STIFLED
DECARBONISATION

ASSESSING THE BULGARIAN
NATIONAL ENERGY
AND CLIMATE PLAN
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The current report analyses the draft Bulgarian National Energy and Climate Plan (NECP) and pinpoints the main obstacles for the implementation of decarbonisation policies in the electricity sector. The main goal of the analysis is to present possible ideas and solutions for improving the NECP and for the more effective adaptation of the EU energy policies in Bulgaria. The assessment evaluates whether the NECP is consistent with the ambitious European goals in energy transition, and whether it has overcome some of the most common decarbonisation myths in Southeastern Europe. The focus is on the governance framework and the action plan for achieving the decarbonisation targets. The assessment reveals how the NECP development process reflects the common energy sector governance deficits in Bulgaria, including the lack of political consistency, the limited transparency of decision-making and the lack of adequate cost/benefit analyses of long-term strategic decisions. The report recommends the implementation of a series of measures for the transformation of the electricity sector towards lower dependence on fossil fuels, the more ambitious integration of renewables-based power plants, as well as the effective inclusion of consumers in the functioning of the Bulgarian energy system.

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<tr>
<td>BREF</td>
<td>Best Available Techniques Reference Document</td>
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<tr>
<td>CHP</td>
<td>Combined Heat and Power</td>
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<tr>
<td>DAM</td>
<td>Day-ahead Market</td>
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<td>EU</td>
<td>European Union</td>
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<td>ETS</td>
<td>Emission Trading Scheme</td>
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<td>FiTs</td>
<td>Feed-in Tariffs</td>
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<td>Gg</td>
<td>Gigagram</td>
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<td>GHG</td>
<td>Greenhouse Gases</td>
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<td>GW</td>
<td>Gigawatt</td>
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<td>GWh</td>
<td>Gigawatt hour</td>
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<td>Ktoe</td>
<td>Kiloton of Oil Equivalent</td>
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<td>MFF</td>
<td>Multi-Year Financial Framework</td>
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<td>MW</td>
<td>Megawatt</td>
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<td>NDC</td>
<td>National Determined Contribution</td>
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<td>NECP</td>
<td>National Energy and Climate Plan</td>
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<td>NEK</td>
<td>National Electricity Company</td>
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<tr>
<td>NPP</td>
<td>Nuclear Power Plant</td>
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<tr>
<td>RES</td>
<td>Renewable Energy Sources</td>
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<td>SEERMAP</td>
<td>South East Europe Electricity Roadmap</td>
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<td>SRT</td>
<td>Social Responsibility Tax</td>
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<td>TPP</td>
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<td>TSO</td>
<td>Transmission System Operator</td>
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<td>TWh</td>
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Renewable energy sources will play a major role in the EU and Bulgaria’s energy mix in order to ensure a sustainable, competitive and secure energy system. However, the proposed energy and climate targets in the Bulgarian National Energy and Climate Plan, as well as the regulatory framework do not enable this urgently needed transition but reflect a rather business-as-usual approach. The first version of the NECP lacks ambition, a long-term perspective and a clear vision for the direction of the Bulgarian energy transition. Surprisingly it relies heavily on coal, gas and nuclear for Bulgaria’s energy mix for 2030. The lack of a strategy for a coal phase-out, the low sustainable energy targets (25% renewable energy sources (RES) in gross final energy consumption, 27% energy efficiency and 15% interconnection target), as well as the weak regulatory measures do not facilitate an enabling framework for citizens, energy communities and other small-scale actors.

The proposed policy measures seem inadequate to achieve even these lower targets. The findings of the Plan about the future development of the Bulgarian energy system are in sharp contrast to the modelling outcomes of the Forecast Energy Balance of Bulgaria for the 2020 – 2030 period with a 2050 Horizon commissioned by the Bulgarian Energy Ministry in 2018 to help the development of Bulgaria’s long-term energy strategy and the NECP. Detailed elaboration of energy scenarios is missing from the NECP, which has impaired the justification for the low RES and energy efficiency targets.

The main goal of the current NECP analysis is to provide workable ideas and solutions to the Bulgarian government to improve the document through assessing whether the strategic document will be effective in achieving the EU’s long-term decarbonisation goals. A strong emphasis is placed on the role of the electricity sector, which holds the biggest potential for greenhouse gas (GHG) emissions reduction over the next decade. The main source of GHG emissions in the energy sector is the burning of solid fuels, including coal, which made up 57.8% of Bulgaria’s total emissions in 2016. Electricity is also where the NECP has been most conservative and least ambitious revealing an unrealistic determination to preserve coal-fired power generation and lack of creativity in developing pro-active policies for supporting a new wave of renewable energy investment.

The draft plan foresees maintaining the key role of stranded assets such as coal and nuclear for increasing the flexibility of the national energy system. Bulgaria does not have a long-term energy strategy for a coal phase-out. The postponing of the coal phase out could have very detrimental impact on the energy transformation process. The government should not rely on derogations from EU regulations to keep the power plants active. Instead, a strategy for a phase out for the
most polluting power-plants and keeping the local jobs in the region is urgently needed. The coal plants will be shut down eventually because of increasing carbon prices, however, the lack of a national strategy for the transformation of coal dependent regions may exacerbate social tensions and aggravate the financial risks for the energy sector.

Instead of prioritizing the promotion of wind, solar and geothermal energy, the draft plan foresees a significant increase in the share of biomass in the renewable energy mix (an increase from 290 GWh in 2020 to 426 GWh in 2030). The heavy reliance on biomass could bring numerous side effects, such as deforestation and worsening air quality.

The NECP provides the Bulgarian government with a unique opportunity to unleash the renewable energy potential, reduce total system costs and address structural market failures in this area. In that sense, the draft document submitted by Bulgaria lacks a proper assessment of system flexibility challenges and of the necessary grid infrastructure investments for the local distribution network levels. Key aspects of prosumption and enabling the market integration of small actors are overlooked (these elements are described as not applicable for the Bulgarian context), which is a missed opportunity to mobilize this huge potential of decentralized power generation.

Zooming in on the NECP drafting process, there was little transparency about how the Energy Ministry prepared the draft strategic document. There have been limited stakeholder consultations with civil society organizations, trade unions and business associations. The government commissioned an external impact assessment that models different scenarios for the long-term development of the energy system but did not make the analysis public, and did not consult its results with different stakeholders or other government institutions. The current assessment revealed that the Energy Ministry did not take into consideration the findings of the modelling study but relied on a patchwork of assumptions and projections that more or less fit a business-as-usual scenario with no specific decarbonisation targets. Key information about the sources for the NECP conclusions is still missing as the NECP does not cite specific methodologies that have been used.

If the government is to bring the NECP closer in line with the EU 2030 targets, it will have to focus on the one variable of energy transition it can best control – improving the governance of public policy and the public energy sector. Achieving the ambitious 2030 targets, not to mention the 2050 decarbonisation framework would require action now as catching up after 2030 would necessitate much bigger public resources. Delayed action on renewables is feasible, but has two disadvantages compared with a long term planned effort. It results in stranded fossil fuel power generation assets, including currently planned power plants. Translated into a price increase equivalent over a 10-year period, the cost of stranded assets is on par with the size of long-term RES support needed for decarbonising the electricity sector. Although the main assumption is that the integration of renewables and the improvement of energy efficiency would be driven by private investment, the state
would need to create an enabling tax and regulatory environment to incentivize companies to risk high upfront costs in exchange for low operation and maintenance costs in the future. This transformation goes first and foremost through closing of governance gaps in decision-making, elimination of state capture risks in the state-owned companies and large-scale projects, and ensuring the transparency and independence of the energy and competition regulators.

In light of the overall analysis of the draft Bulgarian NECP, the following **policy recommendations** can be considered as a way to improve the final draft of the strategic document:

- A long-term strategy for a coal phase-out is urgently needed. The NECP should present a vision on how to transform coal-dependent regions into renewable energy sites and innovation hubs.
- Without a significant review of the current draft NECP targets, Bulgaria would not be on track to become carbon neutral by 2050.
- There is an urgent need for conducting a detailed ex-ante impact assessment of the NECP’s targets and energy system projections to make sure they would be consistent with the overall EU energy transition policy framework.
- Policy-makers should review the already existing modelling studies including SEERMAP and the Long-Term Study of the Energy Balance commissioned by the government, and utilize them to define more realistic and more ambitious targets along the main pillars of the Energy Union governance regulation.
- A more integrated approach connecting the heating & cooling, electricity and transport sectors combined with energy efficiency measures is crucial for enhancing the demand side responsiveness of the system and unlocking huge amounts of storage potential.
- Development of special programs for subsidised construction of small-scale RES facilities in attempt to decrease the dependence of households on energy subsidies.
- As long as biomass use is incentivized, the NECP has to draw out a specific financing facility that is not limited to replacing outdated wood-based stoves but targets the building of common medium-scale biomass-based centralized heating in rural areas and small towns.
Parting with bad habits is always difficult. People tend to delay changing their behavior finding good excuses and taking a defensive position. Like people, so are governments rarely willing to shift their policies to accommodate a long-term objective that would require painful adjustments. **Energy policy is exactly one of the areas least susceptible to major changes on European level.** Governments of EU member-states are typically dependent on a policy path that is difficult to steer away from and energy has been an issue of national sovereignty and subject to protectionism for many years. The European Commission though, seems bent on changing behaviors and driving forward a major transition in the way people produce and consume energy, which has produced frictions in Member States’ capitals, in particular among the newer members.

After three major packages of legal changes, the EU has produced its most ambitious and most concrete plan for a common energy policy – the designing of a common Energy Union. Its development is supported by the introduction of the so-called ‘Winter Package’ aiming to streamline governance frameworks on national level to drive the transition to a low-carbon energy sector. The set of legislative actions has been drawn in line with the EU’s long-term strategy 2050, which envisions net zero emissions and climate neutrality compared to 1990 levels, and is closely coordinated with the EU’s nationally determined contribution (NDC) under the Paris Agreement obliging the Union to cut GHGs by 40% until 2030. While the Energy Union has developed a coherent plan for a sustainable energy transition, there are large differences between countries regarding their ability to sustain the costs of energy reforms and the investments needed.

This is where the effective implementation of the Energy and Climate Action Governance Regulation (EU) 2018/1999 (from here on referred to as the ‘Governance regulation’) of the Winter Package would have the biggest impact on streamlining energy transition policies. The most important instrument of the Regulation is the Integrated National Energy and Climate Plans (NECPs) to be developed by every member-state. Albeit being a non-binding document, the European Commission aims to use the NECPs as a way to incentivize governments to commit to a common long-term consistent policy path to energy transition for the 2021 – 2030 period. The NECPs shall outline the current state of the energy system and policy situation and formulate national targets on the five dimensions of the Energy Union including:

- security, solidarity and trust;
- a fully integrated internal energy market;
- energy efficiency;
• climate action and decarbonizing the economy;
• research, innovation and competitiveness.

The Plans shall further focus on corresponding policies and actions to meet the set-out objectives, paying attention on the 2030 targets for GHG emission reduction, renewable energy, energy efficiency and electricity interconnection in line with the overall EU 2030 objectives. By setting the 2030 targets for renewable energy and energy efficiency at the EU level, the process of attaining these targets provides more flexibility to Member States in deciding on national objectives, policies and measures. At the same time, Member States need to plan their policies and measures in the energy and climate fields in full coherence with the delivery of the Energy Union objectives. In the absence of nationally binding energy targets until 2030, the Commission also needs to assess whether Member States are collectively on track to achieve the EU level targets and to intervene in the case of insufficient progress made. The main 2030 targets on EU level are:

• Cutting greenhouse gas emissions (GHGs) by 40% below 1990 levels in 2030
• A 32% share for renewable energy sources of the total final energy consumption
• Reducing energy consumption (improving energy efficiency) by 32.5%

For consistency and effectiveness, the NECPs follow a common drafting and reporting template, and will have to be updated every five years (in 2024 and 2029). Member-states have to also submit mandatory progress reports every two years followed by feedback and guidelines from the European Commission. To support administrative capacity building, the Commission provides technical assistance to Member States for the development of the NECP before 2020. Also, in the period from 2020 to 2030, technical support will continue to play an important role. National Plans should also ensure the involvement of stakeholders at every stage of their development and implementation, as well as should contribute to public awareness about energy transition.

With a view to meet the obligations set above, the Bulgarian Ministry of Energy released on January 15, 2019 the draft of the Bulgarian Plan for public consultation. Interested parties are encouraged to send comments, remarks and proposals for amendments by the end of April 2019. The Commission shall assess the draft NECP and shall issue recommendations until end of June 2019. The final version of the NECP is to be submitted to the EC by December 31, 2019.

The Bulgarian NECP spreads on 170 pages based on the common EU template. The NECP is providing an overview of the current energy policy situation in the country and is revealing the national targets and specific goals for each of the Energy Union’s five dimensions mentioned above. The document is then focusing on the policies and measures for meeting the set targets. A separate analytical section is considering the current situation and develops future projections according to the existing policies and measures.
The draft of the Bulgarian integrated NECP is a detailed account of the status of the country’s energy system, however, it fails to impress with ambition as both the set targets seem low compared to the stated EU objectives. The proposed policy measures seem inadequate to achieve even these lower targets. The findings of the Plan about the future development of the Bulgarian energy system are inconsistent with existing established modelling assessments and even with such commissioned by the energy ministry in 2018 for the purpose of the NECP. Detailed elaboration of energy scenarios is missing from the NECP, which has impaired the justification for the low RES and energy efficiency targets.

The main goal of the current NECP analysis is to assess whether the strategic document will be effective in achieving the EU’s long-term decarbonisation goals. A strong emphasis is placed on the role of the electricity sector, which holds the biggest potential for GHG emission reduction over the next decade. The main source of GHG emissions in the energy sector is the burning of solid fuels, including coal, which made up 57.8% of Bulgaria’s total emissions in 2016. Electricity is also where the NECP has been most conservative and least ambitious revealing an unrealistic determination to preserve coal-fired power generation and lack of creativity in developing pro-active policies for supporting a new wave of renewable energy investment.

This assessment provides a detailed overview of the main policy implications from the NECP including 2030 targets, related policy measures and implementation strategies. The main conclusions of the NECP will be compared and juxtaposed with the modelling results of the long-term energy system study commissioned by the energy ministry in 2018 and the South East Europe Electricity Roadmap (SEERMAP) findings for Bulgaria. The NECP assessment discusses whether the strategic document reflects some of the most common decarbonisation myths in Southeastern Europe. The analysis also briefly focuses on the governance framework for realizing the decarbonisation goals. It is important to discuss the process of developing the NECP and the deficits in the process of policy formation over the past two years. The assessment touches upon how the NECP development process reflects the overall governance deficits of the Bulgarian energy sector including lack of policy consistency, limited transparency and lack of adequate cost/benefit assessment of strategic long-term decisions.

The NECP should be seen as a more general guideline for achieving the overall socio-economic benefits of energy transition in Bulgaria including in terms of green innovations, economic growth, more locally-based
jobs, lower energy import bills and improved energy security. Hence, the design of an ambitious NECP and its subsequent implementation should not be perceived as the mere bureaucratic fulfillment of EU directives and regulations but also as a unique opportunity for economic and social transformation. The development of the NECP also runs in parallel to the **programming of the EU’s Multi-Year Financial Framework (MFF), which could be the most powerful tool for co-funding energy transition and infrastructure projects**, as well as the economic transformation of coal-dependent regions in Eastern Europe. The Commission also emphasizes the need for a stronger link/alignment between the Structural and Investment Funds and the NECP process.
OVERVIEW OF THE NECP

The integrated Bulgarian NECP for the period 2021 – 2030 reveals the main goals, actions, measures and stages of the development of the national policy on energy and climate, taking into consideration but not aiming to reach the long-term EU energy legislation, targets and priorities. The government has set the following key targets in the NECP:

• 0% in additional non-emission trading scheme (ETS) GHG emission reductions according to Regulation No. 2018/842 and no individual contribution target for the implementation of the 43% EU target for decreasing GHG emissions as part of the ETS framework.
• 25% target for the share of renewable energy sources in the gross final energy consumption
• 27% improvement of energy efficiency
• Increase of the power sector interconnectivity from 15% to 22%

Two of the most important strategic implications from the draft NECP are that the government would preserve most of the coal-fired power generation capacity online until 2030 and at the same time build a new nuclear power plant, most likely the 2000-MW Belene project. The government has made the latter commitment irrespective of recent modelling assessments including from the Bulgarian Academy of Sciences pointing out that the Belene nuclear power plant would be a loss-making plant in the first three decades of operations. In addition, the aim of preserving the country’s coal-fired power generation capacity ignores the growing lack of competitiveness of lignite-fired plants that have been under enormous financial pressure due to the recent hike in the CO2 emission prices.

Even at the highest-price scenario for the region, the LCOE of Belene remains above regional prices making it uncompetitive in the first 13 years of the power plant’s operation. Cumulative losses in this period would reach EUR 3.5 billion. At the same scenario, the project would start breaking even in 2044 and profitable thereafter. Then what remains critical for determining the need for building a large base-load capacity such as a new NPP, is whether a power deficit would emerge in Bulgaria or the region. The big unknown here is whether Bulgaria would follow through with the EU requirements and close all coal-fired power plants by 2030.

Zooming in on the statistical results, the government expects the share of renewable energy sources in final electricity consumption to largely stay

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1 Bulgarian Academy of Sciences. (2017). Final Intermediary Report 2 – Activity V: Analysis of the opportunity for Belene nuclear power plant project to be constructed on market basis and the development of a model for the separation of the assets and liabilities linked to the Belene project in a new commercial entity, as well as the execution of a follow-up procedure in line with the Law on Privatization and Post-Privatization Control. Sofia: 31 October 2017, accessed (in Bulgarian only) at http://www.bas.bg/IR2.pdf
Stifled decarbonisation

the same at 17% despite an increase of RES-based power generation from 7.24 TWh in 2020 to 8.05 TWh in 2030 on the back of a 570 MW expansion of wind, solar and biomass generation capacity. Wind power investments are expected to dominate the new RES capacity additions, while the plan does not envision new hydro power plants with the exception of the modernization and expansion of NEK’s Chaira hydro-pumping station.

Similar to the country’s 2020 strategy that includes the mandatory EU 16% target for the overall RES share, the government would rely largely on the expansion of the use of biomass for heating. RES in the heating and cooling sector rises from 35% in 2021 to 44% in 2030. As biomass-based power generation is forecast by the Plan to increase by less than 200 GWh/yr to around 426 GWh, it is unclear from where the renewable component will come in the heating and cooling sector but from the expanded use of solid fuels in the form of firewood for heating. Currently, roughly 54% of the Bulgarian households use firewood for cooking and heating – a criterion for defining a household as energy poor.4 The share for the population living in rural areas or small towns is much higher. This is not only inefficient considering the limited insulation and outdated furnaces used but has been contributing to dangerously high levels of air pollution in urbanised areas. Increasing the share of

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wood use in the energy sector does not seem realistic considering the trend towards electrification, and would not be environmentally sustainable with serious negative implications for biodiversity and the inconsistency with the EU sustainability criteria for biomass. The projection for an increased consumption of firewood and other solid fuels in the residential sector is not supported neither from the PRIMES modelling results nor from government-commissioned modelling studies on the long-term energy balance of the country.\(^5\) In the former case, the primary energy consumption of wood and solid fuels shrinks in half by 2030, and in the latter, remains flat. Realistic expectations put the use of firewood in the residential sector at 33% by 2030, unchanged from current levels. Even less clear are the socio-economic pre-requisites or government measures that will induce an even greater expansion of firewood consumption. The draft NECP mentions only already-existing concrete regulation that contributes to this trend, namely the rule that at least 15% of the overall heating energy in residential buildings to be produced by centralized high-efficiency heating systems on firewood or other biomass; from solar heating installations or from heatpumps and surface geothermal systems.

The government has placed the biomass potential of Bulgaria as a cornerstone of its renewable energy strategy for 2030 by expanding its use beyond firewood and pellets to waste and biogas. The NECP underscores the need for refurbishing district heating plants on local and regional level by installing steam turbines using biomass and waste. The government expects that the district heating modernisation could lead to reduction of 52,000 tons of CO2 per year. The rehabilitation of the heavily outdated heating infrastructure through better isolation of pipelines could reduce heat losses by between 3 and 10%, and thus additionally cutting emissions. Efforts will be also directed towards wider utilization of waste (solid household waste, sludge from sewage treatment plants, etc.) and residues from industrial plants without adversely affecting the health and quality of life of the population in areas where biomass power plants are located. In addition, the government plans regulatory requirements for sustainable production and consumption of gaseous and solid biomass fuels when used to produce electricity and heat from biomass with a total rated thermal input equal to or greater than 20 MW for solid fuels from biomass; and with a total rated thermal input greater than or equal to 2 MW for gaseous biomass fuels.

There is a strong nexus between the extensive use of biomass in the residential sector and energy poverty. Bulgaria is a EU leader in terms of the share of households that have defaulted on their utility bills, despite the fact that Bulgaria’s pricing policy is devised around keeping electricity prices artificially low.\(^6\) The limited reach of certain types of networked energy infrastructures (particularly gas) means that, in addition to affordability

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\(^5\) The PRIMES model is an EU energy system model which simulates energy consumption and the energy supply system. It is a partial equilibrium modelling system that simulates an energy market equilibrium in the European Union and each of its Member States. This includes consistent EU carbon price trajectories.

issues, energy deprivation is also predicated upon the spatial and technical limitations associated with switching towards more affordable fuel sources in households. Some parts of the population have had no option other than using wood and coal for heating. In Bulgaria, **switching towards this source of energy has clear positive income dimension**. Subsidized household electricity prices have made Bulgarians in big cities overly reliant on electricity for heating. Hence, changes in electricity prices have had a disproportionately negative effect on energy poverty of households.

Instead of **unlocking the vicious cycle of energy poverty-induced use of air-polluting low-quality firewood**, the NECP envisions a doubling down on the use of biomass. The document mentions only in passing the enormous benefits of the decentralization of the power supply through the use of small-scale renewables. If financial and administrative obstacles are removed, investing in self-production facilities could become much more attractive even to vulnerable groups. The latter could benefit from special financial support from the government in the form of subsidized loans or innovative financial mechanisms involving the pooling of many communities in energy cooperatives. These policy measures could be much better developed in the NECP detailed action plans.

The draft NECP justifies the smaller uptake of renewables with the fact that Bulgaria is the poorest country in the EU; therefore, it would not be able to afford a similar RES investment compared to the 2010 – 2016 period when close to 2 GW of wind, solar and biomass capacity was added to the system. The government also underscores that a significant expansion of RES in the electricity production carries significant security of supply risks and would increase energy poverty. Noteworthy, the bulk installation of new wind and solar power plants between 2010 and 2012 has led to the sharp increase in final user’s tariffs in the middle of the economic recession. The development of the Bulgarian RES policy took place in the general context of widespread corruption that enabled abnormally high FiTs to be allocated to a small group of well-connected politicians and businessmen. The NECP cites the negative financial impact of the integration of new RES on the overall health of state-owned energy companies including the wholesale supplier for the regulated market, the National Electricity Company (NEK).

The government’s motivations for a less ambitious 2030 RES target **exaggerate the financial impact of the first wave of the integration of renewables and ignore the equally detrimental role that economically non-viable large energy infrastructure projects such as the Belene NPP project have played in undermining the stability of the sector**. The NECP target for RES is also in stark contrast to:

- the long-term technically and economically available renewable energy capacity in Bulgaria, which has been estimated at over 40 GW by the modelling exercise on the South East Europe Electricity Roadmap (SEERMAP). The draft NECP, however, argues that, on the contrary, the

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7 CSD, 2018, Development of small-scale renewable energy sources in Bulgaria. Legislative and administrative challenges, Center for the Study of Democracy, Sofia.
The NECP provides much detail neither about how the government will achieve the forecast 570-MW hike in installed RES generation capacity nor about the overall increase in the RES share in gross final energy consumption. The government presents a list of vague, largely unexplained set of policy measures to boost the share of renewable energy in the gross final consumption including:

- Financing of solar collectors and rooftop PV power plants.
- Preferential feed-in tariffs for RES-based power plants with capacity of up to 30 kW.

The Energy Balance for Bulgaria between 2021 and 2030 with a 2050 Horizon, a modelling study commissioned by the government in preparation of the 2030 energy strategy and the NECP, that envisions RES generation capacity (excluding hydro) to increase three times even in a ‘zero decarbonization’ scenario from the current levels of roughly 3 TWh, making up close to 25% of final gross electricity consumption. The NECP envisions an actual decline in RES-E share to 17% by 2030 from the current 19% (incl. hydro power production).

capacity of the installation of new RES generation capacity would be severely limited by the EU biodiversity rules and the European ecological network, Natura 2000. It covers 34% of the Bulgarian territory making the country among the EU leaders in biodiversity protection. Apart from this explanation, the Plan does not provide further justification for why the technically-available new RES capacity is so low.

- The 2016 PRIMES Modelling envisioning a 75% hike in RES-E capacity from 2020 to 2030 to around 7 GW.

- The Energy Balance for Bulgaria between 2021 and 2030 with a 2050 Horizon, a modelling study commissioned by the government in preparation of the 2030 energy strategy and the NECP, that envisions RES generation capacity (excluding hydro) to increase three times even in a ‘zero decarbonization’ scenario from the current levels of roughly 3 TWh, making up close to 25% of final gross electricity consumption. The NECP envisions an actual decline in RES-E share to 17% by 2030 from the current 19% (incl. hydro power production).
• Premium tariffs for renewables with capacity over 4 MW that have to sell on IBEX.
• Introduction of capacity auctions for new renewable investment with premium tariffs.
• Development of centralized heating system operating on biomass or by using geothermal and solar energy.
• Reduction of red-tape and administrative burdens for the installation of small-scale RES.
• Development of a regulatory framework for renewable energy cooperatives.
• Elaboration of financial schemes for renewable energy projects developed by vulnerable groups.
• Introduction of decentralized heating systems using renewable energy sources such as biomass-based central heating facilities in small communities.
• Modernisation of the usage of biomass in households and the introduction of alternative biomass sources for heating including waste and the production of biogas.

In the energy efficiency field, the NECP has proposed a much more detailed regulatory and financial incentive program to achieve its 2030 target. The government estimates average annual energy savings of 76,1 ktoe for the 2021 – 2030 amounting to the accumulation of total savings worth 4185,8 ktoe or around 10% of the final energy consumption. The NECP sees a much steeper fall in energy intensity,
which is shrinking by 30% over the 2020s down to 70 ktoe/million BGN, and by half until 2050 (see Fig. 6).

To achieve these energy efficiency improvements, the government will undertake to prepare a long-term strategy for the refurbishment of public and residential buildings in attempt to reach near-zero energy consumption. One of the main energy efficiency funding strategies that is likely to be expanded will be the National Program for Energy Efficiency of Multi-family Residential Buildings (NPEEMR), which could generate energy savings of more than 80 ktoe.

The program’s first phase has already been completed and its second phase is currently starting. It is the key instrument aimed at improving energy efficiency in multi-family residential buildings, mainly by installing wall insulation and energy-efficient windows; on-site energy generation facilities such as solar panels are eligible activities under the program, but so far have not been prioritised. The program, with a final budget of about EUR 500 mln. covered all 265 Bulgarian municipalities and the main eligibility criteria for participating is the type of construction of the building. A total of around 2,200 buildings have been completed so far.\(^8\) Early estimates by the government show that energy savings have reached around 30% compared to the pre-refurbishment period or roughly 1 TWh. The program’s outcome despite constituting a fraction of the total electricity consumption in Bulgaria (close to 40 TWh) shows the enormous untapped energy efficiency potential in Bulgaria that can be unlocked over the next decade.

The energy ministry will also allocate the total annual energy savings among a group of energy consumers mandating specific individual energy saving targets. These include 1) final power suppliers including traders selling more than 20 GWh per year; 2) heat distribution companies selling heat energy of more than 20 GWh annually; 3) gas distribution companies with sales of more than 1 mcm per year; 4) liquid fuel traders with sales of over 6.5 kt with the exception of fuels for transportation. These policy measures show more or less continuity from the government’s 2020 energy efficiency framework but the draft NECP does not provide guidelines on how the new even more ambitious targets would be implemented. Additional alternative measures include:

- Energy-based or CO2 taxes leading to reductions in the final consumption of energy;
- Energy efficiency financing schemes or incentives to reduce energy consumption;
- Introduction of regulations enabling ESCO service contracts;
- Performance standards for buildings, appliances and transport vehicles;
- Education, training activities and awareness raising.

An important aspect of the energy efficiency dimension in the Bulgarian NECP, is the gasification of households. Over the past decade, little

\(^8\) According to the 2017 Implementation Report of the National Program, on average the annual saved CO2 emissions are 135,73 kt, while the expected energy savings are 415 074,35 MWh.
progress has been achieved in increasing the number of households connected to natural gas. Currently, less than 3% of households use gas in comparison to the general EU level of 55%. One of the arguments for expanding the use of natural gas is to rein in the steep rise in electricity consumption for heating and cooling that drives up utility costs, and hence energy poverty, increases power market imbalances and GHG emissions due to the coal dependency for generation in the winter. The most ambitious aspect of the NECP is the improvement of the Bulgarian security of power supply and the regional power market integration. The Plan notes that it has already achieved the EU 15% power market interconnectivity as currently the transmission capacity for export is 16.2% and 13.2% for imports (assuming available generation capacity of 8 300 MW at a total installed capacity of 13 563 MW). The NECP forecasts that the level of interconnectivity will rise to 22% by 2030 on the back of 400 kV new power lines between Bulgaria and Romania, and Bulgaria and Serbia, as well as Bulgaria and Greece with combined transmission capacity of 4 500 MW. Only the Greek interconnection line (Maritsa Istok – Nea Santa) project has secured financing and is expected to come online next year.

The development of new power interconnection lines will go hand in hand with the completion of regional market coupling. The process for market integration with Romania and Greece is expected to end in

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2022 after the coupling of the 4MMC and MRC mechanisms, as well as the launch of the day-ahead market (DAM) in Greece this year. Bulgaria will aim to have a coupled intra-day power market with Romania in the second half of 2019. Meanwhile, IBEX has begun strategic projects for joining the WB6 Memorandum that would lead to a DAM coupling with Macedonia, Serbia and Croatia in the beginning of 2020. Bulgaria is already a member of the LIP15 intra-day European coupling project, which is seen as a preliminary phase for joining the cross-continent XBID mechanism.
One of the prerequisites for developing a realistic and effective NECP is to base it on a sound modelling study that analyses all aspects of the energy system dynamically. The Bulgarian NECP lacks a detailed modelling foundation, and has largely ignored such established existing assessments like the SEERMAP study and PRIMES. In fact, the draft NECP does not contain the full details even of the modelling work, commissioned by the Bulgarian government itself in preparation of the 2030 energy strategy and the NECP, or reveals inconsistencies and cherry-pickling in energy sector projections (see Box 1 below).  

In its last major section, Analytical Basis, the NECP details the current balance of the energy system without elaborate forecasts of the main indicators with the exception of projections for total emissions of CO2 by sector.

As can be seen in Figure 6, the NECP projects an almost 40% reduction in the CO2 emissions in the energy sector from 2020 to 2030 down to 26636 gigagrams of CO2 equivalent. This trend contradicts directly the initial assumption that coal-fired power generation would be...

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10 The National Trust Eco Fund the Black Sea Energy Research Centre to provide a forecast for the energy balance of Bulgaria over the next decades including on production, consumption and import/export of energy resources. The modelling study has been carried out and some parts of it included in the draft NECP but its full findings have not been publicly released.
preserved until 2030, and the 2030 target of 0% non-ETS emission reductions. In addition, the NECP does not include any statistical data tables with projections for energy consumption/production and trade. The Plan only stipulates the main structural assumptions behind the 2030 targets including on energy prices, GDP and Population (see Figure 7). However, the logic behind the assumptions and their impact on the projections for the energy balance has not been explained or justified.

**Figure 7. Key Energy Price and Macroeconomic Assumptions for the NECP**

![Figure 7](image)

*Source: Draft integrated National Energy and Climate Plan for Bulgaria.*

**Box 1. Lack of Transparency and Cherry-Picking from the Modelling Scenarios for the Development of the NECP**

In 2018 the Bulgarian government commissioned through the National Trust Eco Fund a forecast for the energy balance of Bulgaria over the next decades including on production, consumption and import/export of energy resources. The modelling study *Forecast Energy Balance of Bulgaria for the 2020 – 2030 period with a 2050 Horizon* has been carried out and some parts of it included in the draft NECP but its full findings have not been publicly released. This shows a lack of transparency in the preparation of the NECP but also seems to mask inconsistencies of the findings of the study with the chosen policy course.

It is worth comparing the NECP projections on CO₂ emission trends, renewable energy integration, coal-fired power generation and electricity supply/demand with existing modelling studies including SEERMAP and with the forecasting study commissioned by the government. The latter develops four distinct scenarios for the development of Bulgaria’s energy and climate policy including:

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11 CSD has seen a final version of the study, which results it presents in this report.
“Zero Decarbonisation”, which similar to SEERMAP envisions no changes in the existing policy measures on European and national level. It stipulates that the national targets for energy efficiency and renewable energy use will be met by 2020 and future developments will not be linked to a reduction in CO2 emissions between 2021 and 2030 and by 2050.

“Low Decarbonisation”, which entails partial implementation of the EU Decision 2017/1442 for adopting the Best Available Techniques Reference Document (BREF) on emissions from large combustion plants and the following 2030 targets (identical to the ones in the NECP):
- 15% electricity interconnection capacity;
- 27% improvement of energy efficiency;
- 25% share of the RES in the gross final energy consumption.

“High Decarbonisation”, which closely corresponds to the “Decarbonisation” scenario in SEERMAP, includes full implementation of the EU Decision 2017/1442 for adopting the Best Available Techniques Reference Document (BREF) on emissions from large combustion plants (meaning the closing of all coal-fired power plants in Bulgaria from 2021) and the following 2030 targets:
- 15% electricity interconnection capacity;
- 30% improvement of energy efficiency;
- 27% share of the RES in the gross final energy consumption.

“High Decarbonisation with Additional Nuclear Capacity”, which is identical to Scenario 3 but envisions the construction of two new 1000-MW nuclear reactors until 2030.

A brief look at the four scenarios reveals that the NECP seems to has adopted the “Low Decarbonisation” scenario by adopting the same 2030 targets and maintaining the coal-fired power generation capacity online. Zooming on the data, one notices significant inconsistencies in projections. Emission reductions in the NECP are one-third lower than those projected in the other two modelling studies. This can be probably explained by the 57% fall in power generation from thermal power plants using local coal (mainly lignite) down to 11 TWh (55% corresponding cut in the lignite capacity) or less than 25% of the total electricity production in the country in 2030. The NECP implies no similar phasing out of coal-fired power plants during the upcoming decade. In fact, the 2030 emission target in the NECP resembles much more closely the projections from the “Zero Decarbonisation” scenario.

As can be seen from Box 1, which compares the structure of power generation depending on the underlying modelling scenario, the NECP chooses to rely on thermal power plants preservation with decarbonization targets being met through increasing the RES share with a disproportionate
expansion of biomass use, rather than with significant investment in wind and solar electricity production capacity. The NECP also reiterates on a number of occasions that nuclear energy capacity should be increased assuming the construction of a new nuclear power plant (NPP).

The model with additional nuclear power generation capacity adopted by the NECP assumes at least one new 1000-MW reactor constructed by 2030. This would squeeze further the share of renewables in the power production profile of the country from around 17% to little over 14.5%, almost equally distributed among hydro power plants and new RES-based generation facilities. Seasonal variations and the inherent intermittency of solar and wind power generation makes their role in the power system marginal, according to the NECP assumptions.

The chosen scenario for the development of the electricity system fails to take into consideration the vast technical potential for the integration of new wind, solar, biomass/gas and waste generation facilities. Neither does the NECP envisage the construction of new hydro power plants with the exception of the already-started expansion and modernization of the Chaira hydro-pumping station, owned by the wholesale regulated market supplier, NEK. It falls prey to widespread myths about renewable energy and decarbonisation despite a multitude of evidence to the contrary including:

12 The hydro power plant production profile is volatile depending on annual seasonal changes, regulatory limits and outdated technological potential. Bulgaria can rarely activate more than half of its installed hydro power capacity at a given time.

• There is already enough RES-installed capacity.
• Decarbonisation scenarios are costlier than preserving the status-quo.
• RES are not competitive to conventional power but can be adopted only by wealthy countries.
• RES increases power prices and an energy transition is not financially feasible.
• RES undermines energy security as it would lead to the removal of coal-fired power generation capacity.
• RES leads to employment losses that are simply unaffordable.
• RES potential is insufficient to cover Bulgaria’s energy demand.
• RES potential is hindered due to Bulgaria’s commitment to the Natura 2020 environmental protection framework.
• All RES projects are corrupt and breed corruption in the energy sector.
• RES do not deliver reliable energy on demand and are non-flexible and unpredictable, which means that we need more base-load capacity to maintain system stability.
• Coal phase out endangers self-sufficiency and Bulgaria’s position as a major power exporter.
The Bulgarian draft NECP embraces fully many of the myths about the viability of energy transition in Southeastern Europe without providing much analytical justification. On the contrary, the myths about decarbonization, and mainly about its socio-economic impact, serve as an explanation of the limited ambition of the strategic document. The NECP’s basic premise is that decarbonisation is a preferred development path for the energy system but that it is simply not consistent with the existing socio-economic conditions in Bulgaria. The document is almost directly saying that energy transition investments are only for rich countries, and Bulgaria is not one of them.

This most popular myth has been debunked in a number of studies, most recently by the SEERMAP study, which has also been used as the basis for the development of the government’s long-term modelling assumptions. According to SEERMAP, it is not decarbonisation of the electricity sector that drives up wholesale electricity prices but the increasing carbon price, a key cost component in the generation of electricity in Bulgaria due to the overreliance on lignite burning. In fact, wholesale price of electricity follows a similar trajectory under all scenarios irrespective of the level of decarbonisation and only diverges after 2045.\(^\text{14}\) At the peak of renewable energy investment achieved after 2040, the marginal effect of more renewables in the system is actually driving down prices.

The model shows that whether or not Bulgaria pursues an active policy to support renewable electricity generation, a significant replacement of fossil fuel generation capacity would take place. Coal and lignite capacities would be almost completely phased out under all scenarios by 2050, accounting for less than 3% of today’s level. The decrease in the share of these fuels would begin early, by 2030 around 45% of these capacities would be already closed driven by the rising price of carbon and of natural gas which would result in unprofitable utilisation rates.\(^\text{15}\) The investment needs for replacing fossil-based electricity generation with renewable energy are estimated at a total of EUR 16.5 billion in the scenario of full decarbonisation. However, more than 75% of the costs would be covered by private companies that can develop

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\(^{14}\) Ibid; The carbon prices in the SEERMAP models were applied for all EU member states, and from 2030 onwards also in non-member states. The carbon price is assumed to increase from 33.5 EUR/tCO in 2030 to 88 EUR/tCO by 2050, in line with the EU Reference Scenario 2016. The corresponding carbon price, although significantly higher than the current price, is a medium level estimate compared with other estimates of EU ETS carbon prices by 2050. The EU ETS carbon price is determined by the marginal abatement cost of the most expensive abatement option needed to stay within the emissions cap.

commercially-viable projects. With the rise of electricity prices and the corresponding decline of renewable energy technology costs, solar and wind parks have been already becoming competitive to traditional baseload supply. This has been vividly seen in early 2019 when the integration of renewable energy sources to the day-ahead market at the IBEX power exchange in Bulgaria contributed to a slump in average baseload prices from an average of around EUR 45/MWh last year to below around EUR 35-8/MWh in the first quarter of 2019.16

The state support of around EUR 4 billion over the next three decades could be relatively easily sourced from the existing social responsibility tax (SRT), as well as from the revenues of selling carbon emission allowances as part of the ETS. In 2018, Bulgaria earned close to EUR 400 million from selling CO2 quotas. With planned full liberalisation of the power market and the removal of the regulated segment, most of these funds will no longer have to plug the tariff deficit in the National Electricity Company (NEK). The latter has been purchasing RES-based power under long-term contracts with preferential feed-in tariffs (FiTs). Instead of compensating NEK, the CO2 revenues could be allocated to the provision of premium contracts to new renewable projects selected based on the results of competitive tenders.

16 CSD estimates based on data from the IBEX power exchange data portal at www.ibex.bg.
The other very common myth that is also present in the draft NECP is that the Bulgarian RES potential is limited. The SEERMAP study has again discounted this argument by expanding the detailed assessment of the RES potential in nine SEE countries based on GIS data on wind speed and solar irradiation, and taking into consideration land use and power system restrictions. The total RES potential in Bulgaria with limited land use (as per the Natural 2020 conservation zones) and with default power system constraints can be estimated at 10.1 GW. Without the structural limitations, the potential rises to over 40 GW, one-third of which is in wind onshore projects, and another quarter in utility-scale and decentralized PV generation. Biomass-based power generation, which has been a focal point for the NECP renewable ambitions, has a much lower potential without a significant reorganization of the process of firewood burning in the heating sector, which would involve the development of hundreds of combined heat and power (CHP-based) plants on local level.

The forecast for the RES potential should be seen as too optimistic, as it does not account enough for the current administrative capacity and the legal and regulatory framework for renewables. In addition, the current legislation and regulatory practice does not attain its goal to provide adequate support for households and small consumers to invest in small-scale power plants. The draft NECP does mention vaguely that the government would work to reduce the administrative burden and create new incentives for renewable investors but does not specify concrete policy measures. Unlocking the enormous potential for decentralized power generation would not only be the cheapest way to decarbonise the electricity system but it would also debunk the myth that renewable energy laws serve only corrupt elites – an argument also pointed out as a justification for the limited ambition of the NECP. Decentralisation of power supply would empower households, democratize energy generation, and contribute to the decline of energy poverty as small-scale facilities could cover a large share of their consumption. The result would be an alleviation of the socio-economic pain exerted by the power market liberalisation, and the stabilisation of the electricity system, which suffers under the strain of unpredictable, extreme spikes in demand such as the 2017 winter power crisis that led to the collapse of power trading in the SEE region.

Another set of myths about the decarbonisation claims that it would lead to severe security of supply risks, while the integration of too many renewable installations would destabilize the power system. It is true that in all scenarios, the coal phase-out and the expansion of the RES investment leads to a paramount shift in the country’s electricity trade balance. Bulgaria becomes a net importer of electricity between 2030 and 2040 and remains so in the 2050 horizon. In a full decarbonisation scenario, imports make up 12% of the country’s total electricity needs. The generation adequacy indicator, referring to the ability of a country to satisfy its demand using only domestic power production, drops to almost zero. However, considering the extended interconnection capacities of

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17 Green-X model for the South East Europe Electricity Roadmap (SEERMAP).
the Bulgarian Transmission System Operator (TSO) in the region, the country is still able to cover its power needs meaning that the system adequacy level remains favourable. The NECP draft is addressing the issue of boosting the interconnection capacity, and is arguably where the Plan is most ambitious with a target of 22% interconnection capacity by 2030. Nonetheless, there will be a need for further investment in domestic high and medium voltage transmission and distribution lines. Analysis of the network constraints anticipates contingencies at the Dobruja region and at the Serbian and Romanian border.

A competitive electricity market, if unconstrained by cross-border network capacity, will result in trade flows which ensure a socially optimal allocation of production across countries. Exporting electricity is only beneficial to a country if electricity can be produced at a lower cost in that country than in neighbouring countries. In this case, electricity producers can make a profit by producing electricity and exporting it to other countries. If this is not the case, and electricity imports are cheaper than domestic production, then importing electricity is the socially optimal solution, as it ensures a lower electricity price which is beneficial to consumers.18 Along the same logic, aiming for full self-sufficiency in electricity production can come at a significantly increased cost compared to a situation when the country is able to rely on cheaper imports.

It is true that the large deployment of renewable energy sources could undermine the stability of the Bulgarian power system as network losses increase and intermittency of the supply causes partial outages. To mitigate these risks, the government should work on introducing large scale demand-side measures such as state support for energy efficiency investment in the residential infrastructure, the coordination of the production cycles of large energy consumers and the development of expanded domestic network connections. Concrete measures in reducing demand-side pressures have been proposed in the NECP, and some mechanisms including the offering of tertiary cold reserve capacity from large industrial users are currently under implementation. The rise of decentralised power supply, especially in PV, could also alleviate some of the pressures on the network.

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ASSESSING GOVERNANCE DEFICITS
IN THE DEVELOPMENT OF THE NECP

The Bulgarian government has continuously been unable to define, publicly defend, and implement its energy priorities, policies and actions in a clear-cut framework, outlining the effects on consumers, producers, tax-payers, the public and private sector. It is thus caught between the rock of EU obligations and popular demands for affordable energy, and the hard place of alluring, large-scale contracting projects such as NPP Belene and the South Stream/Turkstream gas pipeline that benefit entrenched private and foreign state interests, and that breed corruption and waste in the public sector.\(^\text{19}\) The draft NECP is a clear emanation of this state capture dynamics that predetermines the government’s failure to focus on critical energy transition policies within the wider framework of EU energy priorities and regulations. The mismanagement of the implementation of the 2020 energy policy objectives, and the lack of consistency in decision-making has already cost taxpayers dearly over the last decade including a jump in electricity prices and the reallocation of monopoly rents in a few companies and individuals with preferential access to state support mechanisms.

The process of the NECP development points to the similar governance deficits in the development of the future energy policy including:

- Lack of a detailed modelling assessment that becomes the basis of the strategic document.
- Limited evidence-based process of explaining the policy measures and targets listed in the NECP.
- Lack of synchronization and coordination between the different ministries of the development of the different sub-elements of the NECP.
- Political meddling in the final conclusions of the NECP document skewing the expert assessments and ignoring evidence-based research.
- Limited administrative capacity revealing an inability to handle the complex process of the transformation of the energy system with a 2030 and 2050 horizon.
- Capture of the energy policy by vested interests including in the nuclear and coal power sectors.
- Embrace of populist arguments against energy transition instead of evidence-based analyses.

Zooming in on the NECP drafting process, there was almost no transparency about how the energy ministry prepared the strategic document. There have been limited stakeholder consultations with civil society organizations, trade unions and business associations. The government commissioned an

\(^{19}\) CSD, 2016, State Capture Unplugged: Countering Administrative and Political Corruption in Bulgaria, Center for the Study of Democracy, Sofia, pp. 29-34.
external impact assessment that models different scenarios for the long-term
development of the energy system but did not make the analysis public,
and did not consult its results with different stakeholders or ministries. The
current assessment revealed that at the end the energy ministry did not take
into consideration the findings of the modelling study but relied on
a patchwork of assumptions and projections that more or less fit a
business-as-usual scenario with no specific decarbonisation targets. Key
information about the sources for the NECP conclusions is missing as the
NECP does not cite specific methodologies that have been used.

The draft Bulgarian NECP was the last one to be submitted among EU
member-states in the SEE, and shortly after the Commission’s Governance
Regulation deadline. The government has allowed three months of time
for comments and statements from external stakeholders, there is little
information provided on how and if at all the feedback will be addressed.
Impact assessments have not been conducted yet, and there is little
indication that such are planned before the official comments of the
Commission are submitted. The development process did not include
joint discussions with neighboring countries, and there seems to be little
synchronization in the energy policies of the SEE countries even on the
aspects of cross-border trading and supply security. The existing modus-
operandi creates the impression that the government will respond only
to comments from the EC by early Fall before submitting the final draft
at the end of 2019. As with the first draft, which seems to have been
drafted under intense time and political pressure, the expectation is
for the final draft to also be amended at the last moment to fit into
the broader governance framework of preserving coal-fired power
generation, expanding nuclear capacity and keeping to a minimum the
state support schemes for renewable energy sources.

If the government is to bring the NECP closer in line with the EU 2030
targets, it will have to rise to the challenge and focus on the one variable
of energy transition it can best control – improving the governance
of public policy and the public energy sector. Achieving the ambitious
2030 targets, not to mention the 2050 decarbonisation framework would
require action now as catching up after 2030 would require much bigger
public resources. Delayed action on renewables is feasible, but has two
disadvantages compared with a long term planned effort. It results in
stranded fossil fuel power generation assets, including currently planned
power plants. Translated into a price increase equivalent over a 10-year
period, the cost of stranded assets is on par with the size of long term
RES support needed for decarbonising the electricity sector. Although
the main assumption is that the integration of renewables and the
improvement of energy efficiency would be driven by private investment,
the state would need to create an enabling tax and regulatory environment
to incentivize companies to risk high upfront costs in exchange for low
operation and maintenance costs in the future. This transformation goes
first and foremost through the closing of widespread governance gaps
in decision-making, the elimination of political meddling into long-term
strategizing, the elimination of state capture risks in the state-owned
companies and large-scale projects, and ensuring the transparency and
independence of the energy and competition regulators.
Renewable energy sources will play a major role in the EU and Bulgaria's energy mix in order to ensure a sustainable, competitive and secure energy system. However, the proposed energy and climate targets in the NECPs, as well as the regulatory framework do not enable this urgently needed transition but reflect a rather business-as-usual approach. The current NECP lacks ambition, a long-term perspective and a clear vision for the direction of the Bulgarian energy transition. Firstly, it relies heavily on coal, gas and nuclear for Bulgaria's energy mix for 2030. Secondly, the lack of a strategy for a coal phase-out, the low sustainable energy targets (25% RES in gross final energy consumption, 27% energy efficiency and 15% interconnection target), as well as the weak regulatory measures do not facilitate an enabling framework for citizens, energy communities and other small-scale actors.

The switch to 100% renewables in Europe by 2050 entails also a system change – away from centralised monopolistic utilities to decentralised small-scale renewable power projects, including community projects, and innovative business models. For Bulgaria, this means a departure from the fossil fuel driven, environmentally harmful and monopolized energy infrastructure of the past and a gradual transition to a 21-century democratic, decentralized, competitive, interconnected and climate-friendly energy system.

Against this background, the Bulgarian NECP sets the wrong priorities in terms of climate-friendly energy sources and infrastructure. The draft plan foresees maintaining the key role of stranded assets such as coal and nuclear for increasing the flexibility of the national energy system. Bulgaria does not have a long-term energy strategy for a coal phase-out. The postponing of the coal phase out could have a devastating impact on the energy transformation process. The government should not rely on derogations from EU laws to keep the power plants active. Instead, a strategy for a phase out for the most polluting coal-based power plants and keeping the local jobs in the region is urgently needed. The coal plants will be shut down eventually because of lack of perspectives for this sector, however, the lack of a national strategy to the transformation of coal dependent regions may exacerbate social tensions and aggravate the financial risks for the energy sector.

In addition, the NECPs are a unique opportunity to unleash the renewable energy potential, reduce total system costs and address structural market failures in this area. In that sense, the draft submitted so far by Bulgaria lacks a proper assessment of system flexibility challenges and of the necessary grid infrastructure investments for the local distribution network.

The section on market integration in the Bulgarian NECP is poorly developed. Key aspects of self-consumption and enabling the market
integration of small actors are overlooked (these elements are described as not applicable for the Bulgarian context), which is a missed opportunity to mobilize this huge potential of decentralized power generation. Despite real interest from communities and local authorities, decentralized power generation, in particular community energy, is still relatively undeveloped in Southern, Central and Eastern Europe (including Bulgaria), mainly due to a lack of supportive frameworks, legal barriers, excessive administrative and permitting procedures and discriminatory charges for small-scale actors.

Meanwhile, instead of prioritizing the promotion of wind, solar and geothermal energy, the draft plan foresees a significant increase in share of biomass in the renewable energy mix (an increase from 290 GWh in 2020 to 426 GWh in 2030), which is not compatible with the EU principles of sustainability and environmental integrity. The heavy reliance on biomass could bring numerous side effects, such as deforestation and worsening air quality.

In light of the above analysis of the draft Bulgarian NECP, the following policy recommendations can be considered as a way to improve the final draft of the strategic document:

• There is an urgent need for conducting a detailed ex-ante impact assessment of the NECP’s targets and energy system projections to make sure they would be consistent with the overall EU energy transition policy framework.

• Policy-makers should review the already existing modelling studies including SEERMAP and the Long-Term Study of the Energy Balance commissioned by the government, and utilize them to define more realistic and more ambitious targets along the main pillars of the Energy Union governance regulation. There must be a detailed justification for the lack of ambition in the NECP that goes beyond the repetition of vague statements about energy poverty, security and public acceptance.

• Without a significant review of the current draft NECP targets, Bulgaria would not be on track to becoming carbon neutral by 2050. Currently available renewable energy generation technologies, together with today’s new energy storage, energy efficiency measures and demand response tools can make a 100% renewable energy system fully reliable – without having to rely on any ‘backup’ nuclear or ‘dispatchable’ fossil fuel energy and without the need to curtail the volumes of renewable energy.  

• A long-term strategy for a coal phase-out is urgently needed. The NECP should present a vision on how to transform coal-dependent regions into renewable energy sites and innovation hubs. The competitive advantages and the solar potential of these regions should not be overlooked but strategically grasped to make them success stories.

Europe, the conversion of a previous coal site to a renewable energy generation provides significant local job opportunities and economic value, as well as a secure and independent energy supply. The study clearly demonstrates that such projects can greatly benefit from the pre-existing infrastructure, land availability and concentrated engineering skills.

- The industrial restructuring process has to be strategically planned by identifying the right incentives and financial mechanisms to support the adjustment of coal workers in coal regions undergoing transition. The gradual post-coal transition could be achieved by building on the industrial heritage of coal regions in tandem with establishing new competitive and innovative industries and services.

- A more integrated approach connecting the heating & cooling, electricity and transport sectors combined with energy efficiency measures is crucial for enhancing the demand side responsiveness of the system and unlocking huge amounts of storage potential. Electrifying the transport sector and providing electrification options for the heating and cooling sector (in addition to other renewable energy systems) in tandem with strong energy efficiency targets is crucial for achieving a 100% renewable energy system. Sector coupling could be therefore the motor of this energy transformation.

- The NECP needs to define a new regulatory framework that reduces to a minimum the amount of administrative steps that are related to permitting procedures and regulatory compliance to enable the easy integration of decentralized power generation facilities.

- Development of special programs for subsidised construction of small-scale RES facilities in attempt to decrease the dependence of households on energy subsidies.

- As long as biomass use is incentivized, the NECP has to draw out a specific financing facility that is not limited to replacing outdated wood-based stoves but targets the building of common medium-scale biomass-based centralized heating in rural areas and small towns. This would have the enormous added-value effect of diminishing energy poverty and the financial burden on the national budget.

- Gas is also seen is a major bridge-builder in the energy transition and the Bulgarian NECP foresees the expansion of gas infrastructure (whether LNG terminals or pipelines). The country should however avoid a major carbon lock-in, which could increase its import bill, undermine energy security and its overall decarbonisation efforts. Natural gas could only be seen as a transition fuel to replace coal as the main fuel of choice in some of the existing thermal power plants but should not justify the construction of new thermal power plant (TPP) capacity.

- Bulgaria should not divert vital EU or national funds and resources to expensive and corruption-driven large-scale energy infrastructure projects such as transit gas pipelines or nuclear power plants that lock-in the country in long-term uneven relationship with negative implications for national and energy security.

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• The government should systematically reallocate funding streams to **prioritising efficiency solutions that reduce Bulgaria’s overall energy demand** (in particular in the buildings sector and the energy intensive industry).

• It is essential to develop key performance indicators for demand response such as **national benchmarks** for increasing demand side response measures including on:
  
  – self-consumption, (such as volumes of self-consumption per type of clients (residential, commercial, industrial) and per type of connection and national target for increasing self-consumption;
  
  – heating including a national target for developing flexibility and system efficiency from cleaner heating systems including from cogeneration, heat pumps and localized waste management systems;
  
  – sustainable transport including a target for the number of electric vehicles and recharging stations per type of consumers and per type of connection;
  
  – storage including a target on installed capacity of energy storage resources connected to the electricity grid and volumes delivered to all relevant markets per type of technologies, incentives for smart charging and appropriate network tariff structure;
  
  – most of these performance indicators should include supporting measures and a timeframe for delivering the objective.

• Specific measures have to be adopted to ensure that all consumers, including those in low-income or vulnerable households could have equal access to participating in renewable energy communities. The NECP has to put forward **policies and measures to promote energy communities, cities and self-consumption**, which lacks in the Bulgarian draft plan. Moreover, it is recommended that national governments propose specific measures to promote the role of energy communities in the implementation of energy efficiency policies and measures, such as the energy efficiency obligation schemes and alternative measures under Article 7 of the Electricity Directive, the long-term strategy for the renovation of public and private residential and commercial buildings, as well as the promotion of energy services in the public sector.

• Improvement of the coherence of measures including the integration social policies such as a comprehensive employment and education strategy that can prepare the workforce for the energy transition and the phase-out of coal power plants in coal-dependent regions. Social policy is often disconnected from the energy policy even in crucial including poverty reduction and workers’ training as the respective strategies are designed by different ministries with little synergy.

• The government should encourage a **better alignment between the NECP and the national programming of EU structural funds**, since the latter will be one of the tools for achieving the energy transition through projects that improve energy efficiency, enable the just transition of fossil-fuel dependent regions and develop community-based independent energy-producing facilities using renewable energy sources.

Policy Brief No. 79: Decentralisation and Democratisation of the Bulgarian Electricity Sector: Bringing the Country Closer to the EU Climate and Energy Core, S., 2018.


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