Project application form under the Recovery and Resilience Facility

1. Project name

Design, construction and commissioning of infrastructure for transport of hydrogen and low-carbon gaseous fuels for supply of power plants and other consumers in coal regions in the Republic of Bulgaria

2. Project description (objectives, main activities).

According to the National Greenhouse Gas Inventory, the Energy sector is the largest source of greenhouse gas emissions in Bulgaria with over 70% of the total emissions in the country. About 45% of the country's gross electricity production comes from coal.

The power plants TPP Maritsa East 2, ContourGlobal Maritsa East 3, AES - 3C Maritsa East 1 and TPP Bobov Dol produce a significant part of the electricity in the country. These power plants use lignite and brown coal and have no access to appropriate infrastructure to change the fuel base. According to their annual reports, prepared according to the requirements of the European Emissions Trading Scheme (ETS), these four power plants are the source of about 45% of greenhouse gas emissions from the energy sector in the country.

The project aims to create an opportunity to phase out the use of coal for electricity production and to gradually replace the fuel base in power plants through the use of alternative environmentally friendly energy sources such as hydrogen. This will lead to reduction and subsequent elimination of greenhouse gas emissions resulting from the production of electricity from solid fuels in these regions. By establishing an infrastructure suitable for hydrogen transport, project implementation will create conditions for large-scale reform of the energy sector in the country, resulting in the gradual decarbonisation of energy and economy.

The project comprises a set of activities for provision of new supply gas pipeline infrastructure, as follows:

1. Subproject 1: Design, construction and commissioning of infrastructure suitable for transport of hydrogen and low-carbon gaseous fuels, for supply of TPP Maritsa East - 2, ContourGlobal Maritsa East 3, AES - 3C Maritsa East 1 and other consumers in Maritsa East coal basin - gas pipelines of about 125 km total length.
2. Subproject 2: Design, construction and commissioning of infrastructure suitable for transport of hydrogen and low-carbon gaseous fuels for supply of TPP Bobov Dol and other consumers in the region - gas pipelines of about 50 km. total length

In order to implement the transition at an economically reasonable price and ensure security, reliability and continuity of energy supply in the country and the region, until provision of sufficient hydrogen production capacity the gas pipeline infrastructure is envisaged to be used to transport low-carbon gaseous fuels and their mixtures in various proportions (hydrogen, biogas, natural gas). In this regard, the infrastructure will be connected to the existing gas transmission network of Bulgartransgaz EAD, and Subproject 1 will also be connected to IGB (Interconnector Greece-Bulgaria).

In addition, project implementation will give impetus to the development of gas distribution infrastructure in these regions, providing an opportunity for supplies of low-carbon gaseous fuels, including hydrogen, also to other consumers, such as smaller industrial and administrative enterprises and household consumers (households). Thus, the project will

enable the introduction of innovative technologies and will contribute to reducing both, greenhouse gas emissions and air pollution with fine dust particles and harmful substances in Bulgaria.

The project is in line with the vision of the Roadmap for Hydrogen in Europe, according to which the transition to a decarbonised energy system requires large-scale use of hydrogen. According to the Roadmap, hydrogen will also play a systemic role in the transition to renewable energy sources. There is interest in hydrogen technologies in Bulgaria and about 10 organizations and companies are already members of the European Clean Hydrogen Alliance.

3. Beneficiary.

Bulgartransgaz EAD, in its capacity of a certified independent transmission system operator, is envisaged to be a beneficiary of the project.

4. Schedule for project implementation, including activities, stages[1].

- Start date: no later than December 2021;
- Carrying out procedures under the Public Procurement Act (preparatory activities until obtaining a construction permit): 6 months, no later than June 2022;
- Design and permits under the Spatial Development Act, EPA, etc.: 12 months, no later than June 2023;
- Carrying out procedures under the Public Procurement Act (detailed design, supplies, construction and commissioning): 6 months, no later than December 2023;
- Construction of gas transmission infrastructure: 18 months, no later than June 2025;
- Commissioning: 1 month, no later than July 2025

The indicative schedule for project implementation is presented in the table:

[year	2021	2022				2023				2024				July 2025		
quarter	IV.	I	II.	III.	IV.	I	II.	III.	IV.	I	II.	III.	IV.	I	II.	III.
Subproject 1:	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Selection of a contractor for design and other activities until obtaining a construction permit	V	V	V													
Design and permits under the Spatial				V	V	V	V									

[1] The schedule will be relevant to setting intermediate targets under the Recovery and Sustainability Plan and is directly related to the release of tranches of the financial support under the Recovery and Sustainability Fund.

Development Act, Environmental Protection Act, etc., including obtaining a building permit																
Selection of a contractor of the detailed design, procurement, construction and commissioning								V	V	V						
Detailed design, procurement of materials and equipment Construction and installation activities.											V	V	V	V	V	V
Testing and commissioning																V
Subproject 2:	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
Selection of a contractor for design and other activities until obtaining a construction permit	V	V	V													
Design and permits under the Spatial Development Act, Environmental Protection Act, etc., including obtaining a building permit				V	V	V	V									
Selection of a contractor of detailed design, procurement, construction and commissioning								V	V	V						
Detailed design, procurement of											V	V	V	V	V	V

materials and equipment Construction and installation activities.																
Testing and commissioning																V

4.1. When can project implementation start at the earliest after its approval?

Project implementation can start within two months after its approval due to the need to prepare the required documentation for the procedures under the Public Procurement Act.

5. Indicative financial resource by activities, including sources of funding (SB, European funding, private funding, IFIs).

The indicative value of the financial resources required for implementation of project design, construction and commissioning of infrastructure for transport of hydrogen and low-carbon gaseous fuels to supply power plants and other consumers in coal regions in the Republic of Bulgaria amounts to **243 995 273.55 euros.** Indicative allocation of the financial resources by subprojects and it may be necessary to transfer costs from one subproject to another.

Subproject 1	***Planned funds, Euro***
Design and permits under the Spatial Development Act, Environmental Protection Act, etc., including obtaining a building permit	***4 670 330.00***
Construction of a total route diameters Dn1000 (40inch) and Dn700 (28inch) about 125 km	***180 762 854.05***
- *Construction of a route of Dn1000 diameter*	*118 399 500.80*
- *Construction of a route of Dn700 diameter*	*62 363 353.25*
Total Subproject 1	**185 433 184.05**
Subproject 2	
Design and permits under the Spatial Development Act, Environmental Protection Act, etc., including obtaining a building permit	***1 868 132.00***
Construction of a total route of diameter Dn700 (28inch) about 50 km	***56 693 957.50***
Total Subproject 2	**58 562 089.50**
TOTAL ESTIMATED VALUE:	**243 995 273.55**

This project has "additional" added value to the main scenario of development of Bulgartransgaz EAD infrastructure. This is a project of high public importance, crucial for successful implementation of the planned reform of the energy sector aimed at decarbonization and achievement of zero net greenhouse gas emissions by 2050. The project is a necessary prerequisite to enhance development and is in synergy with other projects, including introduction of innovative technological solutions for production and use of low-carbon fuels, including "Green" hydrogen produced on the basis of renewable energy.

In this regard and to ensure the advance and proactive development of hydrogen-adapted infrastructure capable of meeting the demand for transmission services in the context of targeted development of hydrogen fuel production and use, it is necessary a significant part of the required investments to be ensured by grants from the Recovery and Resilience Facility.
For implementation of this project, Bulgartransgaz EAD needs funding in the form of a grant, as it will significantly accelerate execution of the activities and achievement of the ultimate goal of creating conditions for use of hydrogen fuel and decarbonisation of economy.
The execution of activities has not started yet, as the use of the future infrastructure is related to the implementation of additional investments by the companies operating (owning) the thermal power plants. Therefore, by use of grants and strict supervision on implementation of all interrelated activities by national and European regulatory authorities, the risk assumed by Bulgartransgaz EAD will be reduced related to the possible low rate of utilisation of the new infrastructure in the first years due to delayed implementation of activities in the power plants, which may lead to difficulties in pay-back of the Company investment.
Thus, by reducing the risk borne by Project promoter, the grant will significantly accelerate its implementation and provide an opportunity to complete infrastructure in the shortest possible term.
In addition, the grant will support the Company in raising credit funding necessary for project implementation as it will provide sufficient security for the need of new infrastructure and the benefits it brings to society - both environmental and social.
EUR 170,260,196 (69.8% of the planned funds) for project implementation are envisaged to be provided by funding under the Recovery and Resilience Facility. The remaining EUR 73,735,078 (30.2% of the planned funds) will be provided by Bulgartransgaz EAD by own funds and/or attracted funding.
The specified grant amount will ensure timely and rapid project implementation, reducing the risks to Bulgartransgaz EAD, which could delay its implementation, and will also limit the rapid increase of the fees for access and transport to the gas transmission network of the Company, due to the need for urgent pay-back of the new infrastructure, that would have negative social consequences for Bulgarian consumers.
The Ministry of Energy of the Republic of Bulgaria has made a preliminary notification for state aid in connection with the planned partial funding of the project with funds from the Recovery and Resilience Facility.

5.1. Distribute indicatively the financial resource according to the type of expenditure:

- Construction/rehabilitation of infrastructure (CIW), including delivery of materials and equipment - 97.3%
- Labor (Consultancy services - design and related activities required to obtain a construction permit) - 2.7%

6. Indicators

6.1. Result indicator(s)

Approval of the project at the pre-investment stage

- Initial value - 0 - Published announcements for public procurements (PP) for design [30.12.2021]
- Interim value - Signed contracts with contractors for activities until obtaining a construction permit for the two subprojects [30.06.2022]
- Interim value - Approved DSPs for the two subprojects [31.05.2023]
- Interim value - Opinions on conformity assessment for the two subprojects [31.05.2023]
- Interim value - Approved investment designs for the two subprojects [31.05.2023]
- Final value - 2 - Issued 2 construction permits [30.06.2023]

Infrastructure suitable for transport of hydrogen and low-carbon gaseous fuels, pcs.

- Initial value - 0 - Published announcements for PP for detailed design, procurement, construction and commissioning for the two subprojects [01.07.2023]
- Interim value - Signed contracts with contractors for activities until obtaining a construction permit for the two subprojects [31.12.2023]
- Interim value - Deliveries and construction and installation works for construction of the two subprojects [30.06.2025]
- Interim value - Acts for testing and commissioning of the two subprojects [31.07.2025]
- Final value - 2 - two infrastructures suitable for transport of hydrogen and low-carbon gaseous fuels [31.07.2025]

6.2. Effect indicator(s)

Target consumers (power plants) using hydrogen, low-carbon gaseous fuels and their mixtures, pcs.

- Initial value– 0 [2022]
- Final value– 4 [2026]

7. Does project implementation require carrying out a procedure under the Public Procurement Act (PPA)?

Yes, the project will be implemented by award of public procurements under the PPA.

7.1. If a procedure under the PPA is required, what part of the activities and financial resources will be subject to public procurement?

All project activities will be subject to public procurement (s) under the PPA, respectively 100% of the financial resources will be utilized through procedures under the PPA.

7.2. If a procedure under the PPA is required, what is the indicative schedule for its implementation?

The project will be implemented according to the following estimated schedule for carrying out procedures under the PPA:

Initial month (T0)+ months	T0 +3	T0 +6	T0 +9	T0+ 12	T0+ 15	T0+ 18	T0+ 21	T0+ 24	T0+ 27	T0+ 30	T0+ 33	T0+ 36
Subproject 1 - Activities until obtaining a construction permit	V	V	V									
Subproject 2 - Activities until obtaining a construction permit	V	V	V									
Subproject 1 - Detailed design, delivery of materials, construction and commissioning									V	V	V	
Subproject 2 - Detailed design, delivery of materials, construction and commissioning									V	V	V	

8. Demarcation and complementarity.

8.1. If similar projects have been implemented (regardless of their source of funding), describe how this project builds on/complements what has been achieved by previous projects.

Not applicable. No similar projects for infrastructure suitable for hydrogen transport have not been implemented in the Republic of Bulgaria.

8.2. If similar projects are envisaged under the Partnership Agreement programmes, the centrally managed EU facilities or the Just Transition Fund, outline the demarcation with this project.

Not applicable. No similar projects for infrastructure suitable for hydrogen are envisaged for implementation in the Republic of Bulgaria.

9. Does the project directly contribute to the implementation of any of the Specific Recommendations of the Council addressed to Bulgaria in the framework of the European Semester in the period 2017-2020? Please describe how.

The proposed project contributes to the implementation of the Council's specific recommendations made to Bulgaria in the framework of the European Semester in the period 2019-2020.

The project includes investments in the field of energy infrastructure and energy efficiency (Recommendation No.3 to the 2019 National Reform Programme of Bulgaria and delivering a Council opinion containing a Council Opinion on the 2019 Convergence Programme of Bulgaria - COM/2019/512), contributing to the gradual decarbonisation of the economy.

In addition, the project has a direct contribution to meeting the objectives laid down in the Clean energy for all Europeans package related to the security of supply, clean and efficient production and use of energy and resources, reduction of greenhouse gas and harmful emissions and the achievement of carbon neutrality by 2050, including in the coal-producing regions.

10. Does the project contribute to the implementation of reform in a given sector? Please describe how.

The implementation of the project is fundamental for the operation of power plants, which currently use coal and are one of the main sources of air pollution. The construction of the project-specific infrastructure provides a real opportunity to replace the used solid fuels, thereby significantly accelerating the transition to clean energy and reducing emissions from carbon-intensive fuels, such as coal. The project provides an economically and environmentally efficient opportunity to reform the energy sector in order to decarbonise and achieve net zero greenhouse gas emissions by 2050.

The project will create significant added value and will significantly contribute to the implementation of national and European sectoral energy policies. The creation of hydrogen transport infrastructure will stimulate the introduction of innovative technologies, including by expanding the geographically dispersed production of energy from renewable sources as one of the promising methods for subsequent production of hydrogen using the Power to Gas technology, while maintaining the security and flexibility of the energy system.

11. Does the project contribute to the development of any aspect of the sustainable economic development? Please describe how.

The project is in line with the principles and areas set in the 2021 Annual Strategy for Sustainable Growth, contributing to the initiatives set regarding the introduction of clean technologies and accelerated use of renewable energy sources, as one of the leading prospective hydrogen production methods using the Power to Gas technology.

In addition, the project creates conditions for the transformation of the energy sector and achieving the EU's goals in the field of clean energy in the long run - 2050.

The implementation of the project will contribute to accelerating the transition to a low-carbon economy in Bulgaria, by reducing the emissions, strengthening the adaptation to climate change, development of competitive and secure energy.

12. Does the project contribute to the implementation of the objectives of the National Development Programme BULGARIA 2030 Please describe how.

The realisation of the project is in line with the implementation of the objectives of the National Development Programme of the Republic of Bulgaria 2030.

The use of hydrogen and low-carbon fuels energy by means of building a transport infrastructure to supply the power plants TPP Maritsa East 2 EAD, ContourGlovbal Maritsa East 3, „AES - 3C Maritsa East 1“ and TPP Bobov Dol will indeed contribute to achieving a low greenhouse-gas-emitting energy sector.

The possibility to use clean energy to supply the biggest source of emissions in the energy sector would have a long-term impact on the development and transition to a low-carbon energy and the achievement of zero net emission by 2050.

More specifically the realisation of the project will contribute to the implementation of the following objectives, laid down in Axis of development No.2 „Green and Sustainable Bulgaria“ of the National Development Programme of the Republic of Bulgaria 2030.

The main focus of this axis of development is the sustainable management of natural resources, enabling the satisfaction of the current needs of economy and the public, whilst preserving the environmental sustainability to allow the continuous attendance to these needs in the long run. The project complies with Priority 4. “Circular economy and low-carbon economy„ and Priority 5. “Clean air and biodiversity“, contributing to achieving the criteria laid down regarding the reduction of greenhouse gas emissions and the population living in excessive levels of fine-particle pollution10.

13. Does the project contribute to the implementation of the objectives and priorities set out in the Integrated National Energy and Climate Plan? If yes, please describe how.

The construction of transport infrastructure for hydrogen and low-carbon gaseous fuels to coal regions in the Republic of Bulgaria will allow the replacement of coals, used as fuel by the power plants TPP Maritsa East - 2, ContourGlobal Maritsa East 3, AES - 3C Maritsa East 1 and TPP Bobov dol, with hydrogen and low-carbon gaseous fuels. The implementation of the project will provide an opportunity for the transition to a low-carbon energy at economically reasonable price while preserving the security, reliability and continuity of energy supply in the country and the region.

Replacing the coals initially with low-carbon gaseous fuels and their mixtures in different ratio (hydrogen, biogas, natural gas) and further on with hydrogen will lead to the gradual and cost-effective significant reduction in greenhouse gas emissions as a result of the electricity generation in power plants. The complete replacement of the currently used coals in the four power stations with hydrogen will lead to the reduction of about 30% of the national gross greenhouse gas emissions compared to 2018.

The implementation of the project hence meets the main objectives laid down in the National Integrated Energy and Climate Plan:

- stimulating low-carbon economic development;
- development of competitive and secure energy sector;
- reducing the dependence on imports of fuels and energy;

- guaranteeing energy at affordable prices for all customers.