EUROPEAN
COMMISSION

Brussels, 18.6.2019
SWD(2019) 225 final

COMMISSION STAFF WORKING DOCUMENT

Assessment of the draft National Energy and Climate Plan of Bulgaria

Accompanying the document

Commission Recommendation

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

{C(2019) 4402 final}

Table of contents

1. SUMMARY

Main observations[1]

- ✓ The draft Bulgarian integrated National Energy and Climate Plan (NECP) is well structured according to the Regulation and sections are easily identifiable. The key objectives relate mainly to the decarbonisation, energy efficiency and energy security dimensions. While some parts are more developed than others, the draft overall is a good basis for further developing objectives and corresponding adequate policies and measures across all dimensions. Policy interactions are not yet sufficiently analysed to allow related opportunities for economic modernisation and job creation to be well exploited.
- ✓ Bulgaria's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS) is -0 % compared to 2005, as set in the Effort Sharing Regulation (ESR)[2]. Bulgaria might overachieve this target with the existing measures in all sectors, if the **Land Use, Land Use Change and Forestry (LULUCF)** no-debit commitment[3] (i.e. emissions do not exceed removals) is achieved. The draft plan does not yet quantify the possible overachievement nor it considers which planned level of overachievement e.g. through further policies in the building sector could be cost efficient in view of a use for transfers to other Member States and contribute to growth and jobs.
- ✓ Bulgaria proposes a share of 25 % of **energy from renewable sources** in gross final consumption of energy in 2030 as contribution to the EU renewable energy target for 2030. Information provided in the draft plan shows that this contribution would be met with existing measures. This level of ambition is slightly below the share of 27 % in 2030 that results from the formula contained in Annex II of the Governance Regulation, a situation which would also require in the final plan[4] an indicative trajectory that reaches all reference points[5] in accordance with the national contribution in the final plan[6]. 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.
- ✓ The proposed contribution towards the 2030 collective EU **energy efficiency** target comprising 7 Million tonnes of oil equivalent (Mtoe) of primary and 8.7 Mtoe of final

[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] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.
[5] Pursuant to Article 4(a)(2) of Regulation 2018/1999.
[6] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

energy consumption in 2030 is of low ambition and is to be achieved with existing measures. The final plan would benefit from including more substantiated policies and measures underpinned by an impact assessment.

- ✓ As regards **energy security,** focus is put on the use of indigenous resources, such as coal and renewables. The draft plan considers nuclear energy as a local energy source as well, and foresees to maintain its central role. References are made to increased interconnectivity to diversify sources of supply of natural gas, and to enhancing system flexibility. Not all relevant elements are yet consistently developed either within this dimension or across the draft plan and thus warrant being further elaborated in the final plan. The final plan would also benefit from including measures envisaged view to the foreseen role of nuclear generation capacity.
- ✓ Ongoing interconnection projects are well presented in the **internal energy market** part, and Bulgaria should exceed a 15 % **interconnectivity** level by 2030 through the implementation of the projects. The final plan would benefit from providing further details on objectives and measures promoting market integration and from information concerning market functioning and its core parameters so as to allow a full understanding of the envisaged future development. Despite **energy poverty** rates above the EU average, the draft plan does not include an assessment of energy poverty issues as required by the Governance Regulation, which remains necessary for the final plan.
- ✓ The **research, innovation and competitiveness** dimension focuses on some ongoing activities. The final plan would benefit from additional details including specific objectives and funding targets for 2030 that reflect the objectives across all dimensions of the NECP, as well as the deployment perspective of low carbon technologies and objectives related to competitiveness.
- ✓ The draft NECP analyses current and projected trends. It does not yet contain an impact assessment nor an overview of the **investment needs** and expenditures, thus not yet fully taking advantage of the role NECPs can play in providing clarity to investors and attracting additional investments in the clean energy transition. Funding sources are mentioned for certain types of investments, especially for energy efficiency and energy infrastructure, while their time horizon is still mostly limited to up to 2020. The final NECP would benefit from a more comprehensive assessment of funding sources at national, regional or Union including more details on the use of the Modernisation Fund.
- ✓ **Regional cooperation** focuses on energy security and internal market dimensions by means of cooperation on energy infrastructure projects. Given the upcoming common challenges (along with neighbouring countries) for the future development of the energy sector, regional cooperation represents an opportunity for also addressing the other dimensions of the NECP.
- ✓ The final plan should include an impact assessment of planned policies and measures, including notably the major policy decisions such as the delayed phase-out of lignite beyond 2030 or the economic viability in generation adequacy of adding two nuclear 1 000 MW second generation reactors by 2035.
- ✓ The final plan would benefit from complementing the plan's analysis of the interactions with **air quality and air emissions policy,** including through quantification of the impacts on air pollutant emissions.

- ✓ The final plan would benefit from further analysis of the possible social impact of the transition to a low-carbon economy, including on sectoral/industrial shifts, employment, skills, and training. In general terms, the issue of a **just transition** to a climate neutral economy could be better integrated throughout the document, particularly taking into account the impacts of the transition for coal and carbon-intensive industries.
- ✓ 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.
- ✓ The draft plan includes a detailed set of existing policies and measures for all main sectors with quantified estimates of GHG reductions for the years 2025 and 2030 which can be considered **good practice**.

Preparation and submission of the draft plan

Bulgaria notified its draft National Energy and Climate Plan (NECP) to the European Commission on 15 January 2019. The draft NECP was prepared jointly by the Ministry of Energy and the Ministry of Environment and Water via an inter-ministerial working group that involved experts from several ministries and state agencies. Several strategic documents in the climate and energy policy sectors were considered in the process.

Consultations of the national parliament, stakeholders and local and regional authorities are foreseen to take place after the submission. The same is foreseen for **regional cooperation**, while the draft plan does not yet provide information on the process leading to the results of these consultations being reflected in the final plan.

Overview of the key objectives, targets and contributions

The following table presents an overview of Bulgaria's objectives, targets and contributions under the Governance Regulation[7]:

	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) (%)	+18	+20	0	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	18.7	16	25	Below 27 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	18.3 9.9	16.9 8.6	17.7 8.7	Low Low

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

	Level of electricity interconnectivity (%)	7	18	22[8]	N/A

Sources:EU Commission, ENERGY STATISTICS, Energy datasheets: EU28 countries; SWD(2018)453; European Semester by country[9]; COM/2017/718; Bulgarian 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

The draft NECP refers to Bulgaria's **non-ETS target** of 0 % GHG emission reductions by 2030 compared to 2005 levels under the Effort Sharing Regulation[10]. It provides a detailed set of estimates of quantified GHG reduction contributions for the years 2025 and 2030 from the described existing policies and measures for all main sectors.

Based on this, and assuming that Bulgaria achieves its LULUCF no-debit commitment, it might overachieve its 2030 GHG target without further quantifying such overachievement. The draft plan does not yet explicitly state this fact, it does not yet mention the use of flexibilities nor does it consider which planned level of overachievement could be cost efficient in view of a use for transfers to other Member States.

Most policies and measures in the draft plan address the decarbonisation dimension. Measures are provided per sector, with quantified impact per measure by 2020, 2025 and 2030, and include beyond the highlighted sectors also energy, **industry** and waste. In many cases, the distinction between existing and planned measures could be made clearer.

A key measure in the **buildings** sector is to provide gas heating in households, thus saving 2.5 Million tonnes of CO_2 equivalent per year by 2030. Other measures are targeted at improving energy efficiency in public housing.

In **transport,** several measures are mentioned, such as increasing the modal share and improving public transport and increasing the share of biofuels and electricity in the energy mix. Bulgaria also aims to encourage the manufacture of electric cars and promote their use, as well as promote research and innovation regarding environmentally friendly vehicles. It aims to accelerate deployment of charging infrastructure and introduce a tolling system for road transport. This reflects the fact that transport is the second-biggest contributing sector to GHG emissions and the emissions from road transport were around 53 % higher in 2015 than in 1990[11]. However, more

[8] Projection included in Bulgaria's draft NECP.

[9] 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.

[10] 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.

[11] Energy factsheet Bulgaria, Commission Staff Working document accompanying the Communication on the Third report on the State of the Energy Union, SWD (2017) 386 final.

details on policies and measures supporting alternative fuels, would be welcomed in the final plan.

In **agriculture**, more efficient fertilisation and irrigation are described as the measures with the largest mitigation potential. The draft plan refers to the Common Agricultural Policy as a tool for reducing greenhouse gas emissions from agriculture.

Bulgaria intends to meet the **LULUCF** no-debit commitment[12] by enhancing removals, mostly through afforestation. With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by Bulgaria as required by Article 8(3) of the LULUCF Regulation[13], the Commission has put forward technical recommendations requesting action on a number of issues, detailed in SWD (2019)213. The draft NECP also includes policies and measures aiming to increase the resilience and adaptability of forest ecosystems to climate change.

The draft plan recognises that efforts are still needed to improve waste prevention, separated collection, recycling and energy recovery.

The draft plan shortly describes Bulgaria's draft adaptation strategy and action plan, and their objectives and priorities for improving adaptation capacity at national and sectoral levels in the period up to 2030, without detailing these objectives.

Renewable energy

The draft plan sets a share of 25 % **renewable energy** in gross final consumption of energy for 2030 as contribution to the EU renewable energy target for 2030. This contribution is slightly below the share of 27 % in 2030 that results from the formula in Annex II of the Governance Regulation[14]. The **indicative trajectory** to reach the 2030 contribution is included in the draft plan, including the reference points of 18 % by 2022, 43 % by 2025 and 65 % by 2027 in line with the 25 % share put forward. It is not clear from which baseline the 2030 share was calculated, as the shares in 2020 differ between Annex I part 2 and Annex I part A (16 % vs 19 %) of the Regulation[15].

For **electricity**, which is expected to remain at the same level as in 2020, the draft plan showcases the expected total electricity generation, with hydropower being the major contributing technology; wind adding up more than 500 GWh (more than 40 %), biomass and waste adding more than 150 GWh (more than 50 %) and solar registering a small decrease. Policies and measures include actions to continue supporting renewable energy in the form of preferential prices under contracts for the purchase of renewable electricity produced by plants with a total installed capacity of less than 4 MW. The generic need to support the integration of electricity from renewable sources into the transmission and distribution grid, the increased use of smart grids and the use of storage systems have also been identified as measures in the period 2021-2030, next to review and implementation of legislative changes in administrative procedures. As regards enabling renewable self-consumers and renewable energy communities, the draft plan does not provide details on the form of support it intends to provide. Addressing the

[12] Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.
[13] Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.
[14] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.
[15] Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

related investment needs and further detailing these measures in the final plan while taking into account the links with the other dimensions would benefit the final plan's consistency. It would also facilitate understanding how Bulgaria plans to implement new EU legislation and overall, how it intends to pursue renewable energy development up to 2030. In developing the final plan and addressing possible barriers for the development of renewable energy projects, further guidance can be gathered from the Commission's guidelines on renewable energy (wind and hydro), energy transmission and Natura 2000[16]

Renewable energy in **heating and cooling** is expected to increase, but the shares projected in 2030 take into account only existing measures. The draft plan does not show how Bulgaria intends to increase the share by an indicative 1.3 percentage points as an annual average calculated for the periods of 2021 to 2025 and 2026 to 2030; the role of waste heat is not clear.

The draft plan includes actions to continue promoting the use of renewable heating and cooling systems, including in buildings. It notes that an assessment of the potential use of waste heating and cooling in the heating and cooling sector will be performed by the end of 2020. The replacement of solid fuel (coal and briquettes) boilers with biomass stoves and boilers is mentioned. The draft plan presents the potential for CHP and various technologies for heating and cooling in 2025, but does not contain information on projected technology costs development and does not set any targets for the sector. Considering the significant potential of this sector to contribute to decarbonisation, including concrete measures to stimulate renewable energy in heating and cooling would improve the final plan.

For **transport,** a trajectory is set to increase the share of renewable energy from 9 % in 2020 to 14 % in 2030. However, the starting point is lower than the expected renewable transport target of 10 % in 2020. 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 Renewable Energy Directive[17].

The draft plan has generic references to actions stimulating the development of renewable energy in the transport sector such as obligations towards fuel and energy suppliers as regards biofuels or the promotion of renewable energy use in public transport.

Dimension energy efficiency

The draft plan includes a **national energy efficiency contribution** for 2030 of 27 %, but does not sufficiently explain the methodology and assumptions for setting the target. Clarifications provided by the Bulgarian authorities indicate that the target translates into a national contribution of 17.7 Million tonnes of oil equivalent (Mtoe) of **primary** and 8.7 Mtoe of **final energy consumption** in line with the with existing measures (WEM) projections. The proposed contributions are above the 2020 target levels (+0.4 and +4.9 for final and primary energy consumption respectively), but below the 2017 energy consumption levels (-12.3 % and -3.5 % for final and primary energy consumption respectively). The level of ambition in this dimension is justified with factors common to all targets in the draft plan – ensuring the energy security,

[16] http://ec.europa.eu/environment/nature/natura2000/management/docs/Energy%20guidance%20and%20EU%20Nature%20legislation.pdf; http://ec.europa.eu/environment/nature/natura2000/management/docs/Wind_farms.pdf; http://ec.europa.eu/environment/nature/natura2000/management/docs/Hydro%20final%20May%202018.final.pdf.

[17] 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.

availability of indigenous energy resources, balancing the electricity system and the country's GDP – but the draft plan does not clearly explain how these factors affect the energy consumption targets. Overall, the contributions of Bulgaria are of low ambition considering the need to increase efforts at the EU level to collectively reach the Union's 2030 energy efficient targets. This is underscored by the fact that the foreseen energy efficiency contribution is based on the WEM scenario, which indicates that more efforts would be needed to increase its level of ambition.

Policies and measures underpinning the objective mainly refer to existing measures and legal instruments without providing an indication of how they would be continued after 2020. Against this background, providing more details on the analytical part and on additional policies would benefit the final plan. The level of savings under Article 7 EED[18] corresponds to the 0.8 % rate. Elaborating on its contribution to the overall target would benefit the final plan. That could also clarify if national objectives[19] regarding the renovation of central government buildings are to be continued after 2020.

Key measures concern the energy efficiency obligation scheme followed by financial support for refurbishment, regulatory measures and standards mandating energy efficiency and supply-side measures. Apart from funding instruments, the catalogue of measures seems to be closely oriented to implementing the EU energy acquis. Policies relevant for GHG reduction, such as those in the area of transport, also seem to have an impact on energy consumption. For example, the plan mentions a number of strategic objectives by 2030 (e.g. efficiency increase, modernisation and implementation of smart transport systems, etc.). However, measures contributing to a more efficient organisation of the mobility system (e.g. incentivising multimodality and modal shift, intelligent, intelligent transport systems, digitalisation and automation) could be presented in greater detail. This warrants further elaboration in the final plan so as to improve the overall picture of impact on energy savings and interaction between relevant measures.

The final plan would benefit from more information on policies and measures that could be implemented as part of its long-term renovation strategy given the significant contribution of a cost-effective transformation of existing buildings into nearly zero-energy buildings to the Union's energy efficiency target.

Dimension energy security

The draft plan identifies the efficient use of indigenous resources, increased interconnectivity and enhancing system flexibility as the cornerstones of energy security. The continuous use of coal reserves – that could provide feedstock for electricity generation for the next 60 years – and of nuclear energy are the main elements in this approach. The consistency of this objective with the decarbonisation efforts merits further discussion in the final plan, and concrete measures should be identified that would allow Bulgaria to respect its environmental requirements and obligations when using coal, including the required investment needs.

The supply of nuclear fuels is imported from a single supplier. In 2017, 34 % of electricity generation originated in nuclear power plants, making nuclear the second main source for energy generation. Against this background, the final plan would benefit from showing how supply of

[18] 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.
[19] Article 5 of the Directive (EU) 2012/27 on energy efficiency.

nuclear fuel will be ensured for the existing and planned additional units and discuss diversification to enhance security of supply.

The completeness of the final plan would be enhanced by including measures for the development of renewable energy as an indigenous source contributing to reducing energy import dependency (as this is one of the objectives listed in the draft plan under this dimension). The final plan would benefit from addressing the resulting link to grid development and system flexibility measures under the internal market dimension.

Ongoing natural gas offshore exploration activities in Bulgaria are mentioned (although they seem not to have yielded major positive results so far). This element should be further clarified in the final plan. The final plan would benefit from more information on gas import dependency and import mix. In this context, the Turk Stream project and a description of its implications on supply security is missing.

Other measures related to system flexibility, notably related to the market, are very vague and do not include timelines and investment needs. The projects listed under the development of transmission infrastructure would benefit from an overall qualitative assessment against energy security objectives, including regional ones where applicable. The measures to protect the energy system and infrastructures from emerging risks, in particular cybersecurity warrant being included in the final plan in addition to existing preventive action and emergency plans for gas and oil stocks, and emergency procedures. The final plan would further benefit from providing information on risk preparedness plans and the target date for the plans of the Risk Preparedness Regulation[20].

Dimension internal energy market

The draft plan notes that, with the completion of ongoing Projects of Common Interest, the electricity transmission capacity will reach 22 %. It is unclear whether this is the 2030 **interconnectivity** level Bulgaria aims for. The draft plan gives an ample overview of planned and completed transmission projects for gas and electricity. Enhancing interconnections, notably for gas, is of particular relevance for Bulgaria which does not yet comply with the supply standard[21] in case of failure of the single largest infrastructure and is thus vulnerable to gas disruptions. Therefore, the final plan would benefit from detailing the timeframes and expected impacts for the pending projects as well as from setting-out specific measures enabling their delivery.

The draft plan acknowledges energy market liberalisation as a key element of the European energy policy. It references the steps undertaken towards liberalisation of the electricity market and the benefits of the gas market liberalisation. The final plan would benefit from clarifying Bulgaria's approach to this objective and timeframes envisaged for achieving it.

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. To allow a better understanding of the general market functioning and the planned policies and measures to achieve competition-related objectives, quantitative core parameters such as wholesale and retail market concentration

[20] Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC.
[21] Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010.

levels, indicators for market liquidity such as traded volumes and market participants, switching rates etc. are warranted in the final plan.

A solid final plan would also clearly address system adequacy, specify potential for increasing system flexibility, describe in detail the policies and measures on flexibility and on non-discriminatory participation of new market participants, detail plans for smart meters in electricity and gas markets, and address different flexibility sources in all energy markets. In this context the final plan could also consider the interlinkage with the planned electricity transmission and distribution infrastructure measures, smart grids and storage described in the decarbonisation dimension. As the draft plan proposes the promotion of environmentally friendly vehicles and the acceleration of deployment of charging infrastructure to reduce transport emissions, the consistency of the final plan would benefit from addressing the expected impact of these measures on electricity demand and grid.

The draft plan includes a clear description of the social assistance system through which Bulgaria supports energy poor citizens, notably by providing heat allowances. It refers to a planned mechanism to protect vulnerable customers once the electricity market is fully liberalised. It is not clear however if an assessment of **energy poverty** as required by the Governance Regulation[22] has been carried out. This assessment, which is expected to build on the number of households in energy poverty, on existing social policy and other relevant policies, would serve as an indication of what objectives specific to energy poverty and measures to timely achieve them would be warranted in the final plan.

Dimension research, innovation and competitiveness

While identifying research domains that could potentially receive attention, the draft plan does not yet include concrete objectives and funding targets to be achieved by 2030.

The draft plan refers to ongoing activities on hydrogen technologies and fuel cell development. As these technologies will contribute to the decarbonisation goals and ensuing measures, the final plan would benefit from more details on these activities including on their envisaged deployment.

The NECP would benefit from presenting a comprehensive analysis on where the low-carbon technologies sector is currently positioned in the global market, including for decarbonizing energy and carbon-intensive industrial sectors, 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

The policies and measures included consider some interlinkages between the dimensions, but often in a qualitative manner and with the same policies and measures listed in more than one dimension or suggesting positive influence on more than one dimension. The draft plan acknowledges, for example, the importance of electricity transmission infrastructure development, and of the use of smart grids or storage facilities to support renewable energy integration in the decarbonisation dimension.

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

There are, however, notable exceptions where interlinkages are not yet considered, such as the consideration of the **energy efficiency first principle**.

The draft NECP does not yet contain information on how climate change risks might affect energy supply (e.g. wildfires and storms destroying biomass resources and power networks, availability of hydro power), although the country's draft National Adaptation Plan includes such measures for the energy sector. Information is lacking on adaptation co-benefits for energy efficiency, such as in the thermal management of buildings. There is no assessment of the impact of biomass use on removals in the LULUCF sector. The final plan would benefit from an analysis of the impact of afforestation policies on biodiversity.

Moreover, there seems to be tension between the objective to promote low-carbon economic development and the objective to fully exploit domestic coal resources, and the foreseen enhanced use of gas in the long term. The consistency of the final plan would be enhanced by substantiating the analysis regarding the further use of coal based electricity production, including the expected impact of increasing carbon prices on the competitiveness of coal power generation assets and on the financial stability of state owned enterprises relying on it. This kind of analysis would also help to assess the possible social impact of the transition to a low-carbon economy, including on sectoral/industrial shifts, employment, skills and training. In general terms, the issue of a just transition to a climate neutral economy could be better integrated throughout the document.

The final plan should show the link between electricity production and the development of low-carbon technologies by including concrete policies and measures under the research and innovation dimension.

Similarly, as Bulgaria aims at enlarging its nuclear generation capacities, the final plan would be enhanced by including an analysis of its economic viability and the underlying assumptions, as well as by a strategy on how to ensure the long-term supply of nuclear fuel.

The draft plan has very limited information on interaction with relevant policies like the circular economy or biodiversity. The plan recognises that efforts are still needed to improve waste prevention, separated collection, recycling and energy recovery. The relevance of the circular economy for GHG emissions reduction could be assessed and emphasised.

The plan argues that the extension of the Natura 2000 network in the country is an obstacle to develop renewable energy installations, notably wind and solar. However, it should be noted that Natura 2000 does not ban such installations.

The draft plan lacks quantitative information on the interactions with air quality and air emissions policy.

The draft NECP does not yet contain an assessment of **investment needs** and expenditures, market risks and barriers or other relevant information. This information is to be provided following the completion of the consultation phase of the plan and should be included in the final version. Although planned budgets and funding sources are mentioned for certain types of investments, especially for energy efficiency and energy infrastructure, their time horizon is mostly up to 2020. The Modernisation Fund (18 million EU ETS allowances for Bulgaria, corresponding over the period 2021-30 to EUR 362 million at a carbon price of EUR 20/t)[23] is

[23] The figure is based on the amounts established in Directive (EU) 2018/410 and is subject to various uncertainties, such as the possibility to transfer allowances available pursuant to Article 10c to the Modernisation Fund.

mentioned as a source of funding, but its priorities are not spelled out, nor is the transferring of allowances from the ETS Article 10c derogation into this Fund considered. The final plan needs to provide specific information per dimension and per policy and measure. Ideally, this would facilitate prioritisation of measures and thus also provide transparency and predictability to private investors. Some investment needs could partly be covered EU funds, in particular by cohesion policy funding, notably in line with the investment guidance for 2021-2027 of the 2019 European Country Semester Report for Bulgaria and with any relevant legislation.

Links with the European Semester

- Identifying financing needs and securing the necessary funding will be key 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 Bulgaria, published on 27 February 2019[24], the European Commission's recommendation for a Council recommendation for Bulgaria issued on 5 June 2019[25], in the context of the European Semester, highlights in particular the need to invest in 'transport, notably on its sustainability, energy infrastructure and energy efficiency'.
- When preparing its overview of investment needs and related sources of finance for the final plan, Bulgaria should take into account these recommendations and links to the European Semester.

The draft plan does not yet include a description of **energy subsidies** including for fossil fuels. Based on internationally used definitions, energy subsidies, including subsidies for fossil fuels and renewable energy, were identified in Bulgaria in the European Commission report on Energy Prices and Costs in Europe[26]. It is important that the final plan includes a detailed description of energy subsidies, including fossil fuels as well as of the national policies, timelines and measures planned to phase out energy subsidies, in particular fossil fuel subsidies. Similarly, the description and projection of energy prices development is not exhaustive, in particular regarding electricity and gas prices projections and a breakdown of current price elements.

4. REGIONAL COOPERATION

One of the main policy objectives described is integration with the regional and European market. Regional cooperation elements are well presented, notably regarding the development of electricity and gas infrastructures to enhance security of supply. There are limited indications about intentions to pursue market coupling.

Both, bilateral contacts and cooperation in regional fora in South Eastern Europe are mentioned to foster energy cooperation. Cooperation within the CESEC High level group is referred to in this context.

[24] SWD(2019) 1001 final/2: Country Report Bulgaria 2019.
[25] COM(2019) 502 final: Recommendation for a Council Recommendation on the 2019 National Reform Programme of Bulgaria and delivering a Council opinion on the 2019 Convergence Programme of Bulgaria
[26] 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.

On the other dimensions, the draft plan does not yet include information on measures for regional cooperation. However, there is significant potential to further cooperate with neighbouring Member States with a view to upcoming developments in the electricity sector and the need to accommodate higher shares of renewable energy. A solid final plan would address measures for regional cooperation when assessing system adequacy as foreseen in the Electricity regulation[27]. An assessment of whether regional cooperation could ensure resource adequacy in a more cost effective way than a strategic reserve would be useful.

Moreover, there is cooperation potential as regards the foreseen new build of nuclear capacities – an objective shared by several Member States in the region which is likely to impact electricity interconnections and trading in the region.

The exchange of best practices as regards energy efficiency and regional cooperation in the research and innovation dimension could facilitate the pursuit of common projects, including in low carbon technology development.

5. COMPLETENESS OF THE DRAFT PLAN

Information provided

For most dimensions, concrete elements to the proposed policies and measures such as timeframes, investment needs, and prioritization have not yet been included in the draft plan. Similarly, an impact assessment of planned measures is not included at this stage. This renders assessing their sufficiency for achieving the stated targets and objectives in an adequate and consistent way difficult.

The draft plan follows the structure of Annex I. The **decarbonisation dimension** of Bulgaria's draft NECP is partially complete with respect to the required information. Significant information on **greenhouse gas** related policies is provided. The draft plan, however, does not yet include an estimation of the trajectory with quantified annual emission limits for the years 2021-2030 under the ESR[28]. It does not yet apply the accounting rules set out in the LULUCF Regulation[29].

As regards **renewable energy**, a specific contribution to the 2030 EU target and the trajectory with reference points were included. For heating and cooling and transport no technology contributions to final energy consumption up to 2030 are included in the draft plan. Planned capacities are only provided for the electricity sector and not split between new and re-powering. Information was not included for the increase of 1 percentage points of renewable energy share in district heating and cooling and related infrastructure. The draft plan does not provide trajectories for the bioenergy demand, disaggregated between heat, electricity and transport. Furthermore, there is no inclusion of trajectories on biomass supply, by feedstocks and origin and trajectories for forest biomass, an assessment of its source and impact on the LULUCF sink. Policies and measures that are described in the draft plan mostly refer to past support policies. More details on the elements regarding renewable energy in the draft plan would be useful in order to provide investment certainty. Measures regarding power purchase agreements (PPAs) are not included.

[27] Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.
[28] Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.
[29] Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

The national **energy efficiency** contributions and the trajectories have been set. However, the underlying methodology or justification of the ambition level have not been included, neither the impact assessment in relation to energy efficiency. Efficient use of resources is only mentioned with regard to the use of national coal reserves. An indication of the objectives and savings from renovation of central government buildings[30] and of investment needs is missing, as only current funding programmes are listed. The draft plan is also incomplete as regards including the required elements related to the energy efficiency of buildings, notably the long-term renovation strategy.

Regarding **energy security**, objectives on the required elements are included. However, the draft plan does not cover the timelines for their implementation. Policies and measures do not consistently match the stated objectives in this dimension and the differentiation between existing and planned measures could be clearer. Overall, their vague description makes the assessment of their consistency with the stated objectives and with the objectives under the other dimensions difficult, notably decarbonisation and energy efficiency, but also research and innovation.

As regards the **internal market dimension**, the draft plan mentions an estimate of electricity transmission capacity pending the completion of listed projects, however it is unclear whether that is the interconnectivity level Bulgaria commits to. The listed objectives are incomplete and information provided would not allow for proper monitoring. Objectives and strategies to further develop competition in the market are missing. An assessment of key electricity and gas projects against the five dimensions of the Energy Union and overarching EU targets could have been included. Market related objectives such as increasing system flexibility, market integration and coupling, demand-response, storage or the promotion of competitively determined electricity prices are generic. Providing information and timeframes on these elements would be necessary to understand how Bulgaria envisages further energy market development and notably the implementation of recent market design legislation.

The information provided on **research, innovation and competitiveness** is incomplete. While identifying research domains that could potentially receive attention, the draft plan does not include concrete objectives and funding targets to be achieved by 2030. It does also not include specific national objectives related to the promotion of clean energy technologies or the deployment of low carbon technologies, which would be particularly relevant considering the objectives in other dimensions, such as the continued use of fossil fuels or the promotion of e-mobility. The draft plan misses objectives related to competitiveness and information on financing measures.

Robustness of Bulgaria's draft National Energy and Climate Plan

The draft plan contains part of the required information of the **analytical basis**. It reports a "with existing measures" (WEM) scenario in the voluntary template. The "with additional measures" (WAM) scenario and the impact assessment of planned policies and measures are announced to be part of the final plan. The assessment in the final plan should include macroeconomic impacts and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects. Sources of tables and graphs that are mentioned or can be inferred from the text include national statistics.

[30] Article 5 of the Directive 2012/27/EU on energy efficiency.

The **WEM projection** covers four of the five dimensions of the Energy Union (i.e. all except the research, innovation and competitiveness dimension). Additional information would be desirable on the following variables: (i) the differentiation of sectoral GHG emissions per IPCC gas, (ii) the differentiation of GHG emissions between those covered by the EU ETS and all those falling under the Effort Sharing Regulation, (iii) GHG emissions from international aviation, (iv) non-GHG air pollutants, (v) investment needs, and (vi) electricity interconnectivity levels (to complement the detailed information provided per partner).

The projections are presented in a partly transparent way. The draft plan provides key input parameters such as GDP and population. Transparency of the final plan could be further enhanced by (i) addressing transport (consolidated data), heating and cooling degree days, and technology costs, (ii) adding sources (e.g. for data relating to the decarbonisation and energy efficiency dimensions) and linking them to specific set of data, and (iii) providing more systematically units (e.g. for fuel and EU ETS prices). The objectives of all policies and measures are well explained, in particular for the decarbonisation dimension. The final plan could be further improved by distinguishing more clearly between existing and planned policies and measures, to fully understand which and whether all relevant policies have been included in the WEM scenario. Planned policies and measures should be included in the IA to be provided.

Population and GDP are well calibrated to EUROSTAT figures for the base year 2015, but no information is yet provided on the base year for (i) total final and primary energy consumption, (ii) renewable energy shares, and (iii) interconnectivity levels. Bulgaria’s draft plan follows its own assumptions regarding fuel and EU ETS emissions prices.