Position on Horizon Europe 2023-24 Work Programme

November 2021

Prepared by Implementation Working Group Ocean Energy

The SET Plan Implementation Working Group has identified the need for 9 ocean energy calls with a combined contribution of €226m in the 2023-2024 Horizon Europe Work Programme

These calls and the associated budgets are outlined in the below table, and are based on the sector's Strategic Research & Innovation Agenda (SRIA). Details for each call can be found in the SRIA.

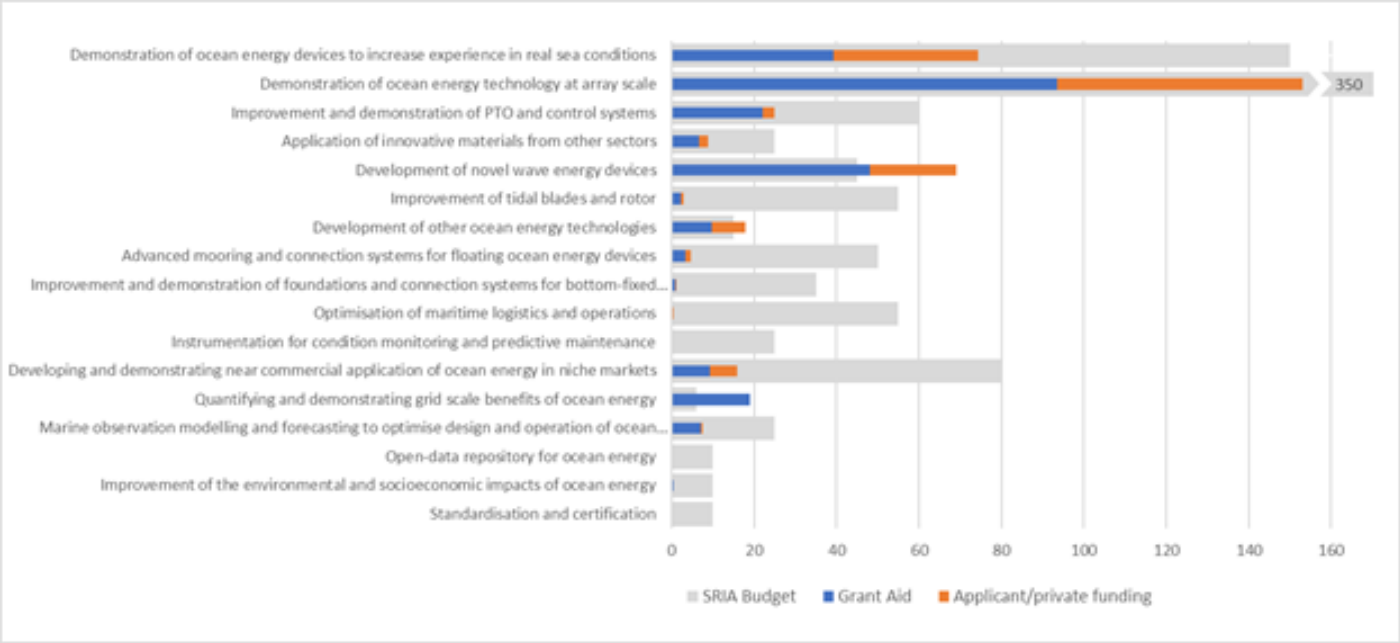
Table 1: Schedule of ocean energy calls required in Horizon Europe 2023-24 Work Programme

Call Topic	Horizon contribution per project	No of projects	Budget for call	Call Type
3 large calls focused on real-sea deployments				
Demonstration of devices to increase experience in real sea conditions *(Breakdown: 1 tidal + 2 wave)*	15	3	45	IA / PPI
Demonstration of ocean energy technology at array scale. *(Breakdown: 2 tidal + 1 wave)*	35	3	105	IA
***NEW* Ongoing operation and maintenance of existing wave + tidal technologies**	10	2	20	IA
6 smaller calls focused on specific priority topics				
Improvement of tidal blades and rotor *(tidal)*	5	2	10	RIA
Improvement and demonstration of PTO and control systems *(wave)*	5	2	10	RIA
Improved knowledge of the environmental & socioeconomic impacts	2	1	2	RIA
Optimisation of maritime logistics and operations	5	2	10	RIA
Application of innovative materials from other sectors *(wave)*	3	4	12	RIA
Instrumentation for condition monitoring and predictive maintenance	4	3	12	RIA

This programme of calls will unlock €73m of private co-funding, and should stimulate up to an additional €276m of wider private investment into the sector.

Analysis of data collected via the 'OceanSET' project has found that while European, national and private funders are making important contributions, a broad range of SRIA priority topics remain underfunded.

Figure 1: Historical national & private funding for ocean energy, relative to needs identified in SRIA



The 2023-24 Horizon Work Programme can best address this general shortfall by focusing on 3 large deployment calls. These will allow the broad range of priority topics to be addressed in a structured and complementary way.

Table 2: Priority topics which can be addressed within larger real-sea deployment calls

3 large calls focused on real-sea deployments	Relevant priority topics
Demonstration of ocean energy devices to increase experience in real sea conditions	• Next stage for novel wave energy devices currently being developed; • Application of innovative materials from other sectors; • Demonstration of connection systems foundations (for bottom-fixed) and/or advanced moorings (for floating); • Environmental life-cycle analysis and circularity of materials; • Marine observation modelling & forecasting to optimise design and operations.
Demonstration of ocean energy technology at array scale.	• Improvement of environmental and socioeconomic impacts of ocean energy; • Environmental life-cycle analysis and circularity of materials; • Marine observation modelling & forecasting to optimise design and operations; • Demonstration of connection systems foundations (for bottom-fixed) and/or advanced moorings (for floating); • Instrumentation for condition monitoring and predictive maintenance; • Open-data repository for ocean energy; • Standardisation and certification; • Quantifying and demonstrating grid scale benefits / complementarity of ocean energy with other energy system components.

***NEW* Ongoing operation and maintenance of existing wave + tidal technologies**	• Optimisation of maritime logistics and operations; • Instrumentation for condition monitoring and predictive maintenance; • Open-data repository for ocean energy; • Standardisation and certification; • Next stage for novel wave energy devices currently being developed; • Application of innovative materials from other sectors; • Demonstration of foundations and connection systems; • Environmental life-cycle analysis and circularity of materials; • Marine observation modelling and forecasting to optimise design and operation of ocean energy devices; • Quantifying and demonstrating grid scale benefits / complementarity of ocean energy with other energy system components.

In parallel the Horizon Europe should focus on **6 specific priority topics**:

- Improvement of tidal blades and rotor (tidal)
- Improvement and demonstration of PTO and control systems (wave)
- Improved knowledge of the environmental & socioeconomic impacts
- Optimisation of maritime logistics and operations
- Application of innovative materials from other sectors (wave)
- Instrumentation for condition monitoring and predictive maintenance

These 6 priority targets are specifically targeted as they collectively:

- are greatest drivers of cost reduction;
- have been historically the most underfunded;
- have the least chance of being progressed via spill-overs in adjacent sectors.

These calls should build on infrastructure and knowledge already built up in previous innovation actions (e.g. dry testing infrastructure, agreed standards)

Remaining priority topics from the SRIA remain very important. The SET Plan IWG will explore how these will be progressed outside of Horizon Europe funding during the 2023-24 period. E.g. via regional funding, integration into other deployments, via spill-overs from adjacent sectors, etc.

The 2023-24 Horizon Europe Work Programme is critical to meet the ambitions of the EU Offshore Strategy – and in particular the 2025 objective.

The EU Offshore Strategy targets 100 MW of wave & tidal by 2025, and commits to coordinating available European funding, with national and regional authorities to achieve this.

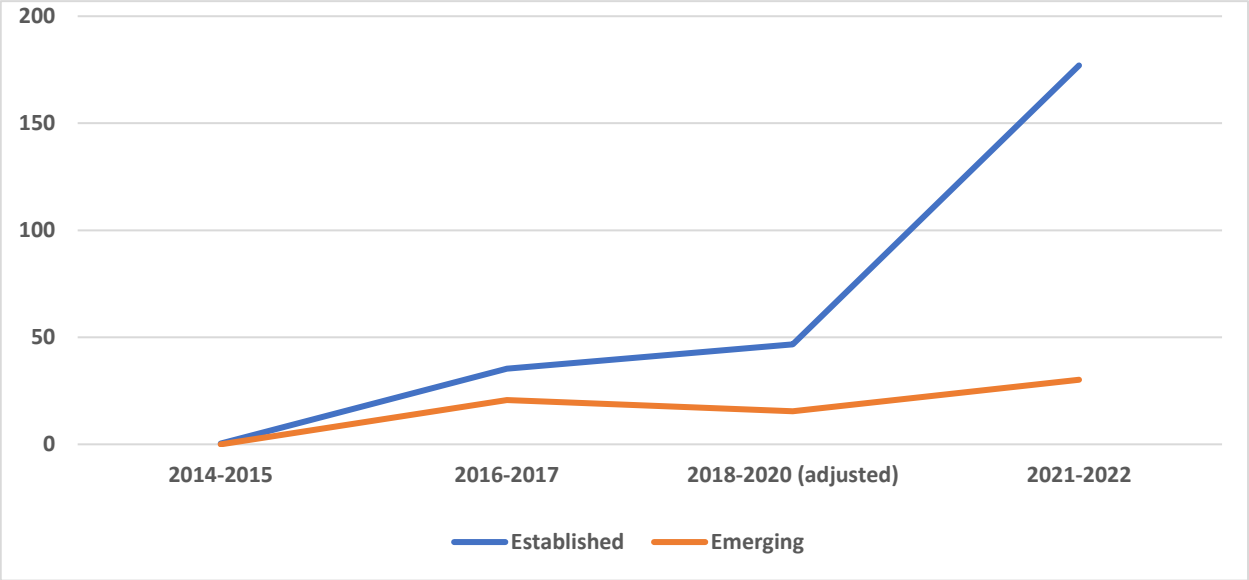
Therefore if Horizon Europe is to support this objective, the 2023-24 Work Programme must drive forward the technological frontier and focus on close-to-market deployments of wave and tidal energy.

These deployment projects are crucial for ocean energy's stage of technology development because they quickly deliver huge cost reductions and generate invaluable learnings that then increase investor confidence.

The 2023-24 Work Programme must prioritise ocean energy and other emerging renewables

Compared to its predecessor programme, Horizon Europe heavily ringfences budget for mature renewables such as solar PV and wind. Industry analysis shows that the current 2021-2022 Work Programme allocates 4 times more budget to PV and wind, compared to ocean, geothermal and concentrated solar

Figure 2: Average budgets ringfenced for established and emerging renewable technologies



If this continues, it is not realistic for emerging renewables to become competitive and achieve large-scale roll-out.

Wind and PV have private R&D investment of more than €3bn each year. The incremental contribution of Horizon Europe is therefore very small.

However Horizon funds have a transformative effect for emerging renewables. They will allow these renewable sectors to scale up and attract exponentially more private investment than is the case today.

Background

A sub-group of the SET Plan IWG sub-group was assembled, comprised of representatives of public funders, researchers and industry. The sub-group assessed the sectoral SRIA, and identified current gaps by comparing with historical spend by Member States, regional governments and private investors. This data was collected as part of the OceanSET project's annual monitoring exercise.

The position was approved at a meeting of the IWG on 10 November 2021.