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CORRIGENDUM

This document corrects document SWD(2020) 901 final of 14.10.2020.

- Modifications are introduced in Annex 1 of the report, regarding specifically values and annotations in tables 1 and 2.

- Minor editorial changes throughout the document.

The text shall read as follows :

COMMISSION STAFF WORKING DOCUMENT

Assessment of the final national energy and climate plan of Bulgaria

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1. SUMMARY

Bulgaria's final integrated national energy and climate plan (NECP)¹ is designed to meet (with additional measures specified in the plan) the country's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS) of 0% compared to 2005. Bulgaria also plans to meet the **land use, land use change and forestry (LULUCF)** no-debit commitment (i.e. its accounted emissions will not exceed its accounted removals).

The final NECP establishes a share of 27.09% of **energy from renewable sources** in the gross final consumption of energy for 2030 as Bulgaria's contribution to the EU's renewable energy target for 2030. This contribution is adequate, as it matches the share of 27% by 2030 resulting from the formula in Annex II to Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (the Governance Regulation)². This contribution represents a substantial increase over the contribution set out in the draft plan (25%) which is to be welcomed. Although Bulgaria has not provided any further key national objectives or targets for renewables, the NECP nonetheless details trajectories for 2030 that are differentiated within the electricity, heating and cooling and transport sectors.

As regards **energy efficiency**, Bulgaria's contribution to the EU's 2030 target is 17.5 Mtoe for primary energy consumption, slightly increased since draft plan, and 10.3 Mtoe for final energy consumption. The first contribution is considered to show little ambition and the second to show very low ambition³. It is however acknowledged, that energy efficiency is an essential component of national and EU policies on energy and climate change and is a top priority. The NECP does not explicitly deal with the implementation of the '**energy efficiency first**' principle. Although the long-term renovation strategy has not been submitted yet, Bulgaria has provided some relevant information, including indicative interim targets for the renovation of residential and non-residential buildings in renovated areas, with estimates of energy savings and CO₂ emission savings in the final NECP. It is positive that as regards buildings owned and occupied by central government, Bulgaria intends to go beyond the 3% annual renovation target enshrined in EU legislation and take measures to improve the energy performance of at least 5% of the total gross floor area of all heated and cooled state-owned buildings used by the public administration.

In its plan, Bulgaria sets objectives for **energy security** and the **internal energy market**. These are to diversify the supply of energy resources; to make the national energy system more flexible; to make regional and national energy systems more resilient; and to improve network and information security (cybersecurity). The country plans to achieve an electricity interconnection level of at least 15% by 2030 in line with the EU target for a minimum level of electricity interconnection. The NECP outlines launched and planned initiatives that reflect the efforts to liberalise and reform the national energy market. Significant progress is being made on the day-ahead and intra-day market coupling with Romania and Greece, which is to be welcomed.

¹ The Commission publishes this country-specific assessment alongside the 2020 Report on the State of the Energy Union (COM(2020)950) pursuant to Article 13 of Regulation (EU) 2018/1999 on Governance of the Energy Union and Climate Action.

² The Commission's recommendations with regard to the Member States' renewable ambitions are based on a formula set out in this Regulation. The formula is based on objective criteria.

³ In accordance with the methodology illustrated in SWD(2019) 212 final.

The NECP contains several national objectives and funding targets to do with **research, innovation and competitiveness**. The subjects concerned include: the long-term development of a low-carbon economy; the improvement of energy and resource efficiency in transport; the modernisation of existing electricity networks; innovation in the field of nuclear energy; the competitiveness of the core energy-intensive industries; and the development of electric cars and hydrogen technologies.

The cumulative **investment needs** associated with energy consumption sectors, electricity and heat production and infrastructure amount to EUR 42.7 billion under the scenario with additional measures. The plan sets out investment needs for each dimension and their calculation is based on a long-term assessment and energy planning model. Investment needs are highest for policies and measures (PaMs) in the decarbonisation dimension, and specifically the energy supply sector. The overview of potential sources of investments describes general funding opportunities at EU, national and regional level, as well as potential mobilisation of private investments.

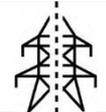
The final plan includes a list of **energy subsidies**, of measures already taken to phase them out, and of planned phase-out measures. No information on fossil fuel subsidies is provided in the relevant section of the plan, although recent Commission analyses of energy subsidies have identified significant subsidies.

The final plan takes account of the **just and fair transition** aspects and provides high level information on the social, employment and skills impacts of a transition to a carbon-neutral economy. It identifies the regions where the impact of decarbonisation on employment will be most significant. Employment challenges will affect not only coal regions, but also Bulgaria's industrial centres for all economic sectors with high levels of greenhouse gas emissions. Bulgaria does not plan to phase out coal yet. The final plan still lacks an assessment of **energy poverty** (there is no estimate of the number of energy-poor households, nor is there an indicative target to reduce this number). Moreover, there is still no definition of energy-poor households. This prevents the country from shifting to a fully liberalised market while protecting those in need. Nevertheless, the plan describes an existing measure according to which about 250 000 individuals and families receive support for heating costs.

The final plan lacks a quantitative assessment of the synergies and trade-off and socio-economic and health-related impacts of **air pollution** due to the planned measures.

The final NECP identifies **some good practices**. In particular, it develops comprehensive approach to energy security covering diversification of sources and routes, combined with significant measures and investments in electricity and network infrastructure. It also sets legal requirements for the renovation of public buildings.

The following table presents an overview of Bulgaria's objectives, targets and contributions under the Governance Regulation⁴:

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	21%	20%	0	As in ESR
	National target/contribution for renewable energy Share of energy from renewable sources in gross final consumption of energy (%)	20.5	21.4	27.09	Adequate (27% is the result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	18.34 9.9	16.9 8.67	17.5 10.3	Low Very low
	Level of electricity interconnectivity (%)	7.1	11.3	15	N.A

Sources: European Commission, Energy statistics, Energy datasheets: EU countries; European Semester by country; Bulgaria's final national energy and climate plan.

2. FINALISATION OF THE PLAN AND CONSIDERATION OF COMMISSION RECOMMENDATIONS

Preparation and submission of the final plan

Bulgaria **notified** its final integrated national energy and climate plan (NECP) to the European Commission on 9 March 2020.

Public consultation: the Bulgarian authorities published the draft NECP on 15 January 2019 and made it available for public consultation until 30 April 2019. The final NECP was published on 21 February 2020 and the plan refers to a number of conferences, round tables and forums with the relevant stakeholders. A dedicated annex to the final NECP contains a detailed summary of the replies gathered during consultation. Bulgaria has submitted a summary of how the final plan reflects the public's views. Finally, a strategic environmental assessment (SEA) is under development under Directive 2001/42/EC.

⁴ Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

Consideration of Commission recommendations

In June 2019 the Commission issued 10 recommendations on Bulgaria's final plan⁵. Annex II to this staff working document provides a detailed account of how the final NECP reflects the various aspects of the Commission's recommendations. Overall, the final NECP **partially addresses** those recommendations. The main changes introduced in the final plan are described below.

As regards **renewables**, Bulgaria has **largely addressed** the recommendations, notably the one about increasing its level of ambition for 2030 to at least 27%. Bulgaria has also included an indicative trajectory for the share of renewables up to 2030 which is in line with the requirements set out in the Governance Regulation. The plan includes detailed information about planned policies and measures, most of which are extensions to existing policies and measures, such as the preferential prices for the purchase of renewable electricity produced by plants with a total installed capacity of less than 1 MW. The remaining budget for this support, however, is limited to EUR 4 970 746. The NECP includes an incremental increase of 0.2% in the renewables used in transport.

As regards **energy efficiency**, Bulgaria has **partially addressed** the recommendations to increase its level of ambition, to update and scale up energy efficiency policies and measures and to further develop the Energy Efficiency Obligation scheme. Indicative intermediate targets for primary and final energy consumption are included in the final version, but there is no such target for transport. The information provided in the NECP about buildings has improved. The long-term renovation strategy has not been submitted yet.

In the field of **energy security**, Bulgaria has **largely addressed** the recommendation to give details of a robust gas diversification strategy and the strategy for the long-term supply of nuclear materials. In particular, the NECP illustrates the ongoing procedure to prepare a feasibility analysis for diversifying the supply of fresh nuclear fuel. The diversification strategy for gas supplies is also explained. Clearer objectives are also set in terms of diversification of sources.

As regards the **internal energy market**, Bulgaria has **partially addressed** the recommendation to define forward-looking objectives and targets for market integration, especially measures to develop competitive wholesale and retail markets. The final NECP outlines the reform of the electricity market better and sets out plans to promote competitively determined electricity prices through the gradual deregulation of electricity prices by 2025. Furthermore, policies and measures on flexibility and the non-discriminatory participation of new market participants (prosumers and 'local energy communities') have been further detailed and specified, although clear legislative and regulatory steps are still lacking, as is a timetable for implementation. Despite these substantial changes, Bulgaria remains one of the few countries that still lacks a detailed plan and timetable for the rollout of smart meters in electricity and gas markets. In addition, other market-related objectives such as non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, remain generic, lacking substantial information and timeframes.

⁵ Commission Recommendation of 18 June 2019 on the draft integrated national energy and climate plan of Bulgaria covering the period 2021-2030, C(2019)4402 final.

In the field of **research, innovation and competitiveness**, Bulgaria has **partially addressed** the recommendation to clarify the national objectives and funding targets. The plan identifies relevant areas where research and innovation efforts are needed. However, these efforts do not have a specific timeline or quantified targets; moreover, they are not supported by any concrete policy or measures beyond 2020. As regards competitiveness, no specific and measurable objectives are defined. Cooperation with the SET plan is mentioned, but the link between European and national efforts has yet to be developed.

Bulgaria has **largely addressed** the recommendation to step up **regional cooperation**. The NECP describes regional cooperation on the internal energy market and energy security dimensions in detail. It is underlined that Bulgaria implements a number of projects of European and regional importance for increasing the energy security of the country and the region of South-East Europe, ensuring security of supply, diversifying sources, routes as well as developing the electricity and gas market. Regional cooperation can be further strengthened as regards the development of renewables and clean transport, and more broadly, air quality, in view of Bulgaria's ambition to develop the use of electric and hybrid vehicles for both public and private use. Significant progress is being made on the day-ahead and intra-day market coupling with Romania and Greece, which is to be welcomed.

As regards **investment needs**, Bulgaria has **partially addressed** the recommendation to provide a general overview of investment needs and an assessment of the sources of investment. In particular, the final NECP contains an overview of investment needs by sector and sub-sector and by five-year periods between 2021 and 2030 in both scenarios. The NECP partially describes the available funding sources that will cover the identified funding needs. The overview of potential source of investments is largely limited to funding opportunities at EU level, even though there is no estimate of a potential contribution from EU funds. Appropriate financing at national and/or regional level is not described. Nor is potential mobilisation of private investments sufficiently addressed.

Bulgaria has **partially addressed** the recommendation to provide a full list of **energy subsidies** and actions undertaken and plans to phase out energy subsidies, particularly for fossil fuels. However, there are no detailed figures or information about actions or plans to phase out fossil fuel subsidies. Bulgaria states that it does not grant subsidies, including subsidies for fossil fuels. However, subsidies are provided for RES, high-efficiency CHP, and free ETS allowances for electricity-producing installations. Additionally, Bulgaria provides information on plans to grant free ETS allowances to electricity-generating installations and a market-oriented capacity mechanism for the transitional period (2021-2030). In this context, Bulgaria will have to provide a Market Reform Plan to the Commission, following the provisions of the Electricity Market Regulation.⁶ In particular, further steps are needed to improve the functioning of the Bulgarian wholesale market for electricity, with a view to making it more competitive and liquid.

As regards **air quality**, Bulgaria has **partially addressed** the recommendation. While the NECP presents the impacts of the planned measures on air pollution, information on synergies and trade-off and socio-economic and health-related impacts do not seem sufficiently assessed.

⁶ Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.

Finally, Bulgaria has **partially addressed** the recommendation to integrate **just and fair transition aspects** better. The NECP identifies some of the main potential impacts of the transition to a carbon-neutral economy, however these are not complemented with details or quantitative analysis. The lack of information on how and when the coal phase-out required to achieve the proposed reductions set out in the NECP will take place makes it difficult to assess whether the impact presented is due to decarbonisation or to existing structural issues. The document also mentions the need to improve skills in the population including vulnerable groups. However, the analysis of the skills aspect is not comprehensive enough. As regards **energy poverty**, the NECP remains vague about setting an indicative target and defining robust policies and measures to reduce the number of energy-poor households.

Links with the European Semester

In the context of the European Semester framework for the coordination of economic policies across the EU and of the country report 2019⁷, Bulgaria received one country-specific recommendation⁸ in relation to climate and energy, in particular to “focus investment-related economic policy on research and innovation, transport, notably on its sustainability, water, waste and energy infrastructure and energy efficiency, taking into account regional disparities, and improving the business environment”. In the 2020 country report⁹ adopted on 20 February 2020, the Commission found that Bulgaria had achieved limited progress on this recommendation.

Due to the COVID-19 crisis, the European Semester country-specific recommendations for 2020 addressed Member States’ responses to the pandemic and made recommendations to foster economic recovery.

In particular, they focused on the need to front-load mature public investment projects and promote private investment, including through relevant reforms, notably in the digital and green sectors. In this context, Bulgaria received a country-specific recommendation¹⁰ stressing the importance of focusing investment on “the green and digital transition, in particular on clean and efficient production and use of energy and resources, environmental infrastructure and sustainable transport, contributing to a progressive decarbonisation of the economy, including in the coal regions”.

The Governance Regulation provides that Member States should ensure that their national energy and climate plans take into consideration the latest country-specific recommendations issued in the context of the European Semester. Bulgaria’s national energy and climate plan can support the implementation of the recommendations formulated in the context of the European Semester, in particular through its identification of necessary investments needs and financial sources to deliver them.

⁷ The Annex D to the 2019 Country report also sets out priority investments for the 2021-2027 cohesion policy, substantially contributing to the clean energy transition.

⁸ Recommendation for a Council Recommendation on the 2019 National Reform Programme of Bulgaria and delivering a Council opinion on the 2019 Convergence Programme of Bulgaria. COM (2019) 502 final.

⁹ Commission staff working document, Country Report Bulgaria 2020. SWD (2020) 501 final.

¹⁰ Recommendation for a Council Recommendation on the 2020 National Reform Programme of Bulgaria and delivering a Council opinion on the 2020 Convergence Programme of Bulgaria. COM (2020) 502 final.

3. ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND OF THE IMPACT OF SUPPORTING POLICIES AND MEASURES

Decarbonisation

Greenhouse gas emissions and removals

Bulgaria's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS) is 0% compared to 2005, as set out in the Effort Sharing Regulation (ESR)¹¹. The Bulgarian plan concludes on the basis of its projections that it will meet this target with additional measures (WAM), assuming that the **land use, land use change and forestry (LULUCF)**¹² no-debit commitment (i.e. accounted emissions do not exceed accounted removals) is achieved. However, it is important to note that the conclusion depends on the 2005 emission values used for the calculations. When using the 2005 base year value of the Effort Sharing Decision¹³, Bulgaria's 'with additional measures' (WAM) projections do not meet its 2030 ESR target. The plan does not look at what planned level of overachievement might be cost-efficient with a view to using transfers to other Member States and contributing to growth and jobs. There is also no indication about the intended use of the flexibility from the LULUCF sector to the effort sharing sectors.

Most policies and measures in the draft plan address the decarbonisation dimension. Measures are provided by sector, with quantified impact by measure by 2020, 2025 and 2030, and include, beyond the highlighted sectors, energy, **industry** and waste. In many cases, it is planned to extend existing strategies and measures that have applied up to 2020 into the next decade. In the **buildings** sector, the plan lists the following key measures: central and local government energy efficiency improvement programmes and energy efficiency management in public buildings, providing gas heating in households, a National Energy Efficiency of Multi-Family Residential Buildings Programme for residential buildings, and a Residential Energy Efficiency Credit Line Programme. A long-term national strategy is being developed to support the renovation of the national building stock of residential and non-residential buildings by 2050, envisaging measures for building new zero-energy-consumption buildings, improving the energy performance of existing buildings, and promoting the introduction of smart technologies in the building sector.

Bulgaria has set a target of 0% for emission reductions in the **transport** sector by 2030. Several measures are mentioned that promote decarbonisation, such as increasing the modal share, increasing the electrification of public transport, and raising the share of biofuels in the energy

¹¹ Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

¹² Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU.

¹³ The Bulgarian projections use a 2005 emission value of 27.27 Mt, yielding -7 % reductions in 2030 compared to 2005. The 2005 base year of Bulgaria under the Effort Sharing Decision, as e.g. published in SWD(2019)396, which takes account of the ETS scope extension in 2013, is 22.12 Mt, yielding a 14% increase compared to 2005. The 2005 base year value under the ESR may change based on the latest, comprehensively reviewed greenhouse gas emission inventory data.

mix. Bulgaria also aims to encourage the manufacture of electric and hybrid cars and to promote demand for such vehicles, as well as to promote research and innovation regarding environmentally friendly vehicles. It aims to speed up deployment of charging infrastructure and introduce a tolling system for road transport. Organising awareness-raising campaigns to build up stakeholder capacity regarding sustainable mobility, creating low-emissions zones in big agglomerations, and introducing intelligent transport systems in the national and city transport network are also among the measures the final NECP plans foresees for the next decade.

Measures contributing to a more efficient organisation of the mobility system (e.g. incentivising multimodality and modal shift, intelligent transport systems, digitalisation and automation) could have been presented in greater detail so as to improve the overall picture of impact on energy savings and interaction between relevant measures.

In **agriculture**, more efficient fertilisation and irrigation are mentioned as the measures with the greatest mitigation potential.

Bulgaria is planning to meet the **LULUCF** no-debit commitment by stepping up removals, mostly through afforestation. The final NECP also includes policies and measures to increase the resilience and adaptability of forest ecosystems to climate change, by developing better forest production systems and focusing on policies to mitigate the observed reduction in sinks caused by the age of forests and their growth.

The final plan recognises that efforts are still needed to improve waste prevention, separate collection, recycling, and energy recovery as well as the contribution to be made from a transition to a circular economy.

The plan describes Bulgaria's **adaptation** strategy and action plan, and the country's objectives and priorities for improving adaptation capacity at national and sectoral levels in the run-up to 2030. The statement of the goals is not supported by any description of the implementing measures in Section 3 or anywhere else in the plan.

As of 1 September 2020, Bulgaria has not notified its national long-term strategy to the Commission as required under Article 15 of the Governance Regulation.

Renewable energy

The national contribution to the 2030 EU renewable energy target is specified in the plan and the **renewable share** is set at 27.09% of gross final consumption of energy by 2030. The indicative trajectory is in line with the requirements set out in the governance regulation and reaches all reference points¹⁴. The plan includes detailed information about planned policies and measures, most of which are extensions to existing ones, such as the preferential prices for the purchase of renewable electricity produced by plants with a total installed capacity of less than 1 MW. The construction of new renewable capacity will be carried out on a market basis and without the provision of investment or operational financial support. Additional policies and measures for 2021-2030 include: support for grid integration; increased use of smart grids and storage systems; review and implementation of legislative changes in administrative procedures.

¹⁴ Pursuant to Article 4(a)(2) of Regulation 2018/1999.

As regards the **electricity** sector, Bulgaria aims to cover a 30.33% share of its electricity consumption from renewable energy sources by 2030. According to the plan, electricity from renewable sources is projected to increase in the electricity sector, given the increasing proportion that is generated from solar and wind energy and biomass. The share of electricity from renewable sources in the electricity sector is projected to increase by 0.55-1.24 percentage points per year. These policies and measures are considered credible in relation to the achievement of the target.

The share of renewables in **heating and cooling** is projected to reach 42.60% by 2030. The plan estimates an annual increase of renewables in heating and cooling of 1.15 percentage points (calculated as the difference between the share of renewable energy between 2020-2030, divided by the number of years) without explicitly mentioning the role of waste heat/cold in the calculation. This is not in line with the indicative requirement of 1.3 percentage points per year as enshrined in the Renewable Directive. The plan also refers to the upcoming assessment of the potential for renewable energy and for the recovery of waste heat and cold in the heating and cooling sector, which will be developed by 31 December 2020. These policies and measures are considered insufficient in relation to the achievement of the target.

The share of renewables in **transport** is set at 14.2% in 2030 in the final plan, which represents a marginal increase of 0.2% of the transport ambition. The plan refers to the existing blending obligation for suppliers of transport liquid fuels and the possibility to change such approach by introducing quotas for each renewable energy supplier, yet without further specifying the rationale and benefits of such possible policy change. Concerning advanced biofuels, the plan says that the future efforts will focus on applied research and larger-scale demonstration activities. The plan also points to the need to develop public information campaigns to increase consumer awareness. It should be noted, however, that these measures affect consumers only indirectly, as advanced biofuels will be mixed into conventional transport fuels.

Energy efficiency

Bulgaria's **national contribution to energy efficiency** in 2030 is 17.5 Mtoe for primary energy consumption and 10.3 Mtoe for final energy consumption. The level of ambition of contribution for final energy consumption in 2030 has been substantially reduced by comparison with the draft NECP and is of very low ambition. The level of ambition of contribution for primary energy consumption has been slightly increased and reflects a low level of ambition in comparison with efforts at EU level.

The **policies and measures** presented that go beyond 2020 mostly target energy production/distribution and building renovation (residential and non-residential). They represent mainly the adaptation or extension of existing measures. New measures are not clearly indicated. In some cases, the level of detail is not sufficient to judge which measures are new, which already exist, and which are being stepped up, as precise implementation timelines are missing.

Overall, the proposed policies and measures should be sufficient in relation to the achievement of the target, as they allow the scenario with additional measures to reach the desired level of ambition. However, given that impacts and energy savings are not quantified in detail, it is difficult to judge if the proposed policies and measures are credible.

The plan sets the level of **cumulative savings at 4.36 Mtoe** to be achieved under Article 7 of the Energy Efficiency Directive¹⁵. Bulgaria intends to achieve those savings by putting in place both the Energy Efficiency Obligation Scheme (EEOS) and alternative measures. These policies and measures are considered sufficient in relation to meeting the target, bearing in mind the quantification provided by Bulgaria. Nonetheless, there is no information about how the existing EEOS will be made more effective. This was an issue in the past. Moreover, the expected savings deriving from the national mechanism for financing energy efficiency seem quite high. Proper identification and implementation of relevant actions will be crucial to achieve the expected savings.

The long-term renovation strategy under the Energy Performance of Buildings Directive was not submitted with the NECP, however its public consultation was concluded in August and its finalisation is expected soon. The plan nevertheless lists a number of key actions for building renovation with a quantitative objective of renovating a total of 22.2 million m² by 2030, 49.6 million m² by 2040 and 55.8 million m² by 2050, with estimates provided of the total energy and CO₂ emission savings. Most measures are continuations of existing ones. Bulgaria has set a more ambitious target for renovating buildings owned and used by the central administration, setting out a legal requirement that yearly measures must be taken to improve the energy performance of at least 5% of the total gross floor area of all heated and cooled state-owned buildings used by the public administration.

Financing mechanisms for building renovation are broadly outlined. However, there is a lack of specific information and figures (investment needs and sources, energy savings/m², etc.) Such information is needed for a comprehensive evaluation of the level of ambition, effectiveness and feasibility of the measures and of how they link to the milestones and measurable progress indicators to be included in the national long-term renovation strategy (due by 10 March 2020). These milestones and measurable progress indicators are mandatory components of the final NECPs (and of the draft NECPs), and they are lacking.

Energy security

Maintaining a high level of security of supply is a priority in the ongoing transformation of the energy system, with an objective of 30.33% of **renewable electricity** in the system and an increasing share of domestic renewable energy of 27.09% in gross final consumption by 2030. When considering risks, the plan takes account of the plans of the other connected Member States.

As regards **diversification of sources and routes**, Bulgaria is well on track to implement a strategy enabling access to different supply sources of natural gas, both via a pipeline from the Southern gas corridor and from LNG. As regards the gas market, two interconnectors with Greece and Serbia respectively benefit as projects of common interest. Implementation of the projects will increase the market's capacity by 10 bcm and will contribute to the country's security of supply and diversification of routes. The plan envisages significant further measures and investments in **storage of natural gas** and electricity and network infrastructure and mentions pump storage technologies and use of underground gas storage and LNG storage as key technologies to improve security of energy supply. It includes considerations on cybersecurity in the energy sector. The planned policies and measures are considered credible in relation to the

¹⁵ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency as amended by Directive (EU) 2018/2002.

achievement of the objectives, because Bulgaria has already made decisions to invest or become a shareholder in specific projects underpinning the objectives.

The plan does not make adequate links with the **emergency plans** for gas, electricity and oil, provided for by the applicable sectorial rules. Specifically, no mention is made of oil.

It introduces policies to maintain adequate capacities in all parts of the **nuclear supply chain** and to ensure security of fuel supply, though few details are provided. The plan sets out a concrete programme (agreed with ESA) for diversifying the supply of nuclear fuel. The programme falls into three stages, the first of which is already under way. These measures could benefit from more details.

Internal energy market

The plan states that Bulgaria sets a **interconnectivity level** of at least 15% by 2030, which meets the target set at EU level. Current projects of common interest to increase the interconnection capacity of Bulgaria with Greece and Romania (1500 MW and 1200 MW respectively), are helping Bulgaria to increase its interconnection capacity and to meet the EU's electricity interconnection target. An analysis of how rising demand for electricity affects the level of electricity interconnectivity and the need for infrastructure is included.

Significant progress is being made on the day-ahead and intra-day **market coupling** with Romania and Greece, which is to be welcomed.

Given the electricity sector target of 30.33% renewable electricity by 2030, an overview is provided of the development of the different sources of **flexibility** required to integrate the rising share of renewable energy into the electricity system. The associated measures and policies to activate some of these sources at distribution system level remain general and vague (e.g. demand response in local balancing markets), or even non-existent (e.g. storage through household or neighbourhood batteries).

The plan provides a partial overview of **current market conditions** for gas, especially as regards levels of competition and liquidity of markets. Issues inadequately addressed in the internal market dimension are expectations about the development of market shares and concentration ratios, as well as a sound target to abolish regulated prices. As regards the internal electricity market, the final plan foresees the promotion of competitively determined prices through a progressive deregulation of prices by 2025. Furthermore, objectives and measures related to consumer participation and system flexibility have been substantiated, but would benefit from clear legislative and regulatory steps and a timetable for implementation in order to be credible in relation to the achievement of the objectives. As regards demand response and aggregation, non-discriminatory participation of renewable energy, storage, smart meters, smart grids, general consumer protection and real-time price signals, the related policy objectives and measures remain generic (e.g. no time-line for roll-out of smart meters) or even non-existent (e.g. measures regarding storage, objectives and measures regarding smart grids).

The final plan still lacks an assessment of the **energy poverty** issue (there is no estimate of the number of energy-poor households, nor is there an indicative target to reduce this number). In all the climate impact scenarios considered, the rise in commodity prices could significantly reduce real income and push up poverty. The analysis of the social impact is not comprehensive; no forecast figures are provided in social areas, including for the residential affordable and social housing sectors. Moreover, there is still no definition of energy-poor households. This prevents

Bulgaria from making the transition to a fully liberalised market while protecting those in need. On a more positive note, additional policy objectives and measures related to energy efficiency have been included, including priority treatment for energy-poor households and a national programme for renovating multi-family residential buildings (not specifically targeting energy-poor households, but expected to have an impact on them). However, overall, the objectives and measures Bulgaria sets out to address energy poverty warrant further specification, taking account of the country's particular energy poverty situation. To date, the only existing dedicated measure in force the plan mentions is a Social Assistance Act and Regulation dating from 2008 for targeted heating aid grants, which seems to be of limited scope given Bulgaria's energy poverty situation.

Research, innovation and competitiveness

The plan highlights 13 R&I specific objectives, mostly relating to energy. However, these are qualitative, with few details or information on timelines. Most objectives are rather general, apart from a few that are more specific, such as 'deployment of new thermal insulation materials for glazed surfaces'. While the NECP shows that R&D spending in all sectors increased from 0.2% of GDP in 2017 to 0.75% in 2018, it does not set funding targets. As part of its research strategy for 2017-2030, Bulgaria is gradually increasing its research budget with the aim of reaching 1% of GDP by 2025. However, this objective is not specifically focused on energy sectors. The 'Innovation Strategy for Smart Specialisation, 2021-2027' and the action plan associated with it – both of which are under development – are the central policy instruments identified in the NECP. The strategy and action plan will build on an existing programme, 'Innovation Strategy for Smart Specialisation of the Republic of Bulgaria, 2014-2020'. However, they lack a description. It is also unclear whether the planned R&I measures are linked to this strategy. The planned programmes particularly support the energy security policy priority of regional interconnection, but also seem to support the achievement of the 13 R&I objectives. A specifically planned focus on innovation for energy efficiency and air quality, described in slightly more detail, addresses multiple R&I policy objectives.

Under the objectives for Research, Innovation and Competitiveness, Bulgaria acknowledges the need to deploy new technologies to reduce network losses, expand the energy market, tackle the challenges of decarbonisation, reduce harmful emissions and energy costs for consumers, and thus improve the quality of people's lives. Among other more technology-specific objectives, Bulgaria includes a large array of generic policies and measures that have more to do with overall competitiveness. However, analytical elements relevant to competitiveness, such as information on patents or researchers, are not described in sufficient detail in the NECP.

Bulgaria's plan notably includes a 2030 target for renewable electricity-based hydrogen consumption of 32GWh in the transport sector. The country expects around 47 GWh of electricity from renewable sources to be used to produce renewable hydrogen by 2030. A pilot project for hydrogen production with a total installed capacity of 20 MW is planned.

Cooperation with the **strategic energy technology (SET) plan** is mentioned. Activities relating to energy efficiency in housing and smart energy grids are specifically linked to the SET plan. The NECP does not commit Bulgaria to any specific plan for implementation. There is no description of how activities are to be allocated under the specific implementation plans. Nor is there any explanation of how the SET plan will help Bulgaria meet its national energy and climate objectives.

No specific and measurable objectives are defined as regards competitiveness. Cooperation with the SET plan is mentioned, but the link between European and national efforts has yet to be developed.

4. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

The policies and measures included take account of some **interlinkages** between the various dimensions, but this is often done in a qualitative manner only. There are many instances where the same policies and measures are listed in more than one dimension or where positive (or negative) influences are suggested that have a bearing on more than one dimension. The final plan acknowledges, for example, the importance of developing electricity transmission infrastructure, and of the use of smart grids or storage facilities to support renewable energy integration in the decarbonisation dimension. Issues such as the socioeconomic effects of decarbonising the economy, the impacts of market liberalisation on vulnerable customers and energy poverty are also briefly discussed.

Although the plan does not explicitly cover the application of the **energy efficiency first principle**, energy efficiency is considered a top priority and its correlation with the decarbonisation and renewables dimension is acknowledged. Moreover, as regards energy security, energy efficiency is linked more to the optimal use of national coal reserves and improvements in nuclear energy, rather than to savings on the demand side. The NECP says nothing about how climate change risks might affect energy supply (e.g. wildfires and storms destroying biomass resources and power networks, availability of hydropower). Only the impact on hydropower is discussed in section 5 (i.e. impact assessment of the NECP), but it is not reflected in the energy security dimension.

Climate risks to the energy section need to be specified, and identification needs to be followed by concrete policies and measures. Energy-efficiency measures need to take account of the adaptation co-benefits and trade-offs that will obtain under future climatic conditions.

Overall, expansion of infrastructure and gasification are the main objectives. Little thought is given to demand-side solutions that could provide an alternative to these investments. Information is lacking on the adaptation co-benefits of energy efficiency, such as may arise in the thermal management of buildings.

Bulgaria has not set any long-term objectives as regards promoting or deploying low-carbon technologies. The country plans to continue relying on coal power and other fossil energy. The current growth in renewable energy production is modest. Without additional measures to speed up the transition, the information provided indicates that Bulgaria will face challenges in meeting carbon-neutrality targets in the medium to long term.

As regards the **just and fair transition** aspects, the plan does partially address the European Green Deal and Bulgaria's commitment to decarbonising its economy by 2050. It does not deal with the future of lignite mining and power generation. In the final NECP, there seems to be tension between the objective of promoting low-carbon economic development on the one hand, and the objective of exploiting domestic coal resources to the full, along with the use of gas as a transitional fuel, on the other. A more substantive analysis of the further use of coal-based electricity production (including the expected impact of rising carbon prices on the competitiveness of coal power generation assets and on the financial stability of state-owned enterprises relying on coal power generation) is missing from the NECP. More generally, while

the just transition is partially integrated throughout the plan, no section of the document pays sufficient attention to the issue of how to achieve a fair transition to a climate-neutral economy and the socio-economic impact cannot be clearly defined.

The final NECP contains an assessment of **investment needs**, detailing needs by sector and sub-sector, and specifying the relevant periods of investment. Cumulative investment needs related to energy consumption sectors, electricity and heat production and infrastructure amount to EUR 42.7bn under the scenario with additional measures. This corresponds to annual investments in an order of magnitude of 7% of GDP¹⁶ over 2021-2030. The main sources of funding identified are predominantly at EU level. Private investments are mentioned as sources of funding, but there is no analysis of their role and scope. The plan lacks clarity as regards the methodology for estimating the stated investment needs and the underlying logic of the model and assumptions. Nor is any specific information provided on how much of the required investment has already been secured. The final composition of the financing mix is hard to assess, as there is no breakdown of the relative shares of EU funds, funds from the national budget, and private funds.

A description of existing **energy subsidies** is presented as a list of support measures and grants for RES and high-efficiency CHP, and free ETS allowances for electricity-generating installations. The plan does not appear to fully reflect internationally used definitions and Bulgaria does not regard support measures as subsidies. The NECP does not provide a timeline for the phasing-out of subsidies.

While the final plan contains an analysis of interactions with **air quality and air emissions policy**, the only quantified impacts and projections provided are based on the scenario with additional measures. This is despite the projected increased use of bioenergy in all sectors. There is no description of synergies and trade-off effects, while the extent to which air projections are consistent with GHG projections is unclear. All this is worrying, as the main air-pollutant-emitting sectors are actually very relevant to energy and climate policies (electricity and heat production, domestic heating, and road transport).

The analysis of the **circular economy** and its potential for GHG emissions reduction has been improved in the final plan, with a particular focus on waste management, a problematic area for Bulgaria. The NECP proposes synergetic measures to address the waste issue, produce renewable energy and reduce emissions.

Bulgaria indicates that there are plans to use **biomass** as a renewable energy source, with high potential of agriculture and forest residues and wastes. There is an observed reduction in sinks, given the age of forests and their growth, but the plan argues that increased biomass use will not affect the LULUCF sink. It indicates that the sustainability criteria in Directive (EU) 2018/2001 are applied, however more concrete measures or guarantees that these criteria will be maintained could be provided.

The interactions between the development of renewable energy sources and **biodiversity** are described at a theoretical level. Although the final plan is an improvement on the draft plan, it would be better if future plans included more specific measures, for instance when referring to afforestation actions.

¹⁶ This is based on Bulgaria's GDP in 2019 (source: Eurostat), which was about EUR 60.7bn.

The NECP lacks a consolidated quantitative **macroeconomic assessment** of the impact of the planned policies and measures on indicators such as overall employment rate, employment rates by specific sector and consumption.

The final version of the plan partially complies with **data transparency** requirements and with the use of European statistics.

5. GUIDANCE ON THE IMPLEMENTATION OF THE NATIONAL ENERGY AND CLIMATE PLAN AND THE LINK TO THE RECOVERY FROM THE COVID-19 CRISIS

Bulgaria needs to swiftly proceed with implementing its final integrated national energy and climate plan, notified to the Commission on 9 March 2020. This section provides some guidance to Bulgaria for the implementation phase.

This section also addresses the link between the final plan and the recovery efforts from after the COVID-19 crisis, by pointing at possible priority climate and energy policy measures Bulgaria could consider when developing its national recovery and resilience plan in the context of the Recovery and Resilience Facility¹⁷.

Guidance on the implementation of the national energy and climate plan

Bulgaria's 2030 target for greenhouse gas (GHG) emissions not covered by the EU Emissions Trading System (non-ETS) is 0% compared to 2005, in line with the Effort Sharing Regulation (ESR). By implementing the additional policies specified in the plan, it is projected that Bulgaria would meet this target, assuming that the land use, land use change and forestry (LULUCF) no-debit commitment is kept. However, this conclusion depends on the 2005 emission values used for the calculations¹⁸.

Bulgaria's contribution to the EU 2030 renewables target is adequate when compared to the share resulting from the formula in Annex II to the Governance Regulation, while its contributions to the 2030 energy efficiency target are respectively low and very low. Bulgaria's plan therefore leaves plenty of scope to further develop and step up policies and measures on both renewables and energy efficiency, so as to contribute more to the EU climate and energy targets and strengthen the green transition.

On **renewables**, Bulgaria committed to an overall renewable energy target of 27%, differentiated through sectoral projections. The country would benefit by having more specific sectoral targets and specific actions, in addition to the policy measures already described in the plan¹⁹. This

¹⁷ On 17 September 2020, the Commission has put forward the Annual Sustainable Growth Strategy 2021 (COM(2020) 575 final), as well as guidance intended to help Member States prepare and present their recovery and resilience plans in a coherent way. The guidance has no bearing on negotiations on the proposal for a Regulation on the Recovery and Resilience Facility in the European Parliament and the Council (Commission staff working document, Guidance to Member States – Recovery and resilience plans, SWD (2020) 205 final).

¹⁸ If one uses the 2005 base year value of the Effort Sharing Decision, Bulgaria's WAM projections do not meet its 2030 ESR target.

¹⁹ The Commission will adopt in November 2020 a European strategy on Offshore Renewable Energy, which will provide a vision and a series of policy initiatives for steering up to 2050 a massive,

would also make it easier to assess and monitor contributory measures and actions in the future, to ensure a better overall result. In the heating and cooling sector, specifically, Bulgaria would benefit by maximising the role of renewables and promoting the role of waste heat. In addition, the penetration of renewable electricity would be significantly enhanced by ensuring a level playing field in the electricity market. In this context, a careful assessment of the regulatory, structural and administrative system would greatly assist the removal of any barriers and burdensome procedures, streamline licensing, and promote the uptake of power purchasing agreements.

As regards **energy efficiency**, Bulgaria would benefit if it were to adopt and implement additional policies and measures designed to achieve further energy savings by 2030. The impacts and expected energy savings resulting from the policies and measures proposed need to be assessed carefully to ensure that they make an effective contribution to the targets. A detailed list of all the elements required by Annex III to the Governance Regulation would help in meeting the energy-saving obligation target under Article 7 of the Energy Efficiency Directive. In addition, improvements to the functioning of the energy efficiency obligation scheme would make it more cost-effective. Bulgaria is also invited to implement the Energy Efficiency First principle properly across all areas of the energy system, especially when planning additional investments in gas infrastructure. It is also important that new financing mechanisms target projects delivering a high level of energy savings; this may include using the funds earmarked for the green transition to finance energy efficiency policy.

The improvement of energy efficiency in buildings has much potential for speeding up energy savings and contributing to the recovery of the economy after the COVID-19 pandemic. Building on the momentum of the **Renovation Wave** initiative²⁰, there is scope for Bulgaria to intensify efforts to improve the energy performance of the existing building stock with concrete measures, targets and actions with due attention to energy poverty. Further support to the renovation of public and private buildings could be provided with increased public funding and by leveraging EU and national budgets with private money, combining grants, lending, guarantees and loan subsidies. Bulgaria is expected to provide a robust and comprehensive long-term renovation strategy, in accordance with Article 2a of the Energy Performance of Buildings Directive. The long-term renovation strategy is to define a roadmap for decarbonisation by 2050 with ambitious milestones for 2030 and 2040 and 2050, measurable progress indicators, expected energy and wider benefits, measures and actions to renovate the building stock, and a solid finance component with mechanisms for mobilising public and private investment.

As regards **energy security**, Bulgaria would benefit if it were to combine its strategy of obtaining access to different sources of natural gas, including decarbonised gases, with specific measures to integrate relevant sectors. This would help optimise and transform the energy system as a whole, instead of decarbonising and making separate efficiency gains in each sector independently. The enhanced role for nuclear energy described in Bulgaria's energy and climate plan has the potential to help improve energy security only if specific measures are introduced to diversify the procurement of nuclear materials and nuclear fuels.

cost-effective and sustainable scale up of offshore renewable energies and related value-chains in the whole EU.

²⁰ Communication 'A Renovation Wave for Europe – greening our buildings, creating jobs, improving lives', COM(2020)662 and SWD(2020)550.

As regards the functioning of the **energy market**, Bulgaria would benefit from maintaining a firm course on energy reforms and market liberalisation, including phasing out regulated prices and integrating the gas and electricity sectors more closely with those of its neighbours. Further efforts to improve the functional independence of the national regulatory authority, increase the funding allocated to it, and recruit more qualified staff, will ensure better application of market rules. Measures to increase the liquidity and transparency of the wholesale market will benefit all participants and prepare for seamless integration into regional and European markets. In retail markets, empowering consumers will help trigger genuine competition, improve quality of service and result in greater consumer satisfaction. This can be achieved through policy measures related to storage and smart grids, system flexibility, real-time price signals, demand response and aggregation, prosumers, energy communities, general consumer protection and non-discriminatory participation of renewable energy.

Bulgaria would benefit by defining clear indicators to track achievement of milestones towards its **research and innovation and competitiveness** objectives. Over time, the gathering of granular research, innovation and competitiveness data will be useful to strengthen this process. Bulgaria will need to ensure that this activity is linked with the SET plan activities already undertaken. The country would also benefit by further strengthening the link between the competitiveness objectives and the policies and measures to be put in place in the various sectors concerned by 2030.

As the main sources of funding identified are predominantly at EU level, the role and scope of different sources of funding in meeting the **investment needs** specified in the plan need to be clarified, as well as the amount of the investment funding required that has already been secured. The relative shares of EU funds, funds from the national budget, and private funds in meeting the identified investment needs also need to be clarified. This analysis could be improved by presenting the methodology used to estimate the stated investment needs, plus the logic underlying the model and the assumptions made. There is scope for improving the business environment to support investment: many measures taken to remove obstacles to investment notwithstanding, their impact remains limited due to lack of follow-up and control over their implementation.

Bulgaria is invited to continue ongoing efforts on **regional cooperation** with a view to intensifying exchanges and initiatives that will facilitate the implementation of its national energy and climate plan, in particular as regards relevant cross-border issues, including those in the context of the Central and South-Eastern Europe energy connectivity (CESEC) High-Level Group. Bulgaria is also invited to better exploit the potential of the **multilevel climate and energy dialogues** to actively engage and discuss with regional and local authorities, social partners, civil society organisations, business community, investors and other relevant stakeholders, and discuss the different scenarios envisaged for its energy and climate policies with them.

Bulgaria faces the challenge of taking account of **just and fair transition aspects** in its efforts to shift the energy system towards low-carbon sources. In particular, the country needs to develop a more comprehensive assessment of the social, employment and skills impact of planned objectives, policies and measures. This applies particularly to coalmining regions, carbon-intensive and linked industries. The measures proposed to mitigate the impact of the transition will also require further detail and analysis. In this context, the Just Transition Mechanism, as

part of the European Green Deal, provides an opportunity to intensify efforts by making financial and technical assistance available.

As regards efforts to address **energy poverty**, it would be useful if Bulgaria were to take clear legislative and regulatory steps and provide more detailed information on the timelines for implementation timeline between 2021 and 2030. Such information could include an estimate of the number of energy-poor households and an indicative target to reduce this number, together with appropriate policies and measures. Bulgaria is encouraged to consult the Commission Recommendation of 14 October 2020 on energy poverty and its accompanying staff working document providing guidance on the definition and quantification of the number of households in energy poverty and on the EU-level support available to Member States' energy poverty policies and measures. In this context, the momentum of the European Green Deal's 'renovation wave' initiative provides an opportunity to step up efforts to tackle energy poverty by improving the energy performance of the existing building stock through dedicated measures and concrete actions. Energy poverty could be, among other measures, addressed through specific support to socially innovative solutions and social enterprises that work on addressing this challenge (e.g. energy-awareness campaigns, retraining unemployed as energy advisors, supporting green installations by cooperatives, buying energy-saving appliances for social enterprises to rent out). It will be important to ensure the upskilling of the workforce in the construction sector.

Bulgaria is invited to extend and update reporting on **energy subsidies** and step up its action to phase out subsidies, in particular for fossil fuels. A rapid phase-out of the fossil fuel subsidies identified in the NECP and recent Commission analyses, through the further development and implementation of detailed plans with associated timelines (coupled with measures to mitigate the risk of energy poverty at household level), would further boost the green transition.

For all investments implementing the national energy and climate plan, Bulgaria is invited to ensure these are in line with national, regional or local plans for **air pollution reduction**, such as the National Air Pollution Control Programme (NAPCP), and relevant air quality management plans.

In implementing its plan, Bulgaria is invited to make the **best possible use of the various funding sources available**, combining scaled-up public financing at all levels (national and local, as well as EU funding) and leveraging and crowding in private financing. An overview of EU funding sources which should be available to Bulgaria during the forthcoming multiannual financing period (2021-2027), and for EU funding addressed to all Member States and companies, is provided in tables 1 and 2 of annex I. For the forthcoming period, the European Council has committed to the mainstreaming of climate action into all EU programmes and instruments and to an overall target of at least 30 % of EU funding to support climate objectives. At the same time, EU expenditure should be consistent with the Paris Agreement and the 'do no harm' principle of the European Green Deal. At the EU level, funding will be available for Bulgaria from the Innovation Fund and the Modernisation Fund too, based on revenues from the auctioning of allowances under the EU Emissions Trading System, as well.

Link to the recovery from the COVID-19 crisis

The vast majority of Member States' final national energy and climate plans were drafted before the COVID-19 crisis, and the present Staff Working Document assesses Bulgaria's plan in that

context. Nevertheless, the implementation of Bulgaria's final integrated national energy and climate plan will need to fully take into account the context of the post-COVID-19 recovery.

In the context of the Recovery and Resilience Facility, which is expected to be operational on 1 January 2021, **the final plan constitutes a strong basis for Bulgaria to design climate and energy-related aspects of its national recovery and resilience plan**, and to deliver on broader European Green Deal objectives.

In particular, **mature investment projects outlined in the plan, as well as key enabling reforms that address inter alia, investment-barriers, would need to be frontloaded as much as possible.** The link between investments and reforms is of particular relevance for the national recovery and resilience plans, to ensure a recovery in the short to medium term and strengthening resilience in the longer term. In particular, Member States' recovery and resilience plans should effectively address the policy challenges set out in the country-specific recommendations adopted by the Council.

In addition, the Commission strongly encourages Member States to include in their recovery and resilience plans investment and reforms in a number of 'flagship' areas²¹. In particular, the 'Power up', 'Renovate' and 'Recharge and refuel' flagships are directly related to energy and climate action and to the final national energy and climate plans. Investments and measures under the 'Reskill and upskill' flagship, in particular as regards green technologies, are also essential to foster the climate and energy transition in all Member States.

In turn, the Recovery and Resilience Facility will provide opportunities to accelerate Bulgaria's green transition while contributing to economic recovery. In order to follow the commitment of the European Council to achieve a climate mainstreaming target of 30% for both the multiannual framework and Next Generation EU, **Bulgaria's recovery and resilience plan will need to include a minimum of 37% expenditure related to climate.** Reforms and investments should effectively address the policy challenges set out in the country-specific recommendations of the European Semester, and will have to respect the principle of 'do no harm'.

Based on Bulgaria's final national energy and climate plan, and on the investment and reform priorities identified for Bulgaria in the European Semester, **the Commission services invite Bulgaria to consider, while developing its national recovery and resilience plan, the following climate and energy-related investment and reform measures:**

- Measures supporting a coal phase-out strategy with a clear timeframe commitment and ensuring a just transition of coal and lignite-reliant areas, accompanied by a clear strategy for promoting renewable energy; measures to reform the energy market;
- Measures promoting investments in buildings renovation, focusing as a matter of priority on worst-performing residential buildings;
- Measures improving sustainable transport infrastructure and boosting sustainable mobility.

The above mentioned measures are indicative in nature and not meant to be exhaustive. They aim to orient reflections in the development of the national recovery and resilience plan. They do not prejudge the position of the Commission on the actions to be proposed. This position will, inter alia, need to comply with the agreed legislative text on the Recovery and Resilience Facility.

21 Cf. Annual Sustainable Growth Strategy 2021 (COM(2020) 575 final), pp. 9-12.

**ANNEX I: POTENTIAL FUNDING FROM EU SOURCES
TO BULGARIA, 2021-2027**

Table 1: EU funds available, 2021-2027: commitments, EUR billion

Programme	Amount	Comments
Cohesion policy funds (ERDF, ESF+, Cohesion Fund)	9.8	In current prices. Includes funding for European territorial cooperation (ETC). Does not include amounts transferred to the Connecting Europe Facility.
Common agricultural policy – European Agricultural Fund for Rural Development, and direct payments from the European Agricultural Guarantee Fund.	7.7	In current prices. Commitments under the multi-annual financial framework.
Recovery and Resilience Facility	6.0	In 2018 prices. Indicative grants envelope, sum of 2021-2022 and estimated 2023 commitments. Based on the Commission’s summer 2020 GDP forecasts.
Just Transition Fund	1.2	In 2018 prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU.
Modernisation Fund	0.3	Approximation: 7/10 of the allocations of ETS allowances to provide revenue to the Modernisation Fund tentatively allocated to Member States for 2021-2030 and assuming a carbon price of EUR 20 per tonne.
ETS auction revenue	2.8	Indicative: average of actual 2018 and 2019 auction revenue, multiplied by seven. The amounts in 2021 to 2027 will depend on the quantity and price of auctioned allowances.

Table 2: EU funds available to all Member States, 2021-2027, EUR billion

Programme	Amount	Comments
Horizon Europe	91.0	In current prices. Includes Next Generation EU credits.
InvestEU	9.1	In current prices. Commitments both under the multi-annual financial framework (MFF) and Next Generation EU. Includes the InvestEU fund (budgetary guarantee to public and private investment) and the advisory hub (technical advice). Does not consider appropriations available to beneficiaries through implementing partners, such as the European Investment Bank.
Connecting Europe Facility <ul style="list-style-type: none"> • Transport • Energy 	24.1 5.8	In current prices. The commitment for transport includes the contribution transferred from the Cohesion Fund. Excludes Connecting Europe Facility Military Mobility funding for dual use infrastructure.
Recovery and Resilience Facility	360.0	In 2018 prices. Non-allocated commitments for loans. Loans for each Member State will not exceed 6.8% of its gross national income.
Technical Support Instrument	0.9	In current prices.
Programme for Environment and Climate Action (LIFE)	5.4	In current prices.
European Agricultural Fund for Rural Development	8.2	In current prices. Commitments under Next Generation EU.
Innovation Fund	7.0	Approximation: 7/10 of the allocations of ETS allowances to provide revenue to the Innovation Fund for 2021-2030 and assuming a carbon price of EUR 20 per tonne.

Note to both tables

The figures provided by programmes under the EU budget include both the proposals under the forthcoming multiannual financial framework, and the reinforcement of these under the Next Generation EU instrument outside the EU budget, unless indicated differently.

The figures quoted in this document are based on the conclusions of the European Council of 17-21 July 2020. They however do not prejudice the outcome of the ongoing discussions between the European Parliament and the Council on the elements of the recovery package, such as the Multiannual Financial Framework, the sectoral programmes, their structure and budgetary envelopes, which will be concluded in accordance with their respective adoption procedure.

For most of the above funds, support to the climate and energy transition is one objective among others. However, for the forthcoming period, the European Council has committed to the mainstreaming of climate action into all EU programmes and instruments and to an overall target of at least 30% of EU funding to support climate objectives. EU expenditure should also be consistent with the Paris Agreement and the ‘do no harm’ principle of the European Green Deal.

Some of the programmes listed in Table 2 provide funding through open calls to companies, not public administrations.

ANNEX II – DETAILED ASSESSMENT OF HOW COMMISSION RECOMMENDATIONS HAVE BEEN ADDRESSED

Recommendations		Assessment	
Decarbonisation – GHG	No recommendation	n.a.	-
Decarbonisation - renewables	Raise the level of ambition for 2030 to a renewable share of at least 27% as Bulgaria’s contribution to the Union’s 2030 target for renewable energy, as indicated by the formula in Annex II of Regulation (EU) 2018/1999.	Fully addressed	The share of renewable energy in gross final consumption of energy for 2030 is adequate and in line with the share that results from the formula in Annex II to the Governance Regulation. It is also an improvement compared to the 25% contribution of the draft plan.
	Include an indicative trajectory in the final integrated national energy and climate plan that reaches all the reference points pursuant to Article 4(a)(2) of Regulation (EU) 2018/1999 in accordance with that share, in view of the need to increase the level of efforts for reaching this target collectively.	Fully addressed	Bulgaria has included an indicative trajectory for the share of renewables up to 2030 which is in line with the requirements set out in the governance regulation.
	Put forward detailed and quantified policies and measures that are in line with the obligations laid down in Directive (EU) 2018/2001 of the European Parliament and Council and enabling a timely and cost-effective achievement of this contribution.	Partially addressed	The plan includes detailed information about planned PaMs, most of which are extensions to existing PaMs, such as the preferential prices for the purchase of renewable electricity produced by plants with a total installed capacity of less than 1 MW. Additional PaMs for 2021-2030 include: support for grid integration increased use of smart grids and storage systems, review and implementation of legislative changes in administrative procedures.
	Increase the level of ambition in the heating and cooling sector to meet the indicative target included in Article 23 of Directive (EU) 2018/2001	Partially addressed	The plan estimates an annual increase of renewables in heating and cooling of 1.15 percentage points. This is not in line with the Directive (EU) 2018/2001 indicative requirement of 1.3 percentage points per year. The plan also refers to forthcoming assessment of the potential for renewable energy and for the recovery of waste heat and cold in the heating and cooling sector, which will be developed by 31 December 2020.
	Put forward policies and measures to meet the transport target set out in Bulgaria’s draft integrated national energy and climate plan and in line with Article 25 of Directive (EU) 2018/2001.	Largely addressed	The plan refers to the existing blending obligation for suppliers of transport liquid fuels and the possibility of changing this approach by introducing quotas for each renewable energy supplier. As regards advanced biofuels, the plan says that the future efforts will focus on applied research and larger-scale demonstration activities.

			The plan also points to the need to develop public information campaigns to increase consumer awareness.
	Provide additional details and measures on the enabling framework for renewable self-consumption and renewable energy communities in line with Articles 21 and 22 of Directive (EU) 2018/2001, including simplification of administrative procedures.	Not addressed	As regards enabling renewable self-consumers and renewable energy communities, the final plan still provides no details on the form of support it intends to provide. It only refers in general terms to unspecified legislative changes that should be made to optimise the current regulatory framework and to regulate the rights of self-consumer in a more satisfactory way, with a view to encouraging and facilitating the development of self-consumption of renewable energy.
Energy efficiency	Increase its ambition towards reducing both primary and final energy consumption in view of the need to increase the level of efforts to reach the Union's 2030 energy efficiency target...	Not addressed	The PEC contribution was only slightly reduced and remains unambitious. The contribution for FEC is much higher and represents a very low level of ambition overall.
	...and support it with adequate policies and measures that would deliver additional energy savings by 2030.	Partially addressed	The changes and updates are minor. Policies and measures are relevant, but their impacts and energy savings are not quantified in detail. It is not specified which measures will lead to the largest reductions.
	Underpin proposed policies and measures by an impact assessment and more detailed information on the quantification of impacts, in terms of expected energy savings, and implementation timeline.	Partially addressed	Some quantified information is provided on energy savings, but this has not been done for all measures.
	Further elaborate on how the effectiveness of its energy savings obligation scheme is to be improved so that it could deliver the expected results.	Partially addressed	New details provided on Article 7 measures. It is indicated that an energy savings obligation scheme associated with new alternative measures will be established to ensure that the total cumulative target for energy savings in final consumption for 1 January 2021 – 31 December 2030 is achieved. However, there is no indication of how it will be improved. The NECP provides useful information for the renovation of the national stock of residential and non-residential buildings, both public and private. The Long-Term Renovation strategy has not been submitted yet.

Energy security	Specify a robust gas diversification strategy including relevant underlying infrastructure projects and their respective contributions. Detail the strategy for the long-term supply of nuclear materials and fuel, in particular in the perspective of the foreseen enlargement of its nuclear generation capacity	Largely addressed	The strategy for diversifying gas supplies is explained. Clearer objectives are also set in terms of diversification of sources (RES and EE promotion). The final plan also explores the possibility of using LNG from different supply routes. NECP specifies that a procedure is in progress to analyse the feasibility of diversifying the supply of fresh nuclear fuel.
Internal energy market	Define forward-looking objectives and targets concerning market integration, in particular on measures to develop competitive wholesale and retail markets and by eliminating barriers to cross-border trade	Partially addressed	The final NECP outlines the reform of the electricity market better. It also provides for the promotion of competitively determined electricity prices through a gradual deregulation of electricity prices by 2025. Furthermore, policies and measures on flexibility and non-discriminatory participation of new market participants still fall short of clear legislative and regulatory steps. Moreover, there is still no timetable for implementation. The NECP lacks a detailed plan and timetables for: the rollout of smart meters in electricity and gas markets; the non-discriminatory participation of renewable energy; the demand response and storage, including storage via aggregation.
Research innovation and competitiveness	Further clarify national objectives and funding targets in research, innovation and competitiveness, specifically related to the Energy Union, to be achieved between now and 2030, so that they are readily measurable and fit for purpose to support the implementation of targets in the other dimensions of the integrated national energy and climate plan.	Not addressed	The NECP provides only a general description of the research and innovation objectives, and of policies and measures up to 2030 and beyond. Its priorities seem to be energy efficiency and security.
	Underpin such objectives with specific and adequate policies and measures, including those to be developed in cooperation with other Member States, such as the European Strategic Energy Technology Plan.	Partially addressed	While the NECP identifies relevant areas and specific programmes, it provides few details of timeframes, the allocation of resources or quantified targets, making the extent to which they have been implemented hard to assess. Moreover, the research and innovation efforts are not supported by concrete policies or measures beyond 2020. As regards competitiveness, no specific and measurable objectives are defined. Cooperation with the SET Plan is mentioned, but the link between European and national efforts has yet to be developed.
Regional cooperation	Intensify regional cooperation with neighbouring Member States and within established regional cooperation frameworks such as the Central and South-Eastern Europe Energy	Largely addressed	Cooperation with neighbouring countries in the internal energy market and energy security is well developed. The NECP also provides further details in terms of the collaboration with CESEC and with

	Connectivity (CESEC) High Level Group, including in the renewables, energy efficiency and research, innovation and competitiveness dimension and taking into account common challenges and shared objectives. There is significant potential to further cooperate with a view to upcoming developments in the electricity sector, including the need to accommodate higher shares of renewables and clean transport which could impact electricity interconnections and trading in the region		neighbouring Member States as regards the electricity market and R&D/R&I, albeit at a high level. However, it is still limited as regards the development of RES and makes no reference to any potential cooperation on clean transport (and more broadly on air quality) beyond the existing CEF investment in charging infrastructure (decarbonisation dimension), despite Bulgaria's ambition to develop the use of electric and hybrid vehicles for both public and private use. There is no reference to the coal transition. Bulgaria has a number of borders with non-EU countries and cooperation will be important.
Investment and funding sources	Provide a general overview on the investment needed to modernise the economy by reaching its energy and climate objectives.	Partially addressed	The final NECP provides a general overview and a breakdown by sector of the investment needed to meet the targets set in the plan. However, information is lacking on: types of costs and methodology for estimation; breakdown of costs by dimensions; and the underlying logic of the model and assumptions.
	Provide a general assessment of the sources of investment, including appropriate financing at national, regional and Union level.	Partially addressed	The NECP partially describes the available funding sources that will cover the funding needs identified. The overview of potential sources of investments is largely limited to funding opportunities at EU level. However, there is a lack of detail on the proportion of investment needs that would be covered by each source. There is no description of appropriate financing at national and/or regional level. Nor is sufficient attention given to the potential mobilisation of private investments.
	Consider also the cost-effective generation of transfers to other Member States under Regulation (EU) 2018/842 of the European Parliament and Council as funding source.	Not addressed	The NECP does not include any evidence that Bulgaria has considered, as a source of funding, the cost-effective generation of transfers to other Member States under Regulation (EU) 2018/842 of the European Parliament and Council.
Energy subsidies	List all energy subsidies.	Partially addressed	The final NECP represents a partial upgrade of the draft plan on energy subsidies, as there is new information in the final plan.
	List in particular fossil fuel subsidies.	Not addressed	The final plan does not include a list of fossil fuel subsidies.
	List actions undertaken as well as plans to phase them out.	Partially addressed	Actions and plans to phase out energy subsidies are mentioned only for RES, and for allowances for schemes to support electricity installations. There is no mention of actions and plans to phase out fossil fuel subsidies.

Air quality	Complement the analysis of the interactions with air quality and air emissions policy,	Fully addressed	The NECP has a dedicated section analysing interactions with air quality and air emissions policy.
	...presenting the impacts on air pollution for the various scenarios...	Partially addressed	Impact on air pollution is presented in detail only for the WAM scenario. The WEM scenario results are mentioned in the text as compatible with WAM, but not quantified. The quantified WAM impacts have to do with all key pollutants regulated under the National Emission reduction Commitment Directive.
	...providing underpinning air pollutant projections...	Largely addressed	The analysis includes underpinning air pollutant projections, based on the WAM scenario only. These are set out in a table and graphs.
	...and considering synergies and trade-off effects	Not addressed	The final NECP provides no information on synergies and trade-off effects. The socioeconomic and health-related risks associated with certain types of fossil fuel generation do not seem to be sufficiently explored either.

Just transition and energy poverty	Integrate just and fair transition aspects better, notably by providing more details on social, employment and skills impacts of planned objectives, policies and measures...	Partially addressed.	The final NECP provides limited analysis of the social, employment and skills impact or of the measures proposed to mitigate the transition's impact. A thorough, detailed socio-economic analysis is expected to be developed of the consequences of the transition and the specific policies required for its implementation. It would be relevant for this analysis to also include a distributional impact assessment on households' income (including impact on housing costs) of the transition measures.
	...and particularly taking into account the impacts of the transition for coal and carbon intensive industries	Partially addressed.	The NECP touches on the impact the transition will have on coal and carbon-intensive industries. Potential job losses resulting from the decarbonisation of the coal sector are also briefly discussed. Some measures currently in progress are also mentioned, such as the decision taken by Bulgaria's National Assembly in January 2020 on accession to the EU 'Coal Regions in Transition' platform.
	Further develop the approach to addressing energy poverty issues, including by specifying the assessment as required by the Regulation (EU) 2018/1999.	Partially addressed.	Further detailed information on energy poverty is needed. This includes an estimate of the number of energy-poor households (together with a forthcoming definition), an indicative target to reduce this number, and robust policies and measures; all the more needed since Bulgaria's performance - as regards the level of certain energy poverty primary indicators used by the EU Energy Poverty Observatory - is still significantly worse than EU average (despite strong positive evolution in recent years).