



ETIPOCEAN

European Technology & Innovation Platform for Ocean Energy

EU-funded ocean energy projects Framework Programme 7 & Horizon2020



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Significant European support for the sector

Since 2008, the European Commission has invested over €190m in ocean energy research and innovation through its FP7 (2007 – 2013) and Horizon 2020 programmes (2014 to date). As Horizon2020 is ongoing, running to 2020, support to ocean energy through this programme will further increase.

The FP7 and Horizon2020 are the main research and innovation funding programmes of the European Commission's lighthouse energy research policy, the Strategic Energy Technology Plan (SET-Plan).

In cooperation with national governments, the Commission's SET-Plan defines priorities and objectives for renewable energy research. Funding is, then, made available through seven-year programmes such as Horizon2020.

A 50% increase in ocean energy funding

€78m were awarded by FP7 from 2007 to 2013. Its successor, Horizon2020 awarded over €117m to the sector, a 50% increase on the previous programme in its first 4 years (2014 to February 2017).

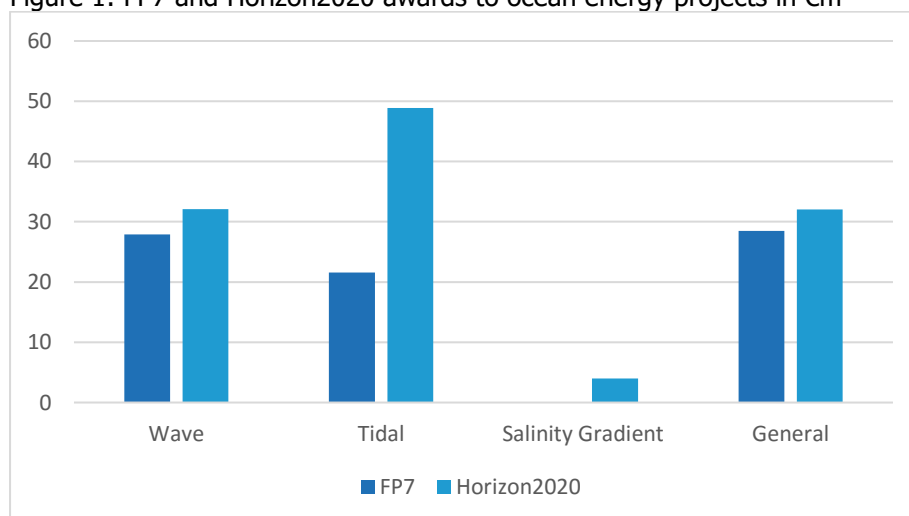
With three more years until the end of Horizon 2020, EU spending for ocean energy research and innovation could increase further.

In FP7, projects looking specifically at tidal stream technology were awarded €21.6m, and €28m to projects looking at wave technology. A further €28.5m were awarded to "general" projects, who's applications can benefit a range of ocean energy technologies.

In Horizon 2020, tidal energy projects have been awarded almost €49m so far. This is more than the €32m awarded to wave energy. Moreover, €4m have been awarded to salinity gradient and a further €32m to general or cross-cutting projects.

Figure 1 compares the amount of funding for each technology under FP7 and Horizon2020 to date.

Figure 1: FP7 and Horizon2020 awards to ocean energy projects in €m





A wealth of information available

EU funded research and innovation projects have created a wealth of learnings and collected vast amounts of data. Most of this information is publicly available through the projects' own websites and the European Commission's web-portal, [Cordis](#).

These findings can be used as a starting point for future ocean energy research and innovation. All ocean energy projects funded by FP7 and Horizon2020 are listed below with a short description. Clickable links will lead you to the projects' websites and their Cordis page.



Ocean energy projects under Horizon 2020

Table 1: Tidal stream projects that received a Horizon2020 award (October 2014 to February 2017)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
Ocean_2G	Magallanes	Validate and develop the Product Categories Rules for pre-certification and industrialisation stages for an innovative full-size tidal energy system.	1,9	02/2017	01/2019	FTI 1	Cordis Website
DEMOTIDE	DEME	Design, build and operate a 6MW turbine array, in the Inner Sound of the Pentland Firth in northern Scotland.	20,3	01/2017	12/2020	LCE 3	Cordis Website
InToTidal	EMEC	Test and demonstrate an integrated and generic solution for offshore tidal energy production.	2,0	01/2017	06/2018	FTI 1	Cordis Website
OCTTIC	OpenHydro	Improve tidal turbine system design to improve performance, efficiency and reliability.	3,0	12/2016	11/2018	FTI 1	Cordis Website
TIPA	Nova Innovation	Build and test a tidal PTO to reduce lifetime costs of tidal generation by 20%.	4,4	11/2016	10/2019	LCE 7	Cordis Website
D2T2	Nova Innovation	Demonstration of turbine with direct drive generator.	2,3	10/2016	03/2019	SME	Cordis Website
FLOTEC	Scotsrenewab.	Open sea demonstration of floating tidal turbines.	9,8	01/2016	06/2019	LCE 3	Cordis Website
PowerKite	Queens University Belfast	Design, build and deploy a power take-off system (PTO) for novel tidal energy collector concept, the Deep Green subsea tidal kite to gather experience in open sea conditions to enhance the structural and power performance of the PTO for a next generation tidal energy converter.	5,1	01/2016	06/2018	LCE 2	Cordis Website
TIDAL HEALTH	Pars Makina	Feasibility study for the development of a direct torque measurement device attached to tidal generator shaft for overall condition monitoring of tidal power plants remotely.	0,05	03/2015	08/2015	SME	Cordis Website
SEAMETEC	Eire Composites	Feasibility study for the development of tidal turbine blades using composite manufacturing processes.	0,05	10/2014	03/2015	SME	Cordis Website
Direct Drive TT	Nova Innovation	Feasibility study in market potential for direct drive tidal turbine.	0,05	10/2014	03/2015	SME	Cordis Website



Table 2: Wave energy projects that received a Horizon2020 award (October 2014 to February 2017)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
Waveboost	CorPower	Provide a step-change improvement to the reliability and performance of PTOs (Power-Take-Offs), by developing and validating an innovative braking module with a Cyclic Energy Recovery System (CERS).	4	11/2016	10/2019	LCE 7	Cordis Website
OPERA	Tecnalia	Collect 2 years of open sea testing data of an oscillating water column wave device.	5,7	02/2016	07/2019	LCE 2	Cordis Website
ICONN	College of the Holy Trinity Dublin	A European Industrial Doctorate initiative to meet the current and future demand for highly skilled offshore wind and wave energy engineers by developing and advancing European capacity in the design, development and performance optimisation for Offshore Wind and Wave Energy installations	0,8	10/2015	09/2019	ITN-EID	Cordis Website
CEFOW	Fortum	Deployment of multiple MW-scale wave energy converters.	17,0	06/2015	05/2020	LCE 3	Cordis Website
POSEIDON	Floating Power Plant	Overcoming market barriers to commercialisation of a floating wind & wave energy concept.	1,1	06/2015	05/2017	SME	Cordis Website
WETFEET	WavEC	Understand and find solutions to the major constraints in the development of wave energy technology by identifying and developing disruptive components, systems and processes to improve the sector as a whole	3,5	05/2015	04/2018	LCE 1	Cordis Website
Wavepiston	Wavepiston	Feasibility study for the development of wave energy converters using "force cancellation" technology.	0,05	02/2015	05/2015	SME	Cordis Website

Table 3: Salinity Gradient projects that received a Horizon2020 award (October 2014 to February 2017)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
RED-Heat-to-Power	Wirtschaft & Infrastruktur gmbh	Generate electricity from salinity gradient using Reverse Electrodialysis with artificial saline solutions operating in a closed-loop. The original salinity gradient is regenerated by a separation step that uses heat at 40°C – 100°C.	4,0	05/2015	04/2019		Cordis Website



Table 4: General ocean energy projects that received a Horizon2020 award (October 2014 to February 2017)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Tech	Links
MARINET 2	University College Cork	Ensure the continued integration and enhancement of all leading European research infrastructure and facilities specialising in research, development and testing of offshore renewable energy systems including electrical sub systems and grid integration.	10,6	01/2017	06/2021	INFRAIA 1	General	Cordis Website
OCEAN ERA Net Co-fund	Scottish Enterprise	Demonstration and validation of innovative technologies for the generation of electricity from waves, tidal current, tidal range, salinity gradient and ocean thermal energy conversion.	6,0	01/2017	12/2021	LCE 34	General	Cordis Website
TAOIDE	University College Cork	Develop a complete power transfer system from prime mover to electrical grid with normal maintenance intervals of greater than five years, and availability of greater than 98%.	3,2	11/2016	10/2019	LCE 7	General	Cordis Website
ETIP Ocean	Ocean Energy Europe	Identify challenges to ocean energy development and creating a knowledge sharing platform to overcome them.	0,6	12/2016	11/2018	LCE 36	General	Cordis Website
MUSES	Marine Scotland	Build knowledge of the appropriate techniques to minimize barriers, impacts and risks, whilst maximising local benefits, reducing gaps in knowledge to deliver efficiencies through integrated planning, consenting processes and other techniques.	1,98	11/2016	10/2018	BG 3	General	Cordis Website
LINCOLN	Politecnico di Milano	Develop three new concepts of added-value specialised vessels able to run requested services for	6,3	10/2016	09/2019	BG 2	General	Cordis Website



		several maritime sectors including ocean energy in the most effective, efficient, economic valuable and eco-friendly way.						
MARIBE	University College Cork	Investigate cooperation opportunities (partnerships, joint ventures etc.) for companies within four key Blue Growth sectors to develop these companies and their sectors and to promote the multi-use of space in the offshore economy.	1,98	03/2015	08/2016	BG 1	General	Cordis Website
RiCORE	Robert Gordon University	Establish a risk-based approach to ocean energy consenting.	1,4	01/2015	06/2016	LCE 4	General	Cordis Website

Ocean energy projects under Framework Programme 7 (FP7)

Table 5: Tidal stream projects that received an FP7 award (April 2008 to September 2014)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
TIDAL-EC	Offshore Renewable Energy Catapult	Optimisation of tidal energy PTOs, by determining their optimum design.	1	09/2014	02/2017	SME	Cordis Website
CLEARWATER	Atlantis Operations Ltd	Install and operate a 4.5MW tidal array in the Pentland Firth in Scotland.	7,7	01/2014	12/2018	ENERGY	Cordis Website
TIDES	DP Energy	Develop and demonstrate a full-scale tidal array.	8	04/2013	04/2018	ENERGY	Cordis Website
REMO	TWI ltd	Develop remote monitoring systems to reduce life-cycle costs of tidal energy.	1,1	12/2012	11/2014	SME	Cordis Website
MAGNETIDE	ATARD	Development of magnetic materials for tidal turbines.	1,1	12/2012	11/2014	SME	Cordis Website
TIDALSENSE DEMO	Innotec UK	Demonstration and validation of condition monitoring systems for tidal generators.	1,6	02/2012	01/2014	SME	Cordis Website
TIDALSENSE	TWI ltd	Developing condition monitoring systems for tidal generators.	1,1	09/2009	08/2011	SME	Cordis Website



Table 6: Wave energy projects that received an FP7 award (April 2008 to September 2014)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
OceaNET	WavEC	Train young researchers in specific and enabling technologies common to both wave energy and offshore wind.	3,4	09/2013	08/2017	ITN	Cordis Website
PolyWEC	Scuola Superiore Sant'Anna di Pisa	Development of polymeric wave energy converters.	2,1	11/2012	01/2017	ENERGY	Cordis Website
AQUAGEN	National Technical University of Athens	Development of wave energy converter PTO.	1,7	01/2011	03/2014	SME	Cordis Website
Waveport	Intelligent Systems Research Institute	Demonstration of a 600kW wave energy converter and a ten-port underwater sub-station rated at 1.5MW.	4,6	02/2010	07/2014	ENERGY	Cordis Website
Standpoint	Wavebob	Standardise point absorbers through full-scale demonstration of a wave energy converter at sea.	5,1	11/2009	11/2014	ENERGY	Cordis Website
SURGE	AW-Energy	Demonstration of a wave energy converter prototype for near-shore areas at sea.	3	10/2009	10/2013	ENERGY	Cordis Website
SNAPPER	ORE Catapult	Develop a low-cost linear generator for wave energy converters.	1	09/2009	08/2011	SME	Cordis Website
Wavetrain2	WavEC	Creating a pool of specialised wave energy research professionals.	3,5	10/2008	06/2012	ITN	Cordis Website
CORES	University College Cork	Developing new concepts and components for wave energy PTOs, moorings, risers and data acquisition systems.	3,5	04/2008	09/2011	ENERGY	Cordis Website

Table 7: General energy projects that received an FP7 award (April 2008 to September 2014)

Name	Coordinator	Description	EU award (€m)	Start	End	Call	Links
ACORN	TWI ltd	Improving protective coatings for offshore renewable energy structures	1	11/2013	03/2016	SME	Cordis Website
DTOcean	University of Edinburgh	Provide open access design tools for developing the first generation tidal and wave energy arrays.	4,2	10/2013	10/2016	ENERGY	Cordis Website
Marinet	University College Cork	Linking ocean energy research and test facilities to coordinate research and development at all scales (small models, prototype scales, laboratory, open sea tests). Allow access for researchers and developers to facilities across Europe.	9	04/2011	09/2015	INFRA	Cordis Website
ORECCA	Fraunhofer	Produce a roadmap for future deployment of offshore wind and ocean energy technologies.	1,6	03/2010	08/2011	ENERGY	Cordis Website



Marina Platform	Acciona	Create multi-purpose deep offshore platforms for offshore wind and ocean energy technologies.	8,7	01/2010	06/2014	ENERGY	Cordis Website
EQUIMAR	University of Edinburgh	Development of cost and environmental protocols to harmonise wave and tidal energy technology testing.	4	04/2008	04/2011	ENERGY	Cordis Website