

**Technical support to the Energy Community and its Secretariat to assess the candidate Projects of Energy Community Interest in electricity, smart gas grids, hydrogen, electrolysers, and carbon dioxide transport and storage, in line with the EU Regulation 2022/869**

**- Description of Approach, Work Plan and Organization -**

TEN-E (PECI) Groups meeting – 1<sup>st</sup> joint meeting of the “Electricity” and “Gases” Groups

07 March 2024

# Contents



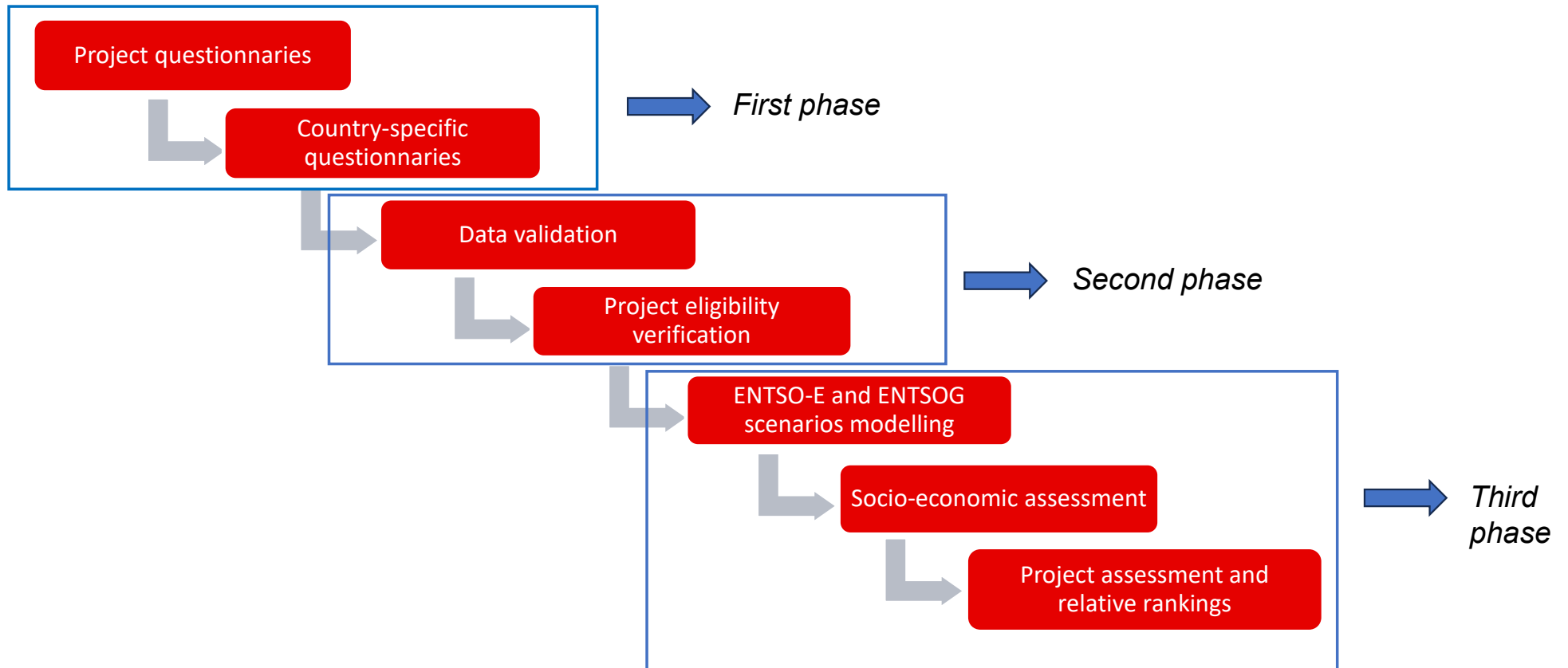
1. Project objective and activities
2. Deadlines and work plan
3. Data collection
4. Data validation and eligibility verification
5. Approach and methodologies for project assessment
6. Models and modelling assumptions
7. Socio-economic assessment
8. Next steps

# Project objective

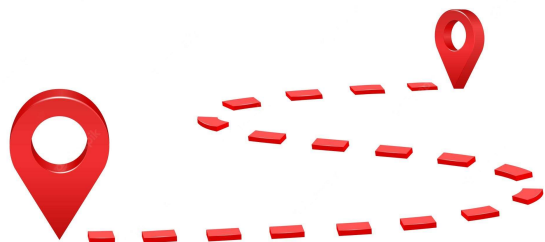
- **EU Regulation 2022/869** (revised TEN-E)
  - identifies eligible categories for **energy infrastructure development projects**
  - promotes better cooperation between countries, with the main objective **to ensure market and system integration** that benefits all EU Member States and Energy Community Contracting Parties (CPs)
- Implementation of the Regulation 2022/869 in the EnC legislative framework
  - the new selection process for **Projects of Energy Community Interest (PECI)** to be conducted during 2024
- **The Consultant's task**
  - to **assist Energy Community Secretariat** and the Groups (related to **electricity** and related to **smart gas grids, hydrogen, electrolysers, and carbon dioxide**) in compiling the preliminary list of PECI projects to be approved by the Ministerial Council

# Project activities

## Activities during the project implementation



# Deadlines and work plan



- **Start date**

15<sup>th</sup> of February 2024

- **End date**

28<sup>th</sup> of June 2024

No	Activity	Beginning	End
1	Kick-off meeting	16/02/2024	16/02/2024
2	<b>Inception Report</b> preparation and submission	16/02/2024	29/02/2024
3	1 <sup>st</sup> Groups' meetings	07/03/2024	07/03/2024
4	Data Collection	26/02/2024	08/04/2024
5	<b>Data Validation and Scenario Report</b>	18/03/2024	15/04/2024
6	2 <sup>nd</sup> Groups' meetings	18/04/2024	19/04/2024
7	Data and Scenario Finalization	19/04/2024	03/05/2024
8	<b>Analysis Techniques' Guidance Document</b>	19/04/2024	10/05/2024
9	3 <sup>rd</sup> Groups' meetings	15/05/2024	16/05/2024
10	Project Assessment	17/05/2024	14/06/2024
11	Assessment Results Consultation with the Secretariat	12/06/2024	17/06/2024
12	4 <sup>th</sup> Groups' meetings	19/06/2024	20/06/2024
13	<b>Final Report</b> preparation and submission	22/04/2024	28/06/2024

# Deadlines and work plan

- **Deliverables**

1. **Inception Report (until 29<sup>th</sup> of February 2024)**

*Description of activities, work plan, approach, presentation of project-specific and country specific questionnaires*

2. **Data Validation and Scenario Report (until 15<sup>th</sup> of April 2024)**

*Report on the collected project and country data, data validation process and compliance of the data with the proposed analysis, results of the project eligibility verification, description of defined scenarios*

3. **Analysis Techniques' Guidance Document (until 10<sup>th</sup> of May 2024)**

*Final description of the data, scenarios, applied methodologies and techniques, sensitivities to be carried out, and structure of results and indicators*

4. **Final Report (until 28<sup>th</sup> of June 2024)**

*Summary of the applied methodology, scenarios, data and assumptions and detailed presentation and interpretation of the results for each analysed project in all scenarios and sensitivities*

# Data collection

## Project questionnaires

- Project-specific data to carry out socio-economic and market simulation analysis (technical and economic parameters, level of project readiness, specific issues etc.)

## Country-specific questionnaires

- Country-specific data for 2030/2040/2050 in line with the [ENTSO-E and ENTSOG joint scenarios](#) (existing and planned energy infrastructure, demand of electricity and gas(es), etc.)

# Data collection

- **Project questionnaires** – used to collect project-specific data from the project promoters for each of the eligible project categories defined in the Regulation:

1. Electricity Infrastructure
2. Energy Storage Facilities
3. Smart Electricity Grids

➔ *Electricity*

4. Smart Gas Grids
5. Hydrogen
6. Electrolyser
7. Carbon Dioxide

➔ *Gas(es)*

- Project promoters have chance to submit their applications **until 18<sup>th</sup> of March 2024**

## • Data categories:

- **General data:** general information about the project
- **Technical data:** data necessary for modelling and project assessment
- **Cost data:** CAPEX and OPEX
- **Status data:** project status and progress



# Data collection

- **Country-specific questionnaires** – used to collect input data on **electricity and gas(es)** markets and infrastructure for Energy Community Contracting Parties
- Collected input data will be used to develop market models of all CPs in order to assess candidate projects taking into account relevant market conditions in each country for the period **until 2050**
- Questionnaires and required data are categorized:
  - **Electricity related:** Thermal, Hydro, Wind and Solar, Batteries, Demand, NTC
  - **Smart gas grids, hydrogen, electrolysers and carbon dioxide related:** Demand, Interconnections, Storages, Fields

# Data validation and eligibility verification

- **Data validation** – validation and correction (if necessary) of the collected data
- For project-specific data:
  - Technical data consistency check
  - Financial data consistency check
  - General data check
- For country-specific data:
  - In case of missing data, the Consultant will assist and propose values based on the ENTSO-E/ENTSOG publicly available data and experience in modelling EnC countries

*A validated data set for project eligibility verification*

# Data validation and eligibility verification

- **Project eligibility verification** – based on the criteria defined in the Regulation, prior to the modelling activities
- The data delivered by the project promoters will be assessed to determine if each candidate project satisfies following **general eligibility criteria**:
  - Project involves **at least two Contracting Parties** by directly or indirectly, via interconnection with a third country, crossing the border of two or more Contracting Parties;
  - Project is located on the territory **of one Contracting Parties**, either inland or offshore, including islands, and has a **significant cross-border impact**.
- The projects will be further assessed for additional **specific criteria per different energy infrastructure categories** based on the Regulation and relevant methodologies

# Methodologies for project assessment

- **Methodologies that will be applied**
  - **CBA Methodologies of the ENTSO-E and ENTSG**
    - ✓ *4<sup>th</sup> ENTSO-E Guideline for Cost-Benefit Analysis of Grid Development Projects, April 2023*
    - ✓ *2<sup>nd</sup> ENTSO-G Methodology for Cost-Benefit Analysis of Gas Infrastructure Projects, February 2019*
  - Methodologies developed and published by **the European Commission**
    - ✓ *Harmonised System Wide Cost-Benefit Analysis for Candidate Electrolyser Projects, May 2023*
    - ✓ *Harmonised System Wide Cost-Benefit Analysis for Candidate Hydrogen Projects, May 2023*
    - ✓ *Harmonised System Wide Cost-Benefit Analysis for Candidate Smart Gas Grid Projects, May 2023*
    - ✓ *Harmonised System Wide Cost-Benefit Analysis for Candidate Smart Electricity Grid Projects, May 2023*
    - ✓ *Harmonised System Wide Cost-Benefit Analysis for Candidate Cross-Border Carbon Dioxide Network Projects, May 2023*
  - Methodology for assessing the **hydrogen and electrolyser candidate** PCI/PMI projects 2022-2023 exercise, June 2023
  - Methodology for assessing the **electricity and offshore infrastructure** candidate PCI and PMI 1<sup>st</sup> Union PCI-PMI list 2023, June 2023
  - Previous methodologies used for the selection of PECE/PMI projects in the Energy Community

# — Approach for project assessment

- Develop **reference scenario**, against which all projects will be assessed
  - Each project will be added to the reference scenario to determine its benefits (*PINT modelling approach*) until 2050
- Determine **socio-economic monetary and non-monetary benefits and costs** for each project (project-specific CBA and MCA)
- Compare individual project assessment results between projects in the same project category and propose **relative project rankings**

# Market and network models

- *Tender docs:*

*“Ideally, **a single tool**, possibly with different modules for the **electricity and hydrogen/smart gas markets**, would be used for the assessment of energy infrastructure projects”*

- **PLEXOS** – proposed tool for the project assessment
  - enables modelling and analyses of **both electricity and gas(es)/hydrogen markets**
  - extensive experience of EIHP experts in various applications of PLEXOS for energy system analyses (including project assessments and CBA analyses)
- EIHP has developed a **detailed regional electricity market model of SEE countries (including WB6)**, and regional **gas market model** of SEE in PLEXOS
- **PSS/E** – additional tool for electricity network analyses
- **Timely and quality delivery of input data crucial for successful models development/upgrades!**

# Modelling assumptions

- **Geographical scope:** Albania, Bosnia and Herzegovina, Kosovo, Moldova, Montenegro, North Macedonia, Serbia, Ukraine and Georgia
- **Time horizon:** 2030/2040/2050
- **ENTSO-E and ENTSOG TYNDP scenarios:**
  - **TYNDP 2022** NT for 2030/2040
  - **TYNDP 2022** DE for 2050
- **Modelling tools to be applied:** PLEXOS Energy Modelling Software, PSS/E
- **Approach for neighbouring countries:** use of the best available data and models (ENTSO-E and ENTSOG TYNDP, EIHP in house data sets and developed models)



# Modelling assumptions

- **Climatic year for time series: 2009** as the most representative year in the TYNDP 2022
- **Hydrological conditions: Average/Normal**
- **Fuel and CO<sub>2</sub> prices:**
  - Based on the TYNDP 2022 scenarios
  - Can be subject to **sensitivity analysis**

€/GJ	2030	2040	2050
Nuclear	0.47		
Biomethane	20.74	16.94	13.97
Shale Oil	1.86	2.71	3.93
Lignite:			
- Group 1 (BG, MK and CZ)	1.40		N.a
- Group 2 (SK, DE, RS, PL, ME, UK, IE and BA)	1.80		N.a
- Group 3 (SI, RO and HU)	2.37		N.a
- Group 4 (GR and TR)	3.10		N.a

	Unit	Scenarios	2030	2040	2050
CO <sub>2</sub>	€/tonne	NT	70	90	N.a
		DE and GA	78	123	168
Hard coal		NT	2.48	2.41	N.a
		DE and GA	1.97	1.92	1.87
Light oil		NT	13.78	15.41	N.a
		DE and GA	10.09	9.61	9.12
Natural gas		NT	6.23	6.90	N.a
		DE and GA	4.02	4.07	4.07
Biomethane	€/GJ	NT	20.74	16.94	N.a
		DE and GA	20.74	16.94	13.97
Synthetic methane		NT	28.09	23.35	N.a
		DE and GA	28.96	23.35	18.09
Renewable H2 imports		NT	20.25	16.08	N.a
		DE and GA	20.63	16.08	12.52
Decarbonised H2 imports		NT	20.25	16.08	N.a
		DE and GA	17.11	17.55	17.91



# Socio-economic assessment

- **Main objective**
  - to determine socio-economic monetary and non-monetary project benefits and costs
- **Cost-benefit and multi-criteria analysis**
  - CBA evaluates project impact on costs and benefits at the level of society
  - MCA determines non-monetised project impacts
  - Integrated CBA and MCA approach to ensure **a full assessment of all benefits**, both monetized and non-monetized



# Socio-economic assessment

## Costs

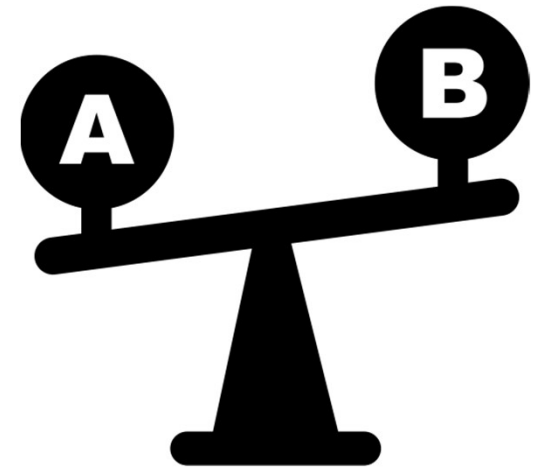
- Verified investment costs (CAPEX) and operation and maintenance costs (OPEX) delivered by the project promoters

## Benefits

- Indicators calculated **using market and network models**, and
- Indicators determined based on **the data delivered by the project promoters**, depending on specific assessment criteria set out in the methodologies

# Relative rankings of projects

- Based on the results of quantitative and qualitative analysis, individual project assessment will be made for each of the eligible project category
- Each of the criteria evaluated in a specific project category (monetised and non-monetised) will have a certain weight in the total possible score
- Based on the calculated total scores of each individual project a **relative ranking of all eligible projects** will be provided as the final output of the assessment

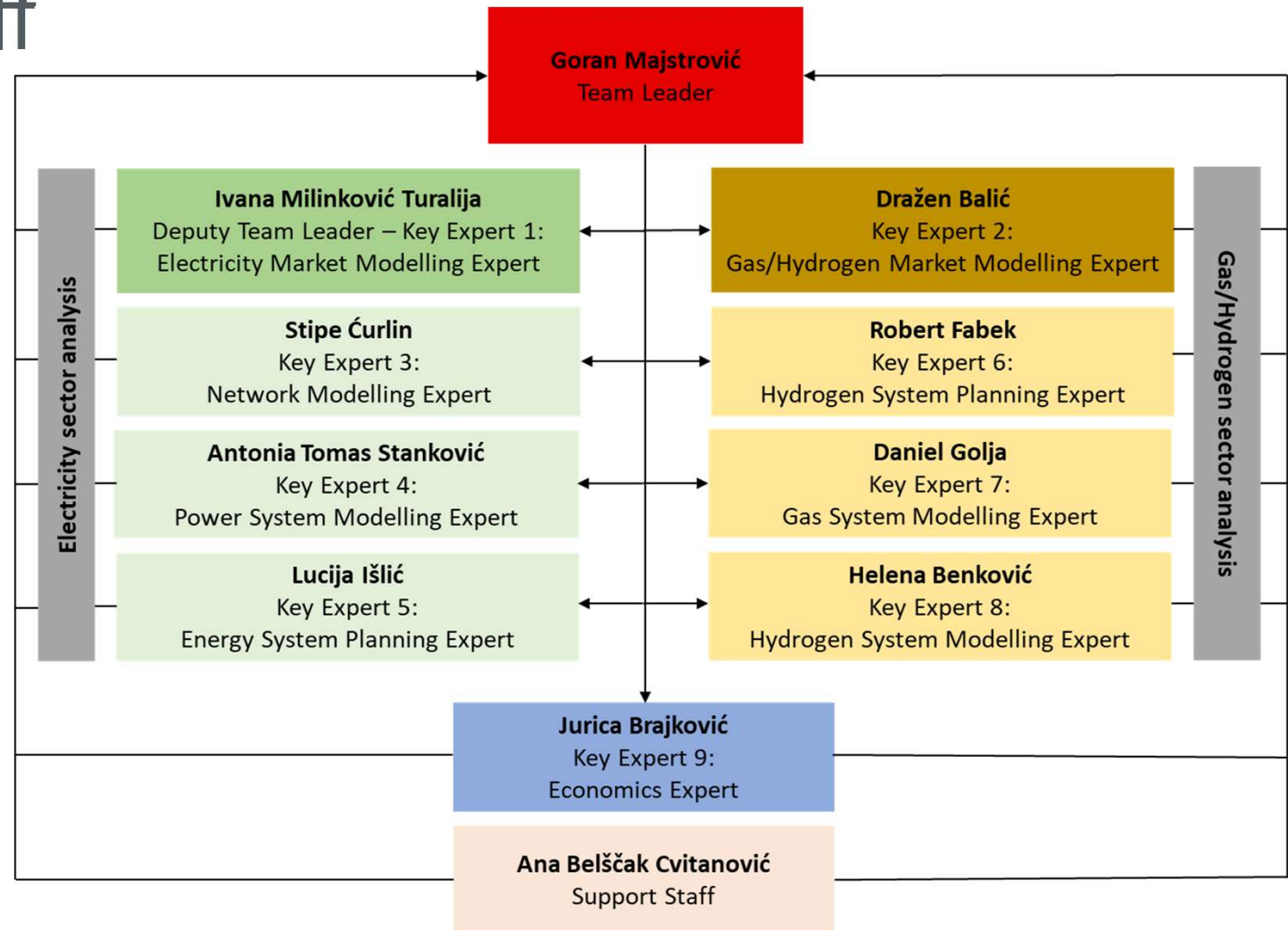


# Next steps



- Kick off meeting ✓
- Inception Report preparation and submission ✓  
(until 29<sup>th</sup> of February 2024):
  - The template questionnaires for eligible project categories ✓
  - The template questionnaires for country-specific data collection ✓
- 1<sup>st</sup> Group's meeting (7<sup>th</sup> of March 2024) ✓
- Data collection process (until 8<sup>th</sup> of April 2024)
- Data Validation and Scenario Report (until 15<sup>th</sup> of April 2024)

# Project staff



# Thank you for your attention



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