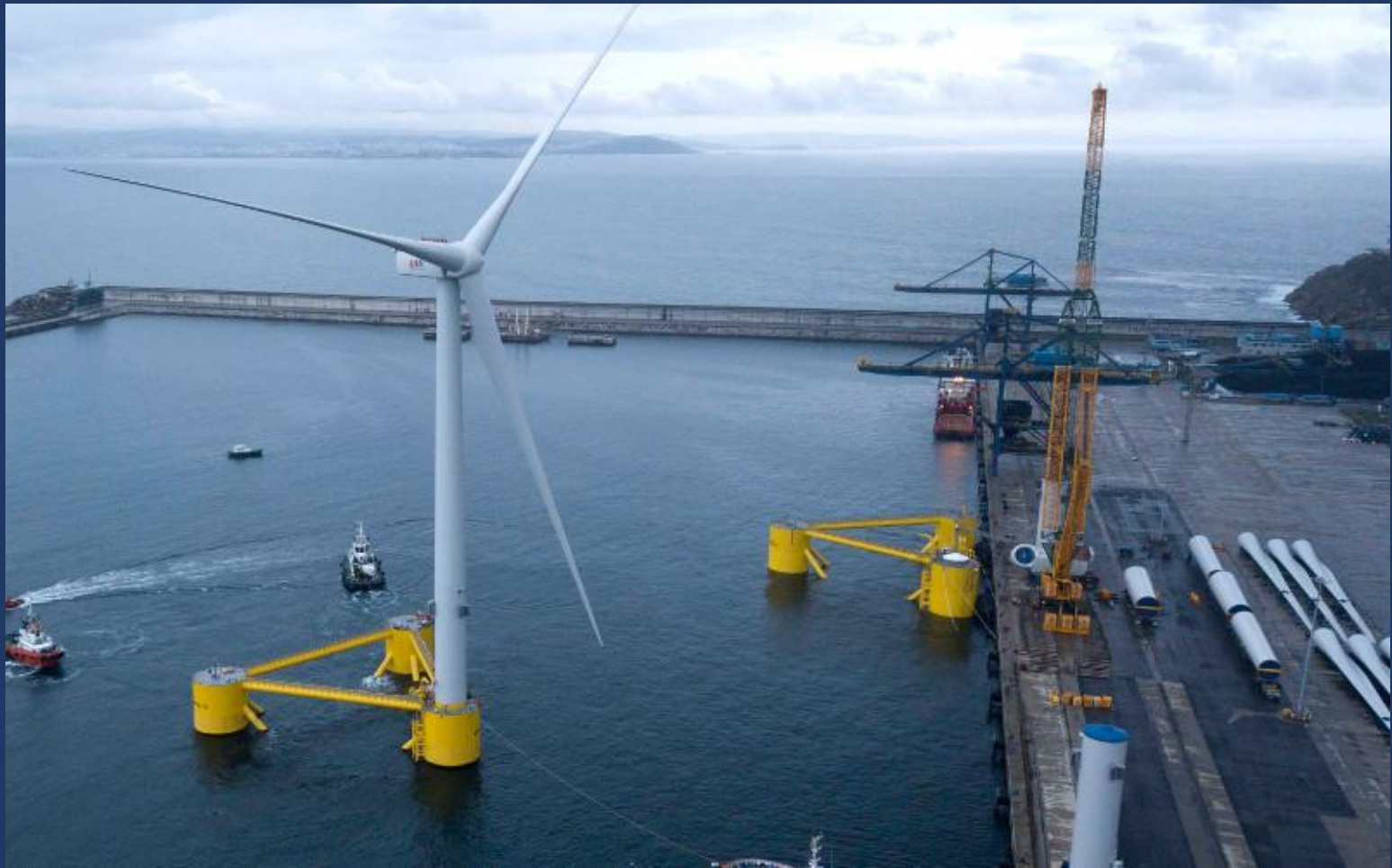


DOC Dublin Offshore



EXECUTIVE SUMMARY

Growth of Onshore to Offshore Wind – Atlantic Region Wind Energy & Supply-Chain Feasibility Study

July 2022

Client

The study was commissioned by the Mid-West, North-West and West Regional Enterprise Offices and funded by the Enterprise Ireland Regional Enterprise Transition Scheme, Clare County Council, Donegal County Council, Leitrim County Council, Limerick County Council, Mayo County Council, Tipperary County Council and the Western Development Commission. Dublin Offshore Consultants were selected by tender to develop a report and briefings on how public bodies and educational bodies can support the development and growth of the wind energy industry and supply chain from onshore to offshore in the Atlantic region (from Donegal to Limerick, covering the NUTS3 areas defined by the Mid-West, Northwest and West Regional Enterprise Plans.



About this Report

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The Project Team authored this report based on an impartial analysis of primary and secondary sources, including stakeholder consultation. The Authors would like to thank everyone that has contributed their time and expertise during the preparation and completion of this report. Special thanks go to Leitrim County Council and the Stakeholder group whose input and feedback were invaluable in completing this report.

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Executive Summary

The Atlantic Region, comprising of the Northwest, West, and Midwest regions (from Donegal to Limerick) has an abundance of natural resources along its coastline. The Atlantic region has an established onshore wind industry that already accounts for more than half of the wind energy generated in Ireland. Within the study area, Donegal and Tipperary have delivered the highest installed wind capacity per square kilometre (>90kW/km²).

It is clear from all stakeholders that there is strong support and ambition in tackling climate change and that wind energy in the Atlantic Region can play a significant part. Wind energy is seen as an opportunity to deliver on climate goals, to deliver jobs, economic development, infrastructure, innovation and Foreign Direct Investment in the Atlantic Region. Whereas 2GW of onshore wind was built in the Atlantic Region in 20 years, 30GW of floating offshore wind could be built in 30 years. Local stakeholders recognise that there is an unprecedented opportunity for the Atlantic Region.

Wind Energy in the Irish Atlantic Region

Ireland has amongst the best wind energy resources globally. Wind projects onshore can avail of wind speeds of approx. 7 m/s, which are high in global terms. The wind speeds available off the Atlantic coastline, are far higher at up to 11 m/s within Irish Territorial Waters (12 nautical mile limit) and up to 15 m/s in the Irish Exclusive Economic Zone. Wind power is a function of the cube of the wind speed so even minor increases in wind speed can deliver significant increases in the energy yield. Wind speeds observed offshore in the Atlantic Region are significantly greater than the up to 10 m/s wind resource on the East coast of Ireland. The quality of wind resource further offshore means that the energy captured as a percentage of the capacity of the turbine can increase from the Irish average of 28% onshore to 57% observed for a floating wind project in Scotland.

The Current Context of Government Targets

The Irish Government have set a target for 80% renewable electricity in Ireland by 2030, including 8GW of onshore wind capacity, and 5GW of offshore wind capacity. The target of 8GW of onshore wind capacity by 2030 represents an almost doubling of existing wind capacity. Of the 5GW of offshore wind contained within the 2030 targets, 3GW is expected to be delivered on the East coast of Ireland with the remaining 2GW delivered on the South coast in the Celtic Sea, and on the West coast. The Programme for Government 'Our Shared Future' aims to take advantage of the "at least 30 GW of offshore floating wind power" off the Atlantic coast by 2050.

Pipeline Projects in the Atlantic Region

Almost 40GW of offshore wind projects are in development in Ireland of which more than 10GW are in the Atlantic Region. In early 2022 the first six commercial scale offshore wind projects comprising nearly 4GW were given "relevant projects" status to allow fast track development. Five of these projects are in the Irish Sea, the other, the 400MW Sceirde Rocks project, is off the Galway coast.

The majority of the remaining projects in the Atlantic Region are focused on access to the Moneypoint and nearby Tarbert grid connections, anticipated to become available from 2025. These projects are located off the Clare and North Kerry coasts and intend to use floating platforms due to the limitations on water depth for traditional fixed-bottom foundations. With the exception of those utilising Moneypoint and Tarbert grid connections all other future installed FOW capacity will require upgrades in grid

connection availability, battery storage, or alternative routes to market such as the production of Green Hydrogen.

Estimated Economic Impact

In 2022 it is estimated that across the Atlantic Region there is a total pipeline of 3,550 MW of onshore wind capacity, including 930 MW under development, 460 MW under construction, and 2,160 MW in operation. Despite offshore wind in the Atlantic Region being in the development stage, projects such as Sceirde Rocks are already generating economic activity.

For the future development of wind energy in Ireland, our analysis has considered three build-out scenarios considering *Steady*, *Rapid*, and *Aspirational* outcomes. The projections from the analysis in this study indicate that the offshore wind sector will overtake the onshore industry in the Atlantic Region within the period considered (15 years).

The longitudinal economic model built in this study estimated that the combined GVA of onshore and offshore wind in the Atlantic Region will be €2.85bn up to 2037 in the 'Rapid' build out scenario. In the 'Steady' scenario the GVA is reduced to €1.86bn and for the 'Aspirational' scenario the GVA is increased to €4.21bn to 2037. The modelled scenarios anticipate that the level of economic activity in the region will grow throughout the 2030s. By 2037 it is expected that in the Atlantic Region the wind sector will annually generate €220 million GVA in the Rapid Build Out Scenario (€170 million GVA in the Steady Build Out Scenario, and €400 million GVA in the Aspirational Build Out Scenario). Not all of this spending takes place within Ireland, as turbine components, for instance, are imported. In general, each region is expected to secure between 15 – 30% of the CAPEX of projects built in their area.

The economic model was also used to estimate the direct, indirect and induced employment supported by the wind industry. The results indicate that in the 'Rapid' build out scenario the wind industry can support 44,000 years of employment between now and 2037 in the Atlantic Region, with over 3,000 FTE jobs supported from 2028 to 2037.

Barriers to Delivery of Offshore Wind Potential in the Atlantic Region

The study identifies five significant barriers to delivery that must be overcome:

- **Route to Market - Grid Infrastructure:** including constraints to existing grid infrastructure, inadequate upgrade targets nationally, and a lack of forward planning for grid development post-2030. Grid capacity to support large-scale offshore wind developments extremely limited in the Atlantic Region with Sceirde Rocks and Moneypoint the only identified grid connections available.
- **Alternative Routes to Market:** Offshore wind resources exceed domestic demand – export markets are required to fully exploit the available wind resource. Green Hydrogen is considered a key enabler to decarbonise the Irish economy for transport and as an alternative to natural gas for heat and power, but the economic viability and relative merits of green hydrogen, ammonia and other alternative fuels are not yet fully established. A national hydrogen strategy is required in tandem with offshore wind to deliver the required industrial capacity and capability.
- **Port Upgrades:** There are significant gaps between existing port infrastructure in the Atlantic Region and in Ireland, and the requirements to support delivery of large-scale offshore wind, particularly for Floating Offshore Wind (FOW). Port infrastructure is not currently available to support FOW platform construction and FOW turbine assembly, two areas with the largest potential

for GVA. If the delivery of port infrastructure is delayed, offshore wind projects in the region may be constructed out of UK and European Ports with the opportunity for local economic development lost.

- **Clear Policy Signals:** Clear signals from government are critical to deliver the full potential of the wind energy industry in Ireland and the Atlantic Region. Specific targets for installed capacity of offshore wind post-2030 are required. Clear signals on a pipeline of wind energy activity in the Atlantic Region will enable ports to finance and commence upgrades, project developers to develop construction schedules, and educational bodies and training providers to tailor courses and ramp up activity to support industry needs.
- **Industrial Strategy:** A lack of an industrial/supply chain strategy aligned with clear signals on FOW build out is preventing the maximum capture of economic impact of the FOW projects within the Atlantic Region. FOW platform fabrication presents a massive economic opportunity, accounting for approximately 30% of project CAPEX. Other opportunities could include grid infrastructure upgrades, interconnectors, alternative fuels, innovative transmission, and storage technologies, such as high-voltage, direct-current interconnection, and green hydrogen.

Study Recommendations

Wind energy is a major part of the solution to Ireland's climate change commitments, but the benefits extend beyond improving our environment. Offshore wind can deliver hugely significant direct and indirect employment in regions that are historically disadvantaged economically. With sufficient ambition and support Ireland's wind industry can deliver our energy needs and establish us as an energy exporter.

To fulfil this ambition for the Atlantic Region and Ireland, the study identified the following recommendations:

- Deliver a regionally inclusive national energy strategy to co-ordinate route to market (grid & hydrogen), port upgrades, industrialisation and policy requirements, and to align national policies for maximum benefit.
- Ensure government provide clear signals on post-2030 capacity, with grid upgrades along the Atlantic region, and national strategies for alternative fuels, port development and supply chain.
- Ensure regional strategy supports delivery of onshore wind within counties with low levels of existing wind energy activity and limited offshore pipeline i.e. Leitrim, Sligo, Roscommon, Mayo, Galway.
- Enable new industry by identifying opportunities in the offshore wind value chain for new industrial development in the Atlantic Region, identifying early supply chain opportunities, including digital, clear signalling of 'Route to Market', and supports through the development of industry cluster(s).
- Support wind industry ramp-up activities by providing the necessary consenting, cabling, technical and financial support for FOW developers at SmartBay and AMETS test sites.
- Develop new courses and centres targeted at wind energy sector, with a particular emphasis on FOW skills and expertise not currently offered by Irish educational bodies.
- Raise awareness of offshore wind industry in the Atlantic Region as a business and career opportunity to ensure there is a pipeline of students, apprentices and transferees from related industries to support the sector as it develops.
- Establish a supporting framework for the grant of planning permission for the construction of onshore substations and cable routes to ensure developers have clarity on the process to successful award.
- Stakeholder supports should be made available to facilitate dialogue from project initiation through to operation between project developers and relevant stakeholders.



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