

Input to Public Consultation to the Draft Offshore Renewable Energy Future Framework Policy Statement.

Ireland is rich in renewable energy resources. There is one major untapped source in wave energy off the West Coast which has the potential to make a major contribution to indigenous and international energy supply as well as creating a new industry with significant economic activity and consequent job creation. On a daily basis Ireland has , on average, €15 million of wave energy washing up on the west coast. Recognising this, the Irish Government has previously identified Ocean Energy as a priority research and industrial development area.

Ireland had a comprehensive development strategy for development of its marine resources. The original Offshore Renewable Energy Development Plan (OREDP I) published in 2014 saw significant development of the ocean energy resource and highlighted specific areas suitable for deployment. Unfortunately this has not happened due to a number of circumstances but the adoption of OREDP II should address this shortcoming. Accelerated programmes will be needed, by Government, to ensure the enhanced targets for Renewable Energy investments agreed by the European Commission are achieved.

Ocean Energy Europe, the industry trade group, have estimated that the projected installed capacity for ocean energy in Europe will be 100GW by 2050. This was endorsed by the DGMARE Ocean Energy Forum in 2016, where it expected industrial roll out to take place after 2030. DG MARE expects significant contributions to Blue Growth from the wave and tidal energy industry.

In 2020 the European Commission published the Strategy for Offshore Renewable Energy (COM 2020 – 741). This set out a target of 1 GW installed capacity for wave and tidal energy by 2030 and 40 GW by 2050. Ireland has the potential to make a significant contribution to these targets. This was updated in October 2023 and the targets were confirmed as feasible and because of significant progress there was an expectation of 100MW of wave and tidal energy to be installed by 2027. The updated E.C. Offshore Strategy document (COM 2023 - 668) also encourages the inclusion of at least 5% of new installations by 2030 should be innovative renewable technologies like wave energy.

We estimate that the installed capacity for wave energy in Ireland could be as follows.

Year	2030	2040
Base Scenario	40 MW	1,000 MW
Aggressive Scenario	65 MW	1,500 MW

The IEA Ocean Energy Systems Group, of which Ireland is a member, estimates that the installed capacity worldwide by 2050 to be over 300GW.

In order to get a credible estimate for the roadmap to wave energy development in Ireland, it is useful to look at the historic development for offshore wind in Europe. Offshore Wind Europe publish annual statistics on installation rates for offshore wind generating capacity. The commencement of significant demonstration installations for offshore wind coincided with the development of large wind turbines around the year 2000. This led to significant growth in offshore wind capacity with increased installation rates from around 2006.



A similar trajectory for wave energy installation could be as follows for the aggressive scenario.

This scenario assumes that large scale demonstrations for pre-commercial wave energy converters are undertaken with industrial roll-out starting after 2028.

Ocean Energy are a marine technology development company based in Cobh, Ireland. They have been developing a wave energy conversion (WEC) device – the OE Buoy - using the technologically mature oscillating water column (OWC) concept, in a floating hull. This concept speeds up the slow-moving nature of the wave motion to produce air flows compatible with electrical generation turbines. All of the machinery is above the waterline and the power conversion system is contained within a waterproof compartment. The device uses standard shipyard type construction and is capable of being installed with standard marine operating vessels. OE has been developing the first-generation OE Buoy through the Technology Readiness Levels (TRLs). This process has included early-stage research on the baseline technology at laboratory scale at 1:50 scale, then 1:15 scale followed by over 24,000 hours (c. 3 years) of open ocean testing at medium scale ("OE12"),

3 Casement Square, Cobh, Co. Cork, Ireland. t: +353 (0)21 4816 780 f: +353 (0)21 4816 778 e: info@oceanenergy.ie w: www.oceanenergy.ie with a 28 metric tonne (MT) steel prototype at the open sea test site in Galway Bay, achieving TRL6. In 2015, the Department of Energy (DoE) and SEAI, under the joint Ireland / US MoU to develop marine energy, awarded OE funding to build and deploy the firstgeneration steel "OE35" Buoy (35m OWC duct length) at the US Navy's Wave Energy Test Site (WETS). Fabrication was completed in 2019 and it was subsequently towed to Hawaii for deployment. The deployment has been delayed because of the intervention of the pandemic but the expectation is that it will be now in Q2 2024.



The picture shows the OE35 500kW device in Honolulu Harbour awaiting deployment at the WETS site.

Recently Ocean Energy were awarded funding for a €19.6m project under Horizon Europe. This project involves the collaboration of 14 partners from 5 different European Countries to design and deploy a 1MW rated device at the European Marine Energy Centre in Orkney in 2025. This will lead to a two year test of the pre-commercial scale OE Buoy making it ready for industrial replication post 2027. The project has reached its Go/No Go moment and the Go has been approved by the Partners and awaits confirmation by the European Commission.

There are policy measures required to support this nascent industry are targeted enterprise support as well as effective revenue support (which were already committed in the OREDP I) to ensure that it develops to make a significant contribution in the timeframe 2025-2040. This will require some special measures within the upcoming RESS auctions which happened in a similar way for tidal energy development in UK.

3 Casement Square, Cobh, Co. Cork, Ireland. t: +353 (0)21 4816 780 f: +353 (0)21 4816 778 e: info@oceanenergy.ie w: www.oceanenergy.ie The development of this industry will create significant jobs in Ireland with the assembly, deployment and servicing of wave energy farms off the West Coast as well as contributing to the security of supply issue in the Irish energy market.

Specific Comments on the Draft Offshore Renewable Energy Future Framework,

It is imperative that we do not repeat the false starts from previous Policy measures.

- 1. There was a comprehensive White Paper published in 2007 which mapped out the future potential for renewables and in particular offshore renewables represented by wave and tidal energy development. The target set then was 500MW installed by 2020.
- 2. This was supported by the development of major R&D facitlites in University College Cork combined with the creation of the MaREI Centre by SFI.
- 3. Unfortunately since that time the supports for industrial development were withdrawn the SEAI Prototype Development Fund was discontinued and the licence for the test site at Galway Bay expired and has only recently been reinstated.

What is required now are the following.

- 1. The creation of a demonstration zone for floating offshore renewables including wind and wave energy. The current identified test site at Belmullet is not feasible for innovative technologies as it is located 60 Nm from the service port of Killybegs. A new Development Zone should be identified in the vicinity of the Shannon Estuary. This was ruled out in the first analysis when Belmullet was chosen because of the abundance of rocky seabed but more recently the INFOMAR surveys have given us a better insight into the nature of the seabed and anchoring technology has advanced in relation to rocky conditions.
- 2. An Emergency Regulation was introduced by the E.U. on 22nd December 2022 and encouraged Member States to speed up permit-granting procedures and facilitate PPAs. As part of the REPowerEU response to the gas crisis caused by the Ukraine War. This needs to happen faster in Ireland and the creation of a new agency MARA has introduced an additional step in the application process which is not helpful.
- 3. The design of ORESS 2 should take account of the EU Offshore Strategy Document and ensure that the 5% innovative technology is enabled and ring fenced with a minimum strike price of €450/MWh, similar to the recent licensing round in the UK, to encourage wave and tidal energy projects, which was very successful.
- 4. Full consideration should be given to the demonstration of wave energy farms in Ireland in the same way as given to Floating Offshore Wind. The potential return to Ireland is higher for wave energy as more of the technology can be assembled here.

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- 5. When considering the effect of variable renewable energy on the Irish Grid it can be shown at the West Coast that there is a complementarity between wind and wave incidence with wave energy being present when wind energy is low and sometimes vice versa. The net effect on the grid is provide more reliable power production and so co-location of wind and wave energy technologies should be encouraged and sharing of infrastructure is also then possible.
- 6. The proposed SEAI ORE Technology Road Map and the establishment of supports for R&D are welcomed but there is an urgency of development and the demonstration of current leading technologies, like Ocean Energy Buoy, should be fast tracked alongside longer term innovations. External Road Maps exist and the publishing of the Irish equivalent should not be delayed. Ireland is a Member of the IEA OES Ocean Energy Systems Agreement which regularly publishes such Roadmaps.
- 7. Finally, there are over a dozen Government Departments and Agencies responsible for developments offshore so we now need a single National entity to realise the urgency of the crisis that we are in as we still import up to 82% of our energy needs. Offshore Renewable Energy is the key to energy security. Shortly after the State was formed in 1927, we invested 25% of one year GDP in the Shannon Scheme to establish the ESB and power ireland. In 1941, during the Emergency, Sean Lemass realised that we had no way to import supplies into Ireland, as there were no ship owners, so Irish Shipping was formed. In 1946 there was an energy crisis and to ensure security of supply Bord na Mona was established to supply Irish homes.

Maybe we need - Bord Fuinnimh Mhara to respond to the current crisis.

<u>– February 2024</u>

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