

Consultation on the offshore renewable energy (ORE) Future Framework Policy Statement

Dear Minister Ryan & the Department of the Environment, Climate and
Communications Team,

I am writing to you as a [REDACTED] student with a focus on renewable energy
systems and environmental protection.

My name is [REDACTED], I am studying [REDACTED]
[REDACTED] in which I am majoring in [REDACTED]

My expertise is greatest in the data centres industry, but I have been educated in
environmental impact assessments, and the integration of renewable energy sources
into existing grid infrastructures. My ongoing thesis research is titled [REDACTED]

[REDACTED] Having read the Future
Framework Policy Statement and set of reports provided by AFRY Managing
Consultants and BVG Associates I wish to contribute some feedback and
recommendations in which I have answered within the provided questions in the
reports, Overall my main recommendations are all based on successful ORE systems
that have been performed by other countries in which I encourage the Irish Government
to participate in international forums, working groups, and partnerships focused on
renewable energy, the government can gain insights into global trends, best practices,
and innovative technologies.

Mise le meas,

[REDACTED]

Executive Summary

Environmental and Marine Spatial Planning:

- Need for detailed biodiversity conservation strategies within ORE project planning.
- Importance of Marine Spatial Planning (MSP) to harmonize ORE development with marine biodiversity conservation.

Green Hydrogen as a Renewable Solution:

- Procurement of 2GW non-grid limited offshore wind capacity through competitive auctions focused on environmental considerations and cost-effectiveness.
- Green hydrogen highlighted as pivotal for energy storage, export, and decarbonizing sectors like transportation and industry.

Policy Recommendations and Infrastructure Needs:

- Alignment with EU energy strategies and REPowerEU Plan for renewable hydrogen.
- Investment in hydrogen infrastructure such as refuelling stations and pipelines emphasized for a domestic and export-oriented economy.

Government and Industry Collaboration:

- Government support needed for streamlined engagement with developers to achieve ORE targets.
- Advocacy for multipurpose sites and policy alignment with technological innovations to future-proof the ORE planning process.

The following is a reply to :

Q1(b) Has each key priority been adequately described and considered all relevant components? For each key priority please provide any additional concerns, aspects, or commentary for inclusion.

The document thoroughly outlines Ireland's strategic priorities for Offshore Renewable Energy (ORE) delivery. However, further detailing specific biodiversity conservation strategies and measures to mitigate ecosystem disruption directly within ORE project planning and execution phases could strengthen the document and aid with consultations with stakeholders. I believe further emphasis on the following could strengthen the document:

- **Environmental concerns:** More detail on specific biodiversity conservation strategies and the mitigation of ecosystem disruption could be valuable. As showing these strategies will aid with stakeholder collaboration showing the possible positive effects that can be related to the introduction of ORE projects. For example a recent Dutch study showed increased porpoise activity within operational wind farm areas compared to a reference outside the wind farm area, this increase was due to the exclusion of fisheries and reduced vessel traffic [1].
- **Marine Spatial Planning (MSP):** The Implementation of comprehensive marine spatial planning to ensure ORE development is harmonized with marine biodiversity conservation. As MSP aims to minimize spatial conflicts and encourage cross-sectoral cooperation, it highlights the potential to facilitate co-location of activities, such as nature conservation alongside wind farms, enhancing ecosystem sustainability. This approach, supported by the European Union's submission of Maritime Spatial Plans, showcases MSP's role in optimizing space use, reducing competition, and promoting environmental protection within offshore wind expansion[1].

1(c) How best should the 2GW of non-grid limited offshore wind capacity be procured?

The procurement of the 2GW of non-grid limited offshore wind capacity should prioritize competitive auctions, encouraging innovative solutions that cater to the unique challenges of non-grid limited projects. Emphasis on technological readiness, environmental considerations, and cost-effectiveness could ensure a balanced approach to selecting projects that align with Ireland's renewable energy goals.

With regards my recommendations to a solution my proposal is the utilisation of Green hydrogen, produced through the electrolysis of water using renewable energy sources, representing a pivotal solution for renewable energy storage and export. This approach

not only enables the decarbonization of various sectors, including transportation and industry, but also offers a viable method for storing excess renewable energy in remote areas which are non-grid.

The Hydrogen Ireland Association, representing a broad coalition of stakeholders across Ireland and beyond. Their submission to the Public Consultation on the Renewable Fuels for Transport Policy highlights hydrogen's versatility as a clean fuel and energy vector, essential for decarbonizing transport, energy, and industrial sectors [2].

Key Points from Hydrogen Ireland's Submission:

- **Strategic Role of Hydrogen:** Hydrogen Ireland emphasizes hydrogen's crucial role in enabling a transition to a low-carbon economy, advocating for its use across various sectors to leverage Ireland's rich renewable energy resources.
- **Policy Recommendations:** The association supports the European Union's strategy for energy sector integration and the REPowerEU Plan's ambition for renewable hydrogen, suggesting that Ireland's National Hydrogen Strategy should align with these objectives to enhance energy security and economic decarbonization[3].
- **Transport Sector Decarbonization:** Recognizing the challenges in electrifying the transport sector, Hydrogen Ireland advocates for renewable hydrogen and its derivatives, like ammonia and methanol, to decarbonize heavy transport and support the transition towards electrification [4].
- **Renewable Hydrogen Production:** The association identifies the potential for Ireland to become a significant producer of renewable hydrogen, leveraging its offshore wind capacity. This could position Ireland as a key player in the emerging green hydrogen market, particularly for export to European neighbours, currently Hydrogen represents about 2% of the EU's energy mix. Nearly all hydrogen - 95% - is produced by fossil fuels, which release 70-100 million tonnes of CO₂ every year [5].
- **Infrastructure and Market Development:** Hydrogen Ireland calls for strategic investments in infrastructure, including hydrogen refuelling stations and pipelines, to support the domestic and export-oriented hydrogen economy. They stress the importance of early support for small-scale hydrogen projects to stimulate market development and supply chain investment. The image 1 below shows the global leaders of green hydrogen plans, a list in which Ireland could easily be climbing if the use of Green hydrogen was implemented.

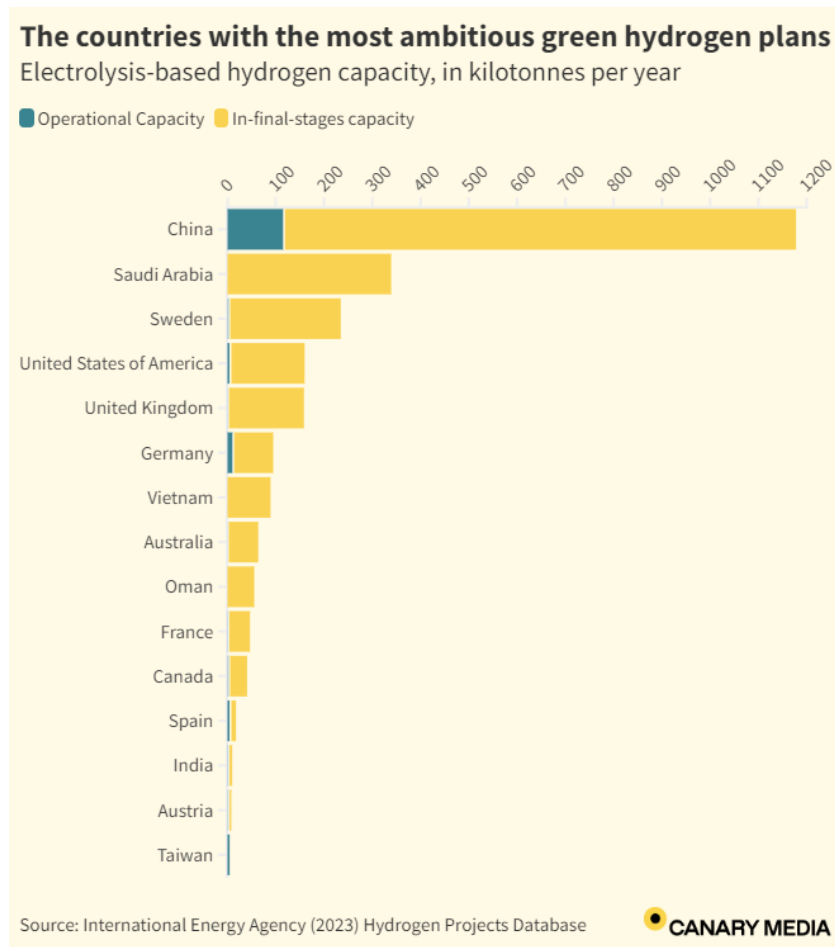


Image 1 – Countries that are leading the green hydrogen race 2023 [6]

- **Collaboration and Policy Support:** The submission highlights the need for government-industry collaboration to develop supportive policies, including incentives for renewable hydrogen production and use in transport. It also points out the necessity of a dedicated “per kg” support scheme for renewable hydrogen to ensure its competitiveness against fossil fuels[4].

Adding to Hydrogen Ireland's Submission regarding the benefits of green Hydrogen that I want to highlight are:

- **Energy Storage and Grid Balancing:** Green hydrogen serves as a flexible energy carrier, capable of storing surplus renewable energy generated during periods of high production and low demand. This stored energy can then be converted back to electricity during peak demand periods, enhancing grid stability and reducing reliance on fossil fuels[7].
- **Export Potential:** With its ability to be compressed or converted into liquid form, green hydrogen can be transported over long distances, offering countries rich in renewable energy resources the opportunity to become key players in the global

energy market. This is particularly relevant for Ireland, which has the potential to produce significant amounts of green hydrogen for export to Europe and beyond, leveraging its abundant wind resources. A 2023 Deloitte study on Green hydrogen showcases a steady market growth, from US\$642 billion in annual revenue in 2030 to US\$1.4 trillion per year in 2050 [8], a recognized milestone to reach climate neutrality, an environmentally positive and economically beneficial market in which the Irish Government could be heavily involved in.

- **Decarbonization of Hard-to-Abate Sectors:** Green hydrogen provides a pathway for reducing carbon emissions in sectors where electrification is challenging, such as heavy industry, shipping, and aviation. By replacing fossil fuels with hydrogen in these areas, it's possible to significantly cut emissions and advance towards net-zero targets [8].
- **Economic and Job Creation:** The development of a green hydrogen economy can stimulate local economies, create jobs in the renewable energy sector, and foster technological innovation. Investing in hydrogen infrastructure, such as electrolyzers, pipelines, and fuelling stations, can drive economic growth and support the transition to a renewable energy society. A recent report by CEPESA forecasts “that over the next 16 years, the countries that will lead in green hydrogen production and related employment growth will be Spain with 181,000 new jobs, followed by the United Kingdom with 173,000, Germany with 145,000, and France with 105,000” [9].
- **International Collaboration and Policy Support:** For green hydrogen to become a cornerstone of the global energy system, international collaboration on standards, trade, and technology transfer is crucial. Policy support, in the form of subsidies, incentives, and research funding, can accelerate the development and deployment of hydrogen technologies.
While challenges remain, including reducing the cost of green hydrogen production and establishing international transport and trade frameworks, the potential benefits of integrating green hydrogen into the energy system are substantial. Ireland, with its focus on expanding offshore renewable energy capacity, is well-positioned to capitalize on these opportunities, contributing to global decarbonization efforts and enhancing its energy security.

1(d) What are your views on the design parameters for the successor scheme to ORESS, what else should/should not be considered?

For the successor scheme to ORESS, considerations should include mechanisms for variable support levels to accommodate the high variability of renewable electricity, integration with broader market mechanisms, and support for renewable energy beyond electricity, like green hydrogen. It should also incorporate qualitative criteria that address policy objectives like energy security and environmental protection, reflecting commitments under the Net Zero Industries Act and the European Wind Charter.

1(f) What additional capacities and responsibilities should be held by industry in the context of the plan-led approach?

In the context of a plan-led approach for offshore renewable energy (ORE) development, the industry's role extends beyond mere project execution to include responsibilities that contribute to innovation, environmental stewardship, and community engagement. Expanding these roles is crucial for ensuring the sustainable and socially responsible development of ORE projects.

- **Innovation and Technological Advancements:** The industry should invest in research and development (R&D) to pioneer new technologies and improve existing ones, focusing on increasing efficiency, reducing costs, and enhancing the integration of ORE into the energy system. This includes the development of floating wind technologies, advanced turbine designs, and energy storage solutions. Collaborating with academic institutions and research organizations can accelerate technological innovations and their commercialization [10].
- **Community Engagement:** Engaging local communities early and throughout the project lifecycle is key to building trust and gaining social acceptance for ORE projects. This includes transparent communication, addressing community concerns, and involving local stakeholders in decision-making processes. The industry should also contribute to local development through initiatives such as community benefit funds, local job creation, and skill development programs. Establishing partnerships with local organizations and authorities can enhance the positive socio-economic impacts of ORE projects [11].

By embracing these expanded roles, the ORE industry can play a pivotal part in achieving sustainability goals, fostering innovation, protecting the environment, and contributing to the well-being of local communities. Such a holistic approach not only aligns with global sustainability standards but also enhances the long-term viability and public support for ORE projects.

1(g) How can Government facilitate a more comprehensive and streamlined engagement process with developers to ensure national ORE targets are delivered?

The Government can streamline engagement by establishing clear, consistent communication channels and frameworks for collaboration, including regular stakeholder meetings, digital social media platforms for information sharing, and transparent timelines for decision-making processes. Simplifying regulatory procedures and providing clear guidelines on project requirements would also aid in achieving national ORE targets more efficiently.

2(a) What grid infrastructure should be of particular focus in facilitating the build-out of capacity to support ORE generation targets?

In relation to the emphasis on green hydrogen as a key component of Ireland's renewable energy strategy, the grid infrastructure that should be of particular focus includes:

- **Electrolyser Integration Facilities:** Infrastructure to support the integration of electrolyzers for hydrogen production directly at or near offshore renewable energy (ORE) sites. This would enable the efficient conversion of electricity into hydrogen when supply exceeds demand or when grid constraints prevent direct electricity transmission [12].
- **Hydrogen Storage and Transportation:** Development of facilities for the storage of hydrogen, including large-scale underground storage and liquid hydrogen storage, is crucial. Additionally, infrastructure for the transportation of hydrogen, such as pipelines for hydrogen distribution or facilities for the conversion of hydrogen into more easily transportable forms like ammonia or methanol, needs significant attention. A recent study shows “that while hydrogen energy storage systems are technically feasible, they still require large cost reductions to become commercially attractive” which could be benefited by Government enticement schemes to bring more attention from the private sector to build such projects [13].
- **Renewable Energy Connection Points:** Enhancing connection points between ORE generation sites in Ireland and the main grid to ensure that renewable energy can be either directly supplied to the grid or diverted to hydrogen production facilities based on demand and grid capacity. This includes the development of high-capacity transmission lines and substations equipped with advanced grid management technologies.

- **Advanced Grid Management Systems:** Implementing smart grid technologies that can manage the variable output from renewable energy sources and the input from hydrogen production facilities. This would include demand response systems, energy management software, and real-time monitoring systems to optimize the flow of electricity and hydrogen production[14].
- **Interconnection for Export:** Given the potential for Ireland to produce excess renewable hydrogen mentioned in Q1c, developing interconnectors that can support the export of hydrogen to other regions is important. This could involve the establishment of dedicated hydrogen pipelines or the use of existing natural gas pipelines that are retrofitted for hydrogen transport.

Focusing on these grid infrastructure components will not only support the build-out of capacity to meet ORE generation targets but also facilitate the large-scale production and utilization of green hydrogen. This approach aligns with the broader goals of decarbonizing the energy sector, enhancing energy security, and positioning Ireland as a leader in the renewable hydrogen market.

4(a). What structures, measures, and interventions can the State and State agencies implement to assist in the development of a long-term, sustainable skills and workforce pipeline? Provide any recommendations on what the State can do to promote careers in ORE across a range of educational backgrounds and movement from other relevant sectors.

To develop a sustainable skills and workforce pipeline, the State and agencies could implement structured apprenticeship programs within the CAO system, upskilling initiatives, and educational partnerships focusing on ORE. Recommendations include

promoting ORE career paths through targeted campaigns, integrating ORE modules into existing education curricula, and facilitating transition programs for professionals from related sectors like maritime, engineering, and environmental science. This would ensure a continuous stream of sustainable workforce, if interest and numbers drop the government could introduce grants and schemes to increase supply demand in these courses.

4(d). How can Government ensure policy is kept in line with evolving technological innovation and developments in ORE devices? What structures and government procedures should be implemented to future-proof the ORE planning process and account for technological shifts?

To ensure policy remains aligned with the rapid pace of technological innovation and developments in Offshore Renewable Energy (ORE) devices, the government can implement several strategies:

- **Establish an ORE Innovation Task Force:** A dedicated group focusing on monitoring technological advancements, assessing their implications for policy, and recommending updates to regulations. This task force should include representatives from government, industry, academia, and environmental groups to cover a broad spectrum of insights and expertise.
- **Regular Technology Review Sessions:** Periodic meetings to review the latest technological developments in ORE and their potential impact on existing policies. These sessions can help identify areas where policy adjustments are needed to facilitate the adoption of new technologies or to address emerging challenges.
- **Flexible Regulatory Frameworks:** Develop and maintain regulatory frameworks that are adaptable to technological changes. This involves creating policies that can be easily updated without lengthy legislative processes, allowing for swift responses to technological advancements.
- **Engagement with Industry Experts and Academia:** Establishing strong connections with industry and academic institutions can provide the government with access to the latest research and development (R&D) findings

and technological innovations. This collaboration can inform policy decisions and ensure that regulations support and encourage innovation.

- **Participation in International ORE Communities:** By participating in international forums, working groups, and partnerships focused on renewable energy, the government can gain insights into global trends, best practices, and innovative technologies. This international perspective can inform national policy and ensure Ireland remains competitive in the global ORE market.
- **Incentivizing Innovation through Policy and Funding:** Implement policies and funding mechanisms that incentivize R&D in new ORE technologies. This could include grants, tax incentives, or innovation competitions designed to stimulate investment in technology development.

By adopting these strategies, the government can create an environment that not only keeps pace with technological innovations in the ORE sector but also actively supports and promotes the development and integration of these advancements into Ireland's energy strategy.

Thank you for taking the time to take on my recommendations , if you have any questions please don't hesitate to contact me via email

[Redacted Signature]

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