

Project: Regulatory Challenges for Delivering the Offshore Electrical Networks of the Future

Key focus: Offshore networks, regulatory models, coordinated network design

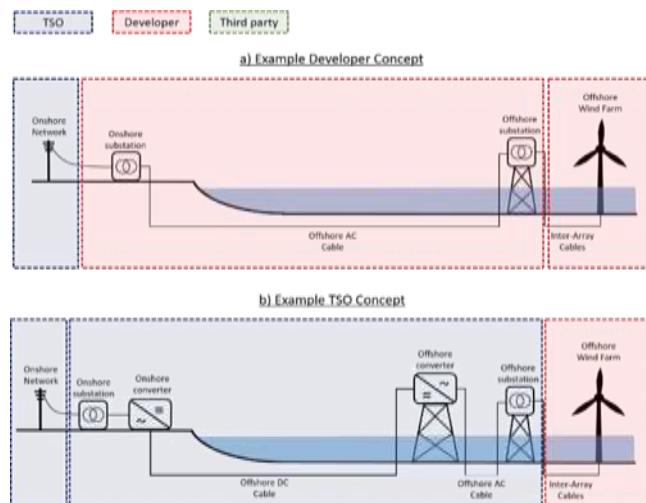
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Background

Over the course of the last decade the UK has established itself as a world leader in the deployment of offshore wind energy with an installed capacity approaching 9GW at time of writing which represents around 45% of the total capacity in Europe. In 2019 the UK government published the offshore wind sector deal which envisages up to 30GW of offshore wind generating capacity by 2030, implying a build out rate of roughly 2GW/year. In addition to this, the Committee on Climate Change (CCC) published its analysis on how the UK could reach its Net Zero 2050 targets, which suggested total installed capacity of offshore wind in 2050 might need to reach 75GW which implies a build out rate of up to 4GW/year after 2030. Given the huge potential expansion in deployment, how such vast quantities of power are reliably and cost effectively transmitted to shore is a key concern.

From experience within the sector to date, the regulatory arrangements under which this development takes place is known to have a significant bearing on the design and cost of the transmission infrastructure used to deliver it. In the UK, transmission infrastructure related with offshore wind deployment to date has followed a developer build approach with largely radial connections to shore from each individual wind farm. This has continued in practice, even since the enduring implementation of the Offshore Transmission Owner (OFTO) regime in 2014, which passes the operation of the offshore transmission assets to a third party and caters for the possibility of independent third party development of the assets. This is in contrast to the path followed in many other North Sea European countries, which have tended towards a transmission system owner (TSO) led build out where the transmission infrastructure associated with offshore wind developments are treated as an extension of the regulated onshore asset base and a series of more centrally co-ordinated network designs have emerged.



Project description

This project sought to compare and contrast these competing philosophies addressing the perceived strengths and weaknesses of each. While it was noted that the current OFTO regime has a strong track record of driving down the costs of individual OWF developments and their associated

transmission assets, it is noted that the scale of future investment is likely to increase the pressure to develop more co-ordinated, perhaps cross-continental network solutions.

Research outcomes/impact

The perceived benefits of this would be an ability to minimise infrastructure investment and onshore landing points as well as facilitating export of surplus production. As such the project found it may be appropriate for the UK to assess what lessons can be learned from existing European examples such as Germany, The Netherlands, Belgium and Denmark which have all in some way taken strides towards a more holistic view of offshore network development to minimise infrastructure investment, make use of economies of scale and standardisation or to facilitate the use of hybrid networks with the dual purpose of interconnection and export of power from OWFs.

Project Sponsorship:

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