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

Accompanying the document

COMMISSION RECOMMENDATION

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

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1 SUMMARY

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



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

France’s draft updated national energy and climate plan (“the draft updated NECP” or “the plan”), submitted on 17 November 2023, partially takes into account this new geopolitical and legislative framework.

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

		2020	Progress based on the latest available data	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)		2021: -19.4% 2022: -21.6% ¹	- 47.5%	NECP: -46.4%
	Binding target for net greenhouse gas removals under the Regulation on Land Use, Land Use Change and Forestry (LULUCF)		Reported net removals of 17.06 Mt CO ₂ eq. in 2021. and reported approximated net removals of 16.92 Mt CO ₂ eq. in 2022	-6.69 Mt CO ₂ eq. (additional removal target) -34 Mt CO ₂ eq. (total net removals)	Insufficient ambitions, not projecting to reach the target
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	2020: 23%	2021: 19.34%		France fell short of its 2020 target and does not provide indications of how it intends to meet its binding baseline. France did not submit a 2030 contribution.
	National contribution for energy efficiency:				

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

	Primary energy consumption (Mtoe)	226.4 Mtoe	2021: 224.8 Mtoe	157.3 Mtoe	France's primary energy consumption contribution is 157.3 Mtoe. EED recast Annex I formula results: 157.3 Mtoe
	Final energy consumption (Mtoe)	137.9 Mtoe	2021: 143.6 Mtoe	104 Mtoe	France's final energy consumption contribution is 104 Mtoe. EED recast Annex I formula results: 104 Mtoe
	Level of electricity interconnectivity (%)	8.5%	5.0%	15% ²	

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

1.2 Summary of the main observations³

France submitted its draft updated national energy and climate plan more than three months later than the deadline of 30 June 2023⁴. Therefore, the European Commission has had limited time to draft its assessment in this SWD, to enable France to submit its final draft updated NECP by the legal deadline of 30 June 2024.

The draft updated plan partially refers to the revised energy and climate targets recently agreed under the **Fit for 55** legislative package and the **REPowerEU Plan**. However, it does not sufficiently elaborate on how these targets will effectively be reached.

Regarding the reduction of greenhouse gas emissions under the **Effort Sharing Regulation** (ESR), the plan provides emission projections demonstrating that with both existing and additional policies and measures, France is not on track to meet its national greenhouse gas target of -47.5% in 2030 compared to 2005 levels. According to France's projections, there is gap of 1.1 percentage points, highlighting the need for more ambitious climate action.

On Land Use, Land Use Change and Forestry (LULUCF), the draft updated projections in the plan indicate that France will fall short of the 2030 ambition, highlighting the need for enhanced climate action. The draft does not clearly set out a pathway to increase the

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

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

⁴ Article 14 (1) of Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action OJ L 328, 21.12.2018, p. 1–77.

land sector's contribution to the EU's overall enhanced climate target. Despite identifying several relevant policies and measures, net removals are projected to decrease by 2030 and beyond. The draft 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.

On **Carbon Capture Utilisation and Storage (CCUS)**, the plan identifies annual CO₂ emissions that can be captured annually by 2030, however no split into ETS and non-ETS sources has been provided. With regards to the transport of CO₂, it is mentioned that the plans on various means to transport CO₂ and potential infrastructure development are currently under consultation. For CO₂ storage, the deployment of studies for evaluating the geological storage capacity is planned for 2024. The outcomes on storage and transport should be made available, once finalised.

The draft updated NECP reflects limited progress towards **international commitments under the Paris Agreement**. While France is set to phase out coal power before 2030, the draft NECP implies postponing France's earlier commitment to phase out coal use for power generation. While it explains how and when some of the fossil fuels subsidies will be phased out, it does not address all the existing ones.

Regarding **adaptation to climate change**, the draft updated NECP does not contain adequate analysis of the relevant climate vulnerabilities and risks for the achievement of the national objectives, targets, and contributions and the policies and measures in the individual dimensions of the Energy Union. Risks from storms (beyond their impact on forests) and floods are not well reflected in the plan. The link to the specific Energy Union objectives and policies, which adaptation policies and measures should support, is not quantified. In the absence of further detail on many of the policies and measures, it is hard to gauge their likely scope and impact.

For **renewable energy**, the draft updated plan does not put forward a contribution towards the EU 2030 renewable energy target. The draft plan also fails to address the shortfall to the 2020 target and does not indicate how France intends to close this gap and catch up with the requirements to maintain the 2020 target as a baseline for the following years. The draft updated plan includes projections for renewables in heating and cooling and district heating and cooling, although not expressed in the terms as required by the legislation. The draft plan also includes projections for renewables in the electricity and industry sectors and a target for the reduction of the emission intensity of energy consumption in transport but misses the trajectories for renewable fuels of non-biological origin (RFNBO) and does not include a target for renewables in buildings. At the same time, it provides, for the most part, a comprehensive list of measures that France has adopted or intends to adopt to support the deployment of renewable energy in line with Directive (EU) 2018/2001 on the promotion of energy from renewable sources, as amended by Directive (EU) 2023/2413 ("revised REDII").

Regarding **energy efficiency**, the draft updated NECP is comprehensive, ambitious, informative and detailed. The increased ambition in Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955 ("EED recast") has been considered, in particular for the 2030 targets, as well as for the energy savings obligation. It includes national contributions to the EU's 2030 energy efficiency targets of 104.1 Mtoe for final

energy consumption, and of 157.3 Mtoe for primary energy consumption, which are in line with the ambition of the EED recast.

Regarding planned measures, the draft updated NECP puts forward a set of comprehensive measures addressing most of the relevant sectors, including building, transport and business sectors. However, the quantification of the energy savings is not provided for most of the proposed measures, thereby making it difficult to assess their contribution towards the overall energy efficiency targets.

As regards the **energy efficiency first principle**, the plan mentions it among the new provisions of the EED recast but the plan does not elaborate how these provisions will be transposed and implemented. In relation to **buildings**, the draft NECP update does not increase the ambition of the 2020 long-term renovation strategy. France indicates that it will update its strategy with the submission of its Building Renovation Plan. The plan nevertheless indicates an objective of renovating at medium-depth around 600,000 dwellings per year in the next decade, prioritising the worst-performing buildings. The draft updated NECP reports some measures of regulatory, economic, fiscal and education nature, such as the national scheme “MaPrimeRénov”, standards for nearly zero-energy new buildings and some minimum energy performance standards. The individual saving impacts of each measure are not quantified.

On the **energy security** dimension, the draft updated NECP sets out targets and policies to enhance the national security of gas, electricity and oil supply. In the **gas sector**, France benefits from a high level of security of supply notably thanks to its high LNG import capacity and to its already diversified portfolio of suppliers. To further strengthen its security of gas supply, the draft updated plan sets ambitious targets for renewable gases (both biogas and low-carbon hydrogen), as well as for gas demand reduction. However, it does not describe the implemented gas demand reduction measures, nor does it explain how these are integrated in the medium-term planning towards 2030. Most of the **electricity** production is based on nuclear power and the sector is set to remain essential to security of supply, both through the continued maintenance of the existing fleet and the construction of new nuclear reactors. This will be complemented by updated targets for solar, wind and hydro power, as well as demand response and flexibility. The plan includes forecasts for **oil** consumption to 2030 and identifies the need to pay attention to the adequacy of the oil infrastructure (ports, refineries, pipeline, oil stocks) with the expected oil demand decrease in the long run.

The draft updated NECP notes a series of policy objectives related to the **internal energy market dimension**, mentioning the need to enable all French consumers to benefit from the competitiveness of historical nuclear electricity and the importance to incentivize suppliers to a prudent and long-term supply practice. The draft updated plan also includes several objectives on the deployment of flexibility services. However, the plan does not mention detailed actions to further develop demand side flexibility and does not explain how consumers could be enabled to value their flexibility.

On **energy poverty**, the draft updated NECP provides a good overview of the measures currently in place to protect and support both vulnerable consumers and energy poor households, both in terms of price support measures and income support schemes, as well as more structural measures. The plan includes an assessment of the number of households currently affected by energy poverty but does not contain a specific objective to reduce energy poverty in the future. France has had a legal definition of energy poverty since

2010. The main observed developments compared to the last NECP relate to specific measures in both the short term (new energy voucher during the crisis) and the long term (structural support to energy efficiency through Ma Prime Renov). The plan does not contain an assessment of the new tool “Prêt avance rénovation” for energy poor households set up in March 2022.

The **research, innovation, competitiveness, and skills** dimension contains only qualitative targets and measures to support research, innovation and investments in clean energy technologies and the digitalisation of the energy system. France dedicates significant amounts of funding for R&I in key sectors of the country’s economy, but the draft updated plan does not include a concrete breakdown of investments specific for the energy sector for 2030 and 2050. France has defined national objectives and some measures to support research, innovation, and investments in manufacturing and scaling-up of commercially available clean energy technologies, equipment and components and to strengthen its supply chains. The plan refers to sectoral action plans under development to ensure adequate levels of skilled workforce to support its energy transition efforts, earmarking EUR 2.5 billion to support the development of training for transition professions, with a strong priority for decarbonisation.

Just transition is partially addressed in the draft updated NECP. The plan provides an analysis of skills impacts of the climate and energy transition but lacks the analysis of social and employment impacts, including the distributional ones. While the plan includes several social measures and a quite comprehensive approach on skills in the context of the transition, measures addressing access and preservation of employment are not sufficiently addressed in the plan. Moreover, while the coal phase-out is being postponed, it is not clear how this will impact on the actions planned in the Territorial Just Transition Plans (TJTPs). In addition, the draft updated NECP does not detail the resources specifically devoted to supporting a just transition. Finally, it does not provide sufficient information for the preparation of the Social Climate Plan and how the consistency of the two plans would be ensured.

As regards its **strategic alignment with other planning tools**, the draft updated NECP covers the implementation of most of the measures included in the RRP and notably those in the new REPowerEU chapter endorsed by the Commission and adopted by the Council on 26 June 2023 and on 14 July 2023 respectively. The measures in the plan also reflect the 2023 European Semester Country Specific Recommendations (CSR) for France, regarding energy security and energy efficiency that will allow to reduce France’s dependency on fossil fuels. However, the plan falls short in addressing the CSR on accelerated deployment of renewable energy.

The **investment needs** are based on a top-down economic and energy modelling tool. The draft updated plan does not provide details on the investment needs and funding sources for the various specific policies and measures proposed.

Overall, the plan is based on **solid quantitative analysis**, including both bottom-up and top-down tools, covering all five dimensions of the Energy Union and key economic sectors, including industry, buildings, the energy system, agriculture and transport, extending until 2050. However, there is no macro-economic assessment provided of the updated NECP, which under the Energy Union Regulation is a mandatory requirement.

2 PREPARATION AND SUBMISSION OF THE DRAFT NECP

2.1 Process and structure

The French draft updated plan was notified on 17 November 2023, 4.5 months after the legal deadline. The plan is generally well developed and overall follows the structure provided by the Annex I template, covering all five dimensions, and including some objectives, targets or contributions for each, backed by policies and measures and underpinned by an analytical basis, including an impact assessment.

The plan provides evidence that, in line with the Whole of Government approach, France reached out and worked together with all relevant authorities to update the draft plan, considering synergies and trade-offs across different portfolios. One of the stated intentions of the plan is to strengthen the link between national climate objectives and territorial planning to ensure consistency of action at the various levels.

The NECP describes the national context in which the new plan was developed, including the fact that the '*Programmation Pluri-annuelle de l'Energie*' (PPE) and the '*Stratégie Nationale Bas-Carbone*' (SNBC) on which the NECP update is based are currently undergoing a complete revision cycle, which began in 2021 and which will only be finalised in 2025. Prior to their adoption, both documents will be subject to regulatory consultations with stakeholders and the public, in line with the principle of public participation under Directive 2001/42/EC, as well as the committees responsible for energy, the High Council for Climate Affairs, the Assembly of Corsica, overseas authorities, the National Council for Assessment of Standards, the regulatory role of the General Secretariat of the Government and the public.

France has a long tradition of mobilising local authorities in the fight against climate change: since 2012, local authorities above 50,000 inhabitants are obliged by law to carry out GHG emission inventories and to develop plans to curb those emissions. The Plan *Climat-Air-Energie territorial* (PCAET) is the key document at local level defining strategic and operational objectives for climate change mitigation, adaptation, RES deployment, energy efficiency and air quality. The draft updated NECP further highlights the role of local authorities in all these areas and describes a vision according to which environmental objectives will be achieved locally. The role of Cities' and local authorities is especially mentioned and supported in relation to renewable energy communities, energy efficiency, district heating, sustainable mobility, but also in relation to climate change adaptation (e.g., prevention of forest fires). However, there is no explicit reference to the role of local authorities in tackling energy poverty. The plan does not mention the European Covenant of Mayors initiative or the 100 Climate neutral and smart cities mission, although both initiatives involve several French cities.

2.2 Public consultation

No public consultation has been held on the draft updated plan, but there have been and there continue to be wide regional and public consultation on the update of the PPE and SNBC on which the NECP is built. Several citizens' consultations have been held during the 'ecological planning' exercise – including on French energy policy – and in preparing the SNBC and PPE updates there have been extensive consultation and dialogues with many stakeholders including representatives of the business community, representatives

of employees, associations, communities, NGOs. This included consultations on the broad orientations of climate policy and on the energy mix, while the preliminary elements of the updated SNBC and EPP will be up for public consultation in 2024. In conclusion, a wide range of interest groups and citizens were identified and encouraged to take part (including social partners) in preparing the basic documents underpinning the NECP update. However, based on the information in the draft updated plan it is not possible to assess whether communication channels were adequate and there was not a full description of the timeframe for the public to prepare and participate effectively. The draft updated NECP contains a clear but limited summary of the public's views expressed in the consultations on the broad orientations above mentioned, but not whether their views were considered and addressed, or why they were not.

The draft updated plan does not refer to the establishment of a specific multilevel energy and climate dialogue to develop the plan. Nevertheless, provides evidence of the importance attached to the mobilisation of the regional and local level ('les territoires') for implementing the plan via concrete actions on the ground.

2.3 Regional consultations for preparing the draft updated NECP

While the plan provides a general background on the regional cooperation initiatives that France participates in, such as the Pentilateral Energy Forum (Penta), the North Seas Energy Cooperation High-Level Group (NSEC) and the Interconnections for South-West Europe High-Level Group, the NECP does not describe whether consultations were carried out at regional level or with neighbouring states for the specific purpose of preparing the draft updated NECP.

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

3.1 Decarbonisation dimension

The National Low-Carbon Strategy (SNBC) is the strategic document that sets out France's roadmap for pursuing its climate change mitigation policy and meeting its short-, medium- and long-term greenhouse gas (GHG) emission reduction targets. It is one of the two strands of French climate policy, alongside the National Plan for Adaptation to Climate Change. The draft updated NECP is based on it and on the multiannual energy programming (PPE), which France explains in its draft updated plan are both currently under revision (by 2024⁵).

Preparations for the SNBC also fed into the first version of the 'action plan for a successful green transition', published in summer 2023. It identifies all additional levers and financial means to support actors to be mobilised for France to achieve its environmental objectives on mitigation, adaptation, biodiversity, resources, health-environment. This resulted in a

⁵ SNBC 3 will reflect the new French objectives following the adoption of the European Fit-For-55 legislative package.

first set of sectoral targets for reducing greenhouse gas emissions by 2030 and identifying some 50 levers of actions.

These targets and levers have been introduced in the modelling exercise underpinning the draft updated NECP, however a final scenario is still in the making that should ensure France reaches its 2030 and 2050 GHG mitigation targets. These are -50% gross and -55% net GHG emissions by 2030 compared to 1990 levels. France explains that the results in the draft updated NECP are therefore not final but based on a preliminary modelling exercise.

3.1.1 Greenhouse gas emissions, removals and storage

The draft updated plan partially embeds the new and revised climate targets included in the Effort Sharing Regulation (ESR) and in the Land Use Land Use Change and Forestry (LULUCF) Regulation, as part of the **Fit for 55 legislative package**.

The draft updated plan confirms France's commitment to achieve **climate neutrality** by 2050. The plan shows concrete pathways to 2030 and to 2050, in line with the national long-term strategies and with the climate-neutrality objective set out in the European Climate Law. It fixes for this consecutive so-called five-year carbon budgets, that in the final SNBC 3 will run until 2038. The draft updated plan includes emissions projections to 2050 under the With Existing Measures (WEM) scenario, but not under the With Additional Measures (WAM) scenario. The WEM projections are marginally more ambitious than those submitted in March 2023 under Art. 18 of the Governance Regulation, showing net greenhouse gas (GHG) emissions (including LULUCF and excluding international aviation) of 255 million tonnes of CO₂ equivalent (CO₂ eq.) by 2050. This is equivalent to a projected reduction of 51% by 2050, compared to 1990. WAM projections were also not submitted in March 2023. In recent years, net GHG emissions in France have declined at a pace below the EU average, mainly driven by a lack of significant emission cuts in energy production. Despite the commitment to achieve climate-neutrality by 2050, the information provided in the draft updated plan does not allow for a full assessment as to whether progress by France is consistent with the achievement of the EU climate-neutrality objective. However, based on all the available information, progress by France is likely to be consistent with the achievement of the EU climate-neutrality objective.

The plan anticipates the proposed policies and measures to achieving a -50% **economy-wide reduction** in GHG emissions by 2030 compared to 1990 levels, totalling 272 Mt. The policies and measures are well-detailed in terms of scope, timing, and likely impact.

The draft updated plan does not reflect the required ambition under the **ESR**, as the policies and measures in the plan narrowly do not collectively suffice to reach the effort sharing sector obligations. The ESR sets France's 2030 emissions reduction target at -47.5% compared to 2005 levels. The draft updated plan projects ESR emissions to be above this target, both with existing and with additional planned measures, highlighting the need for more ambitious climate action in the sectors involved. In the WEM scenario, France falls short of the target by 23.1 percentage points, while in the WAM scenario they still underachieve by 1.1 percentage points. Aware of the risk of shortfalls and of the uncertainties inherent to modelling exercises, the French government intends to follow a commendable approach of readjustment of the trajectories and levers of action along the

way, to ensure the achievement of the objectives by identifying additional measures to compensate for the risk areas identified in the modelling.

In 2021, France’s ESR emissions were within the **Annual Emission Allocation (AEA)** by 12.3 Mt CO₂eq. Moreover, efficiency improvements in transport were more than compensated by increased use of private transport. Member States have flexibilities under the ESR to comply with their targets. No specific use of ESR flexibilities is mentioned by France. To assess whether Member States comply, the use of saved AEAs from previous years is taken into account.

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

ESR target and projections⁶					
	2030 target*	2021 performance (inventory data) *	2022 performance (approximated data) *	2030 WEM projection*	2030 WAM projection*
France	-47.5%	-19.4%	-21.6%	-24.4%	-46.4%
EU	-40%	-14.5%	-16.9%	-27%	-32%

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

The plan does not fully reflect the increased ambition of the **LULUCF Regulation** and in particular the 2030 national target requiring France to deliver additional -6,693 Kt CO₂eq. net removals to reach the total value -34,046 Kt CO₂eq. in 2030. According to the projections submitted, France will only achieve -18,000 Kt CO₂eq. by 2030 with additional measures, thus falling short compared to the 2030 value; this projection is slightly less pessimistic in the scenario with existing measures (-22,804 Kt CO₂eq. in 2030)⁷. This highlights the need for more ambitious climate action.

The plan sets out a pathway to increase the contribution of the land sector to the overall EU’s enhanced climate target, but it does not quantify the mitigation potential of the planned measures. Although France identifies several relevant EU-funded (through the CAP) as well as national policies and measures targeting the agriculture and forestry sector, the removals are projected to significantly decrease by 2030 even in a scenario including additional measures. This worsening trend is projected to continue up to 2050.

Given that the two dominant land uses in France are forest land and cropland, France has rightly placed a significant focus on policies and measures in these areas. Several existing and additional policies such as the Low Carbon Label, measures under the CAP Strategic Plan, the agroforestry development plan, a tax incentive scheme for investment in forests, or the National Forest and Timber Programme, aim at promoting carbon farming, more active forest management, and upscaling long-lasting wood products. However, the draft plan does not systematically provide the implementation timeframe, the source of funding

⁶ 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).

⁷ The fact that the WAM scenario shows higher emissions from LULUCF than the WEM scenario may require some further explanation in the NECP.

and, most importantly, the quantification of the impacts of the stated policies and measures.

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

The draft updated plan contains an **in-depth evaluation of how policies and measures impact GHG emissions** and collectively reach the target. Key assumptions inform the assessment, drawing from the implementation of policies and measures by 2030 in transport, buildings, agriculture, forestry, industry, waste, and energy production.

The draft updated plan includes policies and measures for improved access to zero- and low-emission **mobility**. The plan is aligned with the expected uptake of **zero emission vehicles** and the provisions of the new Alternative Fuels Infrastructure Regulation (AFIR). The draft updated plan sets a target for the share of electric powered vehicles in new sales by 2030 of 66% for passenger cars, 51% for light duty utility vehicles, and 50% for heavy-duty vehicles (electric or hydrogen). The Energy Transition Law for Green Growth also includes the objective of the deployment of 7 million public and private recharging points by 2030. In 2022, according to EAFO (European Alternative Fuels Observatory) 83,267 public recharging points were deployed in France. The objective to reach the 500,000 public recharging points by 2030 expected by AFIR is well on track. The plan supports these objectives by measures that include subsidies for the purchase of zero emission passenger vehicles and scrapping of old vehicles, including microcredits and attractive leasing schemes for low-income households planned for 2024. Subsidies and fiscal measures are offered to grow the number of zero emission vans and heavy-duty vehicles. However, the plan does not provide specific target for hydrogen refuelling stations. Other targets include an increase in public transport traffic by 25% by 2030 (35% by 2035), a sharp increase in bicycle traffic; tripling of carpooling journeys by 2027 and a continuation of the trajectory to 2030; doubling the modal share of rail freight by 2030 and 50% increase in the modal share of inland waterways freight by 2030. It is not clear though what base year is used. Moreover, the plan also includes a financial scheme which helps to decrease the cost of combined transport.

The plan includes a target for GHG emissions reduction in **maritime transport**, with the EU ETS Directive extending its scope to cover intra-EU journeys and half of EU-third and non-EU journeys. The plan also addresses sustainable **biomethane-biogas** targets, aiming for 50 TWh of annual biogas production in 2030, with a specified distribution in the gas network in France. Additionally, there is a plan to increase the use of **Sustainable Aviation Fuels (SAF)** by 6% in 2030 and 20% in 2035, in line with the ReFuelEU Aviation Regulation. Considering all these objectives, the plan still does not include specific roadmaps or measures for the production and deployment of sustainable aviation fuels (SAF) and sustainable maritime fuels. The co-benefits of these measures for air quality are also explained and quantified.

The draft updated plan identified measures to support **Carbon Capture Utilisation and Storage (CCUS)** as part of the national Strategy for Accelerated 'Decarbonisation of industry'. The use of CCS in the industrial sector is planned as early as 2027, with a focus on the removal of residual process emissions. The volumes of CO₂ captured could reach 4 to 8,5 Mt CO₂ per year by 2030 and between 20 and 25 Mt CO₂ per year in 2050 for the

industrial sector. By that time, additional volumes of captured CO₂ will also be needed beyond industrial emissions to contribute to removals and the climate-neutrality objective. Apart from process emissions, France looks at applications for CCS in the production of hydrogen and heat. The plan also refers to the possibility to produce bioenergy with carbon capture, with estimates of 1 million tonnes of CO₂ per year that could be captured in 2040. The development of so-called CCUS technologies is supported under the ‘France 2030’ investment plan through the strategy for decarbonising industry with an overall budget of EUR 5,6 billion. With regards to the transport of CO₂, it is mentioned that the plans on various means to transport CO₂ and potential infrastructure development are currently under consultation. For CO₂ storage, the deployment of studies for evaluating the geological storage capacity is planned for 2024. ‘France 2030’ investment plan could devote EUR 25 to EUR 30 million to support the carrying out of studies or works aimed at improving knowledge of the capacity of the French subsoil in terms of storing CO₂ (seismic campaigns or injectivity tests). In 2024, a new support scheme through Carbon Contracts for Difference will be implemented.

The plan pays attention to mitigating **non-CO₂ emissions** in different sectors. Regarding **methane**, it refers to the Global Methane Pledge to collectively reduce global methane emissions between 2020 and 2030 by 30% and mentions that the SNBC 2 will establish a methane emission reduction trajectory consistent with this target. With methane emissions representing the largest share of greenhouse gas emissions in **agriculture** (45%), the plan recognises the importance of improving manure management (e.g., development of biogas production aimed at 50TWh by 2030), optimising herd management and adjusting animal feed in agriculture. It refers to the draft 2023-2027 CAP National Strategic Plan and to the National Agricultural and Rural Development Programme (PNDAR) for measures in these areas. Similarly, in the **waste sector**, the plan covers methane emissions from landfill sites (e.g., compliance with the obligation to sort biowaste at source; coverage technologies to improve methane capture rate) estimates a decline of GHG emissions in the waste sector from 15 Mt CO₂ eq. in 2021 to 7 Mt CO₂ eq. in 2030. On **N₂O**, the second largest source of GHG emissions in agriculture (42%), the plan refers to several policies (e.g., the Climate and Resilience Act defines 15% reduction of N₂O in 2030 compared to 2015; National Strategy on Plant Protein to increase legume area and thus reduce use of synthetic nitrogen fertilisers; Sustainable Seed and Agriculture Plan to support selection of nitrogen-efficient plants. However, aggregated agricultural emissions are projected to decrease only marginally by 2030 (67 Mt CO₂ eq. in 2030 compared to 73 Mt CO₂ eq. in 2005) and the decrease would continue to be slow until 2050. As for **F-gases**, the plan refers to the revised F-Gas Regulation and to the Finance Law of 2019 that provided for the introduction from January 2021 of a tax on HFCs. This has been postponed to 2025.

The draft updated plan reflects limited progress towards **international commitments under the Paris Agreement**. While coal already represents only a residual contribution to the French energy mix, the draft updated plan includes a target to reduce coal-based primary energy consumption by 70% in 2030 and 75% in 2035 compared to 2012, in line with the international commitment to phase-down coal in power production. For this it aims to stop burning coal in the remaining coal-fired power plants by 2027. However, this constitutes a postponement compared with a previous commitments made in the adopted Territorial Just Transition Plans as assessed in Chapter 7. The phasing out of fossil fuel subsidies is also discussed in the draft updated plan. France explains that the identification of fossil fuel tax expenditures is monitored as part of the preparation of the finance laws

and annexed to the Finance Acts as a report on the environmental impact of the State budget. The draft updated plan refers to the draft budget law for 2024, where the Government proposed phasing out several reduced excise duties on fuels with clear deadlines. France claims there are no (direct) subsidies for fossil fuels, only environmentally unfavourable tax expenditures related to the excise regime. This statement merits further clarification, also considering the incentives for the conversion of vehicles to natural gas, amongst others. France recognises that further reduction of tax niches is desirable such as sectors subject to the European and international level.

On 12 May 2020, France submitted to the Commission its **national long-term strategy**. The strategy includes the goal of achieving climate neutrality by 2050. The goal is enshrined into law. In March 2023, France reported on the status of implementation of its initial NECP, where the climate-neutrality objective was confirmed. This climate-neutrality goal is reiterated in the draft updated NECP.

3.1.2 Adaptation

France's draft updated NECP identifies some relevant climate vulnerabilities and risks that may threaten the achievement of national objectives, targets and contributions in two of the five dimensions of the Energy Union. The policies and measures put forward for each emitting sector, are currently under consideration by France. On decarbonisation, the plan identifies the risk of natural carbon sink deficits relating to an overall poor forest health caused by climate change – as a threat to the achievement of the French contribution to the Energy Union. It includes planned measures to promote the adaptation of forests to climate change, as well as potential policies and measures for low-emission mobility. The plan does not give extensive details on other climate risks and vulnerabilities and how they affect the other dimensions and does not explicitly quantify the adaptation goals.

France recognizes climate vulnerabilities and risks, such as extreme weather events impacting energy infrastructure and changes in energy demand due to climate change. The plan addresses these risks with envisaged measures to improve resilience, promote energy efficient buildings and transport, including technical benchmarks and standards for energy infrastructures. Additional measures are discussed to ensure a stable electricity supply.

The plan does not explicitly include nature-based solutions, but it addresses afforestation and forest renewal measures, and proposed measures limiting soil artificialisation, and the protection and restoration of natural habitats. Water resilience in energy systems is mentioned, but there is no explicit reference to structural or seasonal water scarcity. The plan also calls for a study on the adaptation of nuclear reactors to climate change, particularly on water resources.

The draft updated NECP considers a few innovative approaches addressing the climate protection gap like the Forest Insurance Investment Account which incentivizes forest owners to finance prevention and insure against the risk of storms. Investments aimed at minimising environmental impacts, such as biodiversity loss, are also put forward.

Compared to the French initial NECP of 2019, the inclusion of the mentioned (albeit usually qualitative and not quantitative) adaptation goals and measures in the 2023 draft updated NECP is equivalent. The plan is less complete on adaptation actions than the national adaptation strategy.

3.1.3 Renewable energy

France's draft updated NECP does not contain a renewable energy contribution and only refers to the projected level of 33%, which was included in 2019 NECP to contribute to the Union's 32% renewable energy target for 2030. This level is significantly below 44%, resulting from formula in Annex II of the Governance Regulation. The draft updated NECP does not take into account the projected shortfall to the 2020 target (baseline) and does not give an indication of the policies and measures envisaged to catch up, nor does France indicate whether it intends to close this gap e.g., through statistical transfers or investments in the renewable energy financing mechanism.

The scenarios do not provide yearly overall renewable energy contribution trajectories and respective technologies up to 2030, and no information is provided on the projections up to 2040. The draft plan does not provide a trajectory to reach the reference points for 2022, 2025 and 2027.

Renewable electricity generation is projected to reach 35% in 2030, with solar power becoming the main source of renewable electricity (54 to 60 GW of installed capacity), ahead of hydropower (26.3 GW of installed capacity), which is the main source at the moment. The wind power capacity will be roughly doubled by 2030 compared to 2022 (36.6 to 38.6 GW, of which 3.6 GW offshore) and triple by 2035, which corresponds to the current pace of deployment. The updated draft plan does not provide projections by technology for 2040. The updated draft plan does not include information on the innovative target for renewable energy deployment.

The use of renewable energy in the heating and cooling sector is projected to reach a share of 45% by 2030. This corresponds to an increase above the binding annual average increase set out the revised REDII and is equivalent to the indicative additional increase. However, the draft updated NECP does not include a clear description of how France intends to deliver this increase, and how it will be spread between the periods of 2021 to 2025 and 2026 to 2030. Neither it describes the role of waste heat and cold and the accounting of renewable electricity in the target and trajectory. Bioenergy will remain dominant with 171 TWh in 2030. It is projected to grow by 31% compared to 2021, most of this increase coming from biogas. The draft NECP indicates that the biomass data is undergoing new modelling which may lead to different projections. Heat pumps will see their gross final consumption doubled by 2030 with respect to 2021, reaching 74 TWh; however, the electricity needed to run these heat pumps and the projected capacity were not included.

The use of renewable energy in the **industry** was provided as an average increase of 1.7 percentage points over the 2021-2030 period while the renewable energy share in buildings in 2030 was not provided. The use of renewable energy in district heating and cooling is set to reach 75% by 2030. No information was provided though on the role of waste heat and renewable electricity accounting for the calculation and on their impacts on the target setting and achievement.

In the transport sector, France sets for 2030 a target for the reduction of the emission intensity of transport energy consumption of 14.5%. For the transport sub-targets, the main measures are the incentive tax on the use of renewable energy in transport as well as a renewable energy incorporation rate. The draft plan does not include information about sub-targets of RFNBOs and advanced biofuels but mentions that the share of conventional

biofuels is capped at 7%. France has set specific targets for electric passenger vehicles – reaching 66% in new sales in 2030, with 51% as light duty utility electric vehicles, and 50% of electric heavy-duty vehicles. It is planned that new sales of electric vehicles should reach 100% in 2035. Dedicated measures have been also envisaged both to promote the sales of electric vehicles through e.g., ‘eco-bonus’ and also the deployment of recharging infrastructure for electric vehicles through subsidies aimed at promoting installation of both public and private recharging stations. As regards the availability of raw materials, the draft mentions France’s strategy of critical materials supply including support to projects, tax credits, an investment fund and an update of the subsurface resources inventory, as well a strategy on recyclability, recycling and reuse of extracted materials, with a reference to batteries.

The draft updated NECP indicates that an updated **hydrogen strategy** will be adopted in 2023 with a target for the capacity of electrolyzers of 6.5 GW in 2030 and 10GW by 2035. It indicates hydrogen use in heavy industry, the establishment of a national value chain **and international cooperation** focusing both on technology exports and hydrogen imports (but no specific information was included on international partnerships or bilateral talks).

The **policies and measures** to support the achievement of the proposed objectives and contributions for renewable energy include a certain level of details although a number of them are subject to decisions to be taken on approving the new policy. In the electricity sector the objective is to accelerate the production of electricity from renewable energy through the use of reverse auctions. The 2023 law on renewable energy includes measures on permitting acceleration and improved planning. On Guarantees of Origin, France has not presented any measures to enhance the current system and improve consumers’ information. When it comes to **Joint projects**, France cooperates in particular through the North Seas Energy Cooperation with the aim to establish joint offshore and hybrid projects. The draft plan provides information on measures to ensure an accelerated deployment of solar energy in line with the EU Solar Energy Strategy objectives, in particular with improved planning and mapping and the development of a regulatory framework for agri-PV.

Individual and collective **self-consumption of renewable energy** as well as renewable energy communities are considered as a means to achieve the objectives. The draft plan lists a few measures related to self-consumption by local authorities and collective self-consumption in particular, but does not provide specific details, nor describe new additional measures. Quantitative targets for self-consumption and for **energy communities** are not included in the draft plan. France did not indicate in its draft updated plan whether it has put in place a strategy on energy system integration but includes references to measures aimed at encouraging demand response, the use of innovative technologies and electricity storage in batteries.

Measures for **renewable heating and cooling** include the continuation of the four main support schemes. The budget of the main one, the Heat Fund (fonds chaleur) was increased by 40% in 2022 to EUR 520 million and will further increase to EUR 820 million in 2024. The draft plan refers to a structured effort to accelerate the deployment of heat pumps through a support to the whole value chain but does not describe it in detail. The draft plan also includes ambitious objectives for district heating and cooling networks (DHC), with the goal to connect an average of 300,000 to 360,000 dwelling per year to DHC networks until 2035. Specific measures include improved feasibility assessments, local heating and

cooling plans, support to local energy sources and in particular to geothermal and solar thermal, schemes for priority connection of public buildings close to urban networks and integration of DHC in large urban planning projects. The draft plan also includes measures related to waste heat recovery, with mandatory assessments for large industrial plants and support to waste water heat recovery. The draft updated plan does not provide information on the framework enabling sector integration between energy networks.

Measures to promote renewable-based electrification of industrial processes to replace fossil fuels used for **industrial heating** include, in particular, the 2030 investment plan that targets for deep decarbonisation of energy-intensive industry, low-carbon heat, energy efficiency and the support to innovative solutions. The draft plan also refers to decarbonisation roadmaps and transition plans for specific industrial sectors. In addition to electrification, biomass is identified as a key resource for the increase of renewables use of industry, but the draft plan highlights challenges related to adequacy between increased demand and resource availability. The draft updated plan includes measures to support renewable hydrogen including a new auction scheme and possible tax instruments in the transport sector and for fertilisers. It also includes a reference to the deployment of hydrogen networks, with an outline to be delivered by 2026.

The draft NECP acknowledges the role that **bioenergy** will play in the path towards decarbonisation: the development of bioenergy, increasing the proportion of biogas injected into the grid, and supporting the installation of biofuel production capacity at national level are highlighted. Some measures related to the promotion of bioenergy have been included in the draft NECP. For example, as regards the forest/wood sector, France made reference to national strategies that have been complemented with some state aid measures aimed to promote bioenergy, taking into account the REDII sustainability criteria. However, for some policies and measures, the draft NECP does not indicate if or how the sustainability criteria as included in the revised REDII will be taken into consideration. The draft NECP has included –preliminary–projections on the production of biomass by feedstock and projections on the biomass consumption by sector till 2030. The cascading principle has not been highlighted exhaustively. The plan has not assessed the impact that bioenergy trajectories may have on LULUCF sinks, biodiversity and air quality. The draft updated NECP does not include either the assessment of the domestic supply of forest biomass for energy purposes in 2021-2030 in accordance with the strengthened sustainability criteria of the revised REDII, and of the compatibility of the projected use of forest biomass for energy production with France’s obligations under the revised LULUCF Regulation, particularly for 2026-2030.

France presents a good practice example of achieving natural gas supply sovereignty by coupling it with increasing carbon sinks and reduction of GHG emissions from manure and intermediary crops based **biomethane and biogas** with digestate use as organic fertiliser. The proposed target for 2030 is 50 TWh (or 5.12bcm) of annual biogas production, of which 44 TWh (4.5 bcm) injected to the gas network distributed in France or equivalent to, at least, 15% of biogas injected into gas networks. This target represents a fourfold increase in biomethane injection from 23 October 2023 (11.1TWh). In 2035, France is also looking at the emerging technologies for biomethane production s by methanisation (50-85 TWh) and pyrogasification, hydrothermal gasification or methane, which are currently at demonstration level. Support for biomethane facilities is combined with decarbonisation measures in agriculture (GHG emissions from manure management - CH₄ and land management - N₂O). The mandatory purchase obligation scheme for

biomethane injected into a natural gas network following a call for tenders is intended to support projects with a production capacity exceeding 25 GWh/year and a one-stop-shop has been established to support project planning and permitting. France intends to develop mandatory blending trajectory with Biomethane Production Certificates mechanism and other incentives (e.g., distinguishing small from large installations) considering optimal social costs for supporting such installations. Currently, French regulation is stricter in terms of using food crops for biomethane than the REDII requirements and set to a maximum of 15% share. Biomethane production is also considered from waste sector.

The plan includes a description of the ongoing process under the draft renewables law towards the **mapping of areas necessary** to achieve the national contribution to the Union's renewable energy target, aiming to support the designation of renewables acceleration areas at municipal level. The draft law under discussion includes shortened procedures for projects within these areas. For the streamlining of administrative procedures and time limits for granting permits, the plan includes a reference to a contact point for local authorities and project promoters. The plan makes a reference to the measures in place to improve offshore renewable development planning at sea basin level, and to further measures in the draft law that would introduce a mapping of priority areas for offshore wind deployment, as a basis for large auctions. France also intends to improve the planning of radar and wind power installations, as part of an effort to free up areas for onshore wind. The draft plan announces a repowering plan to optimise the process and allow the deployment of additional capacity. Information related to administrative procedures for other renewable technologies was not provided. The plan did not elaborate on the additional human resources dedicated to permitting.

3.2 Energy efficiency (including buildings) dimension

Energy savings are presented as a pillar of the draft updated NECP, with France targeting to reduce final energy consumption by 3.97 Mtoe per year until 2030 compared to the 2017-2019 average. This corresponds to a **corrected national contribution** of 157.3 Mtoe for primary energy consumption and 104 Mtoe for final energy consumption. France's targets are set at a level which corresponds to the results of the formula in the Annex I of the EED recast.⁸

The target for 2030 is also set at a lower level as compared to France's 2020 energy efficiency targets namely -30.5% for primary and -24.6% for final energy consumption respectively.⁹

The target on reducing total final energy **consumption of all public bodies** is not described in the draft updated NECP. The draft stipulates that the definition of public bodies to determine the scope of the obligation requires further reflection. As regards the **renovation of public buildings** under Article 5 EED (Article 6 EED recast), preparatory works are underway to establish a public building inventory covering all public buildings and model contracts for energy performance contracting. The French draft updated NECP states that

⁸ 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.

⁹ The comparison has been done with the 2020 targets as included in the final NECPs 2020 JRC assessments (226.4 Mtoe PEC, 137.9 Mtoe FEC)

these details will be included in the final NECP. Financial support for renovations with local and regional authorities will also be provided.

The French draft updated NECP provides clear and satisfactory information on the new energy savings requirement post-2020 under Article 7 EED (Article 8 EED recast) on **energy savings obligation**. The updated total 2021-2030 cumulative savings target is set at 1046 TWh or 89.9 Mtoe, based on the new ambition of the EED recast compared to 731 TWh or 62.85 Mtoe in the previous NECP. The central policy measure to deliver the savings is the updated **energy efficiency obligation scheme** (EEOS), which also addresses energy poverty through targeted measures such as energy advice for energy poor and vulnerable costumers. The share of savings to be achieved to address energy poverty is set above 30% of the total savings under the EEOS (36% in the 5th obligation period of the national EEOS, i.e., 2022-2025).

The draft updated NECP presents the planned measures to achieve the 2030 energy efficiency goals, but their **expected savings** are not quantified. Additional measures adopted after 2020 and the newly planned measures to reach the higher 2030 energy efficiency targets are mentioned in the draft updated NECP, but not described in clear detail. An updated plan on “energy sufficiency” (sobriété énergétique) is also mentioned, which is a mix of measures regarding energy efficiency and energy sufficiency and that could serve as a blueprint for other Member States. The draft updated NECP presents a wide range of measures covering all sectors. Apart from the EEOS, buildings and notably building renovation are addressed by seven measures, while transport is addressed by six measures. Five measures are targeting the public sector, and three the **industry and agricultural sectors** (including fisheries). In addition, two cross-cutting measures present the sobriety/sufficiency strategy and the related revised measures in this field. As the impact of the measures is not quantified, it is impossible to assess the contribution of the measures to the national energy efficiency targets. The draft NECP lists the new or changed provisions in relation with the EED recast, which are currently under discussion and will be addressed in the final updated NECP, namely the implementation of the energy efficiency first principle for planning, investments and policy decisions; establishment of the list of public bodies; determination of the level of obligation for the 6th period of the energy saving certificate scheme and amendment of the list of companies subject to energy audit or the establishment of an energy management system, and update of the dedicated collection platform.

The draft French update NECP does not increase the ambition of the 2020 **long-term renovation strategy** (LTRS) in terms of milestones related to building for 2030, 2040 and 2050. France indicates that it will update them with the upcoming submission of Building Renovation Plans foreseen. The draft update NECP only indicates that France foresees to renovate around 600,000 dwellings per year in the next decade targeting in priority the worst-performing ones. Nevertheless, it is not possible to assess whether the renovation rate represents an increase in ambition compared to the 2020 LTRS, especially because the depth of renovation is not described in a sufficiently accurate manner.

The draft updated NECP details the following new measures since the 2020 LTRS such as ban of the rent of thermal sieves; non-residential and public buildings above 1000 m² to improve their energy efficiency at least by 40% by 2030 and new regulation on nearly zero-energy buildings for new residential buildings since 2022. The regulation will be progressively enforced for other category of buildings as well. It is noticeable that the regulation will take into account the energy use and emissions from a life cycle perspective

(global warming potential). The main public funding instrument related to national renovation policies is the national scheme “Ma Prim’ Renov” which is also funded by the RRF. The plan also lists other measures such as a “Sobriety plan” adopted following the energy crisis to raise awareness of citizens and businesses on reducing energy demand. The objective is to sustain the observed reduction of energy demand in 2022-2023 (~12%) in the long term. The energy savings impacts of the different measures presented are not quantified.

Finally, to support citizens and business the central public “**one stop-shop**” France Rénov program will be strengthened including with the deployment of energy advisers “Mon Accompagnateur Rénov”.

3.3 Energy security dimension

While still largely reliant on **fossil fuels**, France has the third lowest share of fossil fuels in its energy mix (48% in 2021, well below the EU27 average of 70%)¹⁰. The share has decreased only slightly from 51% in 2013. According to the draft updated NECP, the share is expected to decline further to 42% by 2030 and to 29% by 2035. The reliance on fossil fuels translates into an energy import dependency on third countries of 39% in 2021, below the EU average¹¹. On energy security, the plan emphasises the importance of developing energy networks to meet increasing electricity demand and the expected structural changes in gas and oil consumption.

Natural gas accounts for 15% of the French energy mix and 6% of the electricity mix in 2021, which is substantially lower than the EU average¹². The vast majority of gas is imported, but France has traditionally had a diversified portfolio of suppliers, with Norway and Algeria providing substantial shares. Russia accounted for 22% of the imports in 2021¹³. France has a high level of security of gas supply, notably thanks to its considerable LNG import capacity comprising 4 terminals in Dunkerque, Montoir-de-Bretagne, and two in Fos-sur-Mer. France also has access to the Franpipe pipeline, which connects France directly to Norwegian gas fields in the North Sea. It also benefits from a significant gas storage capacity of 130 TWh compared to an annual consumption of around 390 TWh¹⁴. On 15 September 2023, France also completed an additional Floating Storage and Regasification Unit (FSRU) in Le Havre.

In terms of **diversification**, France is notably fostering the development of biogas. Biomethane injection capacities are now 11.1 TWh, which represents an increase of 22% compared to end 2022. The draft updated plan sets an ambitious target of 50 TWh of annual biogas production by 2030, with 44 TWh injected in the gas distribution network, which would amount to 15% of gas in the distribution grids. According to the plan, biogas production through methanization processes could reach 85 TWh in 2035. Overall, the draft updated plan lacks details about the concrete measures to increase the French security of gas supply, however. The plan notes that the final version of the plan will contain more details about diversification targets and measures.

¹⁰ Eurostat data.

¹¹ Eurostat data.

¹² Eurostat data.

¹³ https://economy-finance.ec.europa.eu/system/files/2023-05/FR_SWD_2023_610_en.pdf.

¹⁴ https://economy-finance.ec.europa.eu/system/files/2023-05/FR_SWD_2023_610_en.pdf.

As a consequence of Russia's invasion of Ukraine, France has reduced its gas demand by 18% between August 2022 and August 2023, more than the -15% voluntary objective and equal to the EU27 average (-18%)¹⁵. The draft updated plan also refers to ambitious objectives in terms of primary gas consumption reduction of -40% by 2030 and -60% by 2035 compared to 2012 levels. The plan does not, however, describe the implemented gas demand reduction measures, nor does it explain how these are integrated in the medium-term planning towards 2030.

The existing nuclear fleet, which currently consists of 56 reactors in 18 power stations with a total capacity of 61.4 GWe, is set to remain in operation for as long as safety requirements are met. The French Government has tasked EDF, in conjunction with the Nuclear Safety Authority, to clarify the possibilities to continue operation of the existing nuclear fleet beyond 50 and 60 years of age. In parallel, there are plans to uprate existing reactors in strict compliance with the nuclear safety framework to return to the best operational performance levels to achieve a nuclear production of more than 400 TWh by 2030 (including the commissioning of the new Flamanville 3 EPR). The closure of France's last two coal power plants will also be subject to the restoration of high available nuclear power. In particular the Cordemais power plant is deemed essential to maintain regional grid stability (in the West of country, and in particular in Brittany) at least until the Flamanville EPR starts operation.

France is also constructing new nuclear reactors with the planned addition of three pairs of EPR2 reactors at the Penly, Gravelines and Bugey sites, with a total capacity of 9.9 Gwe. However, no specific planned date for them to be operational is provided given that the final investment decision by the EDF Board of Directors is still pending. Furthermore, a study is ongoing on a potential further reinforcement of the nuclear power programme by at least 13 GWe. The study is planned to enable a final decision by 2026. EDF is also planning to develop a Small Modular Reactor (SMR) with the aim of achieving the first concrete for a reference plant in France by 2030. The SMR project also aim at addressing decarbonisation of hard to abate sectors, including industry and transport.

France will also contribute to further strengthen European uranium conversion and enrichment capacities. The draft updated NECP does not report further details on measures taken to diversify and address long-term supply of nuclear materials, fuel, spare parts, and services.

Electricity consumption is expected to rise due to increased electrification. Nuclear generation comprised around 68% of the electricity mix in 2021 and renewable energy 25%.¹⁶ Renewable energy will, alongside nuclear, contribute to satisfying this growing electricity demand also in the future. These are more ambitious targets compared to the previous *Programmation pluriannuelle de l'énergie*, France's 5-year energy planning instrument, and the draft updated plan includes measures to support the achievement of these updated targets. On wind power, for instance, the plan includes calls for tenders for offshore wind, after the identification of maritime areas. The draft updated NECP acknowledges that lower **nuclear** availability due to the aging of the nuclear fleet and the closure of the oldest thermal power plants has had an effect on security of electricity

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

¹⁶ Eurostat data.

supply. France is therefore planning to rely significantly on increased nuclear electricity production, both by ensuring the continued operation of the existing fleet and by developing new nuclear reactors.

According to a study on **storage** commissioned by the European Commission, the current operational French power storage capacity is around 5 195 MW (pumped hydro being the vast majority) and one of the main barriers identified was the high minimum size for participation on balancing mechanism (10 MW)¹⁷. The plan highlights the importance of demand flexibility as a whole and of electricity storage in particular for security of electricity supply.

Oil remains a significant source of energy in France, representing 29% of the primary energy mix in 2021.¹⁸ In 2021, oil demand was concentrated in the transport sector (64.5%), followed by industry (21%) and buildings (9%). Domestic crude oil production is marginal but imports of crude oil are diversified (top 3 suppliers were Kazakhstan (13%), USA (13%) and Algeria (11.5%)). France operates 7 refineries compared to 12 a decade ago. The draft updated NECP describes that France phased out Russian diesel imports (which represented 35% of French diesel imports in 2021) as a consequence of EU sanctions on Russian oil products. The plan contains forecasts on oil consumption which is expected to remain substantial by 2030. It is positively noted that France identifies the need to pay particular attention to the adequacy of oil infrastructure beyond 2030 (ports, refineries, pipeline, oil stocks) with the expected change in oil demand. The plan specifies that more information is expected on this issue at a later stage.

The draft updated NECP addresses the **resilience of supply chains** in terms of access to critical raw materials needed for the green transition, and notably refers to the development of a strategy for strategic minerals. This strategy relies on the following mechanisms: a call for tender “métaux critiques” to support R&D efforts in the sector; the French observatory on mineral resources for industrial sectors launched in November 2022 and which will gather geological and diplomatic knowledge on the topic; and an investment fund for critical minerals and metals to secure supply for industries.

The plan does not address **the implications of climate change for energy security** in detail. However, it acknowledges its impacts in terms of hydropower and nuclear output. **Cybersecurity** threats in the energy sector are not addressed in the draft updated NECP.

The draft updated NECP does not describe measures in the **event of security of supply crisis** for electricity or gas. France submitted its Preventive Action Plan and its Emergency Plan, as well as the Common Risk Assessments for Baltic Sea, Norway (which it coordinated), Low-Calorific gas and Algeria regional risk groups. At the time of writing, they are all being assessed by the European Commission. However, France has still not submitted its National Risk Assessment, which was due by 1 November 2022.

¹⁷ 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/

¹⁸ Eurostat data.

3.4 In Internal energy market dimension

The NECP does not mention any recently completed or ongoing interconnection projects or an interconnectivity objective. This is announced for the final version of the NECP in 2024. Since the last NECP, three additional electricity interconnectors have become operational: IFA2 (1000 MW, commissioned in 2021) and ElecLink (1000 MW, 2022) with the United Kingdom, and Savoie-Piémont with Italy (1200 MW, 2022). Construction works on two further electricity interconnectors have started: Celtic Interconnector with Ireland (700 MW) and Biscay Bay (“Golfe de Gascogne”, 2000 MW) with Spain.

In terms of **electricity interconnectivity**, measured as a country’s the import capacity over its installed generation capacity, France reached 8.5% in 2020, 5.1% in 2021 and 5.6% in 2022. This has to be seen in a context of improved hydropower, solar and wind power generation capacity.

The NECP does not mention any recently completed, ongoing or future projects of common interest (PCI). This is announced for the final version of the NECP in 2024. Overall, while the NECP underlines that interconnections with neighbouring Member States have played a favourable role in mitigating electricity security of supply risks, it also suggests that France intends primarily to rely on developing domestic electricity production capacity, while considering that interconnectors’ contribution to national security of supply will be stable at best.

In terms of **energy infrastructure development**, the NECP addresses the increased needs for electricity grids due to the massification of renewable energies and higher industrial consumption. It underlines the importance of smart grids and smart meters. In order to foster electricity grid development, the NECP lists generic measures such as the existing ten-year network development planning (TYNDP) process, a focus on tariff affordability, flexibilisation and digitalisation etc. Specific objectives and needs assessments are announced for the final version of the NECP in 2024. Regarding gas grids, a study commissioned by the government and the National Regulatory Authority on gas needs in a context of decreasing gas consumption is expected to be finalised by the end of 2023. On hydrogen, France prioritises grid development in specific hydrogen hubs to decarbonise industry, with inter-hub grid development planned for a second phase. The NECP announced that some projects have applied for PCI status and may require CEF funding.

On the **internal energy market**, the plan mentions the need to enables all French consumers to benefit from the competitiveness of historical nuclear electricity (the post-Arenh nuclear regulatory framework), and the importance to incentivize suppliers to a prudent and long-term supply practice. However, the plan does not mention explicitly concrete actions on how consumers could value their flexibility.

In order to ensure security of supply and optimise the operation of the electricity system by 2030 and 2035, the plan mentions that developing demand flexibility as a whole and electricity storage batteries is a priority axis. The aim is to develop explicit and implicit demand response, battery electricity storage, modulation of charging of electric vehicles, and more generally flexibility of electricity consumption, including structural variations. In this respect, the plan includes an objective of developing flexibility at a level of 25 GW in 2030 and 35 GW in 2035, in particular targeting batteries, pumped hydro stations, demand-side response and interconnections. Several measures are set out to achieve this

objective, including the assessment of the viability of contracts to remunerate the flexibility provided by producers, particularly from renewable energy sources; support to the development of batteries, as well as conditions for the closure of existing thermal power plants. The plans mentions that smart meters are developing well, with 36 million low-voltage customers equipped. This will contribute to strengthening the role of consumers, and to the modernization of the network by making it possible to significantly increase the observability of the low-voltage network for system operators.

Through the Pentalateral Forum (voluntary regional cooperation between Belgium, France, Germany, Luxembourg, the Netherlands and, since 2011, Austria), a flexibility report provided information on needs and sources of flexibility up till 2050, including 2030 and 2040, driven by the integration of renewable energy, and shows that cooperation can lead to significant synergies between countries, thus reducing overall flexibility needs. The report also provides important recommendations on how to promote flexibility in the region and potential measures to improve flexibility for market participants such as harmonization of system operators products, facilitation of demand side flexibility, interoperability. In light of this report, the French draft updated plan lacks details on additional policies and measures to enhance flexibility and enable a non-discriminatory participation of new flexibility services.

Regarding **energy poverty**, the draft plan identifies 11,9% (3,4 million) of number of households in energy poverty on the basis of indicators identified in the Commission Recommendation (EU) 2023/2407¹⁹.

The draft NECP also analyses that this number is considered significant, but do not establish a national objective to reduce energy poverty. It details the policies and measures addressing energy poverty. In particular, several mechanisms have been put in place to ensure that the clean energy transition benefits to all, in particular through such as ‘energy voucher’, the Energy Saving Certificates scheme that requires energy suppliers to finance a certain amount of energy renovation works in French energy poor households, a subsidy scheme to finance energy renovation works (MaPrimeRénov’), zero-interest eco-loans (ecoPTZ), and support to purchase low-polluting vehicles (clean vehicle microcredit, zero-interest loan experiment in low-emission mobility zones, leasing scheme to be announced soon).

Furthermore, despite the absence of a national objective, specific measures are detailed, implemented and assessed. The link with energy efficiency and social policies and measures is well detailed. However, the plan does not include details of a first assessment of the new tool “Prêt avance rénovation” for energy poor households set up in March 2022 or a general approach of the future evolution of measures and tools targeted to energy poor households in the coming years.

¹⁹ Commission Recommendation (EU) 2023/2407 of 20 October on energy poverty, C:2023/4080, OJL 2023/2407, 23.10.2023

3.5 Research, innovation, competitiveness and skills dimension

3.5.1 Research and innovation

The draft updated NECP underlines that research and innovation is key to achieving climate neutrality. It reports that France has put in place the *France 2030* Investment Plan, launched in 2021, which foresees EUR 54 billion for R&I in key sectors of the country's economy. However, the draft updated NECP does not provide the detail of budget allocation from *France 2030* to the energy-related priorities.

The investment plan focuses on five of France's 10 strategic priorities on energy: nuclear SMR; hydrogen (gigafactories) and renewable energy sources, decarbonisation of industry; production of zero-emission vehicles; and production of low-carbon aircraft. It specifies quantified and timed targets for some of these priorities. Moreover, the draft updated NECP mentions the France 2030 Acceleration Strategies (SA) on batteries; advanced technologies for energy systems; sustainable cities and innovative buildings; greening of digital technologies; bio-sourced products and sustainable fuels.

France plans to further invest in the development of nuclear research infrastructures to maintain research capacity in this sector. In addition, the plan refers to a new support scheme through 'Carbon Contracts for Difference' published in June 2023 for launch in the course of 2024, aimed at supporting investments in the deep decarbonisation of industry in the form of CCUS and other intensive disruptive capital technologies, in a technologically neutral approach.

The plan does not report on the national target and spending for research & Innovation (R&I) by specific clean energy technologies, nor does it detail the split between public and private funding. The plan does not explain R&I efforts related to climate adaptation, carbon sinks, nature restoration and air quality, nor does it set a concrete ambition for R&I in specific clean energy technologies for 2030 and 2050. It is therefore not possible to assess whether the 54 billion funding under France 2030 will be sufficient to achieve the national objectives related to the Energy Union research and innovation objectives, notably those under the Strategic Energy Technology (SET) Plan.

The draft updated plan mentions that France actively participates in European and international initiatives to advance low-carbon technologies and collaborate on energy R&I. Within the European framework, France leads the SET Plan Implementation Working Group on Batteries and co-leads the one on Nuclear Safety, aligning its efforts with other Member States. However, the draft updated NECP does not describe France's involvement in other groups, nor whether it focuses its R&I funding towards achieving specific SET Plan targets. The country is actively involved in the Horizon Europe programme, contributing to Cluster 5 on 'Climate, Energy, and Mobility,' and supporting thematic Knowledge and Innovation Communities (KICs) like "Climat", "InnoEnergy", and "Raw Materials".

Internationally, France engages in initiatives such as Mission Innovation. For instance, France is member of the working groups "Zero-emission vessels" and "Green Hydrogen". The country also participates in the International Energy Agency (IEA) Technology Collaboration Programmes (TCP). France's involvement extends to organizations like the International Atomic Energy Agency (IAEA), International Renewable Energy Agency (IRENA), and International Partnership for Hydrogen and Fuel Cells (IPHE), fostering

dialogue between French and international laboratories to address common objectives in the energy transition.

3.5.2 Competitiveness

France has defined national objectives to support research, innovation and investments in manufacturing and scaling-up of commercially available clean energy technologies, equipment and components, to maintain and further support the participation of French companies in the global market.

The *France 2030* plan, driven by the National Acceleration Strategies (SA), seeks transformative changes, emphasising skills development, recyclability, and reindustrialisation. The plan underscores the integral relationship between the digital and energy transitions. The ‘Advanced Energy Systems Technologies’ SA aims to promote the development of a French sector of new energy technologies capable of meeting current and future global demand for the growing development of renewable energies and the electrification of uses. The strategy identifies three priority sectors: photovoltaic, floating wind and energy networks.

Similarly, the ‘Decarbonised Hydrogen’ SA supports the creation of a competitive renewable and low-carbon hydrogen sector to make France one of the world’s leaders in electrolytically decarbonised hydrogen. The strategy aims to develop two electrolyser gigafactories by 2030 and has provided financial support for this purpose. The *France 2030* plan also aims to develop a manufacturing capacity of two million zero-emission vehicles by 2030, and of a French supply of small modular nuclear reactors by 2035.

The “Green Industry Law²⁰” further supports industrial development by facilitating industrial implantations and by greening public procurement. Together with the reinforcement of renewable energy industrial supply chain, this could enable France to produce a decarbonised, stable and competitive energy supply.

France integrated the notions of recyclability and circularity and the need to reduce dependency, effectively diversifying the sourcing of imported raw materials and ensuring the resilience of supply chains of key net-zero equipment and component required to manufacture clean energy technologies, in particular for critical metals, batteries components and plastics.

The draft updated NECP did provide information linked to the Digitalisation of Energy System EU Action Plan to make their energy system more digital. The plan, however, includes measures that enable **digitalisation of the energy system** through solutions such as developing, piloting and market uptake of advanced technologies for energy systems, as well as addressing the carbon footprint of digital technologies through sobriety of products and services.

²⁰ <https://www.economie.gouv.fr/que-contient-la-loi-industrie-verte#:~:text=La%20loi%20industrie%20verte%20a,l%27industrie%20verte%20en%20Europe.>

3.5.3 Skills

The draft updated NECP identified potential **shortages for the “skills and professions of the future”**, though not in detail. France is developing sectoral action plans to ensure adequate levels of skilled workforce to support its energy transition efforts and meet skills needs in the new sectors. Energy renovation of buildings, development of low-carbon energy, electric vehicle development and conversion of thermal vehicle production sites, reindustrialisation towards “green” industries, conversion and withdrawal of the infrastructure for the distribution of fossil fuels, and agro-ecological transition are seen as sectors with the largest green job potential that also require specific skills. The France 2030 plan earmarks EUR 2.5 billion to support the development of training for transition professions, with a strong focus on decarbonisation.

4 JUST TRANSITION

Just transition aspects are partially addressed in the draft updated plan. France presents an analysis of skills shortages linked to the climate and energy transition, but the draft updated NECP states that social and economic impacts of the transition will only be assessed as part of the macroeconomic evaluation of the updated Low Carbon National Strategy (SNBC 3). The plan does not provide sufficient information for the preparation of the Social Climate Plan, as assessed in Chapter 7.

While the plan mentions that sectorial action plans are being developed, France clarifies that its strategy for the development of jobs and skills will be part of the final NECP. The draft updated NECP does not elaborate on concrete measures linked to **supporting access and preservation of employment**, but it does describe different actions aiming to address **access to quality, affordable and inclusive education, training and life-long learning**. These included plans to improve acquisition of transversal skills as well as sectoral skills, in particular in vocational education training and, where appropriate, by region. In addition, labelling of schools is also being considered as means to increase their attractiveness. Efforts to enhance human resources and skills in renewable heat occupations are also actively being implemented.

Decarbonisation of coal and carbon intensive industries are addressed through more general national strategies, e.g., by promoting renewable heat and energy in industry. The plan also mentions a special budget programme for co-financing projects that can support economic resilience in the affected territories. However, measures to support upskilling and reskilling of workers and jobseekers supported by the Just Transition Fund (JTF)²⁰ are not mentioned. France is postponing the coal phase out to 2027 but it is not clear what the impact will be on the remaining actions in the Territorial Just Transition Plans (TJTP), in particular on foreseen measures aiming to mitigate socio-economic impacts.

Energy poverty is the focus of **social policies**. France is targeting its support to households, especially the more vulnerable ones to ensure a just transition for all (see section 3.4 on energy poverty). The plan also considers helping companies, especially smaller ones, which would not be able to finance all decarbonisation costs. The specific measures to support these companies are not very detailed, however.

Finally, the draft updated NECP does not elaborate on the resources specifically devoted to supporting a just transition but mentions that **France 2030 plan** will earmark EUR 2.5

billon to support the development of training in the context of decarbonisation. Moreover, the JTF is not mentioned in the draft updated NECP event though it provides key support for the ecological and energy transition in France.

5 REGIONAL COOPERATION

France is part of three initiatives of regional cooperation: the Pentalateral Energy Forum (Penta), the North Seas Energy Cooperation high-level group (NSEC) and the Interconnections for South-West Europe high-level group.²¹

The NECP sets out how France cooperates with other Member States within the Penta and NSEC fora on issues such as security of supply and solidarity (resource adequacy and risk preparedness), market integration and flexibility needs, energy efficiency, decarbonisation, hydrogen and offshore electricity. In the area of renewable energy, the draft plan refers to the cooperation on deployment of offshore wind energy and hydrogen within NSEC, in particular as regards the identification and implementation of hybrid and joint projects.

In contrast, with regard to cooperation on Interconnections for South-West Europe, the NECP does not provide much information on areas of cooperation, and it does not refer to recent initiatives within this high-level group.

Overall, while the plan underlines that interconnections with neighbouring Member States have played a favourable role in mitigating electricity security of supply risks, it also suggests that France intends primarily to rely on further developing domestic electricity production capacity. France has still not signed any solidarity agreements for the security of gas supply out of the three needed (with Germany, Spain and Belgium).

6 INTERNAL COHERENCE AND POLICY INTERACTIONS WITHIN THE DRAFT UPDATED NECP

The ongoing work on the scenario underpinning the PPE and SNBC provides an opportunity to have a holistic and cross-cutting view on the different dimensions and sectors, maximising synergies, and minimising trade-offs.

The draft plan includes examples of coherence and consistency but would benefit from a better analysis of consistency of policies and measures in each dimension and a quantitative analysis of interactions of certain objectives. Described synergies include the consistency between the growth in renewable energy and national targets on the determination of “go to areas”, that allows local municipalities to be involved in early stage in identifying areas for renewable energy production; and APER Act providing for offshore renewable energy planning with the formalisation of a mapping of priority areas for the development of future offshore wind farms; consistency between the uptake of renewables and the recovery of waste heat, and decisions to set targets for the quantities of heat delivered by the district heating networks; consistency between the energy security

²¹ Four high level groups have been set up by the European Commission to provide strategic steering and policy guidance on regulatory and infrastructure development and to monitor progress of projects of common interest in priority regions. They include: The North Seas Energy Cooperation (NSEC); Interconnections for South-West Europe; Baltic Energy Market Interconnection Plan (BEMIP); Central and South Eastern Europe energy connectivity (CESEC).

dimension and decarbonisation objectives and; notably, the deployment of renewable energy, by speeding up the uptake of biogas in the grid by upgrading the indexing formulas for biogas injection tariffs; consistency between decarbonisation and all the measures described per sector (residential/tertiary/industry/agriculture) e.g. measures to influence demand and food consumption patterns; the planned policies e.g. on carbon storage through CO₂ removal (soils, biomass), carbon storage in forests (Substantial financial resources have been made available in recent years to finance forest renewal), promotion of bio based building.

7 STRATEGIC ALIGNMENT WITH OTHER PLANNING INSTRUMENTS

France formally submitted a modified **RRP and REPowerEU** chapter on 20 April 2023. The French RRP is structured around 3 pillars (green, competitiveness, cohesion) and includes investments on green transition, namely building renovation, sustainable transport, decarbonisation of industrial processes, referred in the draft NECP update as part of the recovery plan. The revised RRP includes in its REPowerEU chapter a scaled-up measure from the original RRP extending the energy renovation of private buildings (MaPrimeRenov), and three new measures: i) fossil-free industry through replacement of fossil-fuel heating systems by biomass systems and other decarbonisation projects; ii) production of fossil-free hydrogen and other projects related to the hydrogen value chain, including zero-emission transport; and iii) thermal renovation of public buildings.

The draft NECP explains that “France Relance” is the French strategy for the recovery of the economy from the COVID crisis, partly financed by the RRF without further details on the share. The REPowerEU chapter and the amended RRP are not clearly referred to in the draft updated NECP although their respective reforms and investments are, even if the funding of the latter is not clear. In particular, the references are not clear on the share of national and EU funds for each of the measures. In fact, the French RRP was originally a subset of the EUR 100 billion national recovery plan, ‘France Relance’ and France follows that same structure, with the REPowerEU allocation and revised RRP thereby refinancing investments already financed at national levels. Many reforms and investments of the RRP were therefore already being developed by France.

The draft updated NECP is partially consistent with the adopted **Territorial Just Transition Plans (TJTTPs)**. The draft revised plan states that the last two coal-fired power plants should be closed by 2027 at the latest. On the other hand, the TJTTPs indicate that the Cordemais coal-fired power plant should close between 2024 and 2026 while the Saint Avold plant was supposed to be maintained open to guarantee energy security following the Russian invasion of Ukraine.

The contribution of **Cohesion Policy** is not well reflected in the draft updated NECP. Only one indirect reference is made to ERDF, and JTF is not even mentioned in the draft updated NECP.

The draft updated plan does not provide an adequate 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. The plan does not yet include an assessment of the number of households in transport poverty and does not provide the methodology and indicators required to identify the future recipients of the Social Climate

Fund (SCF), taking into account the distributional effects arising from the future ETS2. The plan outlines a consistent set of decarbonisation policies and measures in the buildings and road transport sectors, including some targeted at the vulnerable groups, however inadequate information is provided on the concrete reforms and policy framework needed for the future SCP. Thus, the current draft does not explain how the SCP will build on the NECP update and how the consistency between the two plans will be ensured.

In the draft updated plan, France 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 plan is partially consistent with the national **Adaptation Strategies**. The inconsistencies refer for instance to nature-based solutions and water scarcity.

In its draft updated NECP, France addresses most of the 2022 and 2023 **European Semester Country Specific Recommendations (CSR)** to enhance diversification and reduce its dependency on fossil fuels by taking specific actions such as simplifying permitting procedures to accelerate the deployment of renewables, and pursuing efforts on energy efficiency, namely on buildings renovation and decarbonisation of industry. However, the draft updated NECP falls short in addressing the CSR to accelerate the deployment of renewable energy overall.

8 FINANCING THE ENERGY AND CLIMATE TRANSITIONS

8.1 Investments needs

The draft plan includes succinct information on additional total climate investments needed until 2030. A study using a net approach by estimating the difference between additional green investments and the avoided investments in fossil fuel energy systems results in annual additional investment needs to achieve France's energy and climate targets of EUR 66 billion. However, this information is insufficient. The draft updated plan does not include a breakdown of investment needs by dimension of the Energy Union nor by sector. There is also no information of the investment expected at the level of policies and measures. The methodology is not clearly described.

8.2 Funding sources

The draft plan provides occasionally information on the amount of funding available for some measures. However, this is not done in a consistent way for all measures. At aggregate level, there is information provided on the level of public expenditures for the ecological transition in 2023 and 2024. However, this is too few information to identify potential funding gaps towards the estimated investment needs. The plan also does not distinguish public and private sources, nor does it specify the lifetime of the measure or the share coming from the EU budget, explicitly specifying the RRF and Cohesion Policy contributions. There is no overview table gathering all the budgetary information of the different policies and measures. The contribution of the RRF is not well reflected in the draft updated NECP. There is no quantitative indication of the contribution of the RRF to the expected public financing needs to implement the policies and measures of the draft updated NECP.

9 ROBUSTNESS OF THE ANALYTICAL BASIS OF THE DRAFT UPDATED NECP

Overall, the plan is based on solid quantitative analysis, including both bottom-up and top-down tools. The methodologies used for both projections (With Existing Measures – WEM and With Additional Measures – WAM) and impact assessment of specific policies and measures are clearly explained and referenced. The plan describes both WEM and WAM scenarios, providing detailed projections for key economic sectors, including industry, buildings, the energy system, agriculture and transport, extending until 2050. The plan's analytical foundation includes an in-depth evaluation of how policies and measures impact achieving GHG mitigation targets.

The analysis relies on a comprehensive set of sectoral models, incorporating internal and external tools such as CIRED, Solagro, and Enerdata. These models, shaped by assumptions from stakeholder consultation, consider various activities like vehicle traffic, building renovations, livestock size, and energy consumption. The results are aggregated, initially as energy balances and then as greenhouse gas emission inventories.

The scenarios incorporate climate and energy objectives under European legislation, factoring in the influence of EU laws on energy prices and decarbonization incentives. For instance, the new ETS for buildings, road transport and additional sectors (ETS 2) has been considered in the plan and in the projection scenarios, although it remains unclear how. They also consider international goals, evolving social dynamics, and non-climate policies, reflecting anticipated lifestyle changes. The projections are analytically sound, with well-documented data sources and assumptions aligning with best practices in the field. The analysis effectively assesses the plan's expected impact, emphasizing the significance of key policies and measures introduced.

It is unclear, though, how the top-down analysis described above is complemented by a bottom-up analysis. Bottom-up approaches are mentioned as part of the methodology (e.g., bottom-up territorial planning approach from the local authority level to reinforce the comprehensive assessment of renewable energy production) but not in relation to the general modelling.

While the modelling exercise primarily focuses on internal coherence among various scenario assumptions, it also takes into consideration the evolution of key social and non-market driven dynamics. This aims to better elucidate the anticipated changes in the scenario in terms of lifestyle. For instance, concerning health and well-being, the reference scenario accounts for "non-climatic" policies targeting pollution reduction (light, noise, atmospheric, etc.). To the extent possible, these societal non-market changes are reflected in the scenario assumptions.

The plan undergoes a quantitative examination of the anticipated impacts on health, environment, employment, training, skills, and societal aspects. The NECP update however does not include an assessment of macro-economic impacts. The document refers to the principal findings of the evaluation of the baseline scenario of the SNBC 2 and PPE 2 carried out in 2020, available in the accompanying report of the SNBC 2 published on the Ministry's website. While this provides valuable insights, this does not reflect the macro-economic impacts of additional policies and measures included in the draft updated NECP. The plan mentions that those impacts are currently being assessed as part of the on-going update of the PPE and SNBC.