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Energy Community

Methodology for the Identification of Key Regional Infrastructure Projects of Eastern Partnership Interest

Background Note

I. Introduction

In the framework of the regional programme EU4Energy, the Energy Community Secretariat, has developed a methodology of choosing and prioritisation of key regional energy infrastructure projects of interest to the Eastern Partnership. Endeavouring to assess the benefits of energy infrastructure projects (gas and electricity transmission projects crossing the border) in the Eastern Partner countries the Secretariat engaged as a consultant the company-institute REKK. This consultant also developed the methodology for selection of Projects of Energy Community Interest (PECIs).

Using the same or an analogue methodology as in the case of Projects of Common Interest of the EU or Projects of Energy Community Interest, at least in some of Eastern Partner countries, would not be possible. Data availability for a standard cost benefit analysis applied in ENTSO's Cost Benefit Analysis (CBA) is not sufficient, hence cannot be the basis of an adequate evaluation. Therefore, REKK, in cooperation with the Secretariat, developed a new methodology, which can allow the assessment based on available and still appropriate data.

II. Possibilities of Project Assessment

To identify the main methodological questions of CBA analysis in Eastern Partner countries, the consultant performed a short market study for the gas and electricity sector of the countries in question. He found that market functioning in both electricity and gas sectors of the countries is far from competitive, especially in the non-Contracting Parties to the Energy Community. This gives a limited scope for market-based CBA assessment. Therefore, some possible alternatives were considered:

1) Indicator-based assessment, coupled with qualitative analysis

The Methodological guidelines of ENTSO-G, ENTSO-E and ACER presented indicators, which can be quantified without modelling. However, the use of these indicators is limited in scope since monetization is not possible in all cases.

2) Market Modelling

Most indicators of the ENTSOs are based on market modelling.

For this reason, it is proposed to apply market modelling on a case-by case basis where possible, and rely on simplified indicators for other cases.

3) *Directorate-General for Regional and Urban Policy CBA Methodological Guide – the avoided cost approach*

For gas market projects, CBA methodological guidance of Directorate-General for Regional and Urban policy was consulted (referred to as simplified calculation or avoided cost approach). This framework offers an analytical tool between indicators and market modelling in complexity. However, the data need and the sensitivity of the input assumptions is high for this approach. Compared to market modelling, the outcomes are more ad-hoc, but compared to indicator analysis the simplified calculation (avoided cost approach) offers more insights to the project.

When market modelling (2) is not possible, the other realistic option is to rely on non-monetised indicators (1), such as:

- Import Route Diversification Indicator (IRD),
- System Reliability Index (SRI) and
- Number of supply sources available or
- Project maturity should be calculated

These could be backed by a qualitative assessment, which can be done by the EnC Secretariat and/or if necessary by external experts.

Electricity projects follow the logic of PECI evaluation (market modelling). Certain simplifications might be needed if there is lack of network modelling on Electrical Energy Not Supplied (EENS). System Adequacy Indicator (SAI) and Hirschman-Herfindal Index (HHI) indicators are suggested as a supplementary index for a CBA assessment.

Gas project assessment should also be based on modelling following the PECI evaluation logic to support a well-informed decision-making, but a much more pragmatic approach should be used due to the aforementioned market-environment differences.

Based on the modelling for electricity and gas dummy infrastructure projects to test the applicability of the three proposed options, the consultant found that lack of data (especially on long term contracts and transmission costs) and the complex geopolitical situation requires *individual assessment* of each project. The individual project assessment based on modelling (when data availability is satisfactory) can still provide information on whether the project benefits on the long term outweigh the costs or not. This allows for the classification of projects in three distinct groups:

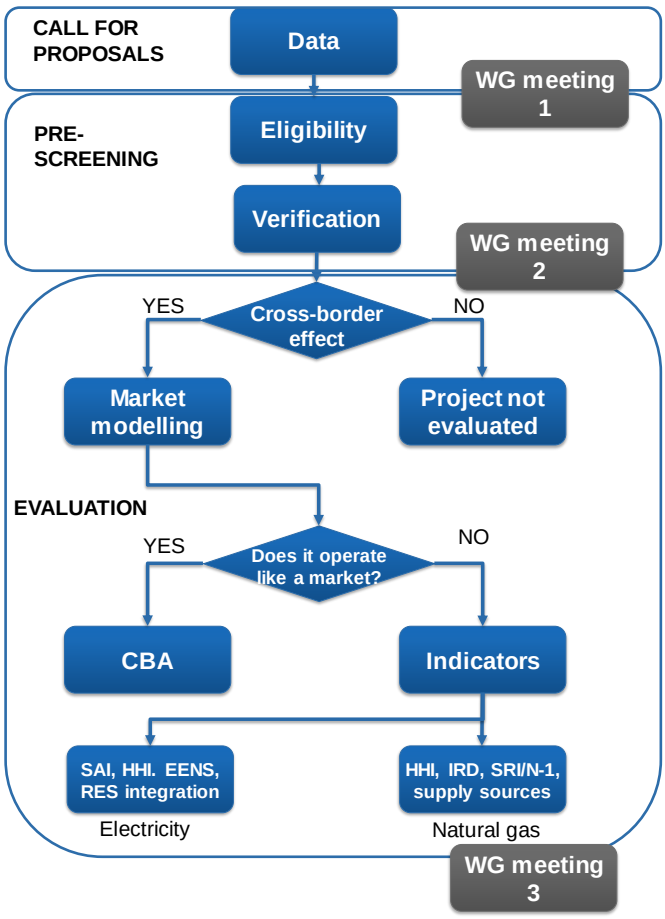
a) those that have a robust positive economic Net Present Value (NPV),
b) those that are on the edge (close to zero NPVs), and
c) those that proved to be robust negative projects.

Annex I below summarizes the proposed project assessment path.

To arrive to the individual assumptions and a better understanding of the local specificities, further discussions during the project assessment should be scheduled between the EnC Secretariat and the Promoters of the hosting countries.

Data availability issues are expected to be more striking in countries which are not Energy Community Contracting Parties or EU-Member States. Special attention is to be given to cross-checking and validation of data submitted by project promoters. International organisations' data publications are of key importance for the validation of country data. Data input needs are presented in Annexes II and III for gas and electricity project assessment respectively.

Annex I – Stylized flowchart for CBA evaluation



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Annex II – *Draft* Specific data needs for **electricity** projects

- Installed capacity, technology, fuel type and year of commissioning for all existing and planned power units
- Hourly electricity consumption data for the latest available year
- Yearly electricity consumption growth rate
- Existing net transfer capacities
- Average monthly utilization rates of hydro and nuclear power generations in the last five years
- Natural gas price

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Annex III – Draft Specific data need for **Gas** Projects

	Unit	HHI	IRD	SRI / N-1	Number of supply sources	Avoided cost approach	Market modelling
Relative share of main suppliers	%	x					
Relative share of import routes	%		x				
Physical possibility of accessing alternative import sources	% of total imports						
Yearly and daily infrastructure capacities (IP, prod, LNG,)	GWh/day, TWh/year			x			X
Storage Capacity	TWh			X			X
Storage Withdrawal and Injection Capacity	GWh/d			X			X
Storage utilization rate	Av. Last 5 years filling rate on 1 October (%)						
Number of import sources	number				x		
Daily peak consumption	GWh/day			x			X
Consumption pattern (temporal)	% of total annual per month						X
Tariffs	€/MWh						X
Long-term contracts	duration, volume (TWh/year), price (€/MWh), up-downward flexibility (%)						X
Sectoral consumption	% of total					x	

	Unit	HHI	IRD	SRI / N-1	Number of supply sources	Avoided cost approach	Market modelling
Alternative fuel prices	€/MWh					x	
Possibility of fuel switch and gas demand curtailment (aggregated)	% of daily gas imports						
Incremental consumption	TWh/year					x	
Investment cost, O&M	€					x	X
Long-term global market assumptions	consumption in TWh/year, global prices in €/MWh						X

HHI: Hirschman-Herfindal Index

IRD: Import Route Diversification Indicator

SRI/N-1: System Reliability Index