 2030 reduction projection of -44.2% (WEM) and -46.4% (WAM) in comparison to 2005. In 2021, Finland's ESR emissions were within the Annual Emission Allocation (AEA) by 1.4 Mt CO<sub>2</sub> eq.

Member States have flexibilities under the ESR to comply with their targets. To assess whether Member States comply, the use of saved AEAs from previous years and the ETS flexibility if needed are taken into account. Finland plans to use their maximum possibility to cancel EU ETS allowances towards the ESR target, which in total equals 6.9 Mt CO<sub>2</sub> equivalent<sup>7</sup>. The extent to which Finland can use this flexibility with EU ETS in 2030 depends on the extent to which it has used this flexibility in earlier years. Finland's draft updated NECP states it may also use the other flexibilities available under the ESR, except for the flexibility available with LULUCF as Finland finds it unlikely to be able to. Based on the assumption that Finland would use saved AEAs from previous years and/or the existing ETS flexibility to cover excess ESR emissions, Finland would be able to meet its 2030 target. No impact from LULUCF on ESR is assumed.

Importantly, under Article 9(2) of the ESR, any debit (i.e., excess emissions) under the LULUCF Regulation in the period 2021 to 2025 is automatically deducted from Member States' Assigned Emission Allowances (AEAs) under the ESR first compliance period. Performance under LULUCF in the 2021 – 2025 period can therefore also affect Finland's progress under the ESR. As described below, the LULUCF projections are not adjusted or aligned with recent reported emissions in the sector and therefore it cannot yet be established to what extent any challenges for Finland to achieve its LULUCF targets may also lead to challenges in achieving their ESR targets.

No additional specific policies are described to reach the ESR targets, revealing insufficient ambition and insufficient assessment of expected impacts.

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<sup>6</sup> The WEM projection includes all measures decided by the 2019-2023 government.

<sup>7</sup> See Commission Implementing Decision (EU) 2020/2126 of 16 December 2020.

Table 2: ESR target and projections in Finland’s draft updated NECP

<b>ESR target and projections<sup>8</sup></b>					
	<b>2030 target*</b>	<b>2021 performance (inventory data) *</b>	<b>2022 performance (approximated data) *</b>	<b>2030 WEM projection*</b>	<b>2030 WAM projection*</b>
<b>Finland</b>	-50%	-20.3%	-22.5%	-	-
<b>EU</b>	-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 NECP does not reflect the increased ambition of the **LULUCF Regulation** and especially the 2030 national target requiring Finland to deliver an additional -2 889 Kt CO<sub>2</sub> eq. of net removals in 2030. According to the projections submitted, Finland will achieve a total value of -22 700 Kt CO<sub>2</sub> eq. by 2030. Finland’s forests will, according to projections (WEM<sup>9</sup>), remain primarily a **net carbon removal**, despite a concerning decline in the land use sector’s ability to achieve its 2030 carbon removal target. However, these projections are not adjusted or aligned with recent reported emissions in the sector<sup>10</sup>. Net removals have, notably, been diminishing since 2015, culminating in net emissions in 2021, highlighting the pressing need for climate action.

Except for Table 10, which gives an overview and quantification of land/agricultural interventions, additional measures are not quantified for the sector. The draft updated NECP therefore does not set out a clear pathway to increase the contribution of land sector to the overall EU’s enhanced climate target, and insufficiently quantifies the mitigation potential of the planned measures.

Given that the two dominant land uses in Finland are **managed and unmanaged woodland**, Finland has rightly placed a significant focus on policies and measures such as the Carbon Euro Programme. However, the additional measures that are identified to contribute to the target focus on the agriculture sector, including controlled subsurface drainage, the promotion of pluviculture, the reduction and replacement of one-year cereal cultivation with grassland, the removal of poorly productive arable land from agricultural production and the afforestation of low-yield arable land. These are considered the most effective means to reduce emissions from agriculture in organic soils.

Finland states that their monitoring system needs to be developed to ensure that the effects of measures are shown in the **greenhouse gas inventory**. However, the draft updated

<sup>8</sup> 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).

<sup>9</sup> No LULUCF WAM projection is described in the draft NECP. The additional measures are more closely related to the agricultural sector, and partly to cropland and grassland.

<sup>10</sup> The draft updated plan states: “the most recent results from the national forest inventory on a decline in tree growth were not yet available for the projection work”. (p. 115).

NECP does not provide information on the status nor the progress to be made in ensuring that these enhancements, such as to higher tier levels and geographically explicit datasets, in line with the provisions under Regulation (EU) 2018/1999 for monitoring, reporting and verification (MRV), will be implemented.

Finland proposes a national target of 29% **reduction of agricultural emissions** by 2035, in line with the EU climate neutrality objective. The potential measures to achieve this target are specified in the Carbon Euro Programme, and Finland has a Climate Plan for the Land Use Sector, which has been used with other documents as a basis for the NECP. Given that Finland does not include forestry measures under its implementation of the CAP, measures that could help to achieve the emissions reduction target in agriculture are more precise nitrogen fertilisation, the use of additives in feeds for bovines, as well as a decrease in the number of bovines and utilising renewable energy in agriculture. However, the draft updated NECP does not provide the implementation timeframe, the source of funding and, most importantly, the quantification of the impacts of the stated policies and measures.

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

The draft updated NECP contains objectives, targets, and policies and measures related to **transport decarbonisation**. The measures for developing a sustainable transport system were identified in the National Transport System Plan by the previous government. This plan is currently being revised and the measures will only be promoted as permitted by the estimated annual central government appropriations. It is therefore not certain that all planned measures will be withheld, and targets may be revised downwards.

The draft updated NECP includes policies and measures for improved access to **zero- and low-emission mobility**. Measures include energy and carbon taxes, quota obligation for the use of biofuels (34% biofuels in road transport by 2030), promoting biogas in road transport, CO<sub>2</sub> emission performance standards for new vehicles, improving energy-efficiency of transport systems, support for charging stations and biogas and hydrogen filling stations, and purchase subsidies for electric vehicles. The draft updated NECP also includes measures promoting soft mobility through better coordination of transport and land use in urban regions. Concrete measures also entail an investment programme for walking and cycling, and discretionary government grants for public transport. The draft updated plan is aligned with the expected uptake of zero emission vehicles and the provisions of the Alternative Fuels Infrastructure Regulation. The plan to have at least 700,000 zero emission vehicles registered by 2030 is in line with the objectives of the green deal and reaching the expected 33,000 recharging points is well on track. However, the draft updated NECP does not include detailed measures on how the required recharging infrastructure will be achieved.

The draft updated plan does not include specific roadmaps and measures for the production and deployment of **sustainable aviation fuels** (SAF) to contribute to the ReFuelEU Aviation Regulation, and **sustainable maritime fuels**. It does briefly address measures for the **electrification and the introduction of zero-emission technologies**, and modal shift towards low-carbon modes (e.g., fiscal measures, deployment of infrastructure for zero-emission aircrafts, shore-power infrastructure at ports). Several fossil fuels (harmful)

subsidies are listed in terms of reduction of energy taxation, but no clear route to their phase-out is presented.

The draft updated plan foresees a large amount of **biomethane and e-fuels** (e-methanol, e-methane and e-ammonia, with carbon coming from BECCU), without clearly allocating the latter to the 'hard-to-abate' transport sectors (aviation and maritime), whereas these energy intensive fuels would counteract energy efficiency if used in road transport. The gradual deployment of e-vehicles envisaged in the plan provides the opportunity for shifting biomethane and biofuels over time towards more efficient uses such as CHP – this is not mentioned in the NECP (albeit it might take place after the timespan of the NECP itself).

The draft updated NECP does not identify annual CO<sub>2</sub> emissions that can be captured from ETS emitters or from non-ETS sources. It notes there are no active **Carbon Capture Utilisation and Storage projects (CCUS)** in Finland, nor any large fossil CO<sub>2</sub> point sources with the potential to emit for decades and thus to suit for capture. No geological storage sites have been identified inland. However, the draft updated plan does mention the possibility of transporting CO<sub>2</sub> by ship for storage in the North Sea. It also mentions that utilisation of captured CO<sub>2</sub> is a focus area, and claims several projects are becoming operational in 2024 that combine CO<sub>2</sub> mainly from biological origin with clean hydrogen to make synthetic methane for the transport sector. Unfortunately, it provides no further information on these projects or their potential for GHG abatement.

The draft updated plan reflects partial progress towards **international commitments** under the Paris Agreement. The draft updated NECP includes a decision to ban the use of coal for use in energy production by May 2029, nevertheless coal may still be used as a backup fuel in exceptional situations. However, the draft updated plan does not mention the commitment to reduce the use of peat by half in for energy production by 2030. Finland reports on energy tax expenditures by type of tax, which still include lower tax rates for diesel, gas and even peat in transport, mobile machinery, and CHP production, although total levels are in decline. But the phasing out of fossil fuel subsidies is not discussed extensively in the draft updated plan nor is there a timeline.

The draft updated NECP mentions **mitigating non-CO<sub>2</sub> emissions**, such as methane emissions in agriculture, including both enteric fermentation (e.g., selective breeding; feed management and feed additives; reduction in pig and bovine populations) and manure management (e.g., new manure processing techniques; biogas investments), and emissions of F-gases (e.g., implementation and improved enforcement of Regulation (EU) No 517/2014; public procurement criteria). On N<sub>2</sub>O, the draft updated NECP mentions the relevance of manure management, but does not address agricultural soils, which are the largest source of non-CO<sub>2</sub> emissions. On methane emissions in waste management, which are the third largest source of non-CO<sub>2</sub> emissions, the draft updated NECP mentions emission sources but does not list any measures other than a reference to the Landfill Directive. The draft updated NECP also does not provide any quantified projections of non-CO<sub>2</sub> emissions. These shortcomings are problematic, because non-CO<sub>2</sub> emissions accounted for 43% of all greenhouse gas emissions within the Effort Sharing sectors in 2021.

On 22 April 2020, Finland submitted to the Commission its **national long-term strategy**. The strategy includes the goal of achieving climate neutrality by 2035. So does Finland's report on the status of implementation of its initial NECP submitted in March 2023.

### 3.1.2 *Adaptation*

Finland has in its draft updated NECP identified relevant **climate vulnerabilities and risks** that may threaten the achievement of its national energy security objectives, targets and contributions, notably changes in precipitation, flooding, solar radiation, snow and frost coverage and average temperatures. These are considered to possibly influence energy production and distribution capacities. The plan mentions that Finland has specifically implemented measures to reduce disruptions to electricity transmission from extreme weather events. The plan does not identify specific issues regarding possible effect of climate risks to other NECP objectives.

As in the 2019 NECP, Finland identifies the national adaptation plan (NAP) as the key tool in defining adaptation measures. Reflecting the new Climate Act, the NAP was updated in 2022, and includes a specific target of strengthening awareness of climate change impacts, risk management and the innovation environment in the energy sector by 2030. Finland has not identified specific adaptation goals in its draft updated NECP.

In its draft updated NECP, Finland does not mention **nature-based solutions**, solutions related to water and water scarcity, innovative uses of insurance policies, fiscal measures to address the climate protection gap, or investments aimed at biodiversity.

Overall, the draft updated NECP does not provide further detail on energy related adaptation goals compared to the new Climate Act, and no link is made to the specific Energy Union objectives and policies the plan supports.

### 3.1.3 *Renewable energy*

**Finland indicates that the revised RED II was not yet in force by the time of the submission of their draft updated NECP. Therefore, its renewable energy contribution to the EU's renewable energy target for 2030 has not changed from the 51% as notified in their original 2019 NECP submission.** Finland states that the contribution is still being assessed in view of the final updated NECP. A WEM scenario is also presented. It projects an overall share of renewable energy in gross final energy consumption of 60% in 2030. The reported 51% contribution is significantly below the share of 62% resulting from the formula in Annex II of the Governance Regulation. The 60% WEM projection is slightly below this share. Absolute values in terms of energy were also included for the estimated trajectories (WEM) by renewable energy technology that Finland projects to use to achieve the overall and sectoral trajectories from 2021 to 2030.

The WEM scenario provides overall renewable energy contribution trajectories for 2022 (48%), 2025 (55%) and 2027 (57%) and 2030 (60%) respectively<sup>11</sup>. The submitted

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<sup>11</sup> 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.

reference point for 2022 is above the trajectory (a renewables share of 40%) 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 are above the trajectory (renewables shares of 48% and 54% respectively) calculated in line with the increased EU 2030 renewable energy target of 42.5%<sup>12</sup>.

**The renewable electricity generation is projected to reach 57% of all electricity generated in Finland in the WEM scenario in 2030**, with wind power becoming the main source of renewable electricity (41.8% share and 7.2 GW of installed capacity, an increase of 30% compared to 2022), ahead of the current main sources such as hydropower (27.2% share and around 3.2 GW<sup>13</sup> of installed capacity, compared with the current 34.2% share and 3.2 GW of installed capacity) and bioenergy (25.5% share, compared with current 34.2% share). Solar power is expected to represent 4.4% share and 2.8 GW of installed capacity in 2030, which is more than fourfold the installed capacity at the end of 2022. The updated draft NECP includes targets on offshore wind power for 2030 (1 GW), 5 GW and 12 GW for 2040 and 2050 respectively. However, the updated draft plan does not include information on the **target for deployment of innovative renewable energy deployment**.

**The use of renewable energy in the heating and cooling sector is projected to reach a share of 71% by 2030 and already reaches 60% in 2022.** Therefore, as this share is above 60%, Finland may count it as fulfilling the mandatory average annual increase under the revised REDII (0.8 and 1.1 percentage points as an annual average calculated for 2021 to 2025 and for 2026 to 2030, respectively). Bioenergy will remain dominant in heating and cooling with providing 93 TWh to heating and cooling in 2030, although it is projected to grow by only 4% compared to 2022. Heat pumps will see their gross final consumption of electricity multiplied by 1.6 by 2030 compared with 2022, reaching 13 TWh. However, the electricity needed to run these heat pumps and the projected capacity increase in electricity to run these heat pumps are not included in the draft updated NECP.

According to current calculations, Finland expects that efficient **district heating and cooling** systems will account for more than 90% of total district heating and cooling sales in 2030, which would exempt Finland from the target for district heating and cooling under Article 24 of the revised REDII. However, Finland still has to assess the impact of the EED recast. Finland intends to use waste heat to achieve the target in district heating and cooling<sup>14</sup>, but the draft updated NECP does not provide clear indications on how this will be accounted for. The plan also indicates that it has not taken a final decision on whether renewable electricity used for district heating will be accounted for in the average annual increase under Article 24 of the revised REDII. District cooling production was 335 GWh in 2022 (mainly from heat pumps and natural cooling sources) and an obligation for bioliquids used for space heating to be at least 10% share in 2028 is included. Moreover,

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<sup>12</sup> 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.

<sup>13</sup> No significant change is expected in the coming years regarding installed hydropower capacity.

<sup>14</sup> Renewable energy in district heating and cooling amounted to 47% and waste heat to 14% in 2021.

since December 2021, at least 38% of the energy used in new buildings and existing buildings that are subject to a major renovation must be from renewable sources.

Finland has put in place in support decarbonisation in the **industry sector**. The country provides a special energy aid grant for new technologies and large-scale demonstration projects for investments over EUR 5 million taking forward future energy technologies. However, Finland has not included an average share for the annual increase of renewable energy in industry nor for the use of RFNBOs in industry. Finland indicates that it should still set the new targets for RFNBO in line with the revised REDII, which will be included in the final updated NECP.

**In the transport sector, the share of renewable energy is projected to reach 51% in 2030**, while Finland has not provided the target as GHG emissions equivalent. Finland aims to promote both the consumption of renewable fuels as well as electrification. Biofuels are promoted by a biofuel distribution obligation. The current legally binding target is for biofuels to account for 34% of all fuels consumed in road transport in 2030. In addition to the overall target, there is a minimum quota for advanced biofuels, biogas and RFNBOs. The level is currently set at 2% (2021–2023) and will increase to 4% in 2025 and 10% by 2030.

The updated draft NECP lacks details when it comes to the limitation of the contribution of conventional biofuels, in line with Article 26 of the Directive (EU) 2018/2001/EC on renewable energy and the related Delegated Regulation. Finland plans to **increase its use of biogas** (biomethane) in transport from 0.2 TWh in 2022 to 0.9 TWh by 2030, supported with EUR 370 million investments. Related objective is to increase the number of gas-powered lorries and busses to at least 6,100 by 2030. Conversion of tractors to biomethane is supported with a subsidy up to 35% eligible costs. To promote electrification, a credit mechanism for economic operators that supply renewable electricity to electric vehicles through **public recharging** will be included in the national quota/distribution obligation. The target is to have at least 700,000 electric vehicles by 2030. However, the draft updated plan does not clearly indicate how this target will be achieved. Details about measures on electro-mobility are included in the draft updated NECP (on subsidies in place and removal of the car tax on battery electric vehicles that both encourage the uptake of electric vehicles) but relate mostly to existing measures. The related reduction of GHG emissions in 2030 are still estimated for 2030 in the draft updated NECP.

The draft updated NECP provides information on the capacity of electrolysers of 200 MW by 2025 (WEM), but no target is set for 2030. No RFNBO target is set at this stage either. On **international partnerships**, Finland's national climate and energy strategy includes focus areas for international R&D advocacy and co-operation including energy system integration, hydrogen and circular economy. However, little detail is provided on the expected deliverables of these partnerships.

The draft updated NECP only includes existing **policies and measures** to support the achievement of the objectives and contributions for renewable energy, and they lack sufficient details (i.e., reference to legal acts, scope, timeframe, and budget expected impacts). Some general indications on some new policy areas have been included but without further detail. Finland indicates that national efforts needed will be carefully



assessed as soon as the revised REDII has entered into force, and it will be taken into account in the final updated NECP.

The draft updated NECP mentions that the uptake of power purchase agreements has increased in Finland especially concerning new wind power projects. However, according to Finland's draft updated NECP, project developers have recently been more reluctant to agree on long-term power purchase agreements for several reasons. Finland aims to assess the need for additional measures in the context of the implementation of the revised REDII. In that relation it should further be noted that the draft updated NECP does not specify any additional measures on guarantees of origin that aim to enhance the current system to improve consumers' information or facilitate their transfer with energy purchase agreements. Little information was provided on **joint projects**.

The draft updated NECP includes information on some measures and investments to promote the deployment of solar energy, but they lack sufficient detail, notably on the acceleration of permit granting procedures for solar energy. Finland indicates that the uptake of photovoltaic systems is one of the challenges of the country's energy transition. Individual and collective **self-consumption of renewable energy as well as renewable energy communities** are considered targeting the set objectives for energy communities. However, the draft updated NECP does not contain sufficient detail on the measures for promoting individual and collective self-consumption as well as renewable energy communities, nor provides quantitative targets. The draft updated NECP only contains the outcome and the recommendations of a report published by the Finnish government in April 2023 stemming from a working group on energy communities. However, specific measures corresponding to those recommendations should be further detailed.

Finland does not indicate that it has put in place a dedicated strategy on energy system integration, but the draft updated NECP contains some measures that constitute a framework to enable energy system integration: (i) uptake of waste heat; (ii) thermal storage combined with district heating; and (iii) e-mobility. However, Finland indicates that it intends to promote new non-combustion **district heating production** and storage, as well as continues to support the increasing use of waste heat from industrial facilities. The draft updated NECP states that in the future geothermal heat and other non-combustion solutions, such as heat pumps and hybrid solutions will be preferred options over solid biomass, as the availability of sustainably produced biomass is limited. Finland is one of the first EU countries to use thermal storage, and several new projects recently started operations or have been planned.

Measures to promote renewable-based electrification of **industrial processes** to replace fossil fuels used for industrial heating are not provided in the draft updated NECP. An energy aid scheme (investment subsidy) is in place to promote the production of electricity from renewables. There is also a premium system in place, based on a competitive tendering process where renewable energy technologies compete based on cost-effectiveness (only one auction in 2018 with seven projects granted).

**Bioenergy** plays a key role in Finland's climate and energy policy. Bioenergy production is largely integrated into forestry and forest industries. In recent years, energy derived from wood fuels has accounted for one fourth to one third of Finland's total energy consumption, with forestry biomass as a significant source of electricity and heat. Biofuels also support

energy transition in the transport sector. Projections (WEM) regarding gross final consumption of renewable energy in the 2030 Horizon show an increase in the use of bioenergy in all sectors (electricity, heating and transport).

In the draft updated NECP projections for 2030 most of the wood-based energy are based on industrial wood wastes and residues as well as harvesting and forest management residues. The draft updated NECP notes that the impact on the LULUCF sector sink is relatively small. However, there seems to be no corresponding impact (increase) in the LULUCF sector on the Harvested Wood Product category, and conversely projections do not yet include the recent sharp decline in net removals from the LULUCF sector. Taken together, these projections imply that the bioenergy feedstock is not a residue of wood processing, but directly that of harvesting.

With regards to bioenergy production, the draft updated NECP stresses the importance to examine the changes and risks to its availability, as the energy use of **forest biomass** is significantly linked to the procurement of wood for the forest industry. The draft updated NECP does not include the assessments required under the revised RED regarding domestic supply of forest biomass for energy purposes in 2021-2030, both, in accordance with the revised sustainability criteria, and regarding the compatibility of the projected use of forest biomass for energy production with Finland's new obligations under the revised LULUCF Regulation (particularly for 2026-2030), together with national measures and policies ensuring such compatibility.

Given Finland's strong reliance on LULUCF carbon sinks to meet the 2035 target and the fact that the high level of wood utilisation in forest industry forms a backbone in meeting renewable energy targets, the draft updated NECP did not assess to what extent a sustainable level of logging and land use might constrain the high reliance on woody biomass, whether primary or secondary, for energy production, which may further increase the need for emissions reductions elsewhere. The plan indicates that the impact of bioenergy use on biodiversity will be included in the final updated plan.

The draft updated NECP 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. Finland indicates that it will be carried out as part of transposition of the revised REDII. For the streamlining of administrative procedures and time limits for granting permits, the plan includes a reference to a contact point to guide through and facilitate the administrative permit application and granting process. Further measures streamlining administrative procedures include the limitation of the duration of the licencing process for priority investments to 12 months, and the allocation of more resources to permitting authorities.

The draft updated plan outlines that Finland has put a lot of effort over many years to speed up and streamline permit-granting processes for renewable energy production facilities, with notably positive results observed in permit granting for wind power projects. Finland does not provide information on other measures to streamline administrative procedures for other sectors/technologies (i.e., solar energy, heat pumps).

### 3.2 Energy efficiency (including buildings) dimension

Finland does not report revised **targets for energy efficiency** but plans to assess the energy efficiency targets before submitting the final updated NECP. The assessment will be based on the Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 ('EED recast').

According to the data presented in the draft updated NECP (WEM projection), Finland is estimated to reduce final energy consumption by 0.18 Mtoe per year until 2030 compared to the 2017-2019 average<sup>15</sup>. This equals to a corrected national contribution of 31.1 Mtoe primary energy consumption (compared to 29.8 Mtoe according to the EED recast Annex I formula results) and 23.2 Mtoe final energy consumption (compared to 20.6 Mtoe according to the EED recast Annex I formula results).

Finland's projections under the **WEM scenario for 2030 for primary and final energy consumption** deviate from the theoretical results stemming from the formula in the EED recast Annex I by 4.4% and 12.6%.<sup>16</sup> The draft updated NECP notes that it would be very challenging for Finland to contribute in quantity to the declining projection of the energy use 2021–2030 given the early actions, anticipated GDP growth, GDP structure based largely on energy intensive industries and the changes in energy supply.

The estimated consumption in 2030 is at a lower level as compared to the Finland 2020 **energy efficiency target** (-13.4% and -13.1%<sup>17</sup> for primary and final energy consumption respectively). The provided forecast for primary energy consumption and final energy consumption for 2030 shows that more ambition would be needed to fairly contribute to the EU's 2030 energy efficiency targets, considering the need to increase efforts at the EU level to collectively reach the Union's 2030 energy efficient targets. The EED recast includes provisions that will ensure that in the final updated NECPs, the sum of the notified national contributions for final energy consumption will equal to the EU target for 2030.

The target on reducing the total **final energy consumption of all public bodies** is not addressed in the draft updated NECP and does not include enough information on the measures planned, including the information on the inclusion of public transport or armed forces. According to the draft updated 2019 NECP, Finland relies on the alternative approach for the period 2021-2030 to implement the requirements of Article 5 of the EED (Article 6 EED Recast) on the exemplary role of public bodies' buildings. The draft updated NECP does not provide information on the planned measures to deliver the **energy savings** required after 2020 under Article 7 EED (Article 8 EED recast) obligation. The policies and measures contained in the draft updated NECP under the energy efficiency dimension are not described and do not include an estimation of energy savings. More details are needed to understand which measures contribute to the achievement of the 2030

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<sup>15</sup> 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.

<sup>16</sup> 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.

<sup>17</sup> The comparison has been done with the 2020 targets as included in the final NECPs 2020 JRC assessments (35.9 Mtoe PEC, 26.65 Mtoe FEC).

energy efficiency contributions. Finland plans to submit information on Article 8 EED recast measures in the final updated NECP.

The draft updated NECP reports no new policies nor measures on energy efficiency at system level, but it reiterates the energy efficiency measures presented in the 2020 NECP. The draft updated NECP further notes that the **voluntary energy efficiency agreements** between the government and industry or municipalities play an important role towards the 2030 energy efficiency targets and that these agreements are expected to continue alongside other measures, such as transport fuel taxation, improving the energy efficiency of vehicles and transport system, energy audits and subsidies for housing companies.

On the supply side of energy efficiency measures, the draft updated NECP highlights the untapped and technical **potential of the waste heat**. This valuable source might be harnessed with new actions, especially in the industry sector.

The draft updated NECP reports on existing measures that include an energy audit programme and **eco-design in industry** as well as energy advisory services funded to undertake regional activities including promotion of energy efficiency agreements and energy audits. However, there are no details provided on the number of obliged companies and on audit carried out.

The Finnish draft updated NECP reports several programmes for **financing energy efficiency** such as subsidies for the renovation of residential buildings and a funding mechanism for companies that signed an energy efficiency agreement. In 2021, a three-year project was launched to create an information service hub on sustainable financing and increasing competence and knowledge related to financing, especially in connection to improving energy efficiency and renovation of buildings. However, the draft updated Finnish NECP does not provide details on the National Energy Efficiency Fund.

The draft updated NECP update does not provide an update of the key elements, targets and milestones (for 2030, 2040 and 2050) of the 2020 **long-term building renovation strategy** (LTRS). Therefore, the draft updated NECP does not update the ambition of the LTRS.

The draft updated NECP does only indicate some of the element of the Finnish LTRS for 2020-2050 published in 2020. This strategy aims to reduce the energy consumption and emissions of the building stock by 90% by 2050. Policies support energy efficiency through building stock removals and efficiency of space utilisation, energy efficiency improvements and maintenance, and decarbonisation of heating. The savings from energy efficiency improvements and maintenance are estimated to contribute around 5% towards the total savings target for 2030.

In terms of energy used for heating in buildings, the previous NECP indicated a target of 54 TWh in 2030 (approximately 17% energy savings between 2020 and 2030). The draft updated NECP provides a target value for **energy used in heating** that has been recalculated to 56 TWh for 2030. Due to an updated (increased) baseline value for 2020, and a slightly less ambitious consumption target, the expected energy savings in 2030 have been recalculated and now amount to 22%.

The draft updated NECP also highlights a notable uptake in the share of **heat pumps** in Finland, which in 2021 heated 10% of the building stock. As heat pumps are projected to

double their energy output by 2030 and at the same time the energy used in heating is expected to decrease to 56 TWh, their share is projected to exceed 20% of the building stock by 2030.

### 3.3 Energy security dimension

**Fossil fuels** are substantially less important in the Finnish energy mix compared to the EU average, accounting only for 38% of gross available energy in 2021<sup>18</sup>. However, the draft updated plan does not provide a target or a forecast for this indicator for 2030. Finland has substantially improved its situation in terms of **energy dependence** on non-EU countries. Finland's dependency on Russian energy imports used to be substantial, with one third of Finland's energy supply coming from Russia before the invasion of Ukraine. However, since summer 2022, energy imports from Russia have been phased out, except for small volumes of nuclear fuel to the Loviisa nuclear power plant and to LNG. Finland's energy import dependency on non-EU countries in general has substantially decreased, from 50% in 2013 to 37% in 2021.<sup>19</sup> Finland also has general security of supply agreements with its neighbours Sweden and Norway.

**Natural gas** plays only a very marginal role in Finland, accounting in 2021 for 6% of the energy mix and 7% of the electricity mix<sup>20</sup>, far below the EU27 average. While it used to be very dependent on Russia for its gas imports (75% in 2021, and even 98% in 2018)<sup>21</sup> Finland improved the **resilience of its gas supply** considerably over the past years thanks to the commissioning of a gas interconnector with Estonia (Balticconnector)<sup>22</sup>; the creation of a regional gas market for the Baltic states and the construction of a small-scale LNG terminal connected to the national grid in Hamina. Finland has also jointly rented a floating storage regasification unit (FSRU) with Estonia in Inkoo with an annual regasification capacity of 40 TWh, which goes far beyond the annual gas needs of Finland. According to the plan, Finland does not import any Russian pipeline gas anymore, but still some LNG. Consequently, the draft updated NECP does not set a specific target for the further diversification of energy deliveries from non-EU countries nor for the phasing out of Russian gas.

Finland implemented **gas storage obligations** for 15% of its annual demand by ensuring that national market actors have arrangements with underground gas storages. Possible quick fuel-switch for most gas consumption also contributes to increasing the security of supply, provided other supply sources are available. This has allowed Finland to cut its gas demand by 44% between August 2022 and August 2023 compared to the average of the previous 5 years, standing at well above the -15% indicative target and the EU27 average

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<sup>18</sup> Eurostat data.

<sup>19</sup> Eurostat data.

<sup>20</sup> [https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets\\_en](https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en)

<sup>21</sup> [https://economy-finance.ec.europa.eu/system/files/2023-05/FI\\_SWD\\_2023\\_626\\_en.pdf](https://economy-finance.ec.europa.eu/system/files/2023-05/FI_SWD_2023_626_en.pdf)

<sup>22</sup> The Balticconnector has sustained damage on 7-8 October and is consequently out of service for the winter 2023/24. According to ENTSOG winter supply outlook, this disruption does not pose a significant risk to the security of gas supplies in the region. However, the European Commission closely monitors the evolution of the situation.

(-18%)<sup>23</sup>. In this regard, and because of the **high fuel-switching capacity** of the country, the draft updated NECP shows well how the demand reduction measures are integrated into the medium-term planning to 2030. Solidarity arrangements with Estonia further secure Finland's gas supply in case of disruptions and possible demand curtailments.

The draft updated NECP contains an objective to achieve carbon neutrality in electricity by 2035 through high shares of **nuclear energy**, increasing renewable energy sources, electrification of most energy demand across the economy and by improving energy efficiency. Significant progress has already been achieved, with an increase in wind power capacity of 75% in 2022 and the entry into service of the Olkiluoto 3 nuclear power plant in spring 2023, representing 1,600 MW of new capacity. The draft updated NECP does not report details on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services. Details on alternative plans to substitute the low-carbon generation capacity of the cancelled Hanhikivi Nuclear Power Plant project are not elaborated either.

**Electricity generation capacity from renewable energy** is expected to increase by up to 7.2 GW for wind and 2.8 GW for solar in 2030. The draft updated NECP also contains non-binding targets for offshore wind (1 GW for 2030, 5 GW for 2040 and 12 GW for 2050) and hydrogen production (200 MW of electrolyser capacity by 2025). Coal is expected to be phased-out in 2029. Electricity demand has always relied on imports, including during peak demand in winter. This reliance will fall with the new Olkiluoto nuclear power plant.

Finland does not seem to have a specific strategy nor measurable targets for the deployment of new **energy storage** capacities. According to a study on storage commissioned by the Commission, the current operational Finnish power storage capacity stands at around 5.5 MW (mainly electrochemical) and one of the main identified barriers was the double taxation on small batteries<sup>24</sup>.

Finland has published its risk preparedness plan for the electricity sector in compliance with the timetable set out in Regulation 2019/941 on risk-preparedness in the electricity sector.

**Oil** comprised of about 22% of the primary energy mix in 2021, down from 26% in 2015.<sup>25</sup> In the transport and industry sectors, oil represented 47% and 31% of demand in 2021, respectively.<sup>26</sup> Finland is entirely reliant on imported crude oil and has historically imported most of it from Russia (91% in 2021). Finland was, however, able to phase out

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<sup>23</sup> DG ENER Chief Economist data, based on ESTAT NRG\_CB\_GASM (sub-series IC\_CAL\_MG subtracted by TOS) in TJ (as of 29 September 2023, 11:00).

<sup>24</sup> This figure is derived from the database which accompanied the ENTEC study on Storage funded by the European Commission and published in November 2022, by taking into account only the "operational" facilities: [https://op.europa.eu/en/publication-detail/-/publication/dfcaa78b-c217-11ed-8912-01aa75ed71a1/language-en?WT\\_mc\\_id=Searchresult&WT\\_ria\\_c=37085&WT\\_ria\\_f=3608&WT\\_ria\\_ev=search&WT\\_URL=https%3A//energy.ec.europa.eu/](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/).

<sup>25</sup> [https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets\\_en](https://energy.ec.europa.eu/data-and-analysis/eu-energy-statistical-pocketbook-and-country-datasheets_en).

<sup>26</sup> IEA figures.

Russian oil imports following Russia's war of aggression against Ukraine. Finland has 1 refinery, 6 oil ports and consistently meets the requirements of the Directive on emergency oil stocks.

To further lower dependency on oil, the country aims at significantly reducing oil consumption in transportation (-50% emissions in 2030 compared to 2005 mainly through promoting biofuels blending and electric vehicles) and in heating (goal to end the use of heating oil by 2030). According to the draft updated NECP, oil should remain a substantial part of Finland's energy mix for some time. The plan does not assess the adequacy of the oil infrastructure (refinery, oil stocks) with the projected decline in demand for oil.

On the **resilience of the energy system**, the draft updated NECP recognises the need to adapt to **climate change** and to be more resilient against extreme weather events (mainly at distribution level). The Government Decision on the Targets of Security of Supply (1048/2018) is being revised to consider crises of recent years and new threats. A new decision is planned to enter into force in spring 2024.

The draft updated plan adequately describes measures in the event of a security of supply crisis for gas, which mainly consists of switching to alternative fuels (in particular to light and heavy fuel oil, LNG, liquefied petroleum gas and biogas) as well as adapting and/or interrupting gas-using production. Finland has submitted its national risk assessment, its Preventive Action Plan and its Emergency Plan related to gas supply on 22 June, which are currently being assessed. However, the Common Risk Assessment for the North-Eastern risk group has still not been submitted, despite the deadline of 1 October 2022, and no country has yet volunteered to coordinate the work.

### 3.4 Internal energy market dimension

The level of **interconnectivity** stands at 17.3% of the generation capacity (excluding connections with Russia) and Finland is fully committed to further develop interconnections with Sweden and Estonia, in particular the Aurora Line. A new interconnection of 800 MW with Sweden is expected by 2025. The draft updated NECP mentions planned EUR 3 billion investments in transmission capacity, including in a third interconnector with Estonia. The investments intend to address the price differences caused by transmission bottlenecks, to strengthen the functioning and reliability of the Nordic-Baltic electricity market, and to achieve the interconnection target by 2025.

On gas infrastructure, Finland has completed gas projects of common interest (PCIs) with neighbouring countries that **increased the security of supply** helping it avoid severe disruptions after Russia stopped its gas imports. Projects such as the Baltic connector with Estonia, together with improving the interconnection between Latvia and Estonia, the Klaipeda LNG Terminal in Lithuania, and the Świnoujście LNG Terminal have already ensured market integration and decreased dependence on Russian gas in a region historically dependent on a single supplier.

The draft updated NECP indicates that the situation is expected to significantly further improve with the improvement to the interconnection between Lithuania and Latvia and the Inčukalns UGS. These projects have benefited from grants under the **Connecting Europe Facility for Energy**. Finland has addressed the security of gas supply in the short

term by securing LNG imports through the Inkoo floating storage and regasification unit (FSRU), and the small-scale LNG facility in Hamina, the draft updated NECP indicates that its mid to long-term objectives to decarbonise its gas market will be concluded by pursuing joint hydrogen infrastructure projects with Sweden and the Baltic states, bringing its supply of renewable hydrogen from demand centres in the Baltic states, Poland and Germany.

With regards to the increase of the renewable energy target, and the need to enable the consumers to rapidly reap the benefits of it, the draft updated NECP does not indicate specific measures to accelerate the deployment of electricity storage or to engage the system operators in facilitating the penetration of **flexibility services**. The draft updated NECP does not entail any quantification of flexibility needs and no specific policies and measures to enhance flexibility. However, it aims at increasing deployment, notably through subsidies from the energy aid programme and the national battery strategy 2025 for storage and through the implementation of the smart grid working group's proposals for demand side response.

In parallel, the draft updated NECP recalls the measures adopted to reduce the **impact of higher energy prices** in February 2022. Some of these measures have been limited in time, others are long-term and have become a part of the stable framework. Further **compensation schemes** were provided retrospectively, such as for households on their bills to cover costs of heating. Finland also applied the windfall profit tax. Measures built in the legislation set the threshold on profits and the maximum annual tariffs increase for Distribution System Operators. Those measures also increase consumer protection by requiring the express consent of consumers to spot electricity pricing or provide for better access to data on electricity market, which should be further improved by access to data for consumers.

Finland is a frontrunner in **empowering consumers**. Finland installed smart electricity meters for all customers back in 2013. They allow customers to choose an electricity contract with dynamic pricing. By the end of 2022, this was used by approximately 13.7% of retail customers (compared to 9% in 2021).

Measures addressing **energy poverty** have been taken in Finland as part of general economic and social policies (through aid to housing costs and basic needs and through housing allowances), or as crises-response measures. However, Finland does not put forward any methods, indicators or quantitative objectives to protect energy consumers and vulnerable households. An assessment of the number of households in energy poverty under Article 3 of the Governance Regulation and in relation to the Social Climate Fund (SCF) has not yet been conducted. According to the draft updated NECP, Finland plans to launch a study in autumn 2023 to assess whether energy poverty has increased recently. The results of the study will be reported in the final updated NECP. The draft updated NECP does not report on structural measures to combat energy poverty and does not establish synergies between policies in relation to demand response, targeted assistance for building renovation.

Finland's draft updated NECP does not include any targets on the share of the required amount of **cumulative end-use energy savings** among people affected by energy poverty, vulnerable customers, low-income households or people living in social housings, also



because the share of households in energy poverty has not been established in the draft updated NECP. However, it addresses affordability by highlighting that energy poverty is part of social policy in Finland and is a basic right due to the geographic conditions of the country.

### **3.5 Research, innovation, competitiveness and skills dimension**

#### *3.5.1 Research and innovation*

Finland reported on the national target and spending for research and innovation (R&I) in specific clean energy technologies. The national roadmap for research, development and innovation (adopted in 2020 and updated in 2021) is guiding overall **technology innovation policy** and details measures to boost funding to reach Finland's 2030 goal of increasing overall R&I spending (public and private) to 4% of GDP. The R&D Funding Act, which entered into force in 2023, sets a clear target to increase annual government R&D funding to 1.2% of GDP by 2030. Total government energy R&I spending stood at EUR 177 million in 2020, representing a relatively high level. However, more information on goals, measures and how investments will be used would be beneficial to better understand what the country proposes. The draft updated NECP does not, however, report on concrete ambitions and spending for R&I in clean energy technologies for 2030 and 2050. Finland also does not indicate its R&I-related pathways towards 2035 decarbonisation goals.

The national roadmap for research, development and innovation introduces a new partnership model to facilitate better co-ordination between the **public and private sectors** through the development of innovation ecosystems. However, the reporting remains on a very superficial level and meaningful details are lacking.

Finland has put in place an **Energy Aid programme**, with a total budget of EUR 200 million for 2022–2026. The primary purpose of the aid is to enhance the profitability of early-stage investment and minimise the risks associated with the introduction of new technology. Finland explains that this aid is aimed at “smart networks, renewable energy, energy efficiency, sustainable and smart energy solutions and systems”. The programme includes a special energy aid grant for investments over EUR 5 million for new technologies and large-scale demonstration projects. Energy technology innovations have also been supported by EU funding through Horizon 2020 which provided EUR 400 million for energy and climate projects in Finland, including EUR 8 million for nuclear energy.

Finland has been active in the operation of the **SET plan** since its establishment. The country played an instrumental role in the preparation and introduction of the implementation plans and continues to chair and co-chair some of the SET plan's implementation working groups (IWGs). Finland reported on its involvement in the IWG on nuclear safety and batteries for e-mobility and stationary storage, where it is leading the working group related to battery recycling. Finland's involvement in the IWGs has been translated into actions at national level, including the “Batteries from Finland” 2018-2020 activation programme. The draft updated NECP does not refer to planned future outcomes

of the participation in the SET Plan, if new projects or objectives are being developed thanks to Finland's involvement in the SET Plan.

Finland is represented and active in the main **international R&I initiatives** of interest for this assessment. As of October 2022, 10 Finnish entities were participating in 22 International Energy Agency technology collaboration programmes. Finland is also part of the Clean Energy Ministerial (CEM), and participates in numerous CEM initiatives (EVs, biofuture platform, long-term scenarios for the energy transition, international smart grid action network, regional and global energy interconnection, equality in energy transitions, 21st century power partnership, and hydrogen). In addition, the country participates in the Mission Innovation initiative, with a particular focus on clean hydrogen, net zero industries and the innovation platform. Finland's draft updated NECP does not, however, provide national goals or plans on international cooperation, nor examples of best practices for specific technologies/areas.

### *3.5.2 Competitiveness*

On measures to improve competitiveness in clean energy technologies, Finland intends to develop ecosystems and integrate technology into a smart system (as compared to developing individual technologies). Finland's aim is to create several **test platforms** that are internationally attractive and will bring investments to the country. Business Finland, the Finnish funding organisation for innovation, is actively advancing ecosystems promoting low-carbon business, for instance through funding growth engines aimed at new business activities amounting to more than EUR 1 billion. It is implemented through an enterprise-driven partnership model between companies, research organisations and public actors. The government allocated EUR 60 million of capital funding for growth engines in 2018-2019. The exact goals of this funding scheme and future funding are, however, not provided.

Furthermore, Finland has launched an **ecosystem** type of consortium named BatCircle, involving more than 30 companies, universities and research institutes. No details are provided in the draft updated NECP with regards to the funding of this initiative.

Finland has not provided specific information about measures and investments intended to support research, innovation and investments in manufacturing and scaling-up of commercially available clean energy technologies, equipment and components. There is no detailed information on how Finland will increase the resilience of the supply chains for such technologies.

Finland integrated the notions of **recyclability** and **circularity**, and the need to reduce dependency, and effectively diversifying the sourcing of imported raw materials, components required to manufacture clean energy technologies. In 2019, Finland initiated a circular economy programme, which sets out two specific targets for the use of natural resources by 2035. Firstly, total domestic consumption of primary raw materials should not exceed 2015 levels. Secondly, the resource productivity and circular material use rates should be doubled by mid-2030s.

Finland has not provided information on investments related to the **digitalisation** of the EU's energy system action plan to make their energy system more digital.

### 3.5.3 Skills

Finland's draft updated NECP does not provide information about challenges related to skills and how to tackle them. The plan does not elaborate on skill shortages and measures/investments to overcome them to boost European competitiveness in clean energy technologies, equipment and components (skills development required for the clean energy transition, connecting for instance with relevant European year of skills initiatives, etc.).

## 4 JUST TRANSITION

Just transition aspects are addressed in a limited manner in the draft updated NECP. There is no analysis of employment, skills and social impacts of the energy and climate transition, including distributional effects on vulnerable groups. The draft updated plan also does not provide sufficient information for the preparation of the Social Climate Plan, as assessed in Chapter 7.

Given that the draft updated plan **does not refer to the transition of sectors covered by the Territorial Just Transition Plans (TJTPs)** nor to the commitment to reduce by half peat for energy use by 2030, it is not clear what is the impact on the remaining actions planned to be financed from the JTF.

There are no measures to ensure **access and preservation of employment and access to affordable and inclusive education, training and life-long learning** in the context of the transition. A national quantitative and qualitative analysis of the situation and a strategy to support people affected specifically by energy poverty, including vulnerable customers, low-income households or people living in social housing, and covering the specificities of different Finnish territories (e.g., sparsely populated areas) is missing. The draft updated plan also does not detail the resources devoted to long-term structural measures addressing vulnerable households in energy poverty, such as measures focusing on energy efficiency or decarbonisation in households. Measures to address affordability of energy services through a robust **system of social and economic policies**, including the commitment to further advance energy communities in general, are explained in detail. However, the description of the role of various levels of public administration, municipalities included, in providing structural long-term measures and promoting energy communities for those suffering from energy poverty, is not clear. Furthermore, Finland mentions the results of R&D IEA Technology Collaboration Programmes projects in the draft NECP (e. g. on equality in energy transition, building communities, district heating and cooling, user-centred energy systems or energy storage in territories phasing out of peat etc.) but without elaborating on details on their contribution to achieving a just transition. Finally, the draft updated plan does not elaborate on the resources specifically devoted to supporting a just transition, nor on Just Transition Fund (JTF)

## 5 REGIONAL COOPERATION

Finland is active in several regional cooperation fora, such as the regional groups established under the TEN-E Regulation, as well as the BEMIP HLG working groups on

offshore wind as well as on the decarbonisation of gas markets and developing hydrogen infrastructure connecting it to Sweden and through the Baltic states to demand centres in Poland and Germany.

Finland has committed to a non-binding political goal of reaching 1 GW of installed **offshore wind capacity** in 2030 and adding further 4 GW by 2040, therefore contributing to a joint offshore wind renewable goal capacity for the Baltic Sea of 22.5 GW in 2030 and 34.6 GW in 2040, respectively.

Finland has signed a solidarity arrangement for the **security of gas supply with Estonia**. Finland also has general security of supply agreements with its neighbours Sweden and Norway.

## **6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP**

The draft updated NECP reflects key synergies within and between the five dimensions of the Energy Union, the impact of increasing flexibility and demand response on the penetration of renewable energy, as well as on the integration of the internal energy market. Similarly, the interaction of key objectives of diversification of energy sources is directly related to the deployment of renewable sources. Finland has outlined a number of largely existing policies and measures aimed at promoting energy efficiency and renewable energy policies. However, Finland will continue to use the potential for aligning both policies linking heat with electricity for flexibility and integrating more renewables in both heating and electricity, utilising the waste heat and waste cold to the extent possible.

In addition, the draft updated NECP provides substantial information on its progress and plans to improve the security of the energy supply and diversification of energy sources by imposing binding reliability standards on distribution system operators to ensure resilience in electricity distribution networks, especially in severe weather conditions. The National Emergency Supply Agency has been actively promoting cybersecurity in the energy sector.

## **7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS**

**The draft updated NECP poorly covers the relevant reforms and investments of the RRP, where a total of EUR 483.2 million has been reserved for energy investments<sup>27</sup>.** In some cases, due to the small size of the RRP, consistency with the draft updated NECP is vague and not specific enough. The draft updated NECP mentions or refers to only 8 out of the 25 climate relevant measures in the RRP (of the 25 climate-relevant measures, 4 measures have 40% climate tracking, and 21 have 100% climate tracking), covering 15

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<sup>27</sup> Finland submitted on 26 January 2023 its proposed amendment to its RRP in line with Article 18(2) of the Regulation (EU) 2021/241, as well as some minor clerical corrections. FI's RRP allocation was reduced by EUR 263 million and therefore FI cut measures across pillars in the plan corresponding to that amount, without reducing the ambition level on the energy transition. The update of the RRP was adopted by the Council on 14 March 2023.

RRP investments. Overall, 20 measures among those 100%-climate tagged are poorly or not reflected in the draft updated NECP. In addition, some measures that are referred to in the draft updated NECP lack the necessary detail to allow for a full comparison with those in the RRP. This is the case for the measure “energy infrastructure investments”. Finland’s draft updated NECP does list the types of projects where funding is already available. EUR 93 million of Finland’s RRP budget reserved for energy investment aid for electrification of industry and investments in energy infrastructure remains to be allocated.

Finland submitted its **REPowerEU** chapter to the Commission on 5 October 2023, endorsed by the Commission 21 November. The updated NECP mentions the REPowerEU and the scope of the plan at the European level, but it does not explicitly refer to any of the measures contained in the Finnish submitted REPowerEU chapter.

The draft updated-NECP lacks the required information and analysis about the interactions with **air quality** and air emissions policy. The impact of planned policies and measures on the main air pollutants for which Directive 2016/2284 sets emission reduction commitments is not quantified and there is no explanation on how the draft updated NECP is aligned with the National air pollution control programme (NAPCP). In the draft updated NECP, Finland has committed to ban the use of coal by May 2029 and phase out of heating oil by 2030. It has not so far set a separate official **national target to phase out Russian gas**, but it is decoupled from the use of Russian pipeline gas since May 2022 while small volumes of LNG of Russian origin may have been imported since then.

The draft updated NECP contains no reference to the **Territorial Just Transition Plans** (TJTPs) even though the plan seems overall consistent with the measures indicated in the 14 TJTPs. However, significant granularity is missing, for instance, the plan refers to shifting away from fossil fuels (especially coal and natural gas) and peat to renewables in the power sector but fails to mention the commitment in the TJTP of reducing by half peat for energy by 2030.

The draft updated plan does not provide a sufficient analytical basis for the preparation of 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. Finland has not yet assessed the number of households in transport poverty and has not provided the methodology and indicators to identify the future recipients of the Social Climate Fund (SCF), considering the distributional effects arising from the future ETS2. The draft updated plan outlines a consistent set of decarbonisation policies and measures in the buildings and road transport sectors, however inadequate information is provided on the concrete reforms and policy framework for the future SCPs. Thus, the current draft does not explain how the SCP will build on the draft updated NECP and how the consistency between the two plans will be ensured.

Compared to the **National Adaptation Plan**, the NECP is less detailed and less ambitious on the respective actions.

Finland states that the current measures in the agricultural sector are mainly related to the implementation of the EU’s **Common Agricultural Policy** (CAP). In the draft updated plan, Finland 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.

The draft updated NECP of Finland addresses the 2022 and 2023 **country-specific-recommendations** (CSRs) to reduce overall reliance on fossil fuels by accelerating the deployment of renewables, including by further speeding up permitting procedures, and boosting public and private investment in the decarbonisation of industry and transport, including through electrification. Moreover, the draft updated NECP includes actions to develop Finland's energy infrastructure to increase security of supply by strengthening the transmission of electricity. In its draft updated NECP, Finland describes actions that have been taken and outlines that the CSR's on energy issues, decarbonisation and security of supply are "in accordance with the core principles of Finland's climate and energy policy and these issues are taken care of even without a separate recommendation".

## 8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS

### 8.1 Investment needs

The draft updated NECP includes an overview of the investments planned in the clean energy transition per sector (e.g., onshore wind, offshore wind, major nuclear investment project, low-carbon steel production etc.). However, the overview seems to only cover investments planned by the private sector, while it does not include a consolidated overview of the total investments going to the clean energy transition. The planned investments quoted report on announcements by businesses but the draft updated NECP omits complementary overall modelling of the investment needs. Partial investment needs are only given for public recharging points for electric vehicles and some other transport areas. The lack of a consolidated figure on **planned investments from public and private sources**, as well as the lack of a figure on total investment needs for all the sectors of the economy, makes it difficult to assess whether there is still a gap.

### 8.2 Funding sources

Finland's draft updated NECP provides information on current spending, including from EU sources, on a semi-aggregate level, e.g., financing coming from special Energy Aid grant, Horizon 2020 or Business Finland (government agency for trade and investment promotion). However, it does not provide information on the sources of financing of each policy and measure, including information on the public and private parts, the lifetime of the measure, and the share coming from the EU budget, explicitly specifying the RRF contribution. An overview table gathering all budgetary information of the different policies and measures is not provided.

The draft updated NECP only partially outlines the main sources of financing to be mobilised to implement the planned key policies and measures, including for the fair and just transition. These are both **national (state-aid) and EU financing**, including programmes like Connecting Europe Facility (CEF), RRF and European Agricultural Fund

for Rural Development (EAFRD). There is a lack of detail when describing the amounts of EU funds that are available and what measures they will be used for. For instance, the draft updated NECP contains no reference to ERDFD funds of EUR 252 million for Policy Objective 2 (A greener and low carbon Europe) under the programme ‘Innovation and Skills in Finland 2021-2027’, the ERDFD funding under PO2 covers energy efficiency and the reduction of greenhouse gas emissions (EUR 107 million), climate change adaptation (EUR 37 million), and circular economy (EUR 107 million). The plan includes information on the types of funding schemes (e.g., grants (also in form of FiTs), income tax credits and TA).

The contribution of the RRF is not fully reflected in the draft updated NECP as some RRP measures are missing. Furthermore, when assessing overall public funding needs, it would be useful to quantify the RRF contribution to the expected public financing needs to implement the policies and measures in the draft updated NECP.

## **9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP**

The draft updated NECP is based on a modelling exercise that dates from 2021-2022 and therefore does not consider **recent data** such as updated international energy prices/constraints, recent EC recommended parameters on fuel prices, EU ETS carbon price, etc. Assumptions on technology cost developments are not provided. The plan describes a **WEM scenario**, with projections until 2040 for the relevant sectors of the economy including industry, the energy system and transport, but does not include a WAM scenario. In the WEM scenario, an ETS/ESR split is included (Figure 2 of the draft updated NECP). The draft updated NECP indicates that a full update of all modelling assumptions and WEM/WAM projections will be included in the updated final NECP that is due in June 2024.

The draft updated NECP does not include any direct reference to the kind of **modelling tools or methodological approaches** used for the projections. Without at least a general description of the type of methodologies, modelling tools and techno-economic parameters used for the projections, as well as an impact assessment of specific policies and measures, it is hard to assess the overall robustness of the draft updated NECP.

**Key indicators** such as GDP and population growth, final/primary energy consumption and renewable energy shares inferred from figures and tables in the plan seem aligned with official statistics. Nonetheless, statistics for renewable energy reported in Figure 10 (p.118), amounting to 140 TWh (12 Mtoe) in 2020, are not in line with ESTAT figures.

The draft updated NECP states that the **impact assessment** will only be included in the final plan. The draft updated NECP includes projections and goals for several aggregate macroeconomic impacts (e.g., R&D spending) but only baseline projections for annual GDP & population growth. There is no macro-economic assessment provided, which under the Governance Regulation is a mandatory requirement. The assessment of the impact on the overall public financing needs is insufficiently detailed. The draft updated NECP states that these assessments will also be developed in the final updated NECP.