

STUDY ON THE ESTIMATION OF THE COST OF DISRUPTION OF GAS SUPPLY IN EUROPE

Why this study?

One of the goals of investing in gas infrastructure in the European Union is achieving and maintaining an adequate level of security of gas supply (SoS). Achieving better SoS is not “free”: such investments certainly have cost. The costs of investments can readily be expressed in monetary terms, i.e. “monetised”. However, the potential benefits which enhanced SoS would bring are not so easily monetised, a circumstance which leads to uncertainty when a decision based on economic considerations has to be made on whether or not to make a specific investment. In other words, when carrying out cost-benefit analyses (CBA) of a potential investment in gas infrastructure, one would be better informed if there were ways and means to assess in monetary terms the potential SoS benefits that an investment would bring.

CBA of investments in gas infrastructure enhancing SoS is required by Regulation (EU) No 347/2013, as well as by the infrastructure standard established in Regulation (EU) 2017/1938. The CBA methodology is used for preparing the ENTSOG’s 1-year Network Development Plan (TYNDP) and further support the selection of Projects of Common Interest (PCIs), as well as to assess proposals of permanent bi-directional capacities at cross-border interconnection points.

However, the existing CBA methodology developed by ENTSOG provides limited ways to monetise SoS benefits. The Agency has repeatedly outlined the need to improve the monetisation of SoS aspects in ENTSOG’s CBA methodology. The Study aims at providing an example how the benefits of improved SoS can be monetised, and a practical implementation of the chosen methodology for that purpose.

Who carried out the Study? What is the main content of the Study?

The Agency hired Kantor Management Consultants (KMC) and Economic Consulting Associates (ECA) to conduct a Study on the estimation of the **Cost of Disruption of Gas Supply (CoDG) in Europe**. The Study includes two distinct tasks:

- Task A: Review and **assess existing methods for the valuation of security of gas supply and recommend a method to estimate the value of CoDG**;
- Task B: **Apply the recommended method of Task A by using publicly available data to estimate the value of CoDG** and suggest a possible approach for the estimation of the solidarity price of gas in cases when gas supply emergency arises.

What are the results of the Study?

A summary of the recommended approach for the monetisation of the CoDG is the following:

1. **Use a fuel-switching approach by estimating a cost measure per unit of energy (“unit cost measure”, UCM, in €/MWh)**. This approach is relevant for all sectors where gas is used as a fuel, mainly the residential, services, industrial and power sectors. In essence, this approach raises the question “*how much do I have to spend, so that my lifestyle, operations, or production process will not be affected by gas supply interruptions?*” The answer is given by calculating the cost of procuring, installing and using equipment that uses an alternative fuel, when gas firing equipment is substituted by alternative appliances/equipment and fuels.
2. Use a **Gross Value Added (GVA) -at-risk approach** to estimate the UCM in the industrial sub-sectors where gas is used as feedstock. In this case, the question is “*what economic loss will I sustain if gas supply is interrupted?*” The answer is arrived at by looking at the value of the output which will not materialize due to the interruption of the production in the absence of gas supply.
3. The Study then refines the above UCM estimates by carrying out a “**reality check**” via **sectoral** (residential, services, industry and power) **online surveys** asking gas consumers about their

estimates of CoDG under hypothetical scenarios. The estimates of the **UCMs cover only possible direct costs** in the case of an event of gas disruption.

Finally, the Study uses the UCM results from all the above steps to calculate sectoral CoDG values for each Member State.

What comes next? What are the possible uses of the results of this study?

The Agency considers that the research and analytical work undertaken in this Study provide practical input to ENTSOG's effort to further quantify and monetise the benefits of improving SoS when applying the CBA methodology. On 23 October 2018, ENTSOG published the adapted [\[link\]](#) version of the 2nd CBA Methodology for the European Commission's approval, following the Agency's [\[link\]](#) and the European Commission's Opinions on the 2nd CBA Methodology and the feedback received from stakeholders. The Agency welcomes ENTSOG's intention¹ to consider this Study in order to improve the approach towards CoDG calculations and the monetisation of the benefits of enhanced SoS.

At the same time, the Study could provide insights to National Regulatory Authorities (NRAs) in cases where NRAs are involved in the valuation of solidarity gas and other activities as per Commission Recommendation (EU) 2018/177.

What if the UCM values provided in the Study seem not to match those of my circumstances?

The UCM values, as a proxy to CoDG values, are not static and could change over time, to a varying extent by location. Such change may be due, for example, to changes in the prices of inputs and outputs in production processes, cost of alternative fuel equipment, consumer preferences, and many other factors. For the sake of transparency and to allow updates enabling the application of UCM to specific circumstances, the Agency asked the Consultant to prepare a "calculator" of the CoDG. The calculator implements the fuel switching and GVA-at-risk methodology as indicated above, with sufficient granularity by sector and country. The calculator is available for download in spreadsheet format and users may change inputs to the calculations in a way that the users find more appropriate for their particular circumstances. The calculator is provided "as is". The Agency does not guarantee the accuracy of the calculations and assumes no responsibility for any consequences of the use of the calculator or the results of the calculations.

The Agency underlines that the information and the views set out in this study are those of the authors (KCM and ECA) and may not in any circumstances be regarded as stating the official position of the Agency, as further elaborated in the legal disclaimer of the Study:

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The Study and the accompanying calculator can be found here [\[link\]](#)

¹ See ENTSOG's Roadmap for future Projects CBA Assessment, document accompanying the Adapted 2nd CBA methodology, 22 October 2018, p. 6.