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Assessment of the draft National Energy and Climate Plan of Luxembourg

Accompanying the document

Commission Recommendation

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

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1. SUMMARY

Main observations¹

- ✓ The draft National Energy and Climate Plan (NECP) has been drafted in accordance with the new coalition agreement 2018-2023 with the objective of doing the utmost to comply with the Paris Agreement and to take into account the findings of the Inter-Governmental Panel on Climate Change's (IPCC) Special Report (1,5 degrees Celsius) and strengthening the link between energy and climate policies on the one hand and the economic development of Luxembourg on the other. A range of policies and measures are included for almost all dimensions except for research, innovation and competitiveness, even though they vary in detail. The projections of planned measures and their impacts still have to be developed for the final plan.
- ✓ Luxembourg's target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS), is -40 % compared to 2005, as set in the Effort Sharing Regulation (ESR)². It is well noted that Luxembourg plans to overachieve by 10 to 15 percentage points this target while complying with the Land Use, Land use Change and Forestry (LULUCF) no-debit commitment (i.e. emissions do not exceed removals).
- ✓ The final NECP would benefit from the inclusion of a more precise ambition level, a more detailed elaboration of the package of existing and planned policies measures, in particular in the **transport and building sector**, and their expected impacts, particularly in light of the reference scenario indicating an expected continued growth of GHG emissions. Likewise, the draft NECP would gain in clarity from explaining how Luxembourg is planning to achieve its LULUCF no-debit commitment³ (e.g. application of the accounting rules, intended use of flexibilities), and the intended use of flexibilities between the LULUCF and ESR sectors.
- ✓ The planned range of 23 to 25 % of **renewable energy** by 2030 is above the share of at least 22 % in 2030 that results from the formula in Annex II of the Governance Regulation. An indicative trajectory is partially provided (for the 25 % overall contribution level in 2025); reference points⁴ are still to be provided for the years 2022 and 2027. The final plan would benefit from elaborating further on the policies and measures allowing the achievement of the contribution and on other relevant sectorial measures.

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 2018/1999.

- ✓ The planned 40 to 44 % reduction in final **energy consumption** sets a sufficient level of ambition. It is expected that the final plan provides more precise national contributions (also for primary energy consumption) and provides more clarity on the expected impact of planned policies and measures.
- ✓ In relation to **energy security**, the final NECP would benefit from being more forward looking, taking into account the specific challenges from Luxembourg, notably its strong dependence on supply from neighbouring countries, deserving also specific attention to the development of national flexibility measures, such as demand side response and storage.
- ✓ In relation to the **internal market**, the plan describes the already very high level of interconnection of Luxembourg, and the integration in the neighbouring gas and electricity markets. Within this context, the final NECP would benefit from a more structured approach to retail markets and system flexibility, providing concrete and quantifiable objectives with a view to 2030. As regards **energy poverty**, the draft plan provides already some information. The final plan should include the assessment as required by the Governance Regulation.
- ✓ As regards **research, innovation and competitiveness** the plan currently does not yet focus on energy and climate issues to be addressed by 2030, instead providing national objectives to be achieved by 2020. This needs to be addressed in the final plan.
- ✓ The draft NECP does not contain an assessment of the overall **investment needs** or information on the financial sources to be mobilised to achieve its targets and objectives thus not yet fully taking advantage of the role NECPs can play in providing clarity to investors and attract additional investments in the clean energy transition. The draft NECP does not yet contain an **impact assessment** of planned policies and measures, which should be included in the final plan.
- ✓ The final plan would benefit from complementing the analysis of the interactions with **air quality and air emissions** policy and presenting the impacts of policies and measures on air quality.
- ✓ The issue of a **just transition** to a climate neutral economy could be better integrated throughout the plan by considering social and employment impacts, e.g. shifts in sectors/industries, distributional effects and revenue recycling. The draft plan would benefit from providing more details on the question of skills and training.
- ✓ A list of all **energy subsidies** and actions undertaken and planned to phase them out, in particular for fossil fuels, needs to be included in the final plan.
- ✓ An example of **good practice** is the approach taken in relation to regional cooperation, where Luxembourg foresees mainly to use existing regional platforms in order to discuss and align its climate strategy with its neighbouring countries, notably the Pentilateral Energy Forum and the North Seas Energy Cooperation. Under the Pentilateral Energy Forum a political declaration was adopted on 4 March 2019 that covers the precise scope and governance structure for cross border cooperation in the frame of the NECPs. Another good practice is the Climate Pact, where Luxembourg has shared best practices among its 98 municipalities, engaged local administrations to initiate projects and mobilised EUR 55.2 million in terms of investment, paving the road for the implementation of the NECP.

Preparation and submission of the draft plan

Luxembourg notified to the European Commission its draft National Energy and Climate Plan (NECP) on 18 February 2019. The document was prepared in close consultation with the two relevant Ministries, i.e. the Ministry of Energy and Spatial Planning and the Ministry of Environment, Climate and Sustainable Development.

Several rounds of **consultations** with representatives of civil society, business, academia and public administrations took place in the context of the previous documents contributing to this draft NECP (such as the National Action Plan for Energy Efficiency). Further national consultations are planned in the framework of finalising the NECP. In this context, the long-term strategy of Luxembourg will also be discussed.

In the draft NECP, Luxembourg sets out its intention to cooperate with **neighbouring countries** in existing fora – such as the Pentalateral Energy Forum, the North Seas Energy Cooperation and the Green Growth Group – on topics of common interest.

Overview of the key objectives, targets and contributions

The following table presents an overview of Luxembourg’s objectives, targets and contributions under the Governance Regulation⁵:

	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) (%)	-15	-20	-40	2030 national -50 to -55 %
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	6.4	11	23– 25	Above 22 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	4.3 4.2	4.5 4.2	3.2-3.4 3.1-3.3	Sufficient Sufficient

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.



Level of electricity interconnectivity
(%)

109

255⁶

405⁷

N/A

Sources: EU Commission, ENERGY STATISTICS, Energy datasheets: EU28 countries; SWD(2018)453; European Semester by country⁸; COM/2017/718; Luxembourgish 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

With 50-55 % GHG reductions by 2030 below 2005 levels, Luxembourg has set in its draft plan an ambitious national target range for reducing **GHG emissions** in the non-ETS sector that goes beyond the 40 % reduction target set under the Effort Sharing Regulation⁹. The draft plan provides no information on other national objectives and targets.

The draft plan includes some key cross-sectoral **policies and measures**, such as the introduction of a climate framework law, the further development of the Climate Pact with the municipalities, the adjustment of the taxation of petroleum products, further development of the sustainable mobility strategy, and a set of financial instruments. A detailed elaboration of the package of measures is still underway.

Under the reference scenario, Luxembourg expects emissions to increase, requiring additional policies and measures to reach the targeted reductions. The draft NECP would benefit from a clearer description of which policies and measures are included in this reference scenario (i.e. mainly existing policies, or also planned policies). The robustness of the draft NECP would also improve by adding details on the scope, time frames and impacts of policies and measures, and clarifying the underlying assumptions of the projections of the reference scenario as well as the impacts of further planned policies and measures.

The draft plan recognizes the contribution of **agriculture and LULUCF**, but does not describe policies and measures for these sectors nor indicates how the Common Agricultural Policy would be considered. It does not explain how Luxembourg is planning to achieve its LULUCF no-debit commitment (e.g. application of the accounting rules, intention to use flexibilities). With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by Luxembourg as required by Article 8(3) of the LULUCF Regulation¹⁰, the Commission has put forward technical recommendations requesting action on a number of issues, detailed in SWD (2019) 213.

⁶ Level indicated in Luxembourg's draft NECP.

⁷ Projection included in Luxembourg's draft NECP.

⁸ 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.

⁹ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

¹⁰ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

In **transport**, the largest sector in terms of non-ETS emissions, a target of 49 % electric and plug-in vehicles is set for 2030. Besides renewable energy and energy efficiency measures, **electromobility** is planned to be promoted by financial support and investment in charging infrastructure. Measures supporting alternative fuels should be, however, described in greater detail.

Renewable energy

The draft NECP proposes as **national contribution** a share of between 23 and 25 % renewable energy sources in gross final energy consumption by 2030. This is above the share of at least 22 % in 2030 that results from the formula in Annex II of the Governance Regulation. An indicative trajectory is partially provided (for the 25 % overall contribution in 2025); reference points are still to be provided for the years 2022 and 2027. The final NECP would benefit from further clarifications on the contribution setting process in Luxembourg taking into account the criteria established in the Governance Regulation, including the three reference points for renewables¹¹. Specifically, further information on the potential for cost-effective renewable energy deployment on the national territory would further solidify the draft NECP, also given Luxembourg's long-term ambition for a 100 % renewable energy system by 2050.

As regards the estimated **trajectories of sectoral shares** of renewable energy and of renewable energy technology, these are currently only provided in 5 year time steps and only for the trajectory towards a 25 % overall contribution.

On **electricity**, the proposed share would be 33.6 % by 2030, which represents a significant increase from the envisaged 11.9 % in 2020. The NECP would benefit from a clear indication on what would be the installed capacity underlying this figure as currently the information is on production only (in GWh).

On **heating and cooling**, the proposed share would be 30.3 %, which represents a significant increase from the envisaged 20 % in 2020. This is mainly driven by an increase in use of biomass (75 % of the total) followed by rapid increase in heat pumps and solar thermal. The trajectory in the draft plan shows an annual average increase for the renewables share in heating and cooling in line with requirements, even without the role of waste heat being included.¹² It would be beneficial to clarify also the annual average increase in district heating.

On **transport**, the proposed share would be 21.9 %, which represents a significant increase from the envisaged 10 % in 2020. The draft plan mainly refers to the role of biofuels in order for this share to materialise in the plan. The final plan would benefit from including the contributions of all eligible fuels as well as the limits for conventional fuels produced from food and feed crops, applicable multipliers and the sub target for advanced biofuels for the 2030 target in accordance with Articles 25-27 of Directive 2018/2001¹³.

The **estimated trajectories on bioenergy** demand are provided. In order to ensure the sustainability of the approach proposed by Luxembourg to increase the share of renewable energy in the heating and cooling sector, the NECP should be completed with trajectories on

¹¹ Article 5 of the Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

¹² A 1.6 percentage point annual average increase is envisaged. [Link to provision in RED to be added](#)

¹³ 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.

biomass supply – by feedstock and origin, distinguishing between domestic production and imports – as well as trajectories for forest biomass and an assessment of its source and impact on the LULUCF sink.

As regards the **policies and measures** underlying the above-mentioned objectives, the draft plan sets out a number of measures such as the maximisation of rooftop photovoltaic installations (PV), energy communities and self-consumption, as well as solar PV along transport routes. Luxembourg further builds on this by making use of the cooperation mechanism as well as joint tenders for PV capacity with neighbouring countries as a tool to increase its national contribution by about 5.2 % and contribute its 'fair share' to the overall EU ambition. The clear identification of the share to be achieved through cooperation mechanisms is a good practice in the draft plan. However there is a lack of concrete information which makes it difficult to assess the consistency between the level of ambition and the measures in place to reach the contribution.

Dimension energy efficiency

The draft NECP proposes as Luxembourg's **national contribution** a 40 to 44 % reduction in **final energy consumption** compared to the PRIMES 2007 projections for 2030. Luxembourg intends to provide a precise contribution in its final NECP. The proposed bandwidth is ambitious and would represent a sufficient contribution compared to the level of efforts needed at the EU level. A similar assessment would apply to a contribution of primary energy consumption applying the same relative reduction. It would be beneficial to the robustness of the NECP to explain how the contribution was established and if any circumstances affecting the energy consumption levels were taken into account.

With regard to the renovation of the national stock of residential and non-residential buildings by 2050, reference is made to a number of policy measures, which have formed part of Luxembourg's Long Term Renovation Strategy to date. From the elements thereof expected to be included in the draft and final NECP (i.e. milestones, indicators, savings, wider benefits, and contribution to EU target), only some milestones and measureable progress indicators were provided to date, as well as a target average renovation depth.

Luxembourg intends to reach its energy efficiency target using both domestic resources and international cooperation mechanisms. The overall strategy aims to trigger energy efficiency improvement throughout all sectors. Key focal point is building renovation at high-efficiency level and measures focusing on road transport. Luxembourg has set standards for new-built buildings since 2007 to become near-passive. They expect an average heat demand reduction of 72 % after a renovation. Along with the improving renovation rates, Luxembourg sees the possibility to rollout investment in combined heat and power of around 500 kWh for the produced energy being used in multi-dwelling buildings. For transport, the plan mentions incentives to more efficient organisation of the mobility system like support for active modes and public transport. An 'adaptation of the taxation on mineral oil products' is mentioned, but more details would be welcome. The industry is to be engaged by voluntary agreements to reduce energy consumption by 12 % in 12 years and will be assisted by advice and knowledge sharing networks. In addition stronger use of ISO 50001, mandatory audits for non-SMEs, energy efficiency networks and high quality training in energy technologies are envisaged. Building renovation and electric vehicle rollout are intended to be closely linked to the development of decentralised energy storage.

These measures go in the right direction and are roughly in the same areas as in the National Energy Efficiency Action Plan 2017. In order to assess the level of ambition of the measures proposed for the draft NECP, time frames and estimated impacts need to be provided – including saving estimates – both for existing and planned measures, and it needs to be clarified what are the underlying assumptions and elements included in the projections¹⁴.

Dimension energy security

The draft NECP underlines Luxembourg's high degree of **dependence on energy import** due to the absence of electricity generation or gas production and storage facilities in the country. The importance of regional cooperation and the completion of the European internal market for electricity are underlined in the draft NECP as essential in this regard.

The main national objective defined to mitigate the situation from an energy security perspective is the rapid development of the **flexibility potential** of consumers. The draft NECP furthermore hints at the possibility to develop renewable energy, while at the same time underlining the limited potential Luxembourg has for deployment on the national territory.

As a response to the specificity of the country, the final NECP would benefit from additional concrete **objectives on energy security** as well as a more detailed analysis setting out the potential for deployment on the national territory as well as potential barriers. The exact renewable energy generation capacity to be deployed and the associated timeframe can be provided. Further details are needed on how demand flexibility will contribute to energy security, notably the size and the exact origin of the flexibility, and the timeframe in which to achieve this. In addition, as the future development of electricity storage can provide additional flexibility, objectives in this regard need to be considered.

Further objectives and measures to mitigate risks associated to **gas and electricity supply disruption** and manage possible crises can be considered – notably in relation to the development of the necessary electricity risk preparedness plans, and gas preventive action plans and emergency plans required under EU law.

Specifically on oil, Luxembourg indicates its will to maintain the **diversification** of suppliers. While this is a welcome consideration, the draft NECP would be more robust if this ambition is translated into concrete objectives. Also, additional indications could be provided as regards the national policy framework that will be elaborated for the market development of alternative fuels in transport (as referred to in section 3.3 of the draft NECP).

Dimension internal energy market

Due to its specific situation, Luxembourg already has a very high level of electricity **interconnectivity**, significantly above the 2020 and 2030 targets. According to the draft NECP, planned network development would increase this level from about 270 % currently to 400 % in 2030.

As regards **energy transmission infrastructure**, an overview is provided on planned electricity transmission network reinforcements, notably commercialisation of the established link with

¹⁴ The inclusion of the Annex of Art 7 of the Directive 2012/27/EU on energy efficiency in the final NECP would create additional transparency.

Belgium and the upgrade of the 220 kV interconnection line with Germany until 2020. The final NECP would benefit from further clarifications on the link with Belgium including a clearer timing for the commercialisation of the available capacity. According to the draft plan, no further gas interconnectors are required. It is made clear that Carbon Capture and Storage is not considered a viable option.

As regards **the wholesale market for electricity**, the draft NECP underlines the importance of the completion of the internal market, also considering the high degree of dependence of Luxembourg on its neighbours. In light thereof, the final NECP would benefit from the inclusion of concrete objectives. This should be built on a reinforced analytical framework to be included in the final NECP, including additional quantitative core parameters, e.g. on market competition, wholesale and retail market concentration levels, indicators for market liquidity such as traded volumes, switching rates etc. These are needed to assess the functioning of the market and to identify possible remaining obstacles to enter the market that could be translated into concrete objectives for the final NECP.

As regards **the retail market for electricity**, the draft NECP sets the target for roll-out for smart meters at 95 % in 2019. This is very promising as smart meters constitute a pre-condition for introduction and take-up of the flexibility-related services, which Luxembourg underlines as a key tool to ensure security of supply. The final NECP would benefit from an update as to whether this target was achieved, as well as from additional information as to whether the regulatory framework will allow the use of the data from smart meters in the most optimal way. In addition, the draft NECP includes the aim to increase level of switching, and ensure enhanced comparability and transparency of prices. It would be beneficial to provide more concrete information regarding the current situation and the exact ambition to be achieved, as well as the policies and measures that will support this objective.

In order to render the final NECP more robust and comprehensive, a more structured approach to retail markets and system flexibility is warranted. Building on analytical data on the actual situation with respect to barriers for new market participants (e.g. aggregators) and the uptake of the different sources of flexibility (demand response, storage, and distributed generation), concrete objectives and supporting policies and measures could be established. Specific indicators could be developed so that the policy objectives can be benchmarked in the areas such as real-time price signals; increase of system flexibility; demand response and aggregation; storage; distributed generation; consumer protection; competitiveness in the retail energy sector.

As regards the **internal energy market for gas**, the draft NECP states the common gas market with Belgium will be deepened. In order to clarify this intention, further information is needed on what this means in terms of objectives, as well as on policies and measures that will achieve this.

As regards **energy poverty**, the draft plans provides information on handling of overall poverty and mentions elements from this framework specific to energy. It would be beneficial to clarify whether the measures listed are aimed at alleviating energy poverty or attempting to secure electricity supply for each individual. It appears the 'myenergy' project is aiming to perform the designated assessment of energy poverty as required by the Governance Regulation. This needs to be included in the final NECP, along with the potential further concrete objectives. At the same time, the 'myenergy' project provides households with basic information and financial support for energy efficiency measures through a subsidy of 75 % of the purchase price of more efficient energy-intensive devices such as freezers, washing machines or refrigerators. It would

be beneficial to provide supplementary information as to how energy poverty is taken into account in the renovation strategy.

Dimension research, innovation and competitiveness

The draft NECP provides general information related to research, innovation and competitiveness, highlighting relevant research domains that receive attention, such as innovation in the steel and automotive sector as well as energy and environmental technologies. However, the draft plan does not identify any specific objectives related to climate and energy to be achieved by 2030.

With regard to spending, the draft NECP reports on the national target for research intensity of between 2.3 % and 2.6 % of GDP (0.7 % to 0.9 % from the public sector), and informs the resources from the public sector amounted to 0.67 % of GDP in 2017. The draft NECP would benefit from setting a concrete ambition in this regard for 2030, while at the same time identifying exactly the share of resources which will be earmarked for research and innovation related to energy and climate.

Upon clarification of the exact objectives Luxembourg aims to pursue in energy and climate related research and innovation, associated policies and measures would need to be defined in the final plan, including on how the **Strategic Energy Technology (SET) Plan** objectives and policies are being translated to the national context.

In terms of competitiveness, Luxembourg's draft plan presents information on recent and current measures and trends for macro-economic competitiveness. The NECP would be rendered more comprehensive if this was expanded to cover specifically the low-carbon technologies sector, including for decarbonizing energy and carbon-intensive industrial sectors, accompanied with an analysis on where said sector 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.

3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

In general, few interactions between dimensions are explicitly spelled out in the draft NECP, with the notable exception of the interlinkage between the energy security dimension and the internal market dimension due to the specific situation of Luxembourg in terms of electricity and gas supply.

The draft NECP identifies some synergies between the **decarbonisation and the energy efficiency dimension** (e.g. between GHG emissions/removal, renewables and energy efficiency; the adjustment of the taxation of petroleum products). However, the draft NECP contains no information on how climate change risks might affect energy supply. Information is also lacking on adaptation co-benefits for energy efficiency, such as in the thermal management of buildings. The final plan would also benefit from an analysis about **biomass** feedstock used, their sustainable supply potential and impacts on biodiversity.

The **energy efficiency first principle** is mentioned as a priority in the implementation of the policies, but it is not explained how it was applied in the context of the draft plan.

In the draft NECP Luxembourg expresses a strong support for a credible and comprehensive **net zero emissions strategy**. The draft NECP would benefit from setting out potential avenues to achieve this, especially in decarbonising energy intensive industries and creating negative emissions. It seems warranted to initiate associated research and innovation objectives and measures before 2030 already.

The linking between electricity, heat and transport by **sector coupling** is set as a key objective to be achieved by 2030 (Section 1.1 of the draft NECP), something the Commission also underlined in its vision for a Clean Planet for all¹⁵. Despite this, the remainder of draft NECP contains no underlying objectives or specific policies and measures to ensure such sector coupling. Such actions could be foreseen in Research and Innovation to develop the knowledge base on system integration with a view to ensure the necessary infrastructure is deployed by 2050.

The draft NECP also generally recognises the scope for **synergies with environmental legislation** in the areas of air quality, industrial pollution control, waste and circular economy. However, it has very limited information on actual interactions with relevant policies like the circular economy or biodiversity, which it does not develop further, nor does it assess them through an impact assessment. The plan would benefit from an analysis and assessment of the role of the circular economy to reduce GHG emissions.

The draft plan lacks quantitative information on the interactions with **air quality and air emissions policy**, while the projected increase in bioenergy would make air impacts especially important to consider.

The final plan would benefit from details regarding the **socially just transition** aspects and relevant issues such as the structural changes needed for energy transition that can affect jobs and social coherence in particular sectors, such as the steel industry which accounts for 40 % of power consumption in Luxembourg according to the draft NECP.

The draft NECP does not contain an assessment of the overall **investment needs** or information on the financial sources to be mobilised to achieve the targets and objectives of the NECP. The NECP would benefit from a comprehensive assessment of the overall investment needs to achieve the objectives of the NECP, as well as information on the financial sources to be mobilised.

Links with the European Semester

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

¹⁵ Communication From The Commission To The European Parliament, The European Council, The Council, The European Economic And Social Committee, The Committee Of The Regions And The European Investment Bank: A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM (2018)773.

Based on the 2019 Country Report for Luxembourg, published on 27 February 2019¹⁶, the European Commission's European Semester recommendation for Luxembourg issued on 5 June 2019¹⁷ highlight the need to invest in 'improving sustainable transport'.

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

As regards **energy subsidies**, the draft NECP does not contain a description of existing energy subsidies, but indicates that this will be specified in the final plan. In addition, no national policies, timelines or measures to phase out energy subsidies have been provided.

4. REGIONAL COOPERATION

In the draft NECP, Luxembourg sets out its intention to cooperate with neighbouring countries in existing fora – such as the Pentalateral Energy Forum, the North Seas Energy Cooperation and the Green Growth Group – on topics of common interest.

On 4 March 2019 a declaration was signed by the Ministers of Energy of Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland, providing a political mandate to the Pentalateral Energy Forum to act as a forum for regional cooperation regarding 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.

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

Further regional cooperation, notably on mobility and research and innovation, could be warranted, in order to create synergies in addressing common challenges. Existing measures under the "Grande Région" could be reflected in the final NECP and enhanced, notably in the area of mobility which has been continuously highlighted as an area of attention under the European Semester. Given the significant number of commuters, it is not clear how a purely national approach on for example transport infrastructure will lead to the achievement of the envisaged ambitions in sustainable transport and electromobility.

It is expected that Luxembourg will clarify how the results of regional cooperation are taken into account in their final NECP.

5. COMPLETENESS OF THE DRAFT PLAN

Information provided

The submitted draft NECP follows the structure of Annex I of the Governance Regulation¹⁸ covering all five dimensions of the Energy Union, at least partially. The impact assessment of

¹⁶ SWD(2019) 1015 final.

¹⁷ COM(2019) 516 final.

planned policies and the with additional measures projections are still to be included. The draft NECP also indicates that additional measures still need to be defined on several matters. There is generally a need to further improve the level of detail on policies and measures to understand their exact nature and potential impact. An impact assessment and assessment of required investments will be ready only for the final plan. Information on energy subsidies is also still to be added.

On **greenhouse gas reduction** in the **decarbonisation dimension**, Luxembourg's draft NECP includes a range of national ambition levels, on the basis of which a precise national contribution is still to be determined. The draft NECP is to be further completed with estimates of the binding greenhouse gas emission reduction limits for the period 2021-2030 under the Effort Sharing Regulation (ESR)¹⁹. Moreover, accounting rules as set out in the LULUCF Regulation²⁰ are not yet applied and information about the intended use of flexibilities between the LULUCF and ESR sectors has yet to be provided, as well as projections for the LULUCF sector. Furthermore, adaptation to climate change is not mentioned

On **renewable energy**, the draft NECP sets a good level of ambition on the basis of which a precise national contribution is to be determined. Most of the required elements on “objectives and targets” for the year 2025 and 2030 are provided, with the notable exception of the total planned installed capacity per renewable energy technology, with a split between new and re-powered capacity. Bioenergy is only provided as part of energy production for heat, electricity and transport for 2020, 2025 and 2030; without including trajectories on biomass supply (by feedstocks and by origin and distinguishing between domestic production and imports), trajectories for forest biomass, and an assessment of its source and impact on the LULUCF sink.

On **energy efficiency**, the draft NECP again sets a good level of ambition, on the basis of which a precise national contribution is to be determined. In the final NECP, this is to be completed with indicative trajectories and an explanation on the underlying methodology and conversion factors. Information on the existing long-term renovation strategy is provided, which provides a good basis to be completed with the key elements required under the reinforced legislative framework. The final plan should also clearly indicate the objectives and expected savings under Article 5 Energy Efficiency Directive as well as cost optimal levels for minimum energy performance requirements.

On **energy security** and the **internal market**, only few clear and quantified objectives have been defined. The information and underlying analytical framework is only developed in a limited manner.

On **research, innovation and competitiveness**, the information provided does not focus on energy and climate issues to be addressed by 2030. While presenting an overview of national objectives to be achieved by 2020, the draft NECP does not provide such objectives or funding

¹⁸ Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

¹⁹ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

²⁰ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

targets for 2030. No 2050 national objectives have been included related to the promotion of clean energy technologies or deployment of low-carbon technologies.

Robustness of Luxembourg's draft National Energy and Climate Plan

The draft NECP addresses elements of the **analytical basis**. It reports a with existing measures projection in the main document, while projections with additional measures are yet to be provided. The draft plan mentions some data sources such as the national regulator and the transmission system operators (TSOs).

The **with existing measures projection** covers the Energy Union dimensions energy efficiency and decarbonisation and provides some information on the dimensions of energy security, the internal market and research, innovation and competitiveness. Additional information would be desirable on: (i) the differentiation of sectoral GHG emissions per IPCC sector, (ii) the differentiation of sectoral GHG emissions per IPCC gas, (iii) GHG emissions from international aviation, (iii) GHG emissions and sinks from LULUCF, (iv) non-GHG emissions, (v) explicit data for primary energy, and (vi) energy related investment needs.

The draft plan discusses the impact of key parameters used for deriving the projections, such as the development of the population and economic growth. The **transparency** could further improve if numerical values were provided for the projections of key parameters: (i) GDP, (ii) prices for fuels and emissions allowances, (iii) technology costs, (iv) population development and number of household, and (v) transport activities.

An **impact assessment** of planned policies and measures is announced for the final plan. It should complete the assessment of macroeconomic impacts and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects.

The 2016 base year values of the projections for renewable energy are in line with those reported by EUROSTAT.