



Brussels, 18.6.2019
SWD(2019) 263 final

COMMISSION STAFF WORKING DOCUMENT

Assessment of the draft National Energy and Climate Plan of France

Accompanying the document

Commission Recommendation

**on the draft integrated National Energy and Climate Plan of France covering the period
2021-2030**

{C(2019) 4410 final}

Table of contents

1. SUMMARY	2
Main observations	2
Preparation and submission of the draft plan	4
Overview of the key objectives, targets and contributions.....	4
2. ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND ADEQUACY OF SUPPORTING POLICIES AND MEASURES	5
Dimension decarbonisation	5
Greenhouse gas emissions and removals	5
Renewable energy	7
Dimension energy efficiency.....	8
Dimension energy security	9
Dimension internal energy market	9
Dimension research, innovation and competitiveness.....	10
3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS	11
4. REGIONAL COOPERATION	13
5. COMPLETENESS OF THE DRAFT PLAN.....	13
Information provided.....	13
Robustness of the French draft National Energy and Climate Plan	15

1. SUMMARY

Main observations¹

- ✓ The draft integrated National Energy and Climate Plan (NECP) of France builds on the Multiannual Energy Planning and the National Low-Carbon Strategy; both documents were government proposals still to be adopted by the parliament at the time of submission. The **guiding objectives** of the draft plan are to **decarbonise the energy system and to achieve carbon neutrality by 2050**.
- ✓ France's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS), is -36 % compared to 2005, as set in the Effort Sharing Regulation (ESR)². France has set itself a target of being carbon neutral by 2050, and presents a trajectory towards this target. If France follows this trajectory, it may overachieve its 2030 non-ETS target by 4 percentage points. This would require implementation of additional policies that keep emissions within the carbon budgets proposed in the National Low-Carbon Strategy, from 2019 onwards. These additional policies are not yet clearly defined. With existing policies and measures only, France projects to fall short of its 2030 non-ETS target by 11 percentage points, assuming that the Land Use, Land Use Change and Forestry (LULUCF) no-debit commitment is met³ (meaning that emissions do not exceed removals). France has ambitious objectives for the transport and building sectors. However, specific policies need to be further defined.
- ✓ The French national contribution for **renewable energy** proposed in the draft plan is 32 % of gross final energy consumption in 2030. This is slightly below the share of 33 % that results from the formula in Annex II of the Governance Regulation, a situation which would also require an indicative trajectory in the final plan that reaches all reference points⁴ in accordance with the national contribution in the final plan. The policies and measures included in the draft plan to support the achievement of the proposed objectives and contributions for renewable energy are clear, well detailed, and cover the expected scope. The final plan would benefit from elaborating further on the policies and measures allowing the achievement of the contribution notably in the transport sector and on other relevant sectorial measures.
- ✓ As regards **energy efficiency**, the contribution of France is of modest ambition for primary energy consumption considering the need to increase efforts at the EU level to reach the Union's 2030 energy efficient targets collectively. France's contribution for final energy consumption is of sufficient ambition. It is expected that, if implemented,

¹ 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.

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

³ Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU.

⁴ Pursuant to Article 4(a)(2) of Regulation (EU) 2018/1999.

the planned policies and measures would deliver a significant reduction of energy consumption. This could best be estimated by including a comprehensive impact assessment in the final plan.

- ✓ In terms of **energy security**, France faces the challenges to decrease the share of nuclear energy, and to phase-out coal power plants. Policies and measures presented in the draft plan contributing to address these challenges could be further detailed in the final plan, which should also include France's views on the use of demand-side management and the long-term options offered by digitalisation to drive consumption load curves.
- ✓ As regards the **internal energy market**, peak consumption is a key element dictating crucial features of the French electricity system. A thorough analysis of possible developments of peak consumption in the next decade would allow optimising the use of the tools to drive electricity load and enhance demand-side response, of which some relevant elements are presented in the draft plan. These will prove essential in view of managing the national electricity system and planning the necessary interconnections in cooperation with neighbouring countries. More generally, the final plan should define forward-looking objectives and targets concerning market integration, in particular measures to develop more competitive wholesale markets, including progressing towards fully market-based prices. The final plan will also need to provide an assessment of the number of households in energy poverty to allow assessing the possible need for an indicative objective for reducing energy poverty.
- ✓ The final plan would need to include an **interconnection** target and acknowledge in particular the importance of increasing interconnections with the Iberian Peninsula.
- ✓ In terms of **research, innovation and competitiveness**, the Hydrogen Plan put forward by France is a good example of a combination of concrete objectives at the 2030 horizon, accompanied by credible policies and measures. This approach could be replicated in areas such as innovation in other energy technologies, deployment of low-carbon technologies and competitiveness. The final plan would benefit from further elaborating on national objectives and funding for research and innovation.
- ✓ The analysis of **investment needs** can be considered a good practice as it includes investment needs by sector. The assessment of the different funding sources could be usefully extended to the future investment needs. The draft plan already takes advantage of the role NECPs can play in providing clarity to investors and attracting additional investments in the clean energy transition. The additional investments for realising the energy and climate transition indicated, are estimated to EUR 25-40 billion per year, which corresponds to 1.1–1.7 % of GDP in 2018.
- ✓ Overall, the draft NECP of France is well developed and largely consistent across the different dimensions. It has a robust analytical basis, but is not yet complete and the impact assessment of policies and measures could be further developed, including through specifying the links between policies and measures and projections.
- ✓ The draft plan assesses the impacts on **air pollution and quality** quantitatively. The final plan could benefit from complementing this analysis with further information on the interactions, with air quality and air emissions policy, including synergies and trade-off effects.
- ✓ The draft plan does provide some elements on a **socially just energy transition**, which could however be better integrated throughout by considering social and employment

impacts. The draft plan mentions the question of skills and training, but would benefit from providing more details on these aspects.

- ✓ A list of all **energy subsidies** and actions undertaken and planned to phase them out, in particular for fossil fuels, need to be included in the final plan.
- ✓ There is potential to intensify the good **regional cooperation** already taking place with Spain, Portugal and the Pentalateral countries, especially in the renewables, internal market and energy security areas. The cooperation could also be expanded to new areas such as regional generation capacity assessment and research and innovation on technologies of common interest with other Member States.
- ✓ A **good practice** is that projections were made until 2050, indicating the scale of emissions reduction by sector that will be needed to reach the carbon neutrality target and supporting the definition of five-year carbon budgets. Another good practice is that the draft plan raises the issue of the balance between production and consumption of biomass for energy and mentions the impact of increased use of biomass on the carbon sink.

Preparation and submission of the draft plan

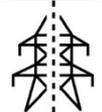
France notified its draft National Energy and Climate Plan (NECP) to the European Commission on 15 February 2019. The French draft NECP is based on two strategic documents: the Multiannual Energy Planning (*Programmation Pluriannuelle de l'Énergie*) and the National Low-Carbon Strategy (*Stratégie Nationale Bas Carbone*). Both have been subject to a large **consultation** with national stakeholders such as the general public, members of parliament, representatives of industry, social partners, local and regional authorities, and committees of experts. During the preparation of the Multiannual Energy Planning, 86 meetings were organised with a total of 8,000 participants. Dedicated websites and online questionnaires have also collected opinions from the public.

France has started the **regional consultation** process, in particular with Austria, Belgium, Germany, Luxembourg, the Netherlands and Switzerland in the framework of the Pentalateral Energy Forum. Further exchanges with other Member States and third countries are planned in the course of 2019.

Overview of the key objectives, targets and contributions

The following table presents an overview of France's objectives, targets and contributions under the Governance Regulation⁵ as expressed in the French draft NECP:

⁵ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-11	-14	-37	As in ESR. Total GHG 2030 -40% to 1990
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	16.3	23	32	Below 33 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	239.5 148.9	226.6 138.1	201.8 124.9	Modest Sufficient
	Level of electricity interconnectivity (%)	9	12	> 16,5 ⁶	N/A

Sources: EU Commission, ENERGY STATISTICS, Energy datasheets: EU28 countries; SWD(2018)453; The European Semester by country⁷; COM/2017/718; French draft NECP.

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

Dimension decarbonisation

Greenhouse gas emissions and removals

Besides the binding target for non-ETS emissions of -37 % by 2030 compared to 2005 as set out in the Effort Sharing Regulation (ESR)⁸, France has set a national target for total **greenhouse gas emissions** of -40 % by 2030 compared to 1990 (excluding LULUCF). This corresponds to -41 % compared to 2005.

France has set for itself a target of carbon neutrality by 2050. Projections have been made until 2050, indicating the scale of emission reductions by sector that will be needed to reach the carbon-neutrality target. An element worth highlighting is that these projections guide the

⁶ Projection included in France's draft NECP.

⁷ https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-your-country_en.

⁸ Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

definition of the five-year carbon budgets adopted via Government decree. The total carbon budgets are also split into sectoral targets.

Based on the projections for the ESR sectors, the Commission estimates that with existing measures, France would fall short of its 2030 non-ETS target by 11 percentage points. However, if France follows the trajectory set out to reach the carbon-neutrality target, it could overachieve its 2030 target by 4 percentage points, provided that the LULUCF no-debit commitment is achieved. With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by France as required by Article 8(3) of the LULUCF Regulation, the Commission has put forward technical recommendations requesting action on a number of issues, detailed in SWD (2019) 213.

Whether France will be able to follow the planned trajectory, and thereby meet the non-ETS target, largely depends on adoption of the carbon budgets proposed in the revised National Low-Carbon Strategy. Furthermore, specific policies would need to be defined to ensure delivery of the emission reductions defined through the carbon budgets. The description of policies and measures in the draft NECP includes, on the one hand, the main objectives and principles of the National Low-Carbon Strategy, and on the other hand, specific existing and planned policies and measures. The planned cross-sectoral policies include a gradual increase of the carbon compound in the energy tax and the introduction of a tax on hydrofluorocarbons. The description of planned policies could be further improved by indicating the expected impact of individual or groups of policies, in particular for those policies that are already under examination.

An interesting existing policy is the low-carbon label that improves greenhouse gas monitoring, reporting and verification across various sectors, and provides a basis for the creation of voluntary carbon offset schemes.

A strong element of the draft NECP is that it identifies a broad range of actions in the **transport sector**. France has ambitious objectives for emission reductions and for increasing the share of renewable energy in the transport sector, including putting an end to sales of GHG-emitting vehicles as of 2030. The draft plan mentions that a Clean Mobility Strategy is to be published in 2019, covering the period 2019-2028. The strategy will include support to alternative mobility services, managing demand for mobility, support for low-emission vehicles, including alternative fuel infrastructure, and support for a modal shift.

An impact assessment of the measures necessary to achieve the carbon neutrality target is provided in the draft NECP, including projections on deployment of alternative vehicles and efficiency gains. **Electromobility** is projected to increase substantially, with 35 % of new vehicles in 2030 projected to be electric vehicles, as well as 10 % plug-in hybrid electric vehicles. Support to electromobility is envisaged via different measures including fiscal incentives, a *bonus-malus* system and support to charging. Objectives for hydrogen and LNG refuelling stations are set for 2028; however, those for recharging stations and electricity used in ports are only set until 2023. The aim of deploying alternative fuels in the waterborne and air transport sectors is also mentioned. More details for all modes on how related policies would be further developed in the future are welcome.

Stricter regulations are planned for increasing the energy efficiency of new **buildings**, and financial measures and cooperation with the industry are planned for increasing the energy efficiency in existing buildings.

On **agriculture and forestry**, the draft NECP raises the issue of the balance between production and consumption of agricultural and forest biomass for energy and mentions the impact of increased use of biomass on the carbon sink. It sets out several strategies and programmes to tackle them, notably the national forest and wood programme.

The draft plan mentions the national adaptation strategy and actions for supporting forest adaptation to climate change as part of France's LULUCF-related policies. For implementing Energy Union objectives, supportive adaptation measures are mentioned. These cover coherence between adaptation and mitigation, support to outermost regions as well as norms and standards related to infrastructure and adaptation in buildings and construction.

Renewable energy

The proposed French national contribution to the EU **renewable energy** target for 2030 in the draft plan is 32 % of gross final energy consumption in 2030. This is slightly below the share of 33 % that results from the formula contained in Annex II of the Governance Regulation⁹.

Reflecting the fact that key dates in the Multiannual Energy Planning (PPE) are 2023 and 2028, the draft plan does not include the trajectories for the share of renewable energy covering the reference points required in the Governance Regulation, nor provides detailed information by technology for the years 2020 and 2030. This prevents comparisons with trajectories put forward by other Member States. The final plan should include an indicative trajectory towards the national contribution in the final plan that reaches all required reference points.

By 2030, France aims at reaching shares of renewable energy of 40 %, 38 % and 15 % respectively for **electricity, heating and cooling and transport** sectors. The relative contributions by sector and of specific technologies within each sector are consistent with the potential for renewable energy deployment in France.

In general, the **policies and measures** included in the draft plan to support the achievement of the proposed objectives and contributions for renewable energy are clear, well detailed, and cover the expected scope to effectively support renewable energy up to 2030. For the electricity sector, they are backed up with concrete plans which make the achievement of objectives credible. As regards the transport sector, it is unclear if the policies and measures included in the draft plan are sufficient to achieve the objectives. This is due to the fact that the draft plan does not include detailed specific measures for the support of biofuels, nor a clear link between this objective and the electrification of road and rail transport. Generally, the final plan would benefit from a thorough impact assessment to demonstrate the consistency and credibility of the proposed level of ambition.

As regards the heating and cooling sector, the draft plan does not allow for reconciliation with the objective of increasing the share of renewable energy in the sector by an indicative 1.3 and 1 percentage points annual averages for the periods 2021-2025 and 2026-2030 respectively. In the transport sector, the final plan could include a detailed calculation of the share of renewable energy in accordance to Articles 25 to 27 of the Renewable Energy Directive¹⁰.

⁹ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

¹⁰ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

Dimension energy efficiency

The national **energy efficiency** contributions by 2030 are expressed in both primary and final energy consumption. However, after clarifications with the French authorities, the value for final energy consumption has been corrected to add also energy consumed in international aviation and the value for primary energy consumption has been corrected to exclude non-energy uses. The corrected national contributions are 201,8 Mtoe of primary and 124.9 Mtoe of final energy consumption. The target for final energy consumption is also expressed as a reduction of 20 % of final energy consumption in 2030 (in comparison to 2012).

The target implies a decrease of consumption by 16.1 % for final energy and 15.7 % for primary energy compared to 2017. The level of energy consumption targeted for 2030 is also lower compared to the level targeted for 2020 (by 10.9 % and 9.6 % for primary and final energy consumption respectively). Overall, the contribution of France is of modest ambition for primary energy consumption considering the need to increase efforts at the EU level to collectively reach the Union's 2030 energy efficient targets. France's contribution for final energy consumption is of sufficient ambition.

The calculation of the estimate of France's cumulative savings requirement under Article 7 of the Energy Efficiency Directive¹¹ is clear and in line with Article 7 provisions.

France plans to put in place a comprehensive set of more than 40 policies and measures to achieve the 2030 energy efficiency objectives. The existing system of energy saving certificates addressing the residential, tertiary, transport and agriculture sectors will be key, while several new actions are envisaged, in particular in the transport sector.

On transport, the plan mentions several actions for contributing towards more efficient organisation of the mobility system and thus towards improved energy efficiency and emissions reductions (e.g. demand management, incentivising multimodality and modal shift, support active modes and development of low emission zones, increase investments in rail and waterborne transport infrastructure, digitalisation and automation). Examples of policies and measures in other sectors include a strengthening of building codes, a widening of energy audits for enterprises, measures to support the improved efficiency of the mobility system and thus improved energy efficiency (e.g. demand management, incentivising multimodality and modal shift, support active modes and development of low emission zones, increase investments in rail and waterborne transport infrastructure, digitalisation and automation), and financial measures to support the renovation of buildings for low-income households. More details on how related policies would be further developed are welcome.

France includes specific information relating to policies and measures to improve the energy performance of buildings that could be implemented as part of its long-term renovation strategy¹², where more concrete and ambitious policies and measures will be needed.

¹¹ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency as amended by Directive (EU) 2018/2002.

¹² The inclusion of policies and measures relating to the long-term renovation strategy to support the renovation of the national stock, provided by Article 2a of Directive 2010/31/EU on the Energy Performance of Buildings (EPBD) as amended by Directive 2018/844, was not required for the draft NECP due to the later transposition of the EPBD set for 10 March 2020.

If implemented, the policies and measures would appear to deliver significant reduction of energy consumption. However, it is not clear whether the envisaged measures will be sufficient to meet the objectives, since the analysis of their expected impacts, and in some cases the timeline of their implementation, is not included in the draft plan.

Dimension energy security

Peak consumption plays an important role in the French electricity system and is key to assess **energy security**. The final plan would benefit from including objectives and policies and measures aiming at reducing its level. This is of particular importance since non-market measures and power cuts are more likely to occur at peak consumption. Meeting electricity demand during these times can also imply resorting to fossil fuel-based power plants, which would go against the French decarbonisation objectives.

France's experience with participation of industrial load-management in its electricity market could be useful for other Member States facing similar challenges of planning a phase-out of large power plants in the next decade. In view of improving the comprehensiveness of the draft NECP, France should report on its analysis of how it intends to cope with the challenge of a decrease in the share of nuclear energy and a phase-out of coal power plants. France's views on the use of demand-side management and the long-term options offered by digitalisation to drive consumption load curves would be particularly relevant additions to the final plan. The objective of between 65 000 and 100 000 self-consumption photovoltaic sites by 2023 is positively noted. Beyond the measures envisaged at national level, a short-term and medium-term assessment of the adequacy between consumption and generation at cross-border level would give the final plan a better regional perspective.

The final plan would benefit from including information on expected needs for lifetime extensions of existing nuclear reactors over 40 years of operation, and a strategy concerning enrichment, conversion, fuel fabrication and reprocessing facilities and an appraisal of the role of nuclear energy in assuring energy security.

Dimension internal energy market

The draft plan describes the current situation and includes 2030 projections of electricity interconnections. It presents a list of infrastructure projects in construction or under study with Germany, Belgium, Spain, Ireland, Italy, Switzerland and the United Kingdom. The final plan should further acknowledge the importance of increasing interconnections with the Iberian Peninsula. More generally, the final plan would need to include an **interconnection** level aimed for 2030. This is particularly relevant considering the ambition of 32 % of renewable energy in 2030 and the importance of available capacity in neighbouring Member States to ensure electricity demand is met, notably during episodes of tension in its electricity system requiring imports. As is the case for energy security aspects, it is of key importance to have a thorough analysis of peak load developments in the period 2021-2030 to have a precise assessment of interconnection needs, and to identify projects accordingly.

As competitive markets are a key enabler for other dimensions of the Energy Union, objectives related to the further development of wholesale and retail market competition and corresponding measures and timelines merit being included in the final plan. The draft plan includes information on France's approach to smart grids, smart meters, demand response and storage, and could better identify the barriers to system flexibility. For a full picture of France's objectives in terms

of system flexibility, the final plan would benefit from more information on, and a better articulation of, the concrete planned measures, notably regarding issues such as aggregation and further incentivising consumers' active participation in the energy system.

Regarding **energy poverty**, the draft plan contains a detailed description of the measures in place, such as energy vouchers, energy certificates and financial measures to support the renovation of buildings for low-income households. An assessment of the number of households in energy poverty is needed in the final plan as it would allow assessing the possible need for an indicative objective for reducing energy poverty. In that perspective, France could build on the work done by the National Observatory for Energy Poverty.

Dimension research, innovation and competitiveness

The National Strategy for Energy Research referred to in the draft NECP includes possible actions within broad areas related to energy **research and innovation**, but the objectives they are designed to deliver and the timeline of their implementation should be better specified in the final plan.

France has put in place instruments intended to support industry with innovation-based solutions, which could be translated into energy-related **competitiveness** objectives in the final plan, in particular in the low-carbon technologies sector.

In 2018, the French Government set up an innovation fund with a budget of EUR 10 billion, generating an estimated annual return of EUR 200 million to EUR 300 million, designed to support the development of disruptive innovations and their industrialisation in France. The main challenges will be identified by the Innovation Council. A major challenge on energy storage was adopted in December 2018.

The draft plan provides a compilation of existing measures in the area of research, innovation and competitiveness. In terms of forward-looking policies and measures to be implemented in the period 2021-2030, note is taken of France's Hydrogen Plan of July 2018. This plan contains specific measures to reach objectives in the hydrogen sector and a timeline for implementation for some of the measures, which appear to be sufficient to achieve the defined objectives.

The final NECP would benefit from presenting a comprehensive analysis on where the low-carbon technologies sector, including for decarbonizing energy and carbon-intensive industrial sectors, is currently positioned in the global market, highlighting areas of competitive strengths and potential challenges. Measurable objectives for the future should be defined on that basis, together with policies and measures to achieve them, making appropriate links to enterprise and industrial policy.

As regards cooperation with other Member States, the draft NECP explains how the national approach regarding research and innovation aligns with the **Strategic Energy Technology (SET) Plan** and describes existing cooperation with Germany, but does not indicate how such cooperation will work beyond 2020. The draft NECP includes figures and concrete information on how the national research strategy aligns with the respective SET Plan Implementation Plans, putting forward the concrete examples of photovoltaic and batteries and storage.

3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

The two strategic documents on which the draft plan is based, the Multiannual Energy Planning and the National Low-Carbon Strategy, have been elaborated on the basis of the same energy and climate scenarios, ensuring a consistent analytical background. In addition, the national law on energy transition and green growth stipulates that the Multiannual Energy Planning must be compatible with the National Low-Carbon Strategy and consistent with the carbon budgets set by France.

France's draft NECP presents some adaptation measures consistent with the other dimensions of the Energy Union. The final plan could include more information on how climate change risks might affect energy supply (e.g. wildfires and storms destroying biomass resources and power networks, availability of hydropower). Additional information could also be included on adaptation benefits for energy efficiency, such as in the thermal management of buildings.

Interactions between dimensions have not been explicitly identified, but most policies and measures are assessed as transversal as they will have impacts on several dimensions of the Energy Union. As an example, measures to improve energy efficiency or increase the deployment of electric vehicles will reinforce security of supply by reducing the needs for imports of oil and gas. The draft NECP acknowledges that energy efficiency is the first principle guiding the efforts towards the energy transition. The impact assessment includes environmental impacts of the plan, including impacts on air quality. Some negative interactions between policies and measures in one dimension and objectives in another dimension are noted. For instance, postponing to 2035 the reduction of nuclear power in the electricity mix to 50 % mechanically limits the increase in the share of renewable energy. Similarly, the measures to develop domestic biomass, biofuels and eco-designed products can have a negative impact on the LULUCF sector and achievement of targets. The trade-offs with **biodiversity** are also raised, consistently with the Biodiversity Plan published in 2018, but to a lesser extent the synergies (carbon sinks, ecosystem services for climate adaptation).

The draft plan strongly integrates the **circular economy**, in line with its National Action Plan on the Circular Economy published in 2018.

The draft plan includes a discussion of the balance between production and consumption of biomass for energy. France notes that the scenario with additional measures implies that the carbon sink in the LULUCF sector will be reduced relative to the scenario with existing measures because of significantly larger use of biomass for energy in the former scenario. The scenario with additional measures is designed for achieving the carbon-neutrality target by 2050 and depends on the implementation of the National Low Carbon strategy, for which further definition of the specific policies will be needed.

The interactions with **air quality and air emissions policy** are mentioned in the draft plan, but not in a systematic way. The draft plan presents the impacts on air pollution for one of its scenarios, however underpinning information is missing. The final plan would benefit from deepening this analysis, in particular in terms of synergies and trade-off effects.

The draft plan does provide some elements on a socially just energy transition, which could however be better integrated throughout by considering social and employment impacts, e.g. shifts in sectors/industries and skills impacts, distributional effects (including on energy poverty) and revenue recycling. The draft plan mentions the question of skills and training, but would

benefit from providing more details on these aspects. It would also benefit from considerations in terms of costs and benefits as well as cost effectiveness of planned policies and measures. The description and projection of energy prices development should be improved, in particular regarding electricity and gas prices projections and a breakdown of current price elements.

Regarding **investment needs**, the draft plan contains a short assessment of the current investment flows supporting the clean energy transition, per sector (energy efficiency, infrastructure, renewable energy etc.) and per origin (households, undertakings or public authorities). The draft plan also presents the different types of public support (budget expenditure, tax measures and tax expenditures) currently allocated to the energy and climate objectives. It should be extended to future investment needs. Concerning future investment assumptions, the draft plan contains an assessment of the investment needs for the next three carbon budget periods (2019-2023, 2023-2028 and 2028-2033) as well as for the period 2034-2050, with breakdown per main sector (energy efficiency in buildings, transport and energy production and networks). The total annual investments in energy and climate in 2019-2032 are estimated to EUR 45-85 billion, of which EUR 25-40 billion would represent the additional investments compared to existing alternatives. The European Commission estimates that those additional investments corresponds to 1.1 – 1.7 % of GDP in 2018. It is noted that this does not represent the investment gap between the with existing measures and the with additional measures scenarios. Some investment needs could partly be covered by EU funds, in particular cohesion policy funding, notably in line with the investment analysis for 2021-2027 of the 2019 European Country Semester Report for France and with any relevant legislation.

Links with the European Semester

Identifying financing needs and securing the necessary funding will be essential to deliver on energy and climate objectives. The Commission addressed this question as part of the 2019 European Semester process.

Based on the 2019 Country Report for France, published on 27 February 2019¹³, the European Commission's recommendation for a Council recommendation for France issued on 5 June 2019¹⁴, in the context of the European Semester, highlights in particular the need to invest in '*renewable energy, energy efficiency and interconnections with the rest of the Union*'.

When preparing its overview of investment needs and related sources of finance for the final plan, [MS] should take into account these recommendations and links to the European Semester.

The Energy Prices and Costs Report¹⁵ identifies significant **energy subsidies** in France, including subsidies for renewable energy and fossil fuels. It is important that the complete final plan includes a detailed description of all energy subsidies as well as of the national policies, measures and timelines to phase out energy subsidies, particularly for fossil fuels.

¹³ SWD(2019) 1009 final: Country Report France 2019

¹⁴ COM(2019) 510 final: Recommendation for a Council recommendation on the 2019 National Reform Programme of France and delivering a Council opinion on the 2019 Stability Programme of France

¹⁵ Commission Staff Working Document Accompanying the Document Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Energy prices and costs in Europe, COM(2019) 1.

4. REGIONAL COOPERATION

The declaration signed on 4 March 2019 by the Ministers in charge of Energy of France, Austria, Belgium, Germany, Luxembourg, the Netherlands and Switzerland, provides a political mandate to the Pentalateral Energy Forum to act as a forum for regional cooperation regarding the development and monitoring of the draft NECP in particular on issues with substantial cross-border effects. The approach taken, including the setting up of a dedicated Committee to coordinate regional cooperation on the draft NECPs, can be regarded as a good practice that can inspire other Member States.

In addition, France, Portugal and Spain agreed to coordinate the elaboration of their draft national strategies and share their energy supply hypotheses in the Lisbon Declaration of July 2018. Considering the importance of the evolution of electricity mixes in neighbouring countries for France's ability to reach its own objectives, regional cooperation is of particular importance to allow a detailed anticipation of possible phase-out of certain technologies in other Member States.

The platform for exchanges provided by the North Seas Energy Cooperation allowed developing concepts for potential joint wind offshore projects and coordinated electricity infrastructure.

In the perspective of future EU-wide adequacy assessment, the regional dimension of energy security would be enhanced notably by increasing transparency on how generation capacity in neighbouring countries is taken into account in the adequacy assessment conducted by the electricity transport system operator RTE.

France indicates as a possible European-wide objective keeping the EU technological leadership in the nuclear sector on both fission and fusion technologies. This is an opportunity for regional cooperation on research and innovation with the other Member States willing to use these technologies.

In May 2017, the Clean Energy for EU Islands Initiative was launched, aiming at accelerating the clean energy transition by helping islands reduce their dependency on energy imports and making better use of locally available renewable energy sources. It also provides a forum for exchanges of best practices and aims to promote modern and innovative energy systems and reduce greenhouse gas emissions on islands. As France is a signatory to the political declaration, France could mention it in the final NECP, in particular in view of enhancing cooperation with other Member States and islands regions.

5. COMPLETENESS OF THE DRAFT PLAN

Information provided

While the French draft plan addresses many elements required by the relevant template, some sections remain incomplete. As part of the section of the draft NECP dedicated to **greenhouse gas emissions** (GHG) in the **decarbonisation dimension**, the expected binding trajectory estimation for 2021-2030 under the Effort Sharing Regulation ¹⁶ is missing. The draft plan does

¹⁶ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

not yet apply the accounting rules as set out in the LULUCF Regulation¹⁷, which is necessary to assess whether France will achieve the no-debit commitment. Since France has a national adaptation strategy, the final plan needs to include a description of adaptation goals.

As regards **renewable energy**, the draft plan provides an overview of national objectives for 2030 for renewable energy in general as well as for renewable electricity, renewable heat, renewable fuels and renewable gas. It does not consistently provide targets, contributions and trajectories in absolute value of gross final energy consumption, expressed in million tons of oil equivalents (Mtoe). Planned capacities are described but are not split between new capacities and repowering. While information is provided on biomass by feedstocks, additional information should be provided on imports of biomass, as well as an assessment of the impact on the LULUCF sink. The description of current and future policies and measures supporting the 2030 renewable contribution is generally well detailed and need only be supplemented by relevant impact assessments.

As regards **energy efficiency**, the draft NECP does contain an estimate of France's cumulative savings requirement under Article 7 of the Energy Efficiency Directive¹⁸ for the period 2021-2030, detailed per energy sector. Although policies and measures for the 2021-2030 period are described, the final plan would benefit from including a detailed analysis of their possible impact. The required elements on the long-term renovation strategy and the cost-optimal levels of the minimum energy performance requirements are expected to be provided in the final plan.

On **energy security**, the detailed information provides a description of the current situation, but does not include policies and measures or projections. Useful additions to be considered in view of the final plan include clear objectives in relation to the flexibility and the adequacy of the electricity system, information on the future of the capacity mechanism, gas import dependency, compliance with the "n-1" infrastructure standards and other elements which should have been covered in the preventive action and emergency plans for gas. The final plan would also benefit from including information on existing risk preparedness plans, the target date for the plans of the Risk Preparedness Regulation and measures for cybersecurity.

As regards the **internal energy market**, the draft plan includes objectives for the retail market. However, there is limited information on general wholesale market functioning and possible wholesale market-related issues. Objectives and strategies to further develop competition are missing. Quantitative core parameters such as wholesale and retail market concentration levels, indicators for market liquidity, such as traded volumes and market participants, and switching rates would allow a thorough assessment of the functioning of the market and the identification of possible market-entry barriers. Elements related to market integration aspects are also needed in the final plan, in particular in relation to the promotion of competitively determined electricity prices and on increasing the tradeable capacity of existing interconnectors. As regards energy poverty, an assessment of the number of households concerned is needed in the final plan, as it would allow assessing the possible need for an indicative objective for reducing energy poverty.

The draft plan provides some elements on a **socially just energy transition**, but would benefit from considerations in terms of costs and benefits as well as cost effectiveness of planned policies and measures. The description and projection of energy prices development is not

¹⁷ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

¹⁸ Directive 2012/27/EU on energy efficiency.

exhaustive, in particular regarding electricity and gas prices projections and a breakdown of current price elements.

On **research, innovation and competitiveness**, while the draft plan identifies broad areas for future activities, it does not provide concrete measurable objectives to be achieved by 2030 and accompanying policies and measures, nor does it identify deployment objectives for the post-2030 period. However, cooperation with other Member States is described, and financing measures are presented.

Robustness of the French draft National Energy and Climate Plan

The French draft plan addresses all required elements of the **analytical basis**. It contains both a with existing measures and a with additional measures scenario, as well as an impact assessment of planned policies and measures. The draft plan uses national data sources as far as documented.

The **with existing measures projections** largely cover the five dimensions of the Energy Union with the exception of research, innovation and competitiveness, which is restricted to historic levels of public funding. The policies and measures as well as the projections are well detailed. The final plan could be further enriched by providing time series for primary energy consumption, gross final energy consumption including the share of renewable energy sources and times series for all variables beyond 2028, the differentiation of sectoral GHG emissions per IPCC (intergovernmental panel on climate change) sector and per gas, and GHG emissions from international aviation. Investment needs are currently addressed in the impact assessment of planned policies and measures corresponding to the **with additional measures scenario**. Presenting investment needs for the with existing measures scenario would be a useful addition to the final plan, including possible investment gaps.

The projections are presented in a largely **transparent** way. The key model input parameters (gross domestic product, population, energy, CO₂ prices) and data sources are documented. More information could be included on transport (passenger-kilometres and freight-tonne kilometres), heating and cooling degree days, and cost data for all relevant technologies. In the final plan, some of the data reported in graphs could also be reported in numerical values, to facilitate the assessment of binding quantitative requirements of the Governance Regulation¹⁹.

The **impact assessment** of planned policies and measures covers GHG emissions and describes their impact on key sectors of the economy. The macroeconomic, social and environmental impacts are assessed succinctly. The macro-economic impacts of the policies and measures envisaged would gain in transparency if more detailed explanations were provided on how these policies and measures would be funded and financed. France provides a clear definition of planned policies and measures. It could be inferred that each of the sectoral group of policies and measures is reflected in the relevant sectoral with additional measures projections. The fact that the planned policies and measures include both specific policies under examination and general objectives not yet specified through policy instruments, limits the likelihood that the with additional measures scenario will be realised. A more explicit description of the link between policies and measures and the impact assessment would improve the final plan. France's final NECP could be improved by analysing planned policies and measures' impacts on other Member

¹⁹ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

States, in particular in view of the regional cooperation process that will occur in the course of 2019.

Key exogenous parameters of population, GDP and final energy consumption are generally in line with EUROSTAT figures for the base year 2015. Since final energy consumption is slightly lower in the draft NECP compared to EUROSTAT data and primary energy consumption is not provided, a clarification of the methodology used to calculate these figures would usefully complement the final plan. The draft plan follows the EU ETS and fuel price assumptions recommended by the Commission.