

Ocean energy: EU leads in technology development and deployment

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Among the various types of ocean energy technologies, tidal and wave power are those poised to provide the most significant contribution to the European energy system Credit: © mimadeo, Fotolia.com

New technologies in the last decade have shown slow but steady progress of ocean and sea energy power: about 30 tidal and 45 wave energy

companies are currently at an advanced stage of technological development worldwide, many of them nearing pre-commercial array demonstration and others deploying full-scale prototypes in real-sea environment, according to a new JRC ocean energy status report.

The EU is at the forefront of technological development of [ocean energy](#) power plants, with more than 50% of [tidal energy](#) and 45% of wave [energy](#) developers based in the EU, as well as the majority of ocean energy infrastructure. The current pipeline of projects could bring Europe's combined tidal and [wave energy](#) capacity up to 66 MW by 2018, a significant step forward for a nascent sector. The first tidal energy array is expected to be deployed in the UK in 2016, becoming the first ocean energy array project worldwide to be completed.

Ocean energy represents one of the few untapped renewable energy sources and its development is attracting the interests of policymakers, utilities and technology developers. In recent years, slow technological progress has hindered technology development and reduced investor confidence in ocean energy. The JRC report analyses the sector, assessing the status of ocean energy technologies, ongoing developments, related policies and markets. In Europe, the highest deployment potential is located along the Atlantic coast, with further localised exploitable potential in the Baltic and Mediterranean seas and in the outermost regions (e.g. Reunion, Curacao).

Background

To support the 'blue energy' sector move towards full industrialisation, in 2014 the European Commission proposed a Blue Energy Action for the creation of an Ocean Energy Forum - bringing together stakeholders to build capacity and foster cooperation. The outcomes of the Forum will feed into a strategic roadmap, which will provide an agreed blueprint for action in order to help the ocean energy sector move towards

industrialisation. In a later phase (2017-2020), a European Industrial Initiative could be developed, based on the outcomes of the Ocean Energy Forum.

Ocean energy could thus play a threefold role for Europe: contributing to the decarbonisation of energy supply; increasing energy security by exploiting indigenous resources; and fuelling economic growth in coastal regions. The development of wave energy technologies is lagging behind that of tidal energy, mainly because a lack of design consensus and low-reliability levels. Nevertheless, small wave energy deployment projects have been taking place in Europe, the US and Australia.

Ocean energy technologies face four main bottlenecks: technology development, finance and markets, environmental and administrative issues and connection to the grid. Overcoming these issues requires concerted efforts by industry, academia and the support of policy makers. The definition and achievement of performance targets and key performance indicators (e.g. related to reliability) for each ocean energy technology type will be fundamental to overcoming technology barriers. Public support mechanisms so far proposed appear to be adequate to sustain the growth of the sector, though it is essential they can be tailored to the needs of the various technologies and their status.

More information: Report: [ec.europa.eu/jrc/en/publicatio ... energy-status-report](https://ec.europa.eu/jrc/en/publication/energy-status-report)

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