

Reply to:

**Public Consultation to inform the Review of National Ports Policy in Ireland**

*Dear Minister Ryan & the Department of Transport Office Team,*

As Assistant Professor of Dublin City University, I welcome the opportunity to feed information into this consultation to enable Government to set a clear direction for managing Ireland's resources, clarify objectives and priorities, and direct decision makers, users and stakeholders towards a more sustainable, environmentally and ecosystem focused, strategic, efficient and forward thinking use of our marine & wind resources.

In my position in the School of Mechanical & Manufacturing Engineering at Dublin City University, I am actively involved with energy-related education, research and development. The main aim of my research is to develop a better understanding of the technologies, strategies and economic models required to achieve Paris aligned national & global ambitions to mitigate the major effects of Global Climate Change. Focusing on clean, low-cost, sustainable energy for households, industry and for transport, interacting with renewable energy, hydrogen and storage technologies, I have ongoing research projects with Irish & EU academic & industry partners and government bodies such as Science Foundation Ireland & Sustainable Energy Authority of Ireland (SEAI).

I am a FEL alumina of the World Energy Council & am an advisor to the World Energy Council Hydrogen taskforce.

I am a hydrogen expert to the United Nations Economic Commission for Europe taskforce on the role of hydrogen in attaining carbon neutrality in the UNECE region.

I am a task force advisor to the IEA on Energy Storage.

I am co-founder and outgoing chair of Hydrogen-Ireland. Hydrogen-Ireland is a not for profit association formed in 2019, on the back of a growing interest from industry, in Hydrogen, the technology, and its potential application in the energy, transport and industry sectors to assist with the transition towards a zero carbon economy.

Myself & my research team in SFI funded projects [HyLIGHT](#) & [NexSys](#) have developed the following section for your information and review. We hope it assists our country's energy, transport and industry sectors energy transition and national emissions reduction ambition/achievement.

I am available to be contacted to clarify any topic or answer any questions you may have.

Kind Regards,

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## Executive Summary:

### The following is a reply mainly to Section 2: Development of Offshore Renewable Energy

- There are many active Offshore Renewable Energy (ORE) policy, strategies, and legislative initiatives being progressed by various government departments. The kernel of all ORE activity; **is the port system capable of ensuring the delivery of a port structure that can function and co-exist with ORE.** This Port Policy should draw these strands together.
- The North Sea Energy Cooperation (NSEC) joint statement in 2022 [1] committed to accelerate Europe's move towards energy independence. **The nine NSEC countries, Ireland being a member, have agreed to reach at least 260GW of offshore wind energy by 2050.** This increases the urgency of Ireland delivering on its commitments.
- **'Ports serve as indispensable hubs in the expansion of offshore wind energy and the energy transition'** [2]. Ireland needs at least 2 Ports to cover the full wind energy value chain in the immediate near term. The review document mentions a multi-port solution, though not necessarily wrong, but the realisation that specialisation for fixed bottom initially and floating wind should be planned in to specific strategic port/s now for immediate implementation in this policy.
- **There are no ports in the ROI capable of deploying ORE.** Belfast is the only port on the island that can support fixed bottom installations at this time, [9], with the other option to use other UK or EU if available to us. This should be a priority to solve; for economy and jobs and energy security.
- If Ireland wants to do most of the main offshore wind activities in its own ports, a **total investment of €2-3 billion** would be required.
- Reports quoted in the *Issues Paper* for this multi-port approach need updating:
  - IPORES 2018 is in need of updating as **the technology and volume of product to be installed has increased rapidly**, [3], thus influencing the outcomes.
  - The Irish Ports Capacity Study issued in 2023 by Arup **does not account for the co-existence of ORE at Irelands ports**, where facilities and space need to be shared.
- The **competition for space** at ports to support the ORE industry and normal port activity is at a premium. **Blades are now 240m long weighing 65tonnes each and nacelles weigh 500tonnes each.** ORE is space hungry, and the policy document needs to future proof Irelands ORE designated ports to future proof them to remain sustainable as the rollout, particularly of offshore fixed wind on the east coast and floating wind on the west coast is maximised.
- The timeline of completion of National Ports Policy in Ireland by Q2 2025 needs to be review as the **issuing of the new Ports Policy is a matter of urgency** if we are to deliver on Irelands national commitments and reap the economic benefits through employment and added value work done at port.

## Section 2: Development of Offshore Renewable Energy

### **QUESTIONS 1 - *What policies, structures or other measures would best support ports to develop the infrastructure necessary for the facilitation of ORE?***

Ireland, who was an early adaptor of Offshore Renewable Energy (ORE) with the installation of the 25MW's of wind turbines on the Arklow Bank in 2002, has now ambitious targets set out in its Programme for Government [4]. The Government has committed to reaching 5 GW target of offshore wind by 2030, with an additional 2 GW for non-grid connected capacity, due to be realised after 2030, the latter is expected to be floating wind (FLOW). Ireland sits on one of the best offshore renewable energy resources in the Europe and also possibly the world, with a sea area approximately 7 times the size of its landmass. This has the potential to deliver in long term potential some 70GWs of offshore wind, mainly on the west coast.

The opportunity to input into this consultation through the Review of National Ports Policy 2013 is welcomed. While this review and consultation is being led by the Department of Transportation (DoT), there has been numerous aspects of ORE being addressed through government strategies, policies and legislation to lay the ground work to ensure a robust ORE industry can be developed. Such activities by department are listed below. All these and some others touch on the need for a port structure to support Irelands climate change commitments.

- **Department of the Environment, Climate and Communications (DECC)**
  - Climate Action Plan 2023
  - Policy Statement on the Framework for Phase 2 Offshore Wind 2023
  - Offshore Renewable Energy Development Plan II (Draft) 2022
  - National Hydrogen Strategy 2023
  - Accelerating Ireland's Offshore Energy Programme – Policy statement on the Framework for Phase Two Offshore Wind 2023
- **Department of Enterprise, Trade and Enterprise (DETE)**
  - White Paper on Enterprise 2022-2030
  - Statement of Strategy 2023-2025
  - Public Consultation on the Development of a National Industrial Strategy for Offshore Wind 2023 – leading to a strategy document.
- **Department for Housing, Local Government and Heritage (DHLG&H)**
  - Marine Planning Policy Statement 2022
  - Maritime Area Planning Act 2021
  - National Marine Planning Framework 2021
  - Foreshore Act 1933 revised 2023
  - Planning and Development Act 2023 currently in the Dail.

All of these strands have a role in the formation and the delivery of a coherent, connected and succinct policy document which when it comes to ports, the output from this consultation needs to blend the strands together.

The Department of Transportation (DoT) has issued this consultation on the National Ports policy, and it is a welcomed opportunity to take a holistic view, but in talking of ports specifically, the ability of the ports to delivery Ireland's global connectivity and at the same time act as one the key delivery vehicles of Ireland ORE deliverables, and the policy needs to knit together as one. In the DoT's Statement of Strategy 2023-2025 [5] while the delivery of ORE is mentioned, greater emphasis, understandably, is

given to connectivity, this submission would advocate for a equalisation of emphasis and co-sharing of Ireland's valuable port facilities.

The first requirement of Irelands port infrastructure is to deliver its primary role of ensuring connectivity with Irelands global trading partners and facilitate passenger movement. But ports also need allow the ORE industry to co-share the resources they have, to ensure that delivery of the governments ORE targets is achieved, and with the economic benefit accruing to Ireland. This can only be done by being able to use the ports on the island of Ireland. The new National Ports Policy should endeavour to set out a policy that is overarching and brings all these objectives together and maximise Irelands valuable port resources.

The Department of Transport, for its part, is also integral to this which makes this consultation on National Ports Policy so important. It is an opportunity to link the port policy of these strands together. The 2013 National Ports Policy does not address the ORE opportunity and the intent to include the Development of Offshore Renewable Energy as part of the current consultation process is very welcome. The delivery of the above-mentioned offshore wind energy targets is acknowledged.

In the consultation document it states "Following the completion of the assessment the Minister for Transport decided on a multi-port approach to the provision of the necessary port facilities." [6] This was based on a comprehensive report completed by IMDO called IPORES 2018, [3] and the challenge is that though the framework used is comprehensive, 6 years has passed since this report was published and the wind industry has made major strides in scale of the technology.

An example is that the typical turbine size used in the modelling in the report was 10 MW whereas today a typically turbine is a 15MW unit used in the 3.2 GWs awarded in the ORESS 1 auction in 2023.

Examples of metrics that have changed - a 10 MW nacelle, including the turbine, weights 400t rising to 500t plus for a 15MW unit, while the diagram below shows that the rotor diameter have grown from 174m to 240m. Blades on the 10MW weight 35t each while on the bigger model can be up to 65t, all model dependent. This growth in dimensions has a direct correlation with the ability of a port to handle, lay down, lift and unload and load vessels and possibly the draft of the vessels using the port with increased load. With a 25MW turbine currently being developed and 20MW turbines being trialled, the port facilities will have to be able to handle this growth, and the port should not be a limiting factor and thus future proofed now.

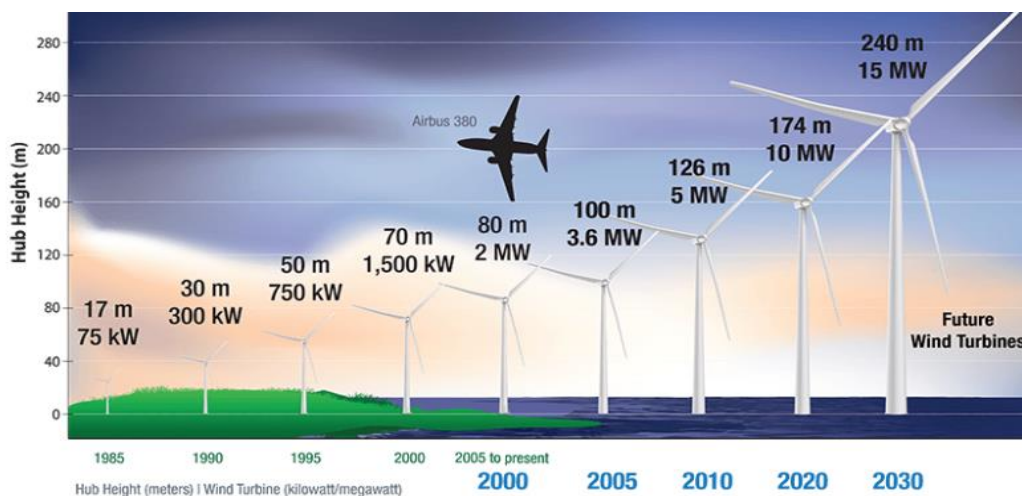


Figure 1 Wind Turbines are large and heavy and port infrastructure must be designed with area, space and capacity today to accommodate Ireland's renewable energy targets [7]

The volumes also used to model in the IPROES 2018 need to be redone in light of the accelerated requirement and review of the output needs to be used in decision making and policy development. A multiport model will be required when the Operations and Maintenance factors are included, but a specialised and focus port structure will be required with accelerated investment into both fixed and FLOW installation ports.

Using a National Renewable Energy Laboratory (NREL) model as a template, the following would be indicative volumes that will be required to deliver the 7GW programme.

*Table 1 Minimum requirements of Irish Ports to deliver 7GW offshore wind [8]*

Requirements	5GW Fixed Ireland	2GW FLOW Ireland	7GW FLOW Ireland
Turbines/Nacelle	340	135	475
Foundations/Floating Platforms	340	135	475
Tower	340	135	475
Hubs	340	135	475
Blades	1020	405	1425
Full-time Equivalents ave. annual workforce	2,000 to 8,200	800 to 3280	2,800 to 11,480

*Assuming on average 15MW turbines used*

*Extrapolated from an NREL document*

The rapid growth of floating wind has accelerated greatly from 2018, when the IMDO report was completed. There would have been only circa 30 MWs of trial farms installed at that time. As of the end of 2023 there is now close to 200MW's installed, with some 240 GWs in the pipeline globally. Installations of 14MW turbines have been planned with the UK planning some 15MW turbine sites. The considerations discussed for fixed bottom are very relevant to FLOW, but added to this is the need to build these units in the port and store in a dedicated wet storage area is an extra requirement.

The consultation paper also refers the Port Capacity Study (2023) carried out by EY DKM ARUP, 2023<sup>1</sup>, issued by the Department of Transport (DoT), confirms in its conclusion that Ireland should have sufficient port capacity for all modes—RoRo, LoLo, Dry Bulk, Break Bulk, and Liquid Bulk—until approximately 2040. “If the planned developments are put in place in time, then the capacity will be sufficient to meet the forecasted demand in the highest growth scenario”. **But the ARUP, 2023 study made no mention of the ORE industry** which is meant to co-exist at the same locations and overlapping on the resources of these ports. Once the scale of ORE is factored in, it is obvious that the ports mentioned in the Arup study do not have capacity for growth unless they are upgraded soon.

In any discussion on Irish Ports and the essential role that they will play in the rollout of offshore wind farms, there are many factors that need to be addressed in a port review. There have been a number of notable reports such as the National Port Study by Wind Energy Ireland (2022), IMDO IPORES 2018 study, along with Wind Europe 2030 Vision for European Offshore Wind Report (2021) and North Seas Offshore Wind Port Study 2030-2050 (2023), to mention a few. A common theme in all these reports in the necessity for ORE ports to have ample space and free access to the resources of the ports in question.

The North Seas Energy Cooperation, of which Ireland is a member, and the objective was to analyse the offshore wind port infrastructure needs in each of the NSEC member countries. The North Seas Offshore Wind Port Study 2030-2050 [2] puts in succinctly when it talks about the 5 key challenges for port development. The 4<sup>th</sup> challenge is listed as ‘Competition for space’. It says that ‘ports have limited space and a large demand coming from other (future) uses with more certainty, returns and clear

<sup>1</sup> <https://assets.gov.ie/274073/b39b9cbc-d9f5-4ec5-aa13-01b90e105090.pdf>

requirements.’ While the various reports mentioned above, set out the requirements for space and resources, has the practicality of the demands of competing activities been addressed and it should not be a core part of any new policy.

The other 4 challenges for completeness sake are listed in the figure below and they are relevant and should be part of the policy review, but for this submission the focus has been on the availability of space in Ireland to support this rollout.

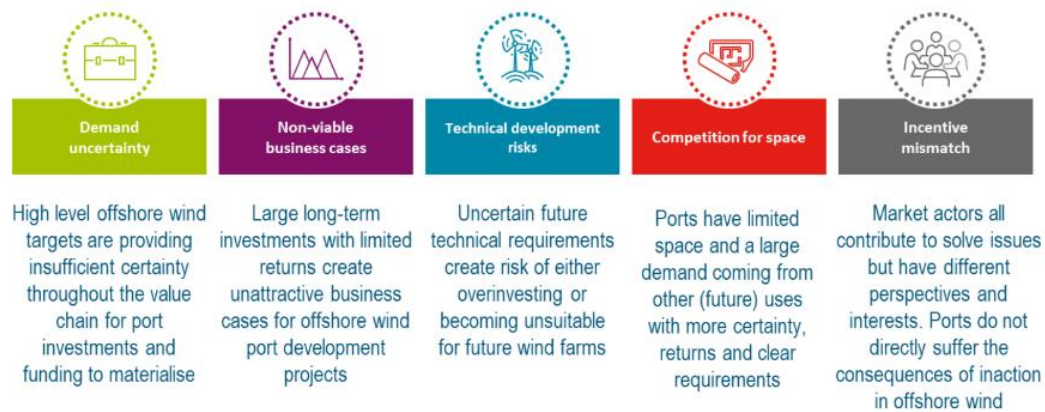


Image source: North Sea Offshore Wind Port Study 2030-2050

Figure 2 Key challenges for port development [2]

The report concludes the following with regards to Ireland “Considering the timeline of the offshore wind ambitions, and the fact that institutional development (policymaking, application procedures, governing body) is still in progress, the timelines are quite ambitious. Significant investment is required for ports to realise these ambitions, with all large-scale plans indicating cost estimates of more than €100 million per site. Several locations have relied on funding from the EU’s Connecting Europe Facility (CEF) to support the developments and, in June 2023, €11 million in co-funding was approved for Doyle Shipping Group in Cork and Irish Rail in Rosslare. In a study for the Dutch Embassy in Ireland, Royal HaskoningDHV (RHDHV) estimated that, **if Ireland wants to do all the main offshore wind activities in its own ports, a total investment of €2-3 billion would be required.** If the focus is just on O&M and partial construction support, the investment needed is expected to be closer to €1 billion.” [2]

It does welcome the Irish government initiative in the Development of a National Industrial Strategy for Offshore Wind 2023 and this current National Port Policy review, as an opportunity to pave a way forward in making use of the available port infrastructure and tackle the main issues with regards to port availability.

It is worth noting that if the investment is not made to the Irish ports the payback to the economy will not be realised until the work is done. **Belfast is the only port on the island that can support fixed bottom installations at this time, [9], with the other option to use other UK or EU if available to us.** Considering these regions aggressive offshore plans, the question of available capacity would be an area of concern. It is also noted in this report that 150 nautical miles (278km) is the ideal distance of the port to installation field, though an ARUP paper talked about 200km as a more ideal distance.<sup>2</sup> The economics of the project then comes into play. While Belfast is within this distance to cover the 3 sites awarded contracts in the ORESS 1 auction it could not service the west coast project.

<sup>2</sup> <https://www.arup.com/-/media/arup/files/publications/p/ports-for-offshore-wind-the-net-zero-opportunity-scotland-ces-arup.pdf>



Currently for FLOW there is potential to have this work done in the likes of Foynes and Cork, but this has not been realised yet. The need timeline is a few years away as of yet, but the policy should address the requirement for the provision and of suitable ports to be developed.

The role of Irish ports and the development of Irelands Offshore wind industry are inextricably linked. So too is the success of the rollout of offshore wind to capitalise on the opportunity that must be realised to assist in not only de-carbonising Irelands energy infrastructure but also assist in exporting green energy to Europe in the form of both electricity and green fuels such as hydrogen helping to enable Europe's success in this area, as well as delivering major commercial value to Irelands economy.

Ports are the kernel of Irelands evolving ORE project and it is critical that ORE is given significant prominence, if the Government targets, as set out in its Offshore Renewable Energy Development Plan II, are to be realised [10].

Ports are central to the development of offshore wind. Wind Energy Europe put it succinctly when they said that ports play a key role for the local supply chain, logistics and supporting infrastructure (e.g., storage of components). Ports are where operation and maintenance of offshore wind farms are run, where all offshore wind turbines and other equipment get transported, and where floating turbines are assembled. And they will have a prominent role in the production and distribution of renewable hydrogen [11]. Within the European context the following infographics from Wind Europe captures the European potential.

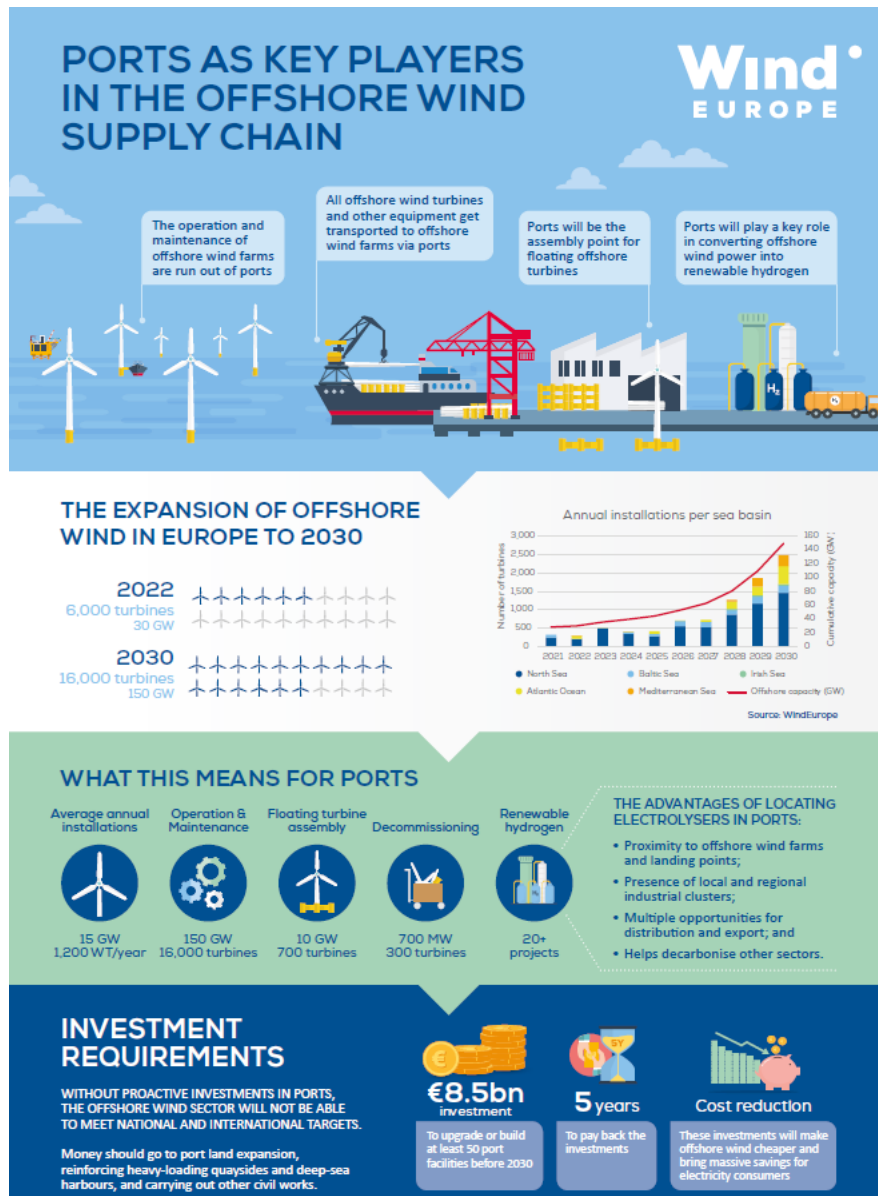


Figure 3 Ports support ORE supply chain, low cost energy, the energy transition, jobs & economy [11].

Ireland plan of 7GW's is a 5% of the European plan but will require significant infrastructure sharing and port enhancements (some of which has already begun) within Ireland ports to deliver this ambition and reap the economic advantages of the fledgling ORE industry.

The previously mention NSEC Offshore Wind Report 2023 itemises the key challenges facing the Irish Port sector, while acknowledging the completion of this new Ports Policy, as follows:

- ▶ Currently Irish port capacity is not ready for expected size and scale in offshore wind
- ▶ Private ports invest on a commercial basis, uncertain demand is limiting investment options
- ▶ Support and funds are required to support Irish ports with their business case to invest
- ▶ Lack of regulatory framework for offshore wind, ports and hydrogen
- ▶ Permitting & consenting procedures need to accelerate [2]

The urgency around the delivery of Ireland ORE commitment was reinforced with the issuing by the NSEC in November 2023 of an indicative schedule (see below) showing Ireland delivery commitments. [12]



It shows Ireland commencing rolling out its ORESS 1 sites in 2026, with ORESS 2.1 following in 2028, and ORESS 2.2 in 2029. Can we ensure that are ports are ready to support this work or are we putting this work elsewhere?

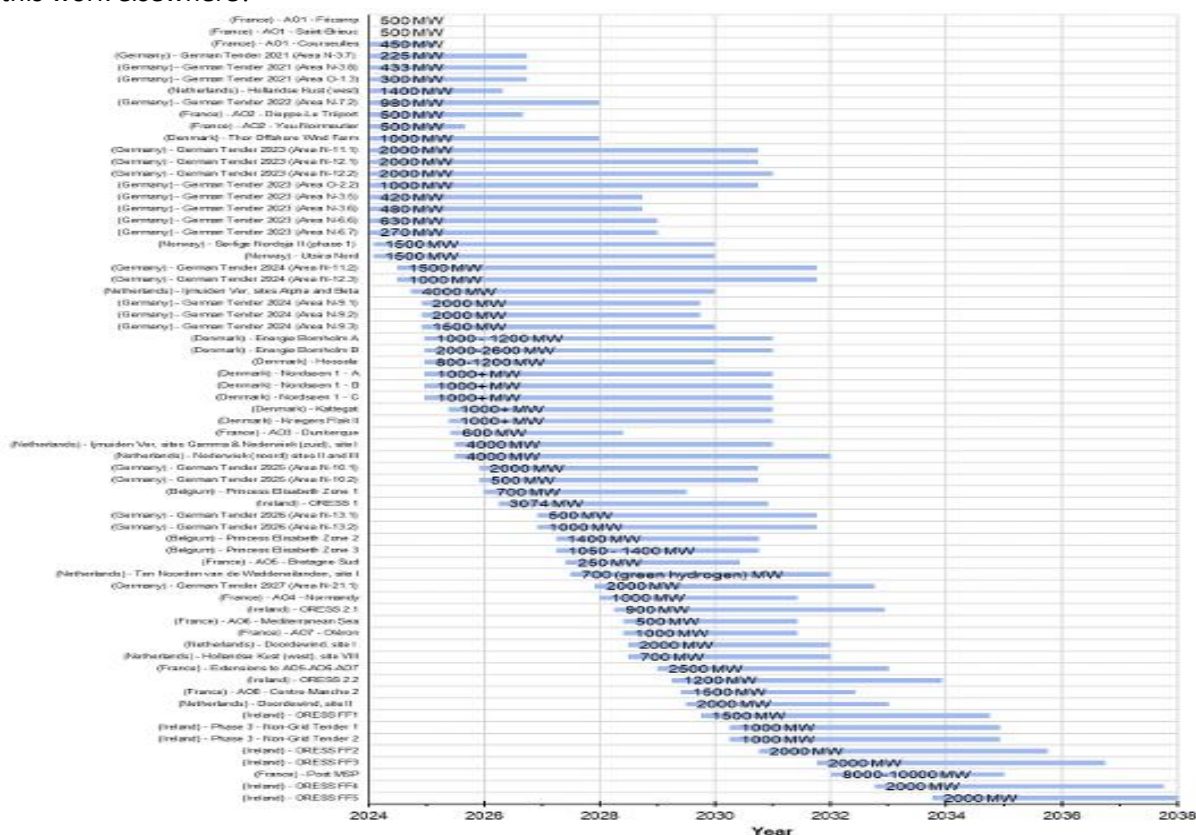


Figure 4 ORE Construction schedule 2023-2035, ports will be busy [12].

It is worth also noting that the Department of Enterprise, Trade and Employment in its White Paper on Enterprise 2022-2030 [13], Statement of Strategy 2023-2025 [14] and its subsequent Public Consultation on the development of a National Industrial Strategy for Offshore Wind 2023 [15] sees the opportunity to develop a long term industry presented by ORE industry. The White Paper captures the opportunity as follows:

*The scale of our offshore wind potential, when coupled with hydrogen production, offers a ‘**once in a century**’ industrial development opportunity as well as a high value export capability. It will not be simple to deliver but with the right policies, and industry buy-in, it has the potential to transform Ireland’s economy. A proactive, positive industrial energy development approach will meet the needs of a rapidly evolving energy sector and the transformation of energy use by industry broadly. This will include developing a domestic supply chain and exportable expertise in renewable energy opportunities, including offshore wind and hydrogen. For example, Ireland could lead globally on the design, build and remote monitoring of floating offshore platforms and monitoring technology.*

To deliver of this objective, ensuring that our National Ports Policy can facilitate this, by maximising what we in Ireland can do ourselves within the country and ensure that our ports can primarily deliver the connectivity that is required but also co-exist and thrive with ORE operating from Ireland own ports.

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