MARINE ENERGY: A CALL FOR EVIDENCE ON THE POTENTIAL OF MARINE ENERGY PROJECTS IN GREAT BRITAIN

DEPARTMENT FOR BUSINESS, ENERGY & INDUSTRIAL STRATEGY

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WindEurope welcomes the call for evidence from BEIS on the potential of marine energy. WindEurope represents the wind industry supply chain with over 400 members across 35 countries. The aim of this letter is to support the response of our member RenewableUK, the organisation representing wind and marine renewables in the UK.

WindEurope would like to highlight that the development of offshore wind in the UK is a success story thanks to the conducive regulatory framework put in place by the Government. Today offshore wind is one of the cheapest, most scalable and reliable renewable energy technologies not only in the UK but across Europe. And as larger turbines and wind farms move projects deeper into the sea, floating offshore wind will deliver projects where bottom fixed foundations have limitations.

The UK will continue to be an important market for both, bottom fixed and floating offshore wind thanks to its considerable wind resources. UK's contribution on floating offshore wind makes Europe the region with the most experience and technology concepts worldwide[2], including the largest operational floating wind turbine and wind farm on the water. Today there are 11 projects for a total capacity of 74 MW online, with 62 MW located in Europe.

WindEurope believes that floating wind have an enormous potential to deliver the net zero emissions because:

- **It is as scalable as bottom fixed.** Floating wind is now installing the same turbine sizes as bottom fixed. This year the Windfloat Atlantic (semi-sub) project installed the largest floating wind turbines of 8.4 MW each. The same technology will be used in the Kincardine 50 MW project, set to become the largest wind farm worldwide.
- **It has record performance.** Hywind Scotland (spar), the first pre-commercial wind farm recorded an average capacity factor of 56% over the first two years of operation[5]. Floatgen (barge) is a 2 MW French demonstrator in the coast of Brittany and recorded an availability of 94.6% in 2019[6]. The same technology was used in the Hibiki demonstrator in Japan. This turbine has gone through rough weather conditions including three super-typhoons.
- **It builds on top of our previous experience.** Building in Europe's bottom-fixed experience to develop commercial floating offshore wind will bring long term economic and environmental benefits. The floating industry could use between 60-70% of the existing supply chain deployed for bottom-fixed solutions, giving a large advantage for the fast commercialisation of this technology.
- **It diversifies coastal activities.** Coastal communities will benefit from new economic activities because compared to bottom-fixed most of the assembly takes place onshore reducing installation activities at sea. Selecting ports for upcoming projects and as a base for wider industrial and business activities is a priority for the entire offshore wind industry.

[2] There are currently 50 floating designs in development worldwide. 34 of these are European. "Ports: a key enable for the floating offshore wind sector" (September 2020).
[5] Equinor (2019). Facts about the Hywind Scotland Pilot Park
[6] IDEOL (2020). Floatgen achieves a total of 6 GWh of power production in 2019

By 2050 there could be between 100 and 150 GW of floating offshore wind spread across Europe[7], mainly but not limited to the Mediterranean Sea. In the UK, around 30% of the 75-80 GW needed by 2050 to reach carbon neutrality could be floating[8]. For this to become reality, floating wind would need to reach competitive prices against bottom fixed in the 2020s. Targeted Government support will be to this end.

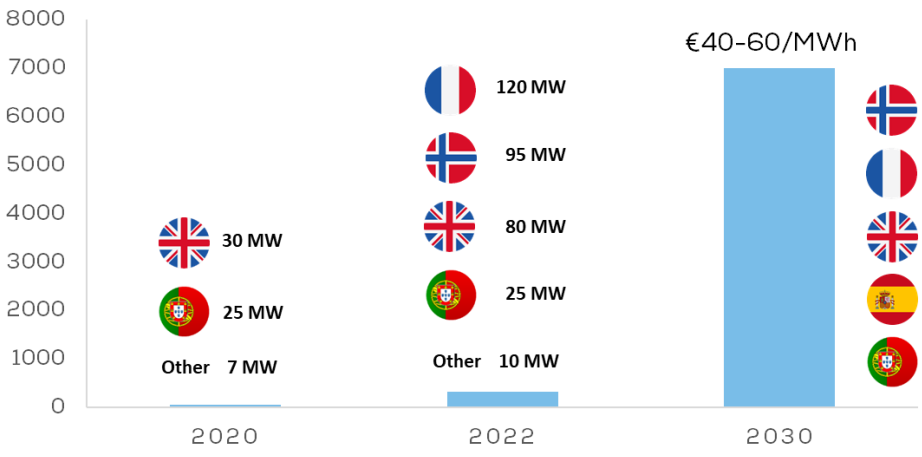
In 2018 floating wind had an estimated LCOE just above 200 €/MWh. But cost projections conclude that LCOE of 50-65 €/MWh are achievable, but policies will determine the pace[9]. This requires large projects on the water to give the industry the first commercial experience. The cost projection includes all the coming volumes up to 2022[10] and the coming French floating auctions (3x250 MW) with target prices of 120 €/MWh (2021) and 110 €/MWh (2022). The French National Commission for Public Debate is even evaluating the possibility to give a 500 MW extension to each. The country has included investment in ports as a key pillar for their recovery plan to upgrade facilities.

The launch of the ScotWind lease for up to 10 GW is expecting to receive floating wind applications but information on detail projects remains confidential[11]. But considering each application is for minimum 100 MW capacity and that each bidder can submit up to 5 projects we expect a positive outcome for at least 500-1,000 MW of floating. Projects granted seabed right will need 3-4 years to obtain all permits and be ready to apply for AR5 or AR6.

In the shorter term the projects WaveHub (32 MW) and Erebus (96 MW) are the most advanced in permitting and may be ready to bid in AR4 if the new pot for emerging technologies is available.

WindEurope expects 330 MW of floating offshore wind online by 2022 in Europe, and at least 7 GW worth of projects that could be commissioned by 2030. Floating wind needs the same conditions as bottom fixed to become a fully mature technology. Experience shows that this can accelerate if countries cooperate the development and commercialisation of technology. The next decade is crucial for the industrialisation of floating offshore wind in Europe and globally. The UK Government therefore consider supporting decisively the development of this industry with strong international collaboration.

Figure 1. Floating offshore wind outlook in Europe. WindEurope, 2020.



[7] WindEurope 2019, "Our energy, our future". Available at: https://windeurope.org/data-and-analysis/product/our-energy-our-future/
[8] Analysis of allocation of 80 GW in the UK according to LCOE levels in Table 2. Our Energy, Our Future. (2019)
[9] The European Technology & Innovation Platform on Wind Energy. ETIP Wind Floating Wind Factsheet. The underlying assumptions for this cost projection model include: a capacity factor of 45%, a turbine lifetime of 25 years, and a weighted average cost of capital of 9%.
[10] 330 MW online in Europe by 2022 including the addition of: TetraSpar, DemoSATH, Kincardine, EFGL, Groix-Belle-Ile, EolMed, PGL, AFLOWT, SeaTwirl S2 and Hywind Tampen.
[11] Public express of bidders includes Aker Offshore Wind for 500 MW and a consortium of BayWa r.e., IDEOL and Elicio.

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