Proposal for an industry study:

Options for decarbonisation of the power sector in Bulgaria

Draft for discussion with AmCham

23 July 2021

Introduction – context and objectives of the study

1.1 This document presents the potential scope and approach for an **industry study sponsored by Amcham to contribute to the public debate in Bulgaria** on the decarbonisation of the power sector and the proposed solutions for this transition.

1.2 In the context of the European Green Deal and the increased ambitions for decarbonisation, Bulgaria, similarly to other coal-dependent countries in Europe, will have to lay out its plan for its energy transition, supported by the Just Transition Mechanism of the EU.

1.3 Several technology options (biomass, CCGT, nuclear, wind, solar PV, alone or combined with batteries, CCS, etc.) are possible to decarbonise the power sector. The different options face different constrains, degrees of technology and industrial maturity, and will entail different costs.

1.4 This study sponsored by Amcham aims to contribute to the public debate by **providing robust modelling of the different options for the decarbonisation of the power sector** in Bulgaria, including a specific focus of the possible contributions from different technologies for the decarbonisation of the Maritsa Basin. Specifically, the study will:

- Identify the key drivers and key uncertainties shaping the evolution of the electricity system in Bulgaria and in the region;
- Review the different clean technologies and their potential cost evolution in Bulgaria, as well as the different constraints for their deployment;
- Model the evolution of the Bulgarian power sector in several alternative scenarios based on different technology mixes consistent with the increased policy ambitions in 2030 and 2050; considering the existing energy system, local resources, potential for demand management and the required security of supply
- Assess the corresponding costs and investment needs, including generation capacity, flexibility sources and grid;
- Identify the ‘low-regret’ options in the short term which could pave the way for decarbonisation and have the potential to be scaled up at a later stage;
- Identify the **desirable characteristics of a sound market design** that will unleash the investments required to decarbonise the power system at least possible cost.

Scope of work and deliverables

1.5 The study will be organised in two phases:

1.6 **Phase I: Study of different options for the decarbonisation of the power sector, based on a detailed modelling of the Bulgarian power sector in different scenarios.** The deliverables will include quantitative modelling outputs in the different scenarios to 2050 and the identification of the low-regret options for the next 5 years.

1.7 **Phase II**: **Policy paper providing recommendations for the development of an investment framework to support decarbonisation**, aiming at identifying which type of investment framework could be implemented in Bulgaria to unlock the necessary investments to decarbonise the power sector.

Phase I: Study on different options for the decarbonisation of the power sector

- **Define the electricity demand scenario** considering its key drivers and uncertainties and reflecting the increased decarbonisation targets;
- **Review the different clean technology options** and their potential cost evolution as well as potential barriers to their development.
- **Detailed modelling of cost-efficient electricity supply in Bulgaria to 2050** in the different decarbonisation pathways considering different shares of clean technologies.
- **Estimate investment needs** including generation capacity, flexibility sources and grid, based on the detailed modelling, and identify the low-regret options for the next five years.
- **Identify potential bottlenecks and barriers to cost-effective electrification in Bulgaria**, e.g. availability of flexibility resources, network capacity, market design, or financing of investments.
- **Identify the 'low-regret' options in the short term** which could pave the way for decarbonisation and have the potential to be scaled up and receive specific funding.

Phase II: Policy paper for an investment framework

- **Identify the key issues with the current or envisaged market design**, i.e. evaluate the potential need for intervention to supplement the market revenues in different scenarios of the different clean technology options.
- **Define the desirable features of a sound market design** to support efficient and timely decarbonisation. Build up the elements of a sound market design considering the challenges and system needs and based on the accurate definition of the full set of objectives and criteria for a future market design.
- **Formulate concrete proposals for policy measures** to support investments and an efficient transition, taking into account the current implementation of liberalisation policies. Propose a narrative that could be used with the relevant stakeholders to promote the policy recommendations.