

Coordinated ocean energy efforts herald a new industrial sector

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Credit: AI-generated image ([disclaimer](#))

Despite its remaining mystery, the ocean is a complex working environment, widely used for fishing, shipping and recreation; but so far largely untapped for energy generation. OCEANERA-NET seeks to give the industry the boost it needs.

The European Union coastline runs to around 66 000 kilometres. This vast stretch holds a largely unexploited potential for ocean generated electricity, calculated to be around 380 GW by DG MARE (the EU Directorate responsible), constituting a significant contribution to the EU's 2020 targets for [renewable energy](#).

Presently, there are a number of Member States funding research and development into ocean energy technology. However, these efforts are not coordinated and so not the game-changers they could be.

The EU's OCEANERA-NET project provided support for collaborative research projects, managed by consortia of trans-national companies and research institutes which focused on solving the key challenges faced by developers of ocean energy technologies.

Alongside the funding framework, the project also enabled the generation and sharing of knowledge and expertise. Project results will enable the reliability, efficiency and cost reduction of ocean energy technologies, bringing them closer to commercialisation and deployment.

Pooling resources

The ocean energy industry in Europe is planning to create 100 GW of electricity production capacity by 2050. This equates to meeting 10 % of demand, supplying the daily electricity needs of 76 million households. This initiative will also mean the creation of a new European industrial sector with, it has been estimated, 400 000 skilled jobs generated along the supply chain. However, before getting to this point a number of technical challenges have to be overcome.

By their very nature, the maritime areas with the highest energy resources are also the most difficult within which to work and the

environment also presents additional problems such as corrosion. Added to which, wave size and direction, as well as levels of turbulence, are highly variable. As project coordinator Ms Karen Fraser explains, "A balance needs to be found between potential energy capture and reliability and survivability during storm conditions and over long term operations."

Despite a lot of exploration and technical experimentation, leading to a number of promising technologies, the sector's innovations remain at the pre-commercial stage. More innovation and testing of demonstration devices is needed to bring down costs to the point where [ocean energy](#) becomes more competitive and deployable more widely.

The wave, tidal stream and [ocean thermal energy](#) conversion (OTEC) research which OCEANERA-NET supports is developing new energy devices, hydrodynamic modelling and resource measurement tools to improve efficiency of devices. Advanced materials, as well as key components such as power take-off, control systems, electrical connections, moorings and a robotic arm for use in offshore operations, are also under development.

Widespread benefits

OCEANERA-NET's efforts will help open up global markets to European companies and has the potential to create a whole new European industrial sector. As Fraser sums up, "This in turn will create job opportunities, more likely to be concentrated in coastal areas and within remote communities, and so contribute to social objectives around the expansion of opportunities for a wider range of people."

Being ocean generated, the energy itself will align well with EU strategies for renewable energy and CO₂ reduction targets, alongside the creation of decarbonised energy systems.

To continue the work, a selection of projects has just been concluded under the follow-up OCEANERA-NET COFUND project, which will see a significant investment in wave, tidal and OTEC demonstration projects, supported by the European Commission and national or regional agencies. This complements other national and regional activity undertaken as part of the Implementation Plan for Ocean Energy developed by the Commission's Strategic Energy Technology Plan.

Provided by CORDIS

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