

Developing a shovel-ready offshore grid in the North Seas – why public support is needed

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This paper sets out why developing an offshore grid in the North Seas should be a key part of the upcoming European Commission € 300 billion public-private investment programme to revive the European economy.

The need for more emission-free and domestic energy supplies to counter climate change while increasing our security of supply and establishing a globally leading, innovative industry sector like offshore wind energy is clear. As the development of its key enabler, an offshore grid in the Northern Seas, faces various challenges, there is a rationale which justifies EU engagement, including financial instruments, to facilitate this major infrastructure project.

In the current economic climate, co-financing pan-European projects to make energy supplies more reliable and help reduce greenhouse emissions, while simultaneously boosting Europe's economic recovery, should be prioritised. The enormous investment need of €100 billion in the North Sea grid alone identified by ENTSO-E until 2030 gives already an indication that a substantial increase of public support for such key energy infrastructure projects is needed. The successful completion of the interconnector with Ireland which is fully paid by Ireland and the European Energy Programme for Recovery highlights the successful role of public money in such cases.

EWEA key messages:

- Offshore wind energy remains a largely untapped domestic industrial sector contributing to the EU's GDP and job creation, and to the development of other economic sectors, as well as security of supply¹.
- The European Commission's own recent analyses shows that *annual* savings alone in 2030 including costs of losses, CO₂ emissions and generation savings are € 1.5 to 5.1 billion for coordinated offshore grid development. These monetised benefits make a coordinated offshore grid profitable in all offshore wind energy deployment scenarios².
- Harnessing offshore wind energy as one of Europe's largest domestic energy resources is impeded by the following main obstacles from a EU policy perspective:
 - Development of offshore resources in the North Seas remains a national responsibility, with no agreed objectives for the region as a whole and considerable differences between national regulatory regimes;

¹ For a detailed overview on wind energy's contribution to security of supply in the EU: <http://www.ewea.org/publications/reports/avoiding-fossil-fuel-costs-with-wind-energy/> and to the EU's GDP and job creation: <http://www.ewea.org/publications/reports/green-growth/>

² EC study carried out by PWC, Ecofys and Tractebel on "Benefits on a meshed offshore grid in the Northern Seas region", 2014: http://ec.europa.eu/energy/infrastructure/studies/doc/2014_nsog_report.pdf

- Despite ongoing regional initiatives such as the North Seas Countries Offshore Grid Initiative (NSCOGI), various financial and regulatory obstacles to investments in an integrated offshore grid persist.
- In order to reap the economic benefits of developing offshore wind energy further measures are needed, particularly political coordination as well as financial support:

The Northern Seas offshore grid should, therefore, be included as a flagship project in the European Commission's upcoming € 300 billion public-private investment programme to revive the European economy, including a work programme in Q1 2015 for investments in infrastructure and industry clusters.

Further economic and technical studies have found ample proof that an integrated grid infrastructure in the North Seas would bring significant benefits in terms of cost savings by enhancing security of supply and facilitating power trading, compared with the currently applied radial method of connecting offshore wind power plants. The economic advantages are confirmed and amount to several billion euros³, not to mention the positive impact of further developing offshore wind energy, a domestic industrial sector contributing to the EU's GDP and job creation, and to the development of other economic sectors.

Ongoing obstacles to bring about a coordinated offshore grid development

Despite the cost saving potential questions arise as to why public funding is needed at all since investment in electricity infrastructure is a regulated business activity which should allow for a recuperation of investments in a commercially sound manner.

The current financial incentives for cross-border investments are based on the national regulator's approval of the investments that the respective TSO plans. Usually, national regulators base the approval on domestic socio-economic benefits. In order to get the approval for a cross-border transmission line there must be at least domestic benefits in each investing country. Contrary to power plant profitability, profitability of energy networks from such an overall socio-economic point of view is not dependent on the absolute levels of power market prices, but solely on the price difference between two markets. This is important to bear in mind when assessing to what extent the envisaged grid infrastructure in the Northern Seas can be funded on a purely market-driven basis.

The most important obstacles to investments in an integrated offshore grid include:

- **Technical barriers become relevant from a financing perspective:** While technological challenges are usually not considered as a direct showstopper, transmission projects making use of new and innovative technologies come along with first-mover risks. HVDC-VSC technology for meshed offshore grid designs is a good example, see e.g. the example of Kriegers Flak or the ISLES project. Regulators are reluctant to take such risks and to reflect them in an adjusted return on investment for the TSO. In practice this may imply that

³ EU-funded study Offshore Grid, 2012: <http://www.offshoregrid.eu/>; North Seas Countries Offshore Grid Initiative, grid study, 2012: http://www.benelux.int/index.php/download_file/view/3813/3108/; Securing Options Through Strategic Development of North Seas Grid Infrastructure report; Imperial College London/E3G, 2014: http://www.e3g.org/docs/E3G_North_Seas_Grid_policy_report.pdf

suboptimal standard solutions are preferred to innovative technological options and therefore makes the case for public funding, at least in the case of a first mover.

- **Broader political obstacles justifying financial intervention:** National interests can have a distortive impact on cross-border investment decisions which would be otherwise clearly beneficial from a wider socio-economical and regional perspective. A good example of this is Norway with its hydro power potential and its planned interconnectors to continental Europe, which has a great potential to increase socio-economic welfare for its citizens through the European market and vice versa⁴.

However, next to political and local resistance to reinforce the Norwegian internal grid which would be required to interconnect with continental Europe, there is a strong preference to increase *producer* welfare rather than overall societal welfare in Norway. Therefore, there is a reluctance to expose the state-owned Norwegian power producers to increased competition at the European level. Another example is France, where commercially interesting interconnectors for electricity imports are sometimes not developed at all, as seen in the case of the Iberian Peninsula⁵.

These examples justify further financial and regulatory intervention, to be carried out by the European Commission and facilitated by an uptake an offshore grid in the North Seas as a flagship project in the upcoming European Commission € 300 billion public-private investment programme, at least for key cross-border projects of European interest which would be otherwise be stalled due to the barriers mentioned above.

- **Financing of the Northern Seas offshore grid**

Given the importance of creating the Northern Seas offshore grid it is essential to ensure EU level public funding dedicated to this project to help leverage capital from institutional investors and industry. A public-private partnership could be established to ensure commitment from all the parties.

The European Investment Bank (EIB) Project Bond Initiative combining EIB finance with the EU budget should play a key role, given it is a large scale infrastructure project.

Another significant public funding support should come from the new EU Structural and Investment Fund (ESIF) covering a significant part of the Connecting Europe Facility - Energy.

⁴ Main drivers for this welfare potential are: access to the Norwegian hydro storage, access to increased balancing power and securing power supply for Norway in dry years.

⁵ Supponen, PhD on „Influence of national and company interests on European electricity transmission investments”, 2012, page 139.