NSCOGI report 2011

North Seas Countries' Offshore Grid Initiative

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Context

The NSCOGI provides a framework for regional cooperation to find common solutions to questions related to ***current and possible future grid infrastructure developments in the North Seas***.

Its objectives are:

1. To contribute to the move to a **sustainable low-carbon economy** while maintaining **security of energy supply most cost-efficiently**;
2. To maximize the potential of the **renewable energy** resources of the North Seas, taking account of the scale of investment required in offshore infrastructure and in onshore grid reinforcements;
3. To identify and **tackle barriers to offshore grid development**, in particular as regards technical, regulatory, market, planning and authorization issues;
4. To facilitate a **strategic, coordinated and cost-effective** development of offshore and onshore grids.

Summary of progress made in 2011

Overview

Each of the three NSCOGI working groups completed a comprehensive baseline analysis of the issues across their work areas in the 10 countries. A report on offshore grid technology was completed which looks at the technologies available today and the emerging new technologies and their expected timelines. This is a critical input into identifying possible future grid configurations and when they are likely to emerge.

The possible new grid configurations with offshore projects grouped together and connected to more than one country pose regulatory and market challenges, as does the interaction of renewable support schemes. There are also cost allocation issues to be addressed in putting in place some of the new infrastructure required.

Planning and permitting regimes will need to be better coordinated to facilitate increased cross border infrastructure development, in some cases to reduce the administrative burden involved and in other cases to reduce decision timeframes.

Detailed reports from each of the Working Groups, which are attached as appendices may be summarized as follows:

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Working Group 1: Grid Configuration & Integration

- WG1 has developed, with ENTSO-E, a methodology for the development of an offshore grid study presenting at least two different plausible configurations for a future offshore grid out to 2030. The two configurations will comprise a) radial offshore wind connections and b) an integrated offshore grid solution. WG1 has established a validated set of data for all the countries in the NSCOGI region, including projections for offshore generation in 2030. These data will be used as the basis for the market modelling needed in order to establish grid configuration designs.

- ENTSO-E's regional group for the North Sea has produced a Report on Offshore Transmission Technology for NSCOGI (Annex "Offshore Transmission Technology"; https://www.entsoe.eu/fileadmin/user_upload/_library/publications/entsoe/SDC/European_offshore_grid_-_Offshore_Technology_-_FINALversion.pdf). This report outlines the main technologies required for offshore transmission, particularly High Voltage Direct Current (HVDC) and Voltage Source Converter (VSC) technology, and gives indications of the likely unit costs of HV assets.

Working Group 2: Market & Regulatory Issues

- WG2 has produced a report analysing the existing European and national regulatory regimes for offshore grid development, interconnection and offshore generation. This highlights some of the regulatory issues that could have an impact on coordinated development of offshore networks (Annex "NSCOGI WG2 – D1 final 13 Feb 2012").

- WG2 has drawn some initial conclusions from this analysis. Different technical designs of national offshore networks may limit the opportunities for a future integrated grid so it recommends that the countries should share their emerging thinking on coordinating offshore connections to mitigate this. Some level of anticipatory investment may be required to facilitate cost-effective incremental evolution towards an integrated grid and a methodology will need to be developed for allocating the costs of cross-border investments. Some of the planned EU-wide framework guidelines and network codes may need to take particular account of issues specific to integrated grid development. The extent to which the countries make use of the flexibility mechanisms in the renewables Directive, as well as the renewable ambitions of the countries and the EU as a whole beyond 2020 could play a crucial role in incentivising investment in an integrated grid. The impact of different interpretations of the Third Package will need to be considered.

Working Group 3: Planning & Authorization Procedures

- WG 3 has collected information on national planning and permitting regimes and concluded that there are no areas of national regimes which could create insuperable barriers to fast and coordinated procedures. The landfall points are the most critical issue due to the comparatively high attention they attract from the general public and local politicians. Moreover, it is clear that, as in some countries import and export licences are required for interconnectors and are issued by the government, political acceptance of such projects is crucial.

- On the basis of these findings procedural guidelines were developed covering issues such as compatibility of environmental requirements, planning and permitting timeframes (Annex "NSCOGI WG3 – Draft procedural guidelines"). The aim is to recommend that the competent authorities in each country adopt these guidelines.

Next steps - Outlook to 2012

- **WG1** will deliver**,** by the end of 2012, an offshore grid study, presenting at least two plausible configurations for a future offshore grid looking out to 2030, comprising a) radial offshore wind connections and b) an integrated offshore grid solution. This will include the overall cost, the likely financial and CO2 reduction benefits and the technology developments required to deliver these configurations.

- This work will be supplemented by virtual case studies and theoretical cost-benefit analyses to explore some of the main issues arising from existing national and international offshore grid studies. These will concentrate, inter alia, on the possibilities of linking offshore wind farms to interconnectors, the possible benefits of offshore hubs and the allocation of costs and benefits. This work will be carried out in cooperation with WG2.

- **WG2** will develop proposals for addressing the potential barriers identified in its report, and for allocating the costs of offshore transmission assets, onshore reinforcement and use of system where offshore renewables are connected to more than one country. It will develop a common regulatory approach to anticipatory investment. The work on cost allocation and anticipatory investment will take account of the discussions on the proposed Regulation on trans-European energy infrastructure which also covers these issues. WG2 will also develop proposals to facilitate the use of the flexibility mechanisms in the Renewables Directive.

- Virtual case studies will be devised to support further analysis of the potential regulatory issues identified and development of solutions. This work will be carried out in close cooperation with WG1.

- **WG3** will propose procedures to reduce the length and complexity of decision making for offshore grid projects and the associated onshore grid reinforcement work and facilitate the issue of the authorisations required.

Next steps –Possible new role for NSCOGI

- The proposed Regulation on trans-European energy infrastructure foresees the use of regional groups, composed of Member States, national regulatory authorities, transmission system operators, the Commission, the Agency for the cooperation of energy regulators (ACER) and ENTSO-E, for the purpose of selecting projects of common interest in the priority corridors. As the "Northern Seas offshore grid" is one of the identified electricity corridors, the Commission has asked NSCOGI to take on this role. It will be decided early next year how NSCOGI might best perform this new role.