

## LOST IN TRANSITION: BULGARIA AND THE EUROPEAN GREEN DEAL

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The National Energy and Climate Plans (NECPs) are supposed to be the member states' roadmap for achieving the EU's 2050 ambitious carbon neutrality goal. The policy measures within these strategic documents are meant to reconcile the tension between past path dependency on carbon intensive national energy sectors and economies and the drive towards new green technologies.

### Wrong Priorities, Lost Opportunities

The Bulgarian NECP,<sup>1</sup> however, does not build a strong foundation for enabling a transformational policy path until 2050. Neither does it clearly outline the spill-over effects from the energy sector into all aspects of the economy and society. **The Plan drifts away from the goals of the recently adopted European Green Deal.** The proposed 2030 targets for renewable energy, energy efficiency and overall CO2 emission reductions in Bulgaria follow the pattern 'walk now, sprint later'. The NECP thus seems to aim at shifting the toughest decarbonisation decisions to future policy-makers. The latter would have to scale up drastically the ambition after 2030 in order

<sup>1</sup> [National Energy and Climate Plan of the Republic of Bulgaria 2021 – 2030.](#)

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#### KEY POINTS

- The Bulgarian NECP reveals moderate progress on energy efficiency, renewable energy and regional power market integration goals. Yet, the chosen 2030 targets reveal a “Walk now, Sprint later” plan, which relies heavily on stranded assets in coal, gas and nuclear for Bulgaria's energy mix for 2030 and is not compatible with the 2050 carbon neutrality goal, and the recently adopted European Green Deal.
- The NECP is not well aligned with the Just Transition Mechanism and the goals of the Investment Plan for Sustainable Europe. Although in line with estimated needed yearly RES investments of 241 million euros, it falls short on detail of ensuring the 16.4 billion euro in total (and 4 billion of public spending) for the decarbonisation of the electricity sector until 2050.
- In order to benefit from the Just Transition Fund, Bulgaria has to urgently develop an ambitious territorial just transition plan outlining the long-term strategy for a coal-phase out and for the economic transformation of coal-dependent regions.
- The targets on RES and energy efficiency are not linked to concrete policy measures, action plans and detailed cost assessments. The NECP still prioritizes wasteful megaprojects such as NPP Belene and the Turkish Stream gas pipeline.
- 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 but more importantly to plan more detailed investment measures.

to catch up for the lost decade. Altogether the main thrust of the plan seems to reflect a formalistic, ticking-of-the-boxes approach of a late-comer country with strong climate denial and traditional energy sources dependencies.

**The Plan** continues to **implicitly prioritize unsustainable, and state capture enabling megaprojects** (Belen Nuclear Power Plant and the Turkish Stream gas pipeline) as cornerstones for the Bulgarian decarbonisation policy. The NECP fails to present convincing and well-developed policies for enabling a transition to a decentralized, prosumer-oriented, interconnected and climate-friendly energy system. The updated plan is also not aligned with the goals of the new Just Transition Mechanisms and the funding rules in the upcoming Investment Plan for a Sustainable Europe.

The NECP has not adequately addressed the major energy security risks for Bulgaria identified by the Energy Security Risk Index,<sup>2</sup> namely energy poverty, diversification, energy efficiency and energy governance deficits (including corruption, mismanagement of state-owned energy enterprises, public procurement irregularities related to large-scale energy infrastructure projects).<sup>3</sup>

The NECP features **a number of contradictions** in the planning and supply investment choices. There is little explanation, for example, why power generation based on natural gas increases despite the lack of a coal phase out; and how the government would incentivize renewable energy investors, when the planned new large nuclear project would crowd out the space for new power generation capacity.

The NECP is thus caught between already undertaken commitments for decarbonisation under EU and international law, and the popular demands for affordable energy amid still widespread energy poverty in

the country. Some 39% of Bulgarians still cannot afford to keep their homes adequately warm and more than half use wood for heating.<sup>4</sup>

Moreover, the NECP could be much better aligned with the national programming of EU structural funds and the upcoming Investment Plan for Sustainable Europe.<sup>5</sup> These would be the main 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 renewable energy projects. Therefore, it is imperative that national and regional authorities set the right spending priorities **in their cohesion and regional programs** and ensure an inclusive decision-making process for the future of the coal regions. They should reflect on the ways of mitigating the effects of the costs of the transition and focus also on the innovative and competitive opportunities of restructuring the regions into renewable hubs, as well as the local economic value it could bring for these regions.

It should be noted that the final version of the strategic document has taken into consideration the comments of independent experts and the civil society from the point of policy measures, cost and impact assessments. The concrete estimates of the necessary investments in new power generating units, energy efficiency and regional power market integration provide a good starting point for monitoring of the implementation of the strategy in the next decade.

## Sustainability Mismatch and Policy Incoherence

With an emissions reduction target of 0% and an unambitious renewable energy target of 27%, the current NECP is resting on a fragile sustainability pil-

<sup>2</sup> CSD (2013) [Policy Brief No. 40: Bulgaria's Energy Security Risk Index](#), Sofia.

<sup>3</sup> CSD (2014) [Energy Sector Governance and Energy \(In\)Security in Bulgaria](#), Sofia.

<sup>4</sup> Eurostat. [Can you afford to heat your home? 2016 Survey](#).

<sup>5</sup> EC (2020) [Press Release: Financing the green transition: The European Green Deal Investment Plan and Just Transition Mechanism](#).

lar. Its energy policy objectives seem to be geared towards trying to satisfy the investment interests of all the energy lobbies in Bulgaria.

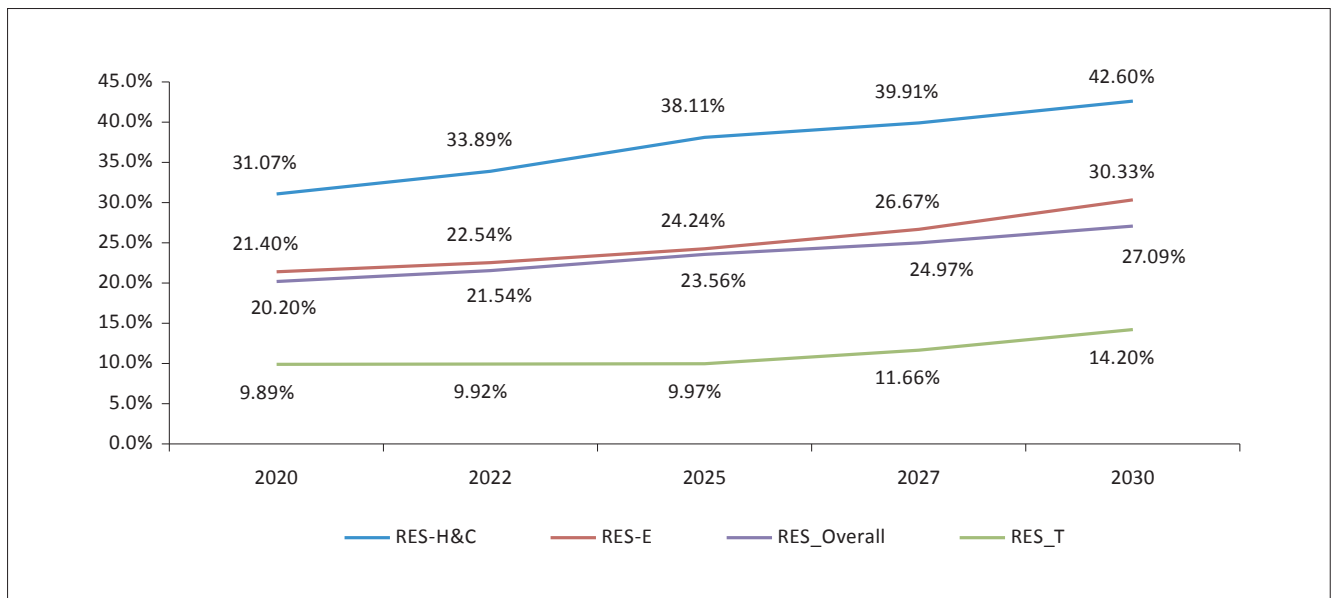
The renewable energy targets have been increased from 25% in the [intermediate version of the Plan](#)<sup>6</sup> to 27% in the final one. Yet the basis for this projected growth remains **firmly rooted in an unrealistic expectation for the growing use of biomass in the heating and cooling sector until 2030**. According to **the Plan** the biomass rises from 14.37 TWh to close to 21 TWh in gross energy demand or 10% of total gross energy consumption. The government also foresees the expansion of renewable energy use in heating and cooling from 31% in 2020 to 42,6% in 2030. This is 2% lower than the target in the previous version of the NECP but it still represents an unrealistic growth in the use of biomass. Still it does not make room for investments in decentralized, local combined heat-and-power (CHPs) on biomass in the form of 220 MW of new biomass-based power generation capacity. However, the overall expected rise in biomass consumption of around 36% in the heating and cooling sector without an expansion of firewood use in households. The heavy reliance on

biomass could bring numerous side effects, such as deforestation (especially amid widespread illegal logging) and air pollution. Alternative renewable energy-based heating sources including the use of solar collectors, geothermal energy and heat pumps are only mentioned in passing.

Like the intermediate version, the final NECP still **relies heavily on stranded assets in coal and natural gas (each with a share of 18% in the overall mix) installed for Bulgaria's energy mix for 2030**. The rise in the share of renewables in the final electricity consumption from 21,4% to 30,33% in 2030 comes on the back of a three-fold increase in solar PV facilities, which expand to 3,22 GW or 23% of the total installed capacities. The share of wind onshore installations remains flat at close to 7% as only around 250 MW of net new capacity comes online until 2030, not enough to catch up with the projected rise in demand.

The final version of the NECP demonstrates **the Bulgarian government still lacks a coherent long-term energy strategy for a coal phase-out** even a decade after such policies were conceived at EU level. The energy minister maintains that most lignite plants

**Figure 1. Renewable Energy Targets per Sector**



Source: Bulgarian National Energy and Climate Plan.

<sup>6</sup> CSD (2019) *Stifled Decarbonisation: Assessing the Bulgarian National Energy and Climate Plan*, Sofia.

would be operating at least until 2030 with a 2050 horizon. Yet the estimates in the document reveal that coal-based electricity generation is slated to fall from around 47% from the total today to 33% in 2030 after the closing of around 1.8 GW of capacity. The power plants that are most likely to close by 2030 are the lignite-fired CHPs, which do not comply with the BREF<sup>7</sup> air pollution standards. As a result, an almost full coal phase-out is not envisioned before 2040. To compensate for the gradual coal phase-out, the NECP envisions an increase in the natural gas-fired installed capacity during the same period from 1.91 GW to 2.47 GW. A more accelerated schedule for the closing of lignite plants could be an opportunity to reduce existing subsidies for lignite power production that can be estimated at around EUR 450 million per annum.<sup>8</sup>

Meanwhile, natural gas-based power generation rises from just around 4% of the total today to 10% in 2030. The postponing of the coal phase out could have a **distressing impact on the energy transition process**. **In addition**, the financial burden of delayed transition would fall on the shoulders of Bulgarian taxpayers due to the financial risks for the sector resulting from rising carbon prices and the global decline of coal and nuclear. Such costs have already grown to the hundreds of millions in 2019 with the government's intention to keep the state-owned Maritsa Istok – 2 coal fired power plant afloat amid rising carbon prices.

**A delayed strategy for a coal exit could also have severe implications for Bulgaria's access to the Just Transition Fund.** One of the requirements in the re-

cently proposed related Regulation of the European Commission is the development of territorial just transition plans until 2030 and ensuring the consistency of the NECP with these plans.<sup>9</sup>

Based on the three long-term scenarios for electricity sector decarbonisation<sup>10</sup> that CSD developed in line with data and modelling used by the European Commission, the best-case decarbonisation scenario estimates the required investments at around 16.5 billion Euro, from which 4 billion Euro have to come from state support in the next three decades.

In terms of **energy efficiency**, the Bulgarian government has complied with the recommendation of the European Commission of a 27% reduction of energy intensity over the next decade. Nevertheless, the Bulgarian goal is **still much below the 32.5% target for all of the EU**, and is not based on a detailed implementation plan. **The NECP could prioritize further demand-side oriented measures and energy efficiency investments instead of overemphasizing energy supply.** This will be in line with the recently proposed EU emissions target cut of 50% that is likely to be adopted in the new EU Climate Law this year. It will also tap into the huge potential for energy efficiency in Bulgaria. The current energy intensity in the country is 66% above the EU-28 average, making it one of the least energy efficient economies in the EU.

The government maintains that the improvement of energy efficiency would be largely the result of the annual energy savings in the form of a 0.8% reduction of consumption. The energy efficiency measures<sup>11</sup> set

<sup>7</sup> Best Available Techniques (BAT) Reference Document for Large Combustion Plants. Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control); sets the limits on the maximum amount of air polluting emissions from thermal power plants. According to new control limits, almost all lignite-fired power plants in Bulgaria would not be compliant starting 2021.

<sup>8</sup> CSD based on an assessment of the different support mechanisms for coal power plants described by the annual regulatory decisions of the Energy and Water Regulatory Commission (EWRC) including the long-term power purchase agreements with AES Galabovo and TPP Contour Global Maritsa Istok 3, availability capacity for TPP Maritsa Istok 2, CHP-based preferential feed-in tariffs and cold reserve capacity for lignite plants.

<sup>9</sup> EC (2020) [Proposal for the Regulation: European Green Deal – Just Transition Fund](#).

<sup>10</sup> CSD (2017) [Policy Brief No. 70: A Roadmap for the Development of the Bulgarian Electricity Sector within the EU Until 2050](#), Sofia.

<sup>11</sup> The main policy measures envisioned by the strategic document include: refurbishment of existing buildings with the goal of achieving near-zero energy consumption, power market liberalisation incentivising final consumers to invest in energy efficiency, the emergence of electricity prosumers in the context of liberalized markets, supporting the implementation of contracts for ESCO services by energy companies, integration of smart buildings and digitalization in the construction sector.

out in the final Bulgarian NECP, in comparison to the intermediary version, have **been much better linked to concrete action plans and to detailed cost assessments**. However, the majority of the proposed actions repeat already existing measures, which are highly insufficient considering the enormous task of modernising the outdated residential infrastructure in Bulgaria. The positive side of the new NECP is that it has included the creation of specialized financial mechanisms for energy efficiency and has placed a specific accent on the improvement of energy efficiency measurement and reporting, as well as the expansion of energy efficiency public procurement. A list of specific potential funding sources has been also included, however, without the elaboration of a concrete plan for their utilization.

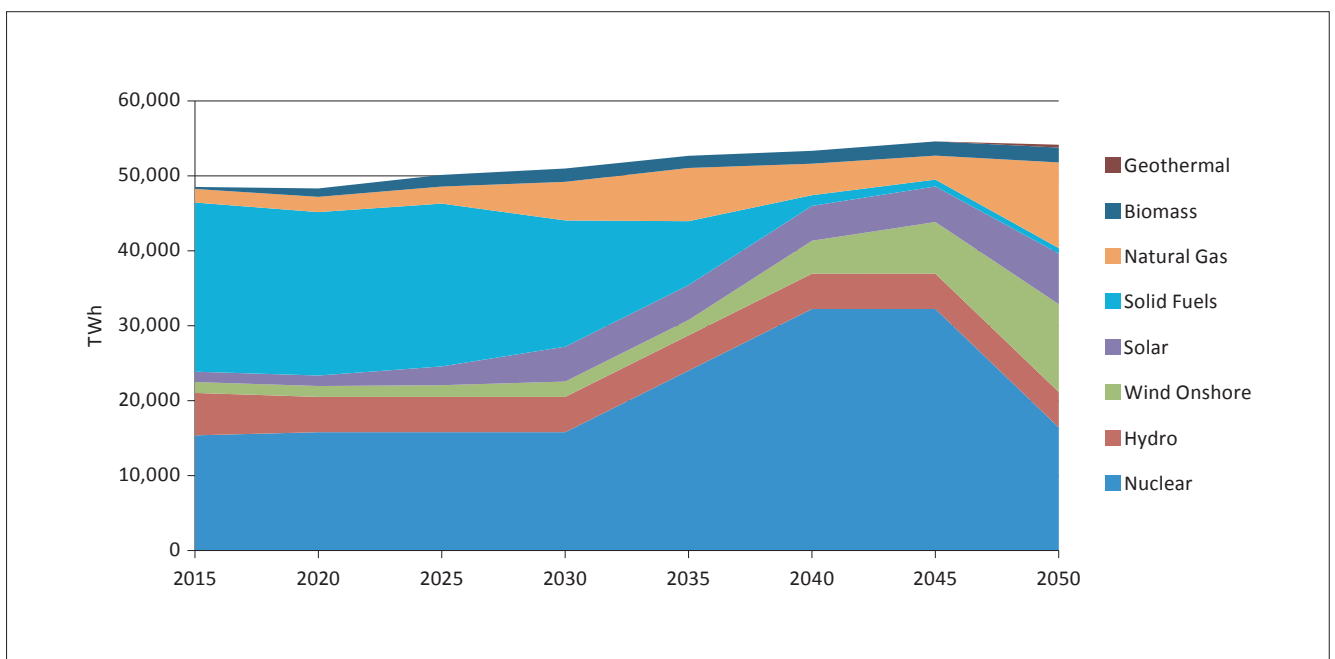
In terms of the transportation sector, the Bulgarian government **has not amended its initial proposal** for an increase in the RES target to 14.32% in 2030 up from 9.89% today. This increase would be largely based on the implementation of obligatory EU regulations on the share of biofuels after 2025. In addition, the government has introduced a set of policy measures to stimulate low-carbon transportation including the expansion of the share of public electric transpor-

tation, a target of over 66,000 electric vehicles until 2030, the introduction of hydrogen use, and new generation of biofuels. Except the increase in the share of electricity in the consumption pattern of the railway transport, **the Plan lacks concrete measures for modernising and expanding the railway infrastructure** as the most ecological transport mode in order to increase its attractiveness for Bulgarian citizens.

## Energy Security and Safety Risks

One of the **main preoccupations and the most developed aspect of the NECP** is the improvement of the security of the Bulgarian power supply and the regional power market integration. The Plan notes that it has already achieved the EU goal of 15% power market interconnectivity, as currently the transmission capacity for export is 16.2% and for imports – 13.2%. The NECP forecasts that **the level of interconnectivity will rise to 22% by 2030** on the back of new 400 kV power lines between Bulgaria and Romania, and Bulgaria and Serbia, as well as Bulgaria and Greece, with a combined transmission capacity of 4 500 MW. However, only the Greek interconnection line (Mar-

Figure 2. Electricity Generation by Type of Fuel (TWh)



Source: Bulgarian National Energy and Climate Plan.

itsa Istok – Nea Santa) project has secured financing and is expected to come online in 2023.

The **overall energy security position of the country remains almost unchanged** as Bulgaria continues to rely for 36% of its energy needs (final energy demand) on imports.<sup>12</sup> Natural gas import dependence rises by 10% although the government plans diversification away from overreliance on one supplier, i.e. Gazprom, through the completion of all interconnector projects and the linking-up of the Bulgarian market with global LNG supply. Despite **the plan** for a coal phase-out, and the continued decline in the competitiveness of lignite plants, the Bulgarian government maintains a target for at least 6,8 TWh of electricity exports by 2030. The changes in power trading behavior over the last two years have shown that this trend is unsustainable without a significant new support scheme for coal, one that is unlikely to be approved by the European Commission. In 2020, the lack of competitiveness of the lignite-fired power plants, has turned Bulgaria into a net electricity importer in certain months of the year. Hence, the NECP expectation that Bulgaria would remain a roughly 19% net exporter of electricity until 2050 is unrealistic. An upcoming modelling assessment of SEE power markets shows that the closing of most coal-fired power generation in Bulgaria would convert Bulgaria into a net importer of electricity for between 10 and 20% of annual demand depending on the amount of capacity phased-out.<sup>13</sup>

Despite the continued reliance on coal until 2030, there is one major change in the structure of the electricity system modelled in the NECP. **A new 2000-MW nuclear power plant, Belene, is expected to come online by 2035.** Modelling assessments clearly demonstrate that the nuclear power plant will generate losses in the first three decades of its operation, making it uncompetitive in the first years

of its operations. According to the most optimistic scenarios, the total loss in the period from the new NPP operation could amount to 3.5 billion Euro. In addition to these costs come also the expenditures for interim storage and deep geological disposal for high-level radioactive waste that have not been properly estimated and even less factored into the cost equation. [The analysis of the long-term scenarios for the decarbonization of the power sector](#)<sup>14</sup> in Bulgaria clearly demonstrate that a new nuclear capacity could remain severely unutilized in all scenarios resulting in stranded assets with significant fiscal and environmental implications.

Belene NPP would also act as an innovation barrier for renewable energy deployment in Bulgaria. Despite these clear economic trends, and the tremendous downside risks of the technology, **the nuclear sunk-costs seems to obscure the long-term vision of the Bulgarian government** when it comes to the interpretation of the European Green Deal in the domestic context.

The construction of NPP Belene also poses substantial risks for the safety Bulgarian and European citizens. As attested by the European-Mediterranean Seismic Hazard Map developed by the European Seismological Commission in 2003, the site Belene NPP has been classified as a zone with high seismic risk due to the proximity of the nuclear site to Vrancea – one of the most active seismic zones in Europe. Moreover, the ecological risks related to the transportation of radioactive waste from Belene site to Kozloduy site have not been properly assessed and would require consultation of the local population.

Instead of transfixing on Belene, Bulgaria could decrease its energy dependence on external suppliers and reduce its import bill by investing in renewables and grid flexibility. Enhancing regional cross-border

<sup>12</sup> This estimate is true if nuclear energy is accepted as indigenous fuel, and ignore the fact that Bulgaria is fully dependent on the import of reactor fuel from and export of used fuel to Russia. See: CSD, 2014, Energy Sector Governance and Energy (In)Security in Bulgaria, Center for the Study of Democracy, Sofia.

<sup>13</sup> Szabó, László et. Al., 2020 (upcoming), Accelerated lignite exit in Bulgaria, Romania and Greece Strategic Investment Plan, Joint Report by REKK, TU Wien, CSD, EPG, FACETS.

<sup>14</sup> CSD ( 2017) [Policy Brief No. 70: A Roadmap for the Development of the Bulgarian Electricity Sector within the EU Until 2050](#), Sofia.



cooperation with the neighboring countries will also be key for strengthening energy security.<sup>15</sup>

## Unlocking Renewable Energy Investments for Green Growth

The **Bulgarian government has provided a more concrete plan for power market integration and liberalization** responding to criticism from the European Commission of the intermediate NECP version. The final NECP envisions (i) a full domestic electricity market liberalization by 2025; and (ii) a complete market coupling with all neighboring countries. To enable this process, the NECP pointed out to the removal of access/transmission fees for exports in 2019 and the gradual removal of limits on the net transfer capacity allocated by the Bulgarian transmission system operator.

To unlock Bulgaria's enormous renewable energy potential, the NECP envisions close to **EUR 2 billion in new investments in RES-based power and district heating plants**. This seems in line with the estimated average yearly investments of 241 million euros (only around 10-15% of the investment would have to come from state support programs) in the 2021 – 2030 period<sup>16</sup> but below the estimated total needs of 16.4 billion euro (4 billion euro from the public sector) for the full decarbonization of the electricity sector until 2050.<sup>17</sup> The overall investments in power plants, according to the NECP, in the 2021 – 2030 period are estimated at EUR 13 billion, as 90% of the funds are envisioned to be spent in the second half of the decade, and are likely to be devoted to the construction of NPP Belene. Yet, the Plan falls short on details as to how the needed private investments would be secured. The policy measures attached to the state support investment includes:

- the continuation of the existing preferential feed-in tariff schemes for small-scale renewables with capacity of up to 30 kW;
- market-based renewable energy tenders after 2025 but only in case of limited direct investor interest;
- the creation of one-stop shops for clearing administratively new renewable energy projects, often delayed by bureaucracy and competing jurisdictions;
- unlocking the country's potential for decentralized power generation and energy communities;
- implementation of a long-term plan for the expanded use of biomass in electricity and district heating;
- Introduction of hydrogen use for the storage of electricity.

Some progress has been made with **reducing the administrative burden for small-scale renewable energy producers**, such as the introduction of legislative measures facilitating the access of for renewable energy sources (RES) and CHPs with a total capacity between 1 MW and 4 MW to the stock exchange market, as well as the removal of the Social Responsibility Tax for end consumers. Yet, the NECP lacks specific measures on how the government plans to support prosumers and remove further legal and administrative barriers for renewable energy communities.<sup>18</sup>

As with the Energy Efficiency pillar of the NECP, the renewable energy policy support program is vague. There is **little attention to the concrete investment bottlenecks**, such as the existence of the 5% power revenues tax or a discriminatory access and transmission fee for RES suppliers.

A key missing point in the NECP is the lack of concrete policy steps for jumpstarting the creation of RES-based energy communities. Under the new Re-

<sup>15</sup> CSD (2019) [Policy Brief No. 88: Energy Transition Governance for Better Energy Security in Europe](#), Sofia.

<sup>16</sup> Szabó, László et. Al., 2020 (upcoming), Accelerated lignite exit in Bulgaria, Romania and Greece Strategic Investment Plan, Joint Report by REKK, TU Wien, CSD, EPG, FACETS.

<sup>17</sup> Szabo, Laszlo et. al. (2017) [SEERMAP: South East Europe Electricity Roadmap South East Europe Bulgaria country report, September, 2017](#).

<sup>18</sup> CSD (2018) [Development of Small-Scale Renewable Energy Sources in Bulgaria: Legislative and Administrative Challenges](#), Sofia.

renewable Energy Directive adopted in 2018<sup>19</sup> Bulgaria is required to assess their potential and existing barriers to their development. Based on the analysis, the country has to develop frameworks that allow communities to access markets and compete for support with other market participants on a level playing field and without facing discrimination.

The NECP acknowledges the need for **protecting vulnerable consumers** but fails to identify specific measures for tackling energy poverty. The development of energy communities among the most vulnerable social groups could improve energy savings and address widespread fuel poverty. One way to tackle energy poverty and at the same time stimulate self-consumption would be to adopt specific measures to ensure that all consumers, including those in low-income households could participate in renewable energy communities. The stimulation of small, private households to join energy communities has to go hand in hand with the government-driven initiative for the mass-scale refurbishment large multi-family residential buildings with the goal of achieving near-zero energy consumption until 2030.

## Policy Recommendations

The updated NECP remains largely at odds with the long-term EU decarbonization strategy and seems not to have taken into consideration the recently proposed EU emissions reduction target of 50%. Moreover, the key policy and governance challenges mentioned above require urgent and bold changes. In light of the above analysis of the Bulgarian NECP, the following policy recommendations can be considered as a way to improve the strategic documents and gain the key political momentum with the Green Deal and the post-2020 Multiannual Financial Framework of the EU:

- The government should **cancel expensive coal subsidies** for uncompetitive power plants and proceed

with a complete coal phase-out until 2030. The delay of this strategy could lead to large stranded assets that would continue to weigh over the financial health of the state-owned energy sector. In addition, the faster decommissioning (closing) of the least competitive lignite plants would increase the utilization rates of the remaining generation facilities.

- In order to benefit from the Just Transition Fund, Bulgaria has to **develop an ambitious territorial just transition plan** outlining the long-term strategy for a coal-phase out and for the economic transformation of coal-dependent regions. 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**. With the next Multiannual Financial Framework (2021 – 2027), Bulgaria should grasp the momentum to plan strategically and **facilitate the industrial restructuring in the coal regions**, as well as identify the right incentives and financial mechanisms to support the adjustment of coal workers in the regions undergoing transition. Since previous lignite mines are particularly attractive for large-scale solar power generation<sup>20</sup> and could benefit from the industrial heritage, the concentration of engineering skills and land availability, innovation and industrial opportunities should be supported through new public and private investments.
- An **enabling regulatory and financial framework for energy efficiency and renewable energy integration** in the Bulgarian context could be achieved first and foremost through closing the 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.
- A **more integrated approach connecting the heating & cooling, electricity and transport sectors** combined with energy efficiency measures<sup>21</sup> is crucial for enhancing the demand side responsive-

<sup>19</sup> Official Journal of the European Union (2018) [Directive \(EU\) 2018/2001 of the European Parliament and of the Council](#).

<sup>20</sup> EC (2018) [EU coal regions: opportunities and challenges ahead](#).

<sup>21</sup> CSD (2019) [Stifled Decarbonisation: Assessing the Bulgarian National Energy and Climate Plan](#), Sofia.



ness of the system and unlocking huge amounts of storage potential.

- The NECP has to **develop concrete national benchmarks and performance indicators**<sup>22</sup> for self-consumption, heating, storage and sustainable transport.
- The government should **enable a favorable tax and regulatory environment** to incentivize companies to risk high upfront costs in exchange for low operation and maintenance costs in the future.
- The NECP should **address alternative renewable heating sources** such as solar collectors, geothermal energy and heat pumps by developing special programs for state-supported construction of small-scale RES facilities in attempt to decrease the dependence of households on energy subsidies.
- Bulgaria **should not divert vital EU or national funds and resources to expensive and corruption-driven large-scale energy infrastructure projects**<sup>23</sup> 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.
- In order to take full advantage of the European Green Deal, Bulgaria has to **focus on energy savings and efficiency in already established sectors that generate notable employment** in the short- and medium run. At the same time, it needs to boost investments in the latest green technologies to provide employment in the long-run. There is significant potential for Bulgaria in fostering sectors like infrastructure and the services<sup>24</sup> in line with the low-carbon sustainable agenda. The Bulgarian government should also put more efforts into alleviating some deeply-rooted structural and skill mismatch roadblocks on the labor market in order to **prepare the Bulgarian workforce for a green future**. Training and education of energy specialists should be one of the highest priorities of Bulgarian education and employment strategy.
- To tackle energy poverty, **vulnerable groups could benefit from special support from the government** in the form of innovative financial mechanisms to pool in households in RES-based energy communities<sup>25</sup> or to finance fuel replacement investments in gasification and electrification.
- The Bulgarian government should allocate a higher share of the EU and national budget to **green tech R&D**, including the development of technology roadmap and a dedicated market uptake strategy.
- The government should consider designing peer-to-peer electricity sharing schemes that would **allow households to share their local energy resources** based on an agreed cost-sharing mechanism that could be defined in a contract.
- 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**.
- 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 but more importantly to plan more detailed investment measures.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Stefanov, R., Karaboev, S. and Mancheva, D. (2012) [Green Growth and Sustainable Development for Bulgaria: Setting the Priorities](#). Sofia: Friedrich Ebert Foundation, Office Bulgaria.

<sup>25</sup> One such instrument could be the CSOP (Consumer Stock Ownership Plan), which enables consumers – especially those without savings or access to capital credit – to acquire an ownership stake in a utility they use and thus to become “prosumers”. See more at: [SCORE – Supporting Consumer Ownership in Renewable Energies](#), Horizon 2020-funded project studying and piloting a cutting-edge financial mechanism for RES investments in energy communities located in socially vulnerable regions.

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