Navigating the Roadmap for Clean, Secure and Efficient Energy Innovation

Workshop Proceedings Paper on Europe’s gas infrastructure needs towards 2050: which projects of common interest should be prioritised?

SET-Nav Stakeholder Dialogue: 2nd Topical Workshop

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www.set-nav.eu

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1 Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
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<tr>
<td>9:30 - 10:00</td>
<td><strong>Registration</strong></td>
</tr>
<tr>
<td>10:00 - 10:35</td>
<td><strong>SESSION I: INTRODUCTION AND KEYNOTE SPEECH</strong></td>
</tr>
<tr>
<td>10:00 - 10:05</td>
<td>Welcome by <strong>Eleanor Drabik</strong>, CEPS</td>
</tr>
<tr>
<td>10:05 - 10:15</td>
<td>Welcome and Overview of the SET-Nav project by <strong>Marijke Welisch</strong>, TU Wien</td>
</tr>
<tr>
<td>10:15 - 10:35</td>
<td>Keynote speech by <strong>Adam Romanowski</strong>, DG Energy, European Commission</td>
</tr>
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<td>10:35 - 10:45</td>
<td>Q&amp;A</td>
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<td>10:45 - 11:00</td>
<td><strong>COFFEE BREAK</strong></td>
</tr>
<tr>
<td>11:00 - 12:45</td>
<td><strong>SESSION II: MODEL-BASED EVALUATION OF PCI GAS INFRASTRUCTURE</strong></td>
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<tr>
<td>11:00 - 11:05</td>
<td>Introduction by chair, <strong>Arno Behrens</strong>, CEPS</td>
</tr>
<tr>
<td>11.05 - 11.35</td>
<td>Presentation of the policy briefing by: <strong>Péter Kotek</strong>, Senior Research Associate, REKK; <strong>Pedro Crespo del Granado</strong>, Postdoctoral Fellow, NTNU</td>
</tr>
<tr>
<td>11.35 - 11.45</td>
<td>Comments by <strong>Celine Heidrecheid</strong>, ENTSOG</td>
</tr>
<tr>
<td>11.45 - 11.55</td>
<td>Comments by <strong>Boyko Nitzov</strong>, ACER</td>
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<tr>
<td>11:55 - 12:40</td>
<td>Open discussion and Q&amp;A</td>
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<tr>
<td>12:40 - 12.45</td>
<td>Concluding remarks by <strong>Arno Behrens</strong></td>
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<tr>
<td>12:45</td>
<td><strong>END OF THE WORKSHOP FOLLOWED BY LUNCH</strong></td>
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2 Minutes

2.1 Welcome

This event was used to promote the work done within the case study 6.3 on *Projects of Common Interest and gas producers pricing strategy* to ensure a continuous flow of dissemination activities and to give interested actors the opportunity to bring their views and guide the analytical process within the project.

2.2 Session 1: Introduction to the project and the keynote speech

This session primarily provided an introduction to the topic of Projects of Common Interest (PCI) by a representative of the European Commission. It also provided an overview of the SET-Nav project that started in April 2016 including a summary of the progress so far.

- **Maijke Welisch** from TU Wien, who is part of the project coordinating team, provided an overview of the project to the audience and a brief summary of the progress so far. Maijke informed participants of the upcoming modelling workshops that are planned as part of the project. The first is on the “Upcoming network challenges: Addressing decentralized generation in smart grids” that will take place in Madrid planned in March 2018. The second is the “Two-stage decision making and modelling for energy markets” event that is planned for October 2018 in Berlin.

- **Adam Romanowski** from the European Commission, DG Energy provided a great introduction to the topic of PCIs, presenting a detailed overview of the process of how projects are selected to reach PCI status. He welcomed the initiative of organising such a workshop on the PCI topic outside of decision making circles. Adam informed participants that the PCI selection exercise takes place every two years since 2013, it is a lengthy, increasingly transparent and inclusive procedure. It starts with the submission of proposals, the European Commission then verifies the data and project specific cost-benefit analyses are performed. The opinion from other organisations, such as ENTSOG, are then required to help select the appropriate project to reach PCI status. The number of projects on the list is decreasing and the third PCI list will be adopted at the end of this year.

He explained that the main concern in 2009 was that infrastructure investment needed to achieve the 2020 targets will not be met. For this reason the 347/2013 Regulation (called the TEN-T) was put in place. The regulation, which did not intend to replace national infrastructure decisions, but to set a minimum standards to them, helps the permit the granting process of Projects of Common Interest (PCI). This regulation also supports projects that are financially not feasible for the promoters but are socially beneficial on a regional level, through the Connecting Europe Facility (CEF). Furthermore, the Regulation sets the methodological framework for cost benefit analysis and the process that leads to the PCI selection.
2.3 Session Model-based evaluation of the PCI gas infrastructure

Achieving deep decarbonisation policies for the energy system might require modifications to Europe’s gas network. Strengthening and diversifying the connections to major suppliers as well as investing in LNG capacity could be instrumental to reducing supply risk. This, coupled with the fact that more variable renewables are entering the system, thus, flexibility is increasingly required and some of that flexible capacity is likely to be provided by Gas Turbines. Therefore, the relative location of gas demand should be incorporated into the planning for gas infrastructure upgrades.

In this session, a list of projects of common interest were presented by researchers that had been analysed by using different modelling approaches with comments provided by leading stakeholders.

- **Péter Kotek** from REKK and **Pedro Crespo del Granado** from NTNU, part of the SET-Nav team presented their findings on the Case Study Projects of Common Interest and gas producers pricing strategy. The results they presented are from three gas models that analyse the trade-offs of a set of key EU gas infrastructure projects. The modelling showed that the majority of projects from the PCI list should not be implemented. This is a shortened list of PCIs selected by the research team.

- **Celine Heidrecheid** from ENTSOG provided her comments on PCIs in response to the results presented by the research team. The role of ENTSOG in the PCI selection process is to, in a transparent and non-discriminatory way, propose a platform and methodology to collect and assess projects and also provide technical support to the European Commission. However, when performing cost-benefit analyses, monetising benefits is tricky, particularly because social qualitative benefits are not easy to monetise. In response to the specific models used by the SET-Nav research team, she stated that assumptions have a big impact on results and therefore it is important assumptions are transparent. Lastly, Celine ended on the point that there are challenges around decarbonising heating and transport sectors, we should expect some synergies between these sectors with the electricity sector, such as power-to-gas (P2G) coupled with renewables.

- **Boyko Nitzov** from ACER provided his comments, from his personal perspective, on PCIs and the preliminary results from SET-Nav partners. He pointed out that on the user-side,
most gas is burnt for heat applications and therefore peak demand takes place in winter. Infrastructure is built to withstand these peak demands and therefore some capacity could be considered redundant. Gas infrastructure has a long lifetime and the implementation of PCIs is slow, at a rate of approximately one project per year. He also stressed the need for cost-benefit analyses in the case of public projects and listed the requests of the public agency towards models that should be used for cost-benefit analyses.

Figure 2: Session 2

Discussions following the presentations between speakers and with the audience included the argument that all PCIs are considered equally important and it is impossible to define the priority. All speakers as well as many audience participants were in agreement that there is need for some gas projects to be developed, however, considering decarbonisation targets, that not many are needed. The real question is how to calculate the benefits in the cost-benefit analysis for each project? This question raised further discussion between all speakers. It was agreed that calculating the cost is far easier than calculating the benefits. Benefits are mostly related to the security of supply of gas in Europe, however, no one can really calculate the benefits in twenty years’ time and therefore they should be considered potential benefits only.
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Europe’s gas infrastructure needs towards 2050: Which Projects of Common Interest should be prioritized?

Overall objectives and framework of the study

To support the energy transition and decarbonisation pathways for the EU, this study intends to answer the question, whether the existing gas infrastructure is capable to serve the decarbonisation goals of the EU and if not, what pieces of infrastructure could fill the gap. As part of the SET-Nav project, this study analyses a set of natural gas infrastructure projects by a novel coordinated gas market modelling exercise.

SET-Nav models implementation

The objective of modelling the development of the gas infrastructure towards 2050 is to analyse the long-term cost-benefits of building new transmission capacity, the prospects of expanding LNG terminals and to provide policy recommendations that are in line with geopolitical realities and trends. In this study, the three gas models participating in the SET-Nav project (EGMM, GGM and RAMONA) analysed the trade-offs of a set of key EU gas infrastructure projects to: 1) identify synergies between infrastructure projects, 2) prioritise projects that strengthen and diversify the connections to major suppliers, 3) assess the welfare benefits of the selected projects on an EU level and 4) provide more robust policy recommendations by using different models and comparing results.

Main results and recommendations

The following infrastructures were selected - based on their modelled social NPV - as key projects by all applied models:

- The Trans-Adriatic Pipeline (TAP), the interconnectors between Greece and Bulgaria (IGB), and Bulgaria and Serbia (IBS) are part of the reference as they are FID projects. Their utilization is high according to all models.
- The Shannon LNG terminal in Ireland is financially viable and shall be implemented on a market basis. Nevertheless, at the EU-28 level it has adverse effects on welfare: by commissioning this LNG terminal, flows previously supplying Ireland transiting the UK are diminished.
- The Baltic cluster projects, Krk LNG and the ITB are both financially and economically viable on EU level and shall be implemented.
- The Interconnector between Poland and Lithuania (GIPL) and the Slovenian-Hungarian interconnector are financially not viable, but with CEF funding already awarded, these projects may turn economically feasible.
- BRUA results are less straightforward: one of the models suggest that RO-HU section is viable the other suggest that RO-BG is needed. Even with the CEF funding allocated to the Romanian section of the corridor fails to turn the NPV to positive due to very high investment costs.

Results from the different models are in disagreement on the viability of the GALSI, Poland-Slovakia Interconnector, MIDCAT, Baltic pipe and BACI

Modelling suggests that the majority of the projects from the shortened PCI list should not implemented. The decarbonisation goals do not need much investment on gas infrastructure since the demand projections of PRIMES (both reference and EUCO30) are showing a decreasing gas demand. This demand can be served by the current infrastructure with a limited number of PCIs needed, despite the decreasing EU domestic production. The results are robust in the sense that three modelling tools, using the same input data but different model structure, granularity and solution algorithm, delivered more or less the same outputs. The results also highlight the need to perform sensitivity analyses on major infrastructure and demand assumptions. It should be also noted that the current PCI regulation creates a perverse incentive for investors to arrive to an unfeasible business plan which may qualify them for CEF funding.
<table>
<thead>
<tr>
<th>Name</th>
<th>From-to</th>
<th>RAMONA</th>
<th>GGM</th>
<th>EGMM</th>
<th>WGMM</th>
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About the project

SET-Nav aims for supporting strategic decision making in Europe’s energy sector, enhancing innovation towards a clean, secure and efficient energy system. Our research will enable the European Commission, national governments and regulators to facilitate the development of optimal technology portfolios by market actors. We will comprehensively address critical uncertainties facing technology developers and investors, and derive appropriate policy and market responses. Our findings will support the further development of the SET-Plan and its implementation by continuous stakeholder engagement.

These contributions of the SET-Nav project rest on three pillars: modelling, policy and pathway analysis, and dissemination. The call for proposals sets out a wide range of objectives and analytical challenges that can only be met by developing a broad and technically-advanced modelling portfolio. Advancing this portfolio is our first pillar. The EU’s energy, innovation and climate challenges define the direction of a future EU energy system, but the specific technology pathways are policy sensitive and need careful comparative evaluation. This is our second pillar. Ensuring our research is policy-relevant while meeting the needs of diverse actors with their particular perspectives requires continuous engagement with stakeholder community. This is our third pillar.

Who we are?

The project is coordinated by Technische Universität Wien (TU Wien) and being implemented by a multinational consortium of European organisations, with partners from Austria, Germany, Norway, Greece, France, Switzerland, the United Kingdom, France, Hungary, Spain and Belgium.

The project partners come from both the research and the industrial sectors. They represent the wide range of expertise necessary for the implementation of the project: policy research, energy technology, systems modelling, and simulation.

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