



Strategic Research & Innovation Agenda

Launch Webinar

tecnal:a

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& TECHNOLOGY ALLIANCE



THE UNIVERSITY
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Agenda

Keynote from the European Commission
Matthijs Soede, DG RTD

State of the sector
Lotta Pirttimaa, Ocean Energy Europe

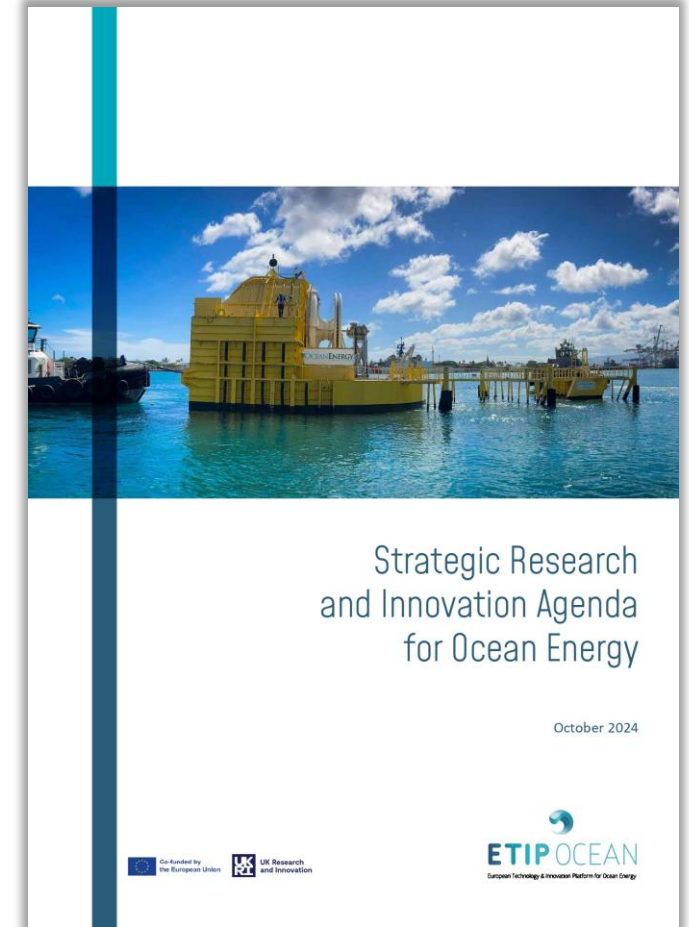
Updating the SRIA
Donald Noble, University of Edinburgh

Challenge Areas and Priority Topics
Pablo Ruiz-Minguela, Tecnalia

Strategic Research & Innovation Agenda

Identifies the key R&I priorities with the greatest impact on the ocean energy sector's progress.

- Accelerate development & pave the way to commercialisation.



Ocean energy for a competitive & zero-emissions Europe

- **Local resource:** 100 GW in Europe by 2050
- **Energy security:** Predictable & flexible – complements wind & solar
- **Competitiveness:** European companies are leaders in ocean energy
- **Job creation:** 500,000 jobs by 2050





Keynote from the
European Commission
Matthijs Soede, DG RTD



State of the sector

Tidal – from pilot to pre-commercial farms



Wave – from single device demos to pilot farms

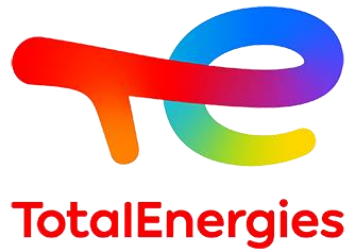


From successful demonstrations to a pipeline of projects

- 43.8 MW of ocean energy devices demonstrated in Europe since 2010
- 93 GWh of cumulative electricity production from tidal in 2023
- 167 MW pipeline of publicly supported projects in Europe



Collaborations with oil & gas majors and utilities





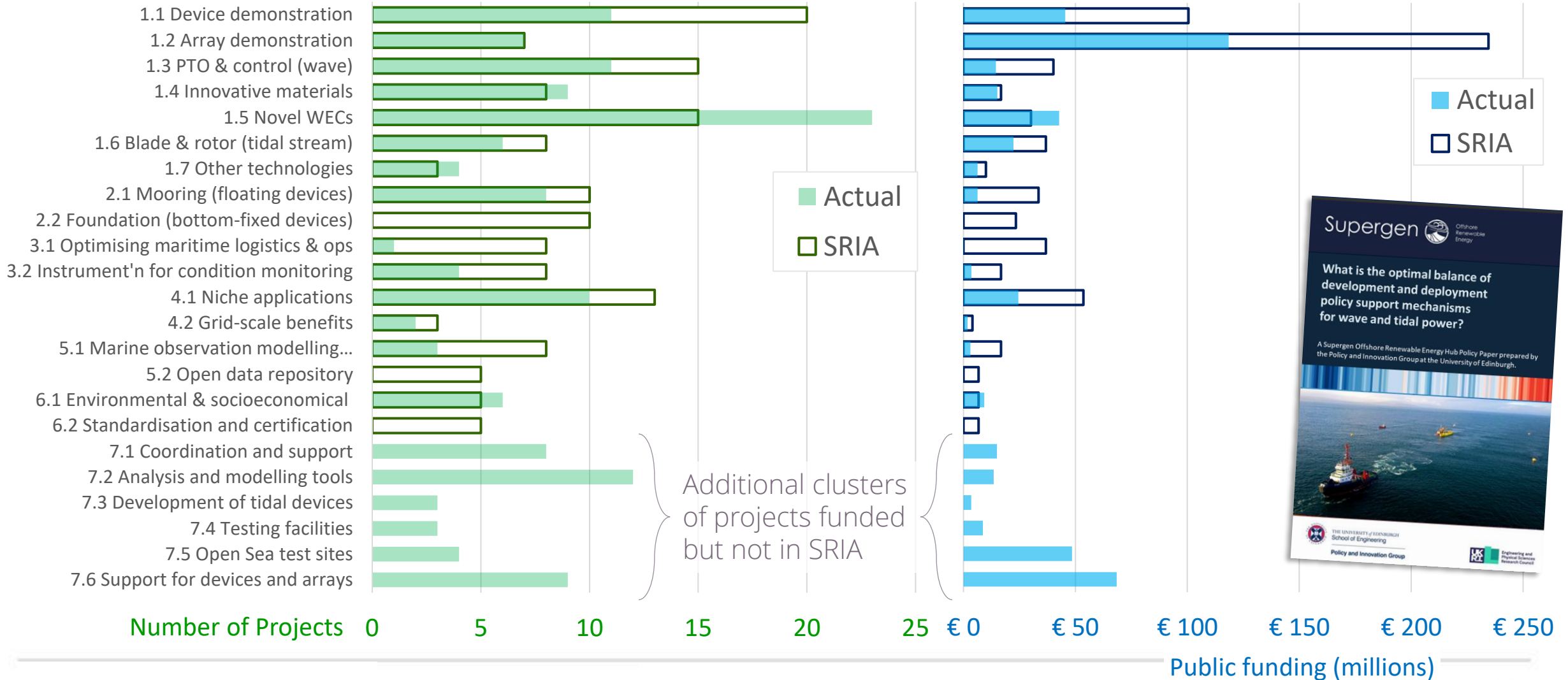
Updating the SRIA

Process of Updating the SRIA

1. Gap analysis of funded projects
 - What have we achieved since the last SRIA?
 - What is still missing and to be done?
2. Discussions with sector representatives
 - 18-month process to collect detailed feedback
3. Refocusing priority topics
 - Align to meet future sector needs



Analysis of funded projects



Discussions with sector representatives

- ETIP Ocean Technology Working Group
- Introductory meeting & questionnaire
- 3 online workshops
 - Each with 3 themed breakout groups
- Workshop alongside OEE 2023
 - Follow up questionnaire
- Webinar to present new SRIA structure before finalising





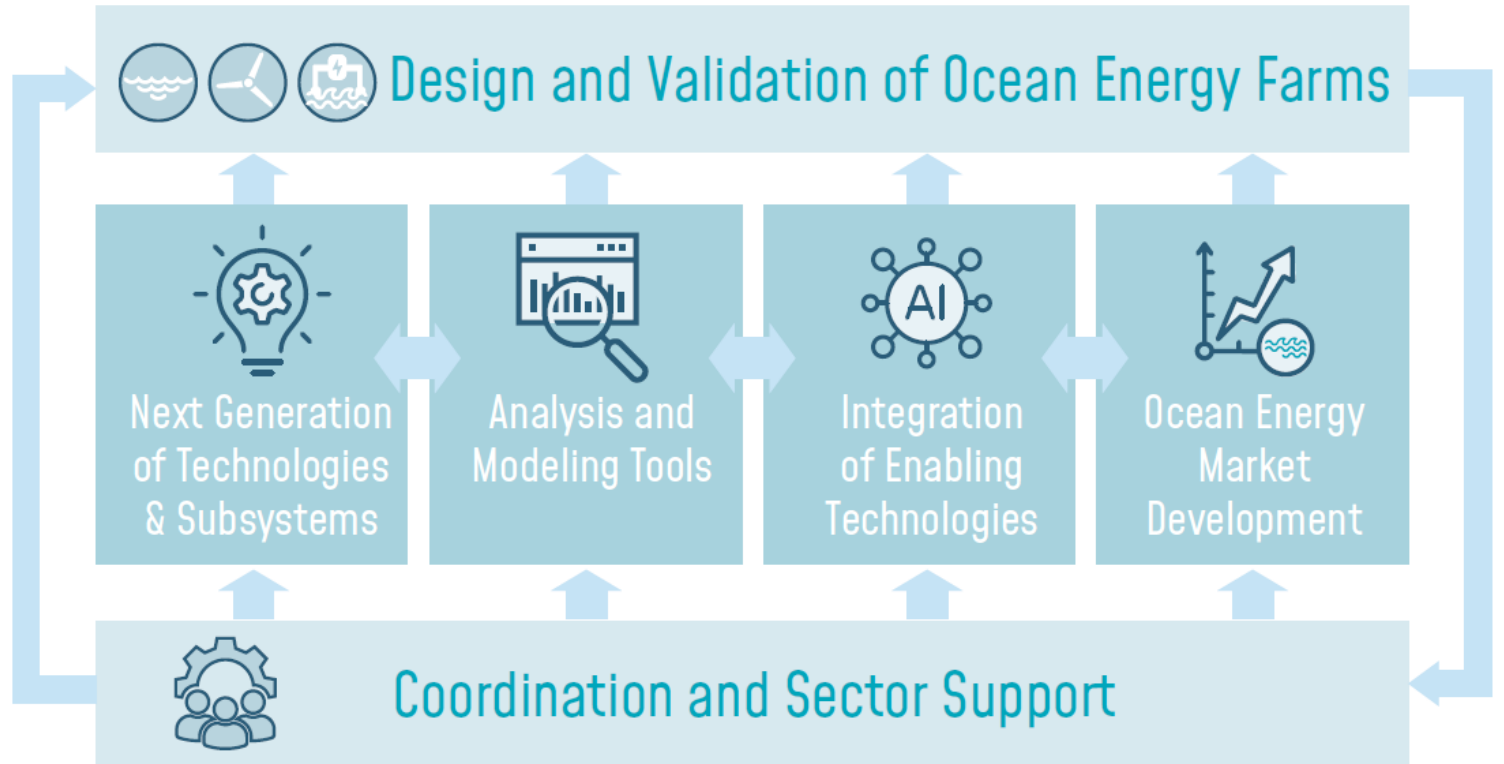
Challenge Areas and Priority Topics

Challenges Areas: Research and Innovation priorities

Top: Design and Validation as the central priority to achieve an ambitious cost reduction

Centre: Four challenges aiming to increase technology maturity and prepare for large scale deployment

Bottom: Supporting innovation efforts to leverage private investment

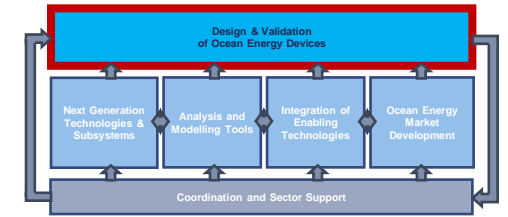


Description of Challenge Areas

Challenge Areas	Priority Topics
I Design and validation of ocean energy farms	I.1 Demonstration of pilot farms
	I.2 Demonstration of single devices
	I.3 Design and validation of other ocean energy technologies
II Next generation of technologies and subsystems	II.1 Disruptive wave energy devices
	II.2 Innovative PTO and control systems
	II.3 Advanced moorings, foundations and power connections
III Ocean energy analysis and modelling tools	III.1 Advanced simulation of ocean energy subsystems and devices
	III.2 Analysis and planning tools for ocean energy farm deployment
	III.3 Modelling and simulation of farm construction and operation
IV Integration of enabling technologies	IV.1 Innovative materials and manufacturing processes
	IV.2 Application of latest instrumentation and sensor technology
	IV.3 Use of artificial intelligence and big data
V Ocean energy market development	V.1 Application of ocean energy in off-grid markets
	V.2 Demonstrating grid-scale benefits of ocean energy
	V.3 Co-location of multiple technologies
VI Coordination and sector support actions	VI.1 Coordinating sector efforts
	VI.2 Accessing and upgrading testing facilities
	VI.3 Support to ocean energy sector development

- General description of the Challenge Area
 - Motivation
 - Level of activity between 2020-2024
 - Main challenges
- Specific Priority Topics
 - Context
 - Main impacts (5 goals)
 - Applicability (wave / tidal / other)
 - Scope of Actions
 - Expected Outcomes
 - Implementation (TRL, type, n°, size of projects)

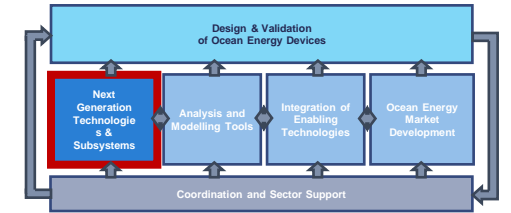
Design and validation of ocean energy farms



Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Demonstration of pilot farms <i>Achieve commercial maturity of OE technologies</i>	Wave / Tidal	6-9	600
Demonstration of single devices <i>Validate system improvements and upgrades to reduce risks</i>	Wave / Tidal / Other	6-8	162
Design optimisation of other ocean energy technologies <i>Improve performance and reliability of OTEC, SWAC, Salinity, Tidal Range</i>	Other	4-8	26



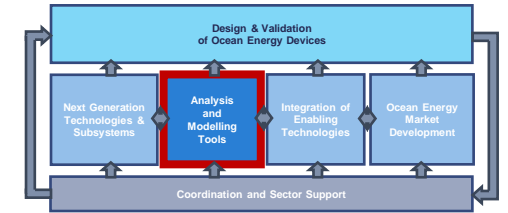
Next generation of technologies & subsystems



Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Disruptive wave energy devices <i>Demonstrate a step-change improvement in LCOE</i>	Wave	1-5	54
Innovative PTO & control systems <i>Improve performance, reliability and power quality</i>	Wave / Tidal	4-8	45
Advanced moorings, foundations and power connections <i>Moorings, foundations and electrical connections that can reduce the LCOE</i>	Wave / Tidal / Other	4-8	73



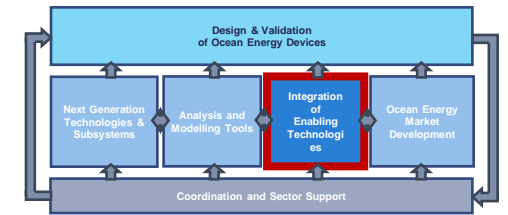
Ocean energy analysis and modelling tools



Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Advanced simulation of ocean energy subsystems and devices <i>Improve modelling confidence of devices and subsystems</i>	Wave / Tidal / Other	1-5	29
Analysis and planning tools for ocean energy farm deployment <i>Increase resolution/accuracy of hydrodynamic and environmental models</i>	Wave / Tidal	4-8	33
Modelling and simulation of farm construction/operation <i>Optimise the offshore logistics and marine operations</i>	Wave / Tidal	4-8	27



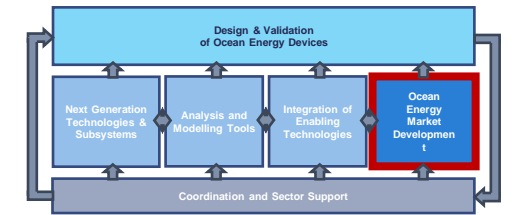
Integration of enabling technologies in ocean energy systems



Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Innovative materials and manufacturing processes <i>Demonstrate potential benefits in realistic ocean conditions</i>	Wave / Tidal / Other	4-8	39
Application of latest instrument. and sensor technology <i>Demonstrate applicability to multiple ocean energy devices</i>	Wave / Tidal / Other	4-8	42
Use of artificial intelligence and big data <i>Apply recent advances to support analysis and decision-making</i>	Wave / Tidal / Other	4-8	21



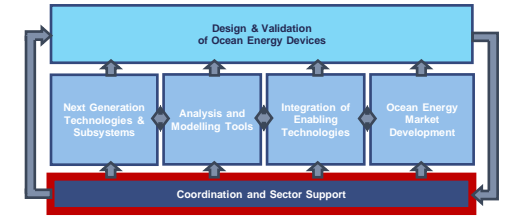
Ocean energy market development



Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Application of ocean energy in off-grid markets <i>Remove the remaining obstacles to technology growth</i>	Wave / Tidal / Other	5-8	69
Demonstrating grid-scale benefits of ocean energy <i>Promote OE through theoretical studies and real demonstration</i>	Wave / Other	6-9	45
Co-location of multiple technologies <i>Increase use of sea space, social and environmental acceptance</i>	Wave / Tidal / Other	4-8	51



Coordination and sector support actions

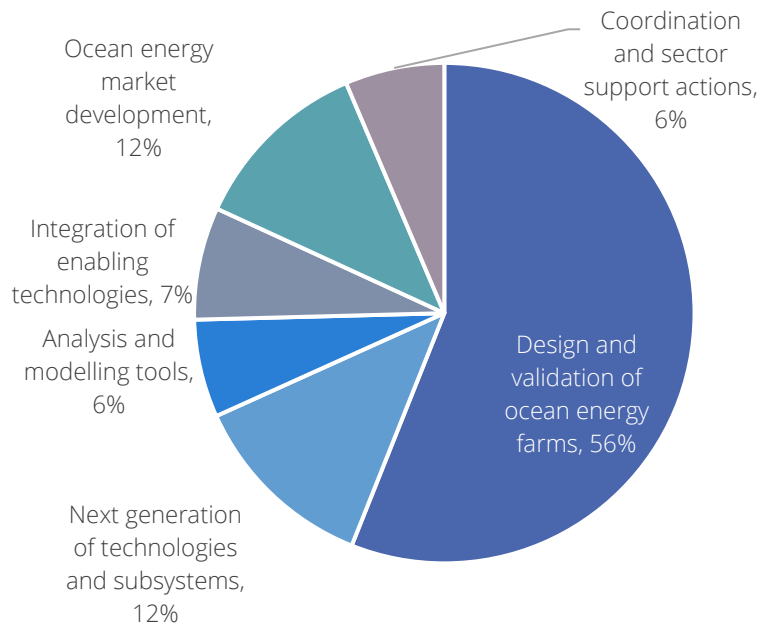


Priority Topics, <i>Aim</i>	Applicability	TRL	Budget (m€)
Coordinating sector efforts <i>Foster coordination, knowledge sharing and standardisation</i>	Wave / Tidal / Other	N/A	8
Accessing and upgrading testing facilities <i>Facilitate testing of components and systems in real conditions</i>	Wave / Tidal / Other	6-8	66
Support to ocean energy sector development <i>Provide non-technical support to companies and professionals</i>	Wave / Tidal / Other	N/A	16

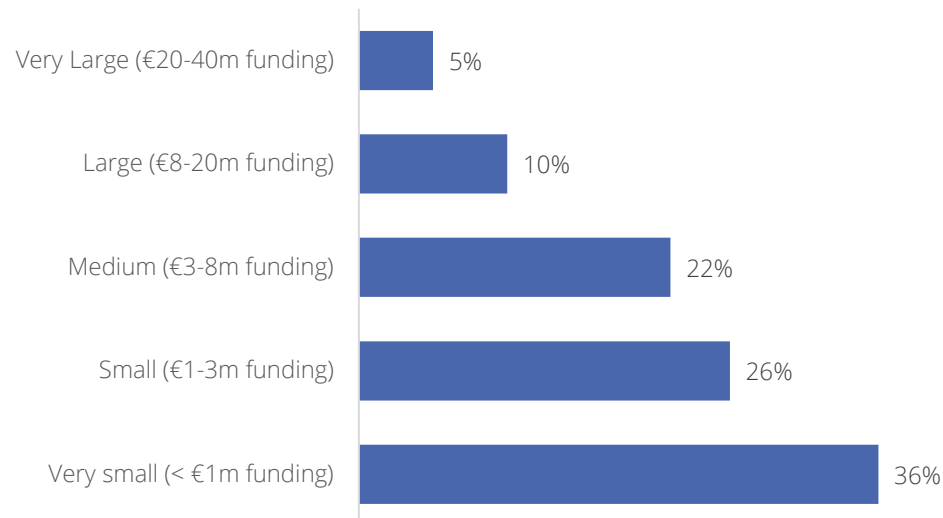


Summary of Implementation

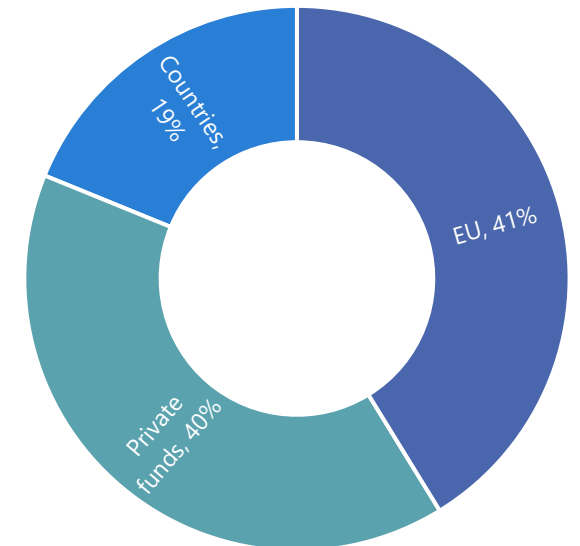
€1.4 b to be mobilised between 2025-2030



Around 190 funded projects in 6 years of various sizes



Financed through a combination of funding sources



Thank you, Any Questions?



Download the SRIA here:





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