



Gas
Networks
Ireland

Ervia and Gas Network Ireland's response to Inform a Grid Development Policy for Offshore Wind in Ireland consultation.

22/07/2020

Introduction

Ervia and Gas Networks Ireland welcome the opportunity to make a submission to the Consultation to Inform a Grid Development Policy for Offshore Wind in Ireland.

In 2019, Ervia and Gas Networks Ireland published 'Vision 2050' (A net zero carbon network for Ireland). Vision 2050 outlines a pathway to achieve a net zero carbon gas network by 2050 via the introduction of biomethane and hydrogen into the gas network and by abating natural gas CO₂ emissions using Carbon Capture and Storage (CCS).

Implementing Vision 2050 could deliver at least 18.7Mt/annum of CO₂ emissions savings by 2050, equating to savings of circa one third of all of Ireland's emissions as the benefits of a decarbonised gas network would extend beyond the energy (gas and electricity) sector to help decarbonise the more difficult sectors of heat, transport and agriculture also. Ireland's gas network is a valuable national asset which can play a major role in achieving a clean energy future in a least cost, safe and secure manner. Ervia are working with government, policy makers and industry partners across all sectors, to maximise the contribution the state-owned gas network can make in reducing Ireland's greenhouse gas emissions while also maintaining a sustainable energy network in the least disruptive and most cost-effective way.

Across Europe, as seen in the EU's Green Deal and the recently published strategies for Hydrogen and Energy System Integration, it is becoming clear that decarbonised electricity and gas networks are both required to achieve net-zero carbon emissions, and must therefore be developed in parallel. The EU have recognised that "linking sectors will allow the optimisation of the energy system as a whole, rather than decarbonising and making separate efficiency gains in each sector independently".

Establishing a national hydrogen network would realise a number of significant national benefits for Ireland:

- the full realisation of Ireland's renewable electricity potential, especially offshore wind;
- a sustainable zero carbon source of secure, flexible, scalable, dispatchable energy;
- an interdependent electricity and gas energy system with renewable power-to-gas enabling renewable gas-to-power;
- energy decarbonisation at least cost and least disruption to energy consumers; and
- maximised utilisation of existing, valuable national energy assets.

Executive Summary

Ervia and Gas Networks Ireland fully support the development of Ireland's Offshore Wind sector, recognising the pivotal role it will play in achieving Ireland's plans for renewable electricity with 70% of electricity to come from renewable sources by 2030. However the consultation focus is somewhat narrow, given the key interplay that will be required between offshore wind generation and the future hydrogen network in Ireland. The DCCAE's own recent response to the EU's Hydrogen Strategy recognises this and calls out the benefit of an integrated energy system, stating *'At times our electrical grid will not be able to use all this renewable generation so having the option to produce green hydrogen and having an integrated energy system will help enable Ireland fully utilise its renewable resources.'*

There is the potential with the EU Hydrogen Strategy and the Energy Sector Integration to take the current interdependency between the Irish gas network and the electricity grid to a new level and develop Ireland as a 'Hydrogen Valley' The future Irish energy system could operate

as a zero carbon circuit where power-to-gas technology using renewable electricity could be a source of networked green hydrogen for clean dispatchable power generation and for other sectors including transport, heating, marine, aviation and certain industrial processes. This could realise significant energy security benefits for Ireland.

However, this level of integration needs to be plan-led, and the offshore wind electricity production and associated electricity infrastructure needs to be developed with due regard to the potential for hydrogen production, storage and injection into the hydrogen gas network.

Ervia and Gas Networks Ireland recommend that the following key points are addressed in the final Grid Development Policy for Offshore Wind:

- Offshore wind cannot be developed in isolation to the hydrogen gas network. At times, renewable electricity produced from offshore wind farms will far exceed national demand. It could then be used to produce green hydrogen which can be stored and ultimately transported through the hydrogen gas network for use in electricity generation, heating, transport, marine, aviation and industry.
- Dedicated hydrogen producing offshore wind farms may likewise need to be developed with due regard to hydrogen production, storage and injection into the hydrogen network.
- While Ervia and Gas Networks Ireland are agnostic about how the offshore electricity grid is developed (i.e. Plan-led or Developer-led) it is imperative that the future energy system is developed on a plan-led basis, taking account of the critical interdependencies between the hydrogen gas network and the offshore electricity grid.

With respect to questions 1-8, Ervia and Gas Networks Ireland are largely agnostic as to which model for offshore electricity transmission grid materialises, however, as stated above, it is critical that the planning and development of offshore electricity infrastructure takes account of the potential for hydrogen production, where this hydrogen production will take place; where the hydrogen will be stored; where the hydrogen will be used in turn to generate clean electricity onshore and used in other sectors of the economy. The recently published EU Strategy for Energy System Integration states that “Offshore electricity production also creates an opportunity for the nearby localisation of electrolyzers for hydrogen production, including the possible reuse of the existing infrastructure of depleted natural gas fields¹”. In essence, whichever model emerges, it is critical that it is aligned with this fully integrated energy system which is needed to achieve net-zero carbon emissions by 2050.

9. How important is it for Ireland to develop an indigenous offshore wind energy industry? How best can an indigenous industry be developed?

It is really important as the Irish Government has set a target of 70% of electricity from renewable sources (RES-E) by 2030. This will see a reduction from 12 MtCO₂/annum from electricity today to approximately 4.5 MtCO₂ in 2030. This will be achieved in parallel with a significant increase in demand for electricity due to data centre connections and increased

¹ https://ec.europa.eu/energy/sites/ener/files/energy_system_integration_strategy_.pdf

electrification of the heat and transport sectors per the Climate Action Plan. The development of an indigenous offshore wind energy industry will play a significant role in achieving the 70% RES-E target.

An indigenous offshore wind industry should be developed where the maximum amount of electricity generated can be used, either by going directly into the electricity grid for domestic use, being exported through electrical interconnectors or used to produce green hydrogen. The industry needs to be seen as part of a fully integrated energy system and developed as such, taking account of where the electricity is generated, where it is used (including in the production of hydrogen) and where its energy can be stored.

In the Netherlands, for example, the Government is linking hydrogen production with offshore wind via integrated tenders and targets².

Failure to develop the offshore wind industry in Ireland in such an integrated manner with hydrogen will likely result in increased curtailment, higher energy costs to the consumer and higher carbon emissions than would otherwise be necessary. It cannot be assumed that more electrical interconnection, for example, will provide a route for excess offshore wind electricity to be utilised. During May 2020, at times of high renewable generation and negative pricing, the UK's electrical interconnectors were underutilised (for export) due to the high volumes of renewable generation in the other countries they were connected to.

10. How should onshore and offshore grid connections be optimised? For example, should consideration be given to common hubs for adjacent projects?

Optimisation of offshore wind electrical grid connections are a matter for the electricity TSO, however, to support a fully integrated energy sector, their development will need to take hydrogen production into account.

Ervia and Gas Networks Ireland are of the view that centralised hubs for hydrogen produced from renewable electricity will be required in Ireland. These hubs should be located close to the demand for hydrogen, either at clusters of hydrogen users (industry) or in proximity to an optimal gas network injection point.

In addition, in some instances, it may be optimal to utilise offshore wind electricity to produce hydrogen offshore or at ports and therefore optimising electricity (onshore/offshore grid connections) and hydrogen infrastructure needs to be a part of a fully integrated energy system.

11. Are there any further considerations which might reduce the cost to the consumer?

Ervia and Gas Networks Ireland believe that to minimise the financial burden on our citizens, Ireland must optimise its investments to meet our 2050 decarbonisation targets and that an integrated energy system will be key to this. Ireland's gas and electricity infrastructure should be planned, designed and operated in an integrated manner. It is crucial that the development of the gas network and electricity network are effectively coordinated to optimise their respective contributions to national energy systems and maximise their combined contribution to a least cost energy system.

² <https://www.government.nl/documents/publications/2020/04/06/government-strategy-on-hydrogen>

Portugal has similar offshore wind potential to Ireland and has recently committed to zero-carbon gases including hydrogen as part of its decarbonisation strategy in the NECP. The analysis undertaken to develop their NECP identified savings of €9bn for an energy system utilising zero carbon gases versus an all electrification approach.

Ervia and Gas Networks Ireland believe, in line with the EU Green Deal objectives³, as set out in December 2019 by the European Commission, the clean energy transition should involve and benefit consumers.

Renewable energy sources, such as offshore wind, will play an essential role in this transition. The smart integration of the gas and electricity sectors will facilitate increased levels of renewable electricity including offshore wind. The rapid decrease in the cost of renewables, has already reduced the impact on households' energy bills. However for levels of renewable electricity to increase further, cost effective storage and back-up solutions are required due to its intermittent nature.

The EU has identified that smart integration of intermittent renewable electricity with green hydrogen stored and delivered via existing gas pipeline infrastructure, blended with other renewable gases, will reduce costs for the consumer.

12. Currently, developer compensation is not provided for delayed delivery of grid connections to renewable generators connecting to the network. Should developer compensation arrangements be provided for delivery of offshore grid connections to renewable projects? Similarly, who is best placed to bear the outage risks under the various options?

No comment.

13. Are there any further drivers which should be considered when assessing a grid delivery model suitable for offshore wind development in Ireland?

Ervia and Gas Networks Ireland recommend that, as in other countries and as per the EU Energy Sector Integration Strategy, electricity and gas TSOs work together, and with industry, to identify the optimum locations for future energy infrastructure. Proximity to gas and electricity infrastructure, proximity to renewable electricity generation sources, space for hydrogen production and storage plant (both blue and green), proximity to electricity and hydrogen demand centres and the space for and capacity of electrical infrastructure are key considerations.

Ervia and Gas Networks Ireland are of the view that centralised hubs for hydrogen produced from renewable electricity will be required in Ireland. These hubs should be located close to the demand for hydrogen, either at clusters of hydrogen users (industry) or in proximity to an optimal gas network injection point.

³ See Section 2.1.2 - "The clean energy transition should involve and benefit consumers" at link https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf

14) Overall, which model, or model variant, is most appropriate as an enduring grid delivery model for offshore wind in the Irish context?

No comment.

15) It is accepted that a transition towards the chosen enduring grid delivery model will be required to leverage the development of the Relevant Projects in the short term. Taking into account the high level roadmaps set out at Figures 5 and 6 above, what should this transition look like?

No comment.

We would welcome the opportunity to answer any questions the department might have and follow up with additional information if requested.

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