



System benefits of ocean energy

PROJECT SUMMARY

EVOLVE is examining the overall market value of the inclusion of ocean energy in European energy systems. The project aims to produce quantifiable outputs by January 2023 to illustrate the benefits associated with integrating ocean energy in low carbon energy systems.

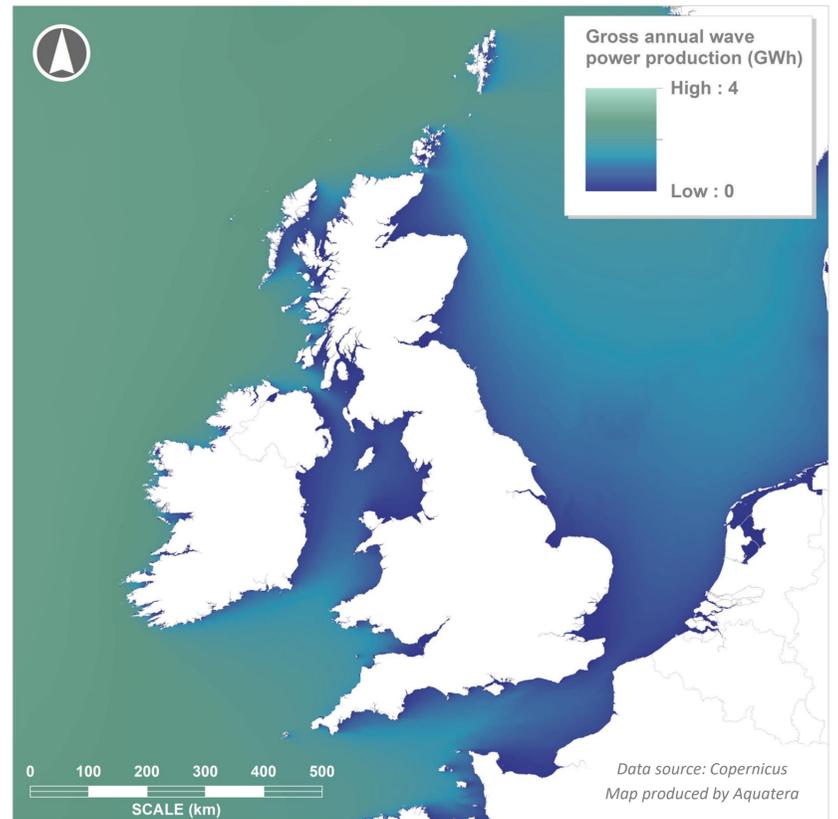
PROJECT AIMS

- Identification of optimal renewable energy combinations in future energy markets and European energy scenarios
- Quantification of the system benefits of increasing the penetration of ocean energy in such future scenarios, over a range of temporal and spatial scales
- Ensuring maximum uptake of results over a range of different stakeholders through an iterative stakeholder engagement programme

PRELIMINARY RESULTS

The EVOLVE project is producing quantifiable results to show that including ocean energy in future generation mixes increases the proportion of available renewable generation. This reduces the generation required from fossil fuels to meet demand, which results in reduced wholesale electricity costs and system carbon emissions.

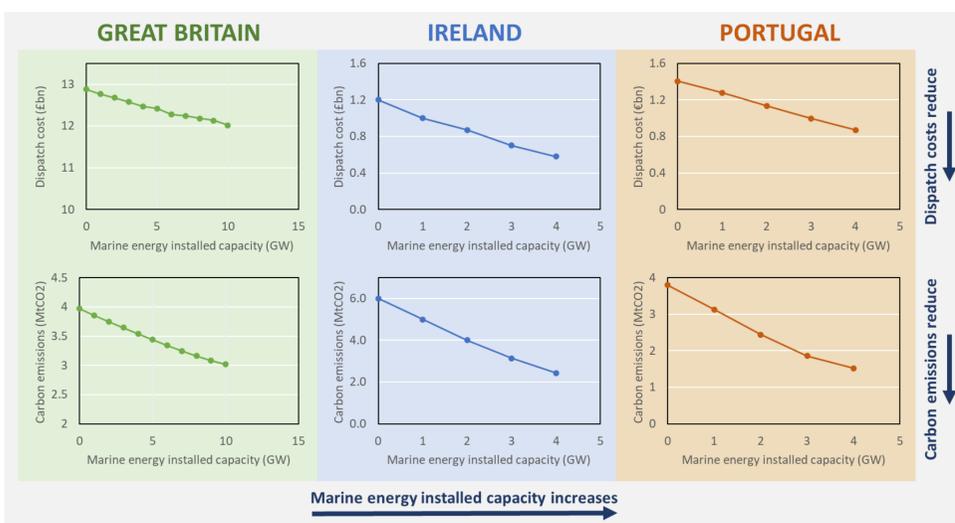
It is also producing GIS based suitability analyses for tidal and wave energy technologies for three pilot areas in Western Europe and estimating the amount of ocean energy that could be potentially harvested in those regions.



As an example, when 1GW of offshore wind is replaced with 1GW of ocean energy (50% wave and 50% tidal) in our 2030 model of the power system of Great Britain, the wholesale electricity costs reduce by £114 million for the full year of dispatch. This is due to a reduction in fuel and carbon cost requirements, as 300GWh of gas generation is displaced by ocean energy. Carbon emissions also reduce by 113,000 tonnes for this year.

Further to this, wave and tidal stream generation are able to capture higher wholesale prices than other intermittent renewables, due to their availability at times of high demand but low wind and solar availability. In the 2030 GB modelling results, wave was able to capture 64% higher wholesale prices and tidal stream was able to capture 49% higher wholesale prices than wind and solar.

The key result – that **including ocean energy in future scenarios reduces system dispatch costs and carbon emissions** – has been demonstrated consistently across three European regions: Great Britain, Ireland and Portugal.



PROJECT PARTNERS



FUNDING BODIES



<https://evolveenergy.eu/>

