

RESEARCH & INNOVATION TO BOOST THE DEVELOPMENT OF OFFSHORE RENEWABLE ENERGY

November 2020

BACKGROUND


Europe's Green Deal sets the ambitious goal of making Europe the **first carbon-neutral continent by 2050**. This will require decarbonisation of our society at a speed at least six times faster than anything achieved globally so far. The **clean energy transition** is a key element of this Green Deal. To achieve it, all renewable energy technologies must increase their contribution to the future technology mix. **Offshore renewable energy has significant potential** to scale up and become a core component of Europe's energy system in 2050.

THE ROLE OF RESEARCH AND INNOVATION

Research and innovation is a key element of the EU strategy to harness the potential of offshore renewable energy and unleash a new European industrial sector. Besides further **improving the more mature offshore technologies**, huge investment is needed for the **development of innovative offshore energy technologies** (floating wind, wave, tidal, and solar) and their demonstration in harsh conditions.

This must go hand in hand with:

- **increasing the recyclability of offshore installations** (applying the principle of circularity by design);
- the **effective integration of offshore technologies in the energy system**;
- and the **sustainable embedding of offshore renewable energy production in the marine environment**.



“ Our oceans and seas provide us with a vast and largely untapped source of renewable energy that can be used to put the EU on a path to climate neutrality by 2050. Research and innovation hold the keys to harvest this unique potential in a sustainable way, providing green power and blue growth in a circular economy. ”

Mariya Gabriel, EU Commissioner for Innovation, Research, Culture, Education and Youth

HORIZON 2020

Horizon 2020, including the recent € 1 billion Green Deal Call, provides support to the development of offshore renewable energy, demonstrating their reliability and robustness and improving their cost-competitiveness.

HORIZON EUROPE

35% of Horizon Europe's funding will go to actions underpinning the European Green Deal to turn green challenges into innovations. **Cluster 5 'Climate, Energy and Mobility'** will address all aspects of a sustainable, secure and competitive energy supply, including strategic support to the development of offshore renewable energy, while respecting the 'do no harm' principle.

A SELECTION OF HORIZON 2020 PROJECTS CONTRIBUTING TO THE DEVELOPMENT OF OFFSHORE RENEWABLE ENERGY:



A DEMONSTRATION OF POWER

FLAGSHIP will demonstrate a cost-effective 10MW floating offshore wind turbine using a semi-submersible concrete floating platform that includes an easy-to-install anchoring design and novel mooring configuration. It will be the starting point for the large-scale assembly for 500 MW future commercial floating wind farms.



DO IT YOURSELF SOLUTIONS

ELICAN will develop a self-installing precast concrete telescopic tower and foundation for deep offshore wind energy. The design will allow for a full inshore preassembly of the complete system and the crane-free offshore installation of the complete substructure and wind turbine, without the use of heavy-lift vessels.



RIDE WITH THE TIDE

FloTEC will demonstrate a 72-metre-long floating superstructure for the generation of power from tidal energy, using two 1 MW turbines. With rotor diameters reaching 20 m, it will boast a 600 m² rotor area, the largest ever seen on a single tidal energy generation platform.



ON THE CREST OF THE WAVE

IMAGINE will develop a wave energy generator with a limited number of components and a more compact architecture, resulting in reduced final cost, increased mechanical efficiency and a higher power density.



A TITANIC EFFORT TO ACHIEVE COST EFFICIENCIES

SEA-TITAN will develop a next-generation, standardised and open-source Power Take Off technology that can be applied to different wave or tidal power devices.



OPERA AT SEA

OPERA has collected, analysed and shared open-sea operating data and experience to validate and de-risk several industrial innovations for wave energy, taking them from a laboratory environment to a marine environment, opening the way to long-term cost-reduction



CONNECTING THE DOTS

PROMOTION has brought together 34 international project partners who represent the whole industry value chain in an ambitious programme of research and full-scale technology demonstrations on integrated meshed offshore HVDC transmission grids.

For more information visit
https://ec.europa.eu/info/research-and-innovation/research-area/energy-research-and-innovation_en