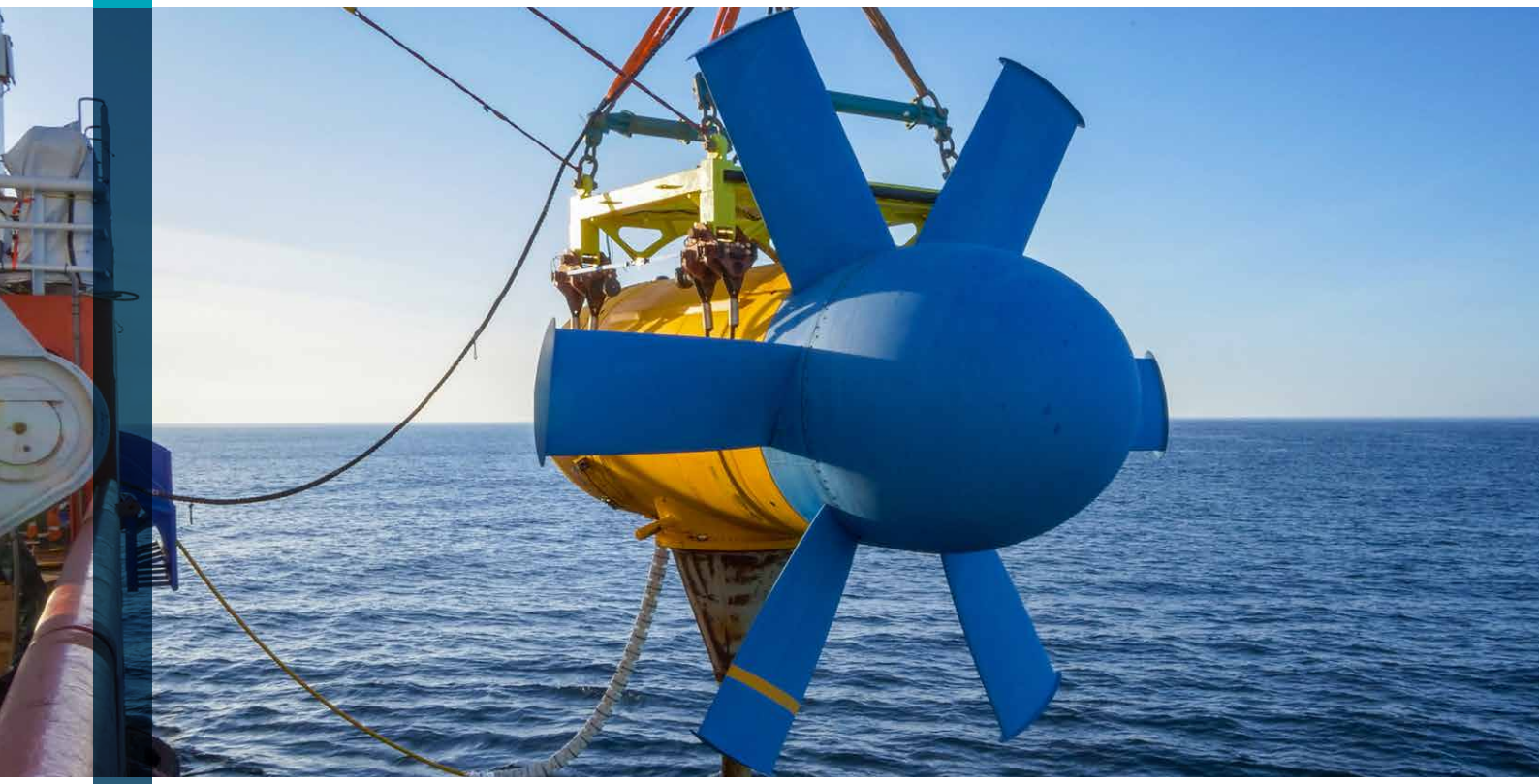

A European Ocean Energy Industry – the €140bn Economic Opportunity

Industrial Roadmap for Ocean Energy

June 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 826033.

ETIP OCEAN

European Technology & Innovation Platform for Ocean Energy

This publication summarises the key results from 2 ETIP Ocean reports:

- '*A study into the potential economic value offered to Europe from the development and deployment of wave and tidal energy to 2050*' led by Charlotte Cochrane and Henry Jeffrey at University of Edinburgh – available on the ETIP Ocean website.
- '*A study into the potential social value offered to Europe from the development and deployment of wave and tidal energy to 2050*' led by Jose Luis Villate and Pablo Ruiz-Minguela at Tecnalia – soon available on the ETIP Ocean website.

Please see these publications for full details on the methodological approach, underlying assumptions and data used.

These analyses are complemented with data on ocean energy industrial activity and case studies of individuals active in the sector. Data & case studies collected by Ocean Energy Europe.

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ETIP OCEAN

European Technology & Innovation Platform for Ocean Energy

THE UNIVERSITY *of* EDINBURGH

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European Technology & Innovation Platform for Ocean Energy

Ocean energy for a 100% decarbonised Europe

Ocean energy can provide
10% of Europe's current electricity needs by 2050.

That's enough to power
94 million households per year.

Abundant, limitless and free energy - right on Europe's doorstep.

The ideal partner for wind & solar

Ocean energy makes a
100% renewablel energy system a reality.

Predictable far in advance,
even decades ahead.

Enables better balancing
of electricity supply and demand.

Produces at different times
to wind & solar.

A diversified renewables portfolio
delivers lower & more stable prices

A new industry for Europe

100GW of ocean energy
in Europe by 2050 will have huge economic benefits.

500,000 European jobs
by 2050.

Decarbonisation pathways
for fossil fuel companies & workers

Revitalising coastal regions.

New opportunities
for traditional maritime industries.

An export opportunity for Europe

Europe can be a pioneer in exporting its technology to a huge global market.

A chance to
replicate European successes
in offshore wind.

Thanks to Europe's technological leadership,
nearly all existing projects worldwide
use European technology.

A climate-friendly solution

Ocean energy emits no CO_2 and has no significant adverse environmental impacts.

Studies show that
marine life is unaffected
by ocean energy.

234 million tonnes of CO_2
can be avoided in Europe
by installing ocean energy.

Ocean energy is almost invisible
and enjoys strong public support.

Ocean energy can create 500,000 jobs in Europe

Photo: CorPower Ocean
Photographer: Colin Keldie

Europe faces a choice

– to lead or to follow the emerging ocean energy global market

The European Commission is putting its weight behind ocean energy. The EU Offshore Renewable Energy Strategy targets 100 MW of wave and tidal by 2025 and at least 1 GW by 2030, and commits to coordinate funding to deliver on these targets.

The Commission's prioritisation of ocean energy is not just about decarbonisation and energy system balancing. It is also about economic opportunities for European industry and employment for European citizens.

But these economic and social benefits will vary significantly, depending on how Europe chooses to develop its ocean energy sector in the coming years.

In this context, ETIP Ocean undertook extensive economic modelling work[1] to establish the economic and jobs impacts of ocean energy deployments under 2 contrasting scenarios:

SCENARIO 1

Europe leads the global market

€140bn
in economic activity

500,000 JOBS
in Europe by 2050

Europe takes clear steps to lead the global ocean energy market for ocean energy. Europe establishes a domestic market of 100 GW by 2050 – an important share of the 293 GW global market.

A strengthened European supply chain dominates the domestic European market.

This leadership position empowers European industry to export significant equipment and expertise to ocean energy projects across the globe.

SCENARIO 2

Europe follows the global market

€59bn
in economic activity

200,000 JOBS
in Europe by 2050

An indecisive approach means that Europe only establishes a 60 GW domestic ocean energy market by 2050 – a much smaller share of the global market.

A weaker European supply chain is more dependent on non-European players – even for projects in Europe.

This lack of leadership means that European developers only have limited ability to export into the global ocean energy market.

[1] GVA and employment effects have been obtained through the Leontief inverse of IxI Input Output tables from the World Input Output Database. Type II effects have been applied to appropriate industrial cost centres based on the annual capital and operational expenditure required to achieve each of the deployment scenarios. SET Plan LCOE targets are assumed to be met by both wave and tidal stream technologies when deriving annual expenditures. This methodology is explained in detail in Section 6 of the ETIP Ocean Economic impact study.

Photo: OceanEnergy Ltd

A 293 GW global market for ocean energy by 2050

The economic modelling was based on the International Energy Agency's (IEA) projections for ocean energy deployments. Specifically, the IEA's 'Faster Innovation Case' was used as the baseline. The 'Faster Innovation Case' is a modelling exercise in the 2020 edition of the IEA's Energy Technology Perspectives publication. It forecasts the composition of the energy system when Net Zero is reached globally by 2050, and with a significant accelerated progression of selected clean energy technologies.

Projected deployments for wave and tidal accelerate rapidly in the Faster Innovation Case, reflecting dramatic cost reductions in the technology. This is consistent with the dynamic of other renewable energy sources like wind and PV. The different projections for wave and tidal also reflect their respective technological progress and resource availability.

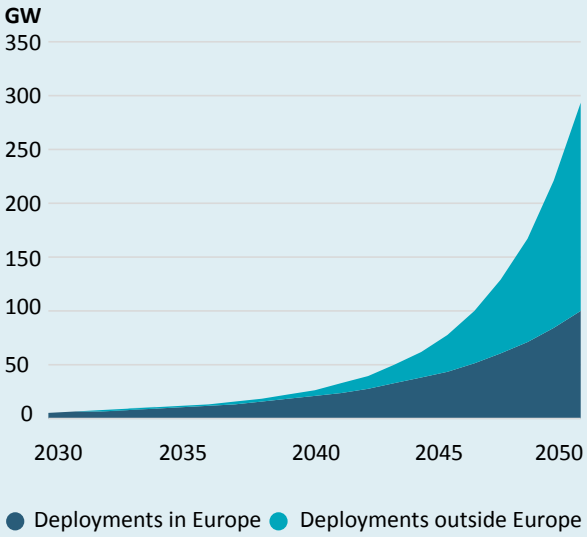
The IEA model projects 293 GW of wave and tidal energy deployed globally by 2050.

Europe has excellent wave and tidal resources, so under both scenarios there will always be ocean energy powering the continent. But Europe's share of global deployment will depend on which of the 2 scenarios is pursued.

SCENARIO 1

Europe leads the global market

Ocean energy deployments

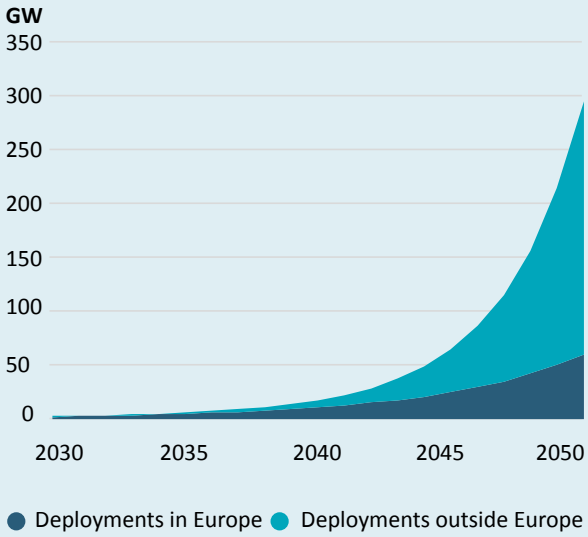


If Europe moves first to establish a domestic market and take a leading global role, then **circa 1/3 of all deployments will take place in European waters.**

SCENARIO 2

Europe follows the global market

Ocean energy deployments

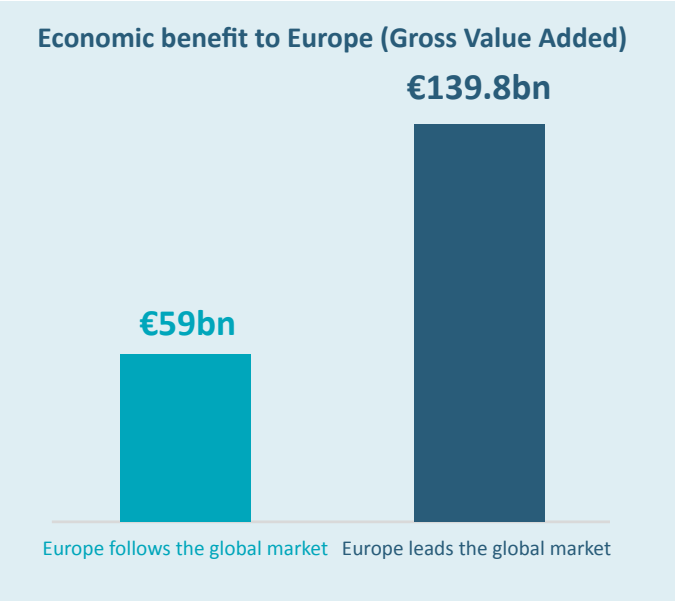


If Europe follows global trends and is slow to establish a domestic market **only circa 1/5 of deployments will happen in European waters.**

€140bn economic benefit & 500,000 jobs up for grabs in Europe

The results are clear – when Europe seizes the opportunity of global leadership, the economic and employment benefits more than double. If Europe moves now, its industry will benefit from additional economic activity worth €140bn and its citizens can access an additional 500,000 direct and indirect jobs.

If not, then other global players will reap the economic benefits – including from European projects.



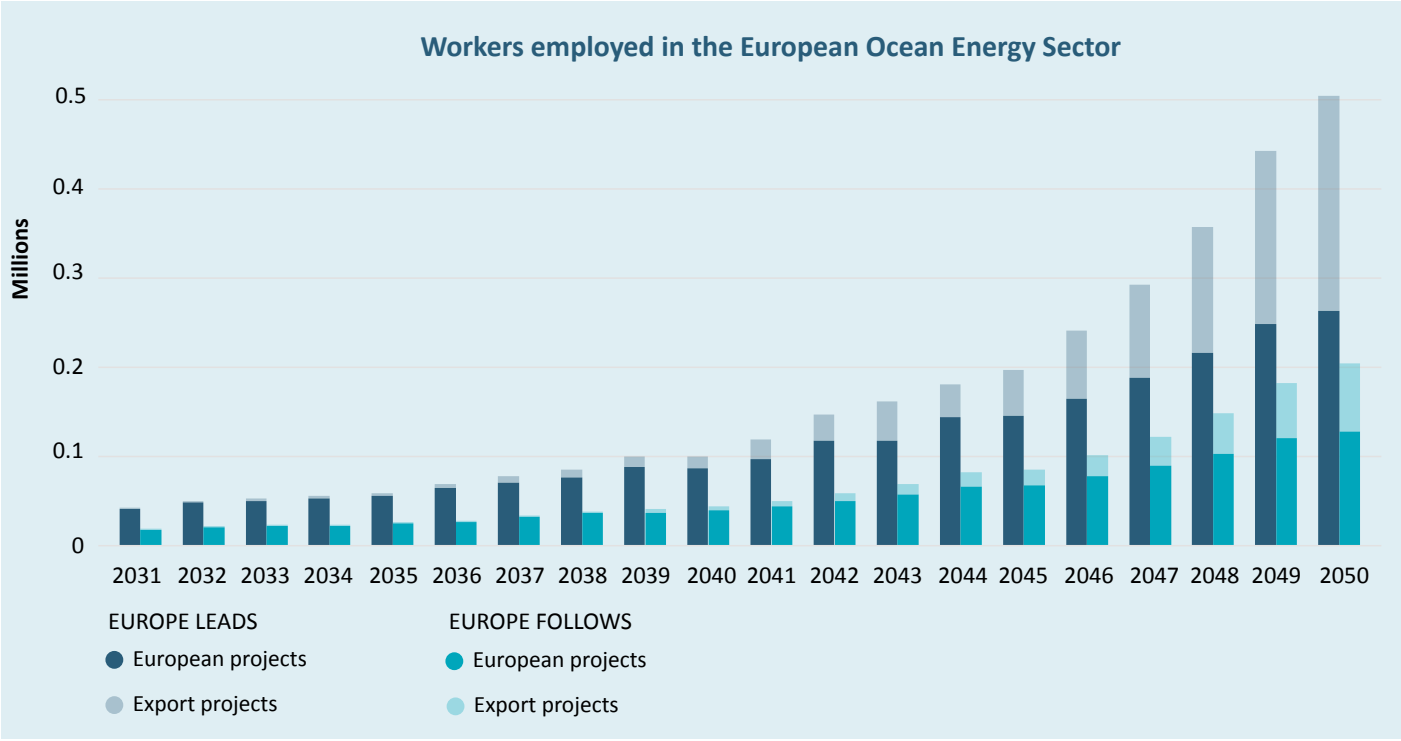


Photo: Orbital Marine Power

New opportunities for traditional maritime workers

Ocean energy is a new industry but uses similar skills and expertise to other sectors such as the fishing, shipbuilding, offshore oil & gas and aerospace. As the growth of these traditional sectors is challenged, the ocean energy sector is providing new opportunities for workers to transition to employment which is both sustainable and rewarding.

Jason Schofield

From fishing industry to a pioneer in ocean energy operations

Jason Schofield is the Founder and Managing Director of the Scottish offshore operations company Green Marine. As one of the first companies focusing entirely on wave and tidal technologies, Green Marine quickly became a sectoral leader. Today Green Marine carries out installation and maintenance operations with a team of over 35 employees and a fleet of 6 boats.

Photo: Green Marine

For Jason, ending up in the maritime sector was no surprise. Born and raised on the Orkney Islands – just 20 metres from the sea – Jason grew up with saltwater in his veins.

After graduating in mechanical engineering, Jason worked on a local fishing vessel catching lobster and crab. He moved up the chain of command all the way to the rank of Captain and, following his life-long dream, started his own fishing company.

Orkney is a hub of sustainable marine innovation, and so Jason was a first-hand witness of the emergence of a new ocean energy sector. Initially wave and tidal developers relied upon oil and gas servicing vessels. The shortcomings of this ad hoc solution were clear to Jason and sparked the idea for a new business opportunity.

In 2012, Green Marine started to provide their fishing vessels and operational experience to ocean energy developers.

The new direction was welcomed by the whole crew – annual quotas and new restrictions limited expansion opportunities in the fishing industry.

But for Jason, it was more than just a smart business move. Jason's father was an avant-garde environmentalist from the 60s onward, building his own wind turbine, always cleaning plastic off the beach and tending to an organic farm in Orkney. These values were passed on to Jason, who always wished to make his own environmental contribution.

Today, Jason enjoys the opportunities offered by the ocean energy. Employing a local workforce contributes significantly to the local community, while working internationally expands Jason's own network and allows him to see not only exciting new innovations but also new people and contacts around the world.

Sarah Thomas

Aspiring astronaut applies her engineering skills to the deep sea

Sarah Thomas works as the Project Manager at the Irish project developer DP Energy and oversees the company's 'Uisca Tapa' tidal project in the Bay of Fundy, Canada.

Originally from a farm in Iowa, Sarah wanted to broaden her horizons – all the way to outer space. She studied aerospace engineering to become an astronaut but had to change her career plans due to an injury. Her skillset landed her to a position in the US Navy, where she was commissioned as a Surface Warfare Officer and joined a ship stationed overseas in Japan. While serving in the Navy, Sarah also volunteered for a few years with Engineers Without Borders.

After three years in the Navy, Sarah continued her career in the shipbuilding industry, first in the US and then in Canada, where she enjoyed the cutting-edge nature of the job.

But at some point, Sarah's priorities shifted. Professional excellence was no longer enough, and shipbuilding was not fulfilling anymore. She felt the need to make a positive contribution to the planet.

This realisation led her to look at jobs in renewable energy. She first entered the ocean energy sector as a technical manager at a tidal technology developer, which then opened the door to DP Energy. She was positively surprised by the diversity of people working on ocean energy and the possibility to meet a variety of colleagues from researchers to electricians.

The welcoming mindset was a change from the shipbuilding industry, where she sometimes found it difficult to thrive as a female engineer.

Working in an innovative sector has its challenges, but for Sarah that's part of the attraction: not everything is figured out so she can use her previous experience to find innovative – and creative – solutions.

Guillaume Gréau

Turning a large ship: Expanding a shipyard to ocean energy

Guillaume Gréau is Head of Business Development of the tidal energy company HydroQuest and of the shipyard Constructions Mécaniques de Normandie (CMN), located in Cherbourg, Normandy.

Guillaume has a lifelong passion to build. This led him to the civil construction sector. He quickly moved from buildings to cruise ships and military vessels. A position as Production Engineer at CMN allowed Guillaume to manage the construction of mega yachts.

To balance the cyclic nature of the shipbuilding sector, CMN began to diversify their activities. The obvious choice was the tidal sector: tidal devices have similar dimensions, mechanical mountings and cabling to ships built at CMN facilities. And Europe's largest tidal resource, the "Raz Blanchard", is located just 20 km from the CMN shipyard.

For Guillaume, entering an emerging market was also personally very appealing due to its innovative nature – and being a pioneer is in the genes of the shipyard as well.

CMN quickly partnered with the French tidal energy company HydroQuest. The construction of HydroQuest's 1 MW prototype came at the right time and provided jobs during a rather quiet period in the shipbuilding industry.

The successful demonstration of HydroQuest's device led to the preparation of the first pilot farm, due to be operational in 2025. Guillaume is confident that the pilot farm will secure leadership in French tidal energy for HydroQuest, with massive job creation from 2025 onwards.

Europe can be the centre of a global ocean energy supply chain

Photo: AW-Energy

The first movers will unlock the greatest economic and social benefits

If Europe moves first to establish a domestic ocean energy market, there will be direct strategic advantages:

The leading technology developers and supply chain actors will remain European

This will be particularly the case for suppliers of high-value complex components and sub-systems. Europe is already the technological leader in ocean energy. Complementary industrial supply chains in the automotive, wind and precision manufacturing sectors offer Europe the opportunity to quickly scale up industrial production of ocean energy technology.

European players will export and capture greater value in global ocean energy projects

With a strong domestic market, European wave and tidal technology will be the most performant and reliable. European players know best how to deploy and operate ocean energy projects. This means that when wave and tidal projects are being deployed around the world, local actors will turn to European companies to deliver.

SCENARIO 1

Europe leads the global market

When Europe leads

European firms supply

90% of the value of **European** projects

25% of the value of **non-European** projects

SCENARIO 2

Europe follows the global market

When Europe follows

European firms supply

70% of the value of **European** projects

5% of the value of **non-European** projects

This means that when Europe leads the global ocean energy market, the economic and employment benefits are significantly greater than when Europe follows.

Photo: WavePiston

A first snapshot of Europe's nascent ocean energy supply chain

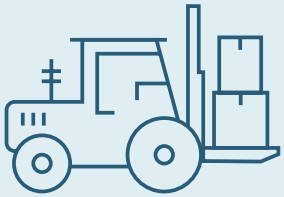
Data was collected on a sample of the highest value supply contracts for 9 recent wave and tidal deployments in European waters. These 114 contracts have a collective value of €45.3m and cover the supply of both products (device components & inputs) and services (e.g. marine operations, insurance).

2/3 of total contract value remains within the countries where the deployments are taking place

This was particularly the case for heavy manufacturing. Territories with good wave or tidal resources typically have complementary industries like shipbuilding. These industries supply large bulky parts like device hulls or floating platforms which tend to be produced and maintained close to the deployment site.

76% of 'heavy manufacturing' contracts were won by companies in the same country as their ocean energy projects. This local activity is very beneficial for ocean energy territories - heavy manufacturing accounts for almost half the economic value of the contracts analysed.

In addition, installation and maintenance operations are often supplied by local players and resources.

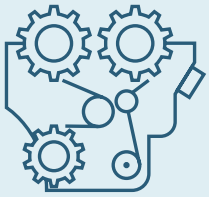


Specialisation within the European ocean supply chain is still to be won

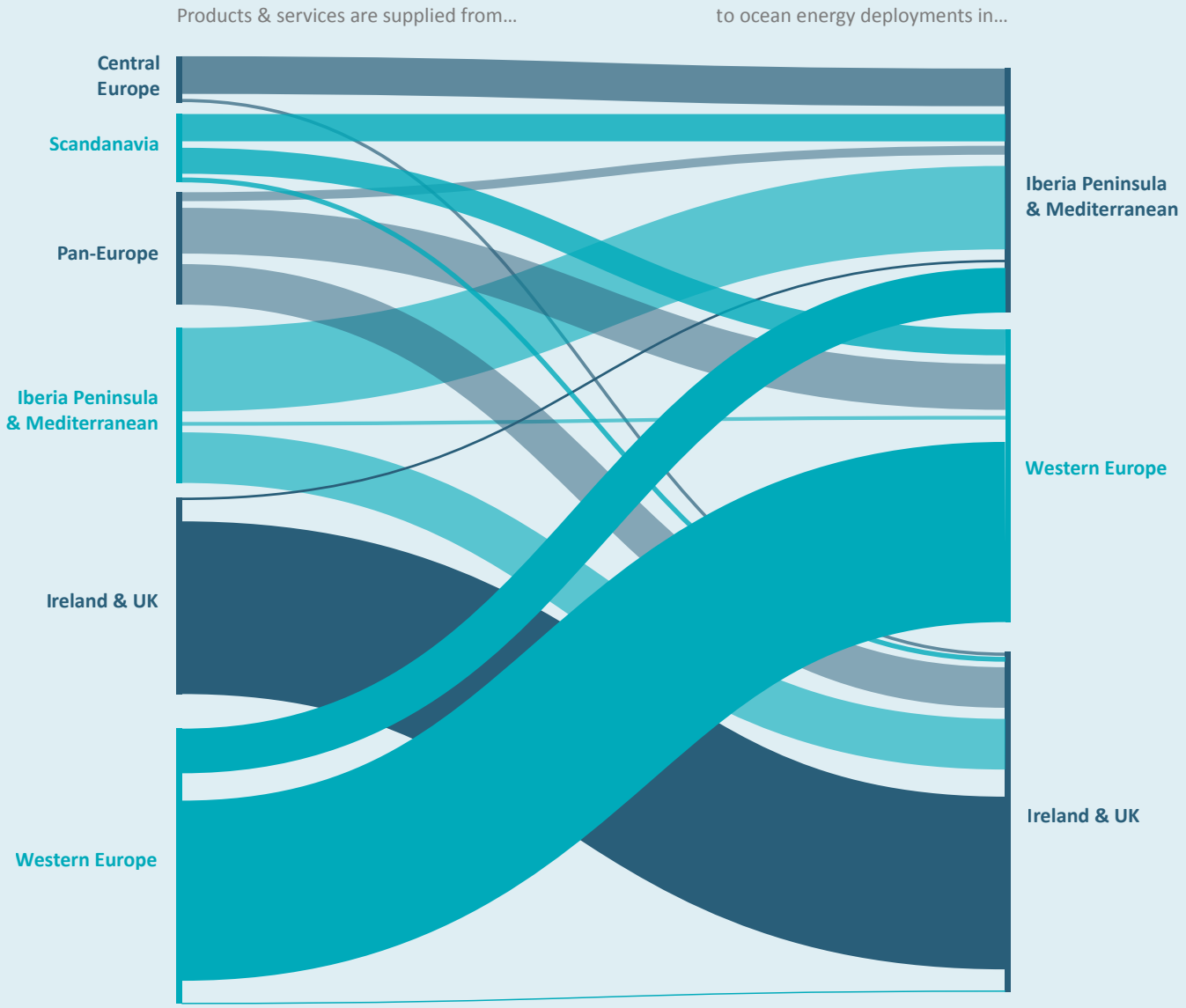
'Specialist manufacturing' products like gearboxes, generators, control systems and drivetrains were most likely to be sourced from non-domestic countries in Europe.

These are high-value but smaller and more transportable components of wave & tidal devices. Since they must operate with extremely high reliability they are often produced by countries with already-mature industrial supply chains – e.g. other renewables, automotive or precision machinery.

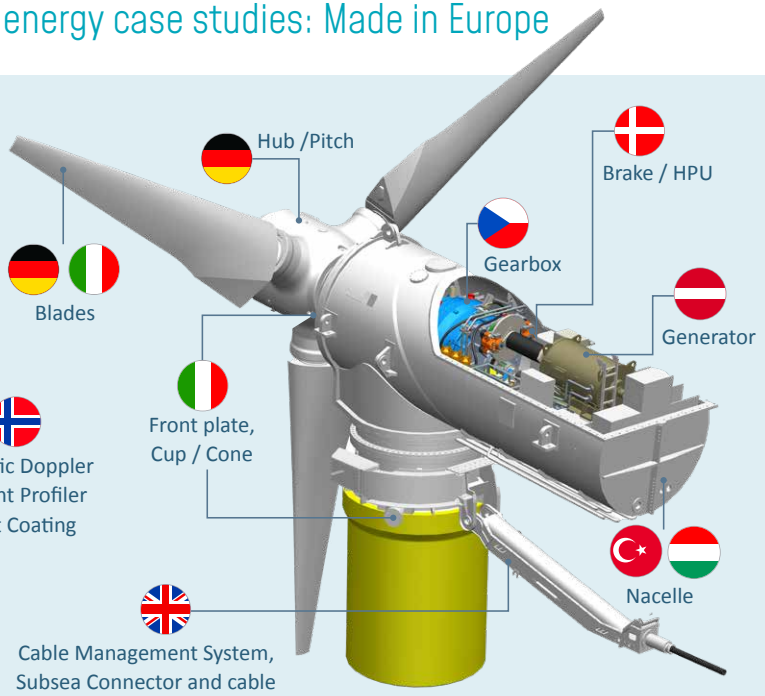
Over half the value of 'specialist manufacture' contracts involved cross-border trade within Europe – but this was spread across several countries. The prize of specialisation in ocean energy components remains to be won. And it is a significant prize – specialist manufacture accounted for a third of the economic value of all contracts.



Value flows – tracking how €45m of ocean energy contracts flow between European regions



Ocean energy case studies: Made in Europe



ANDRITZ Hydro, headquartered in Graz, Austria, is a global supplier of equipment and services for hydropower plants. Their 1.5 MW turbine is part of the world's first tidal array, Meygen, and is now being exported to Canada to power a 9 MW project in the Bay of Fundy in Nova Scotia.

ANDRITZ's supply chain makes clear that tidal energy is very much 'Made in Europe'. Just for the turbine alone, economic activity is generated in multiple European countries - including in countries which are thousands of kilometres away from the ocean.

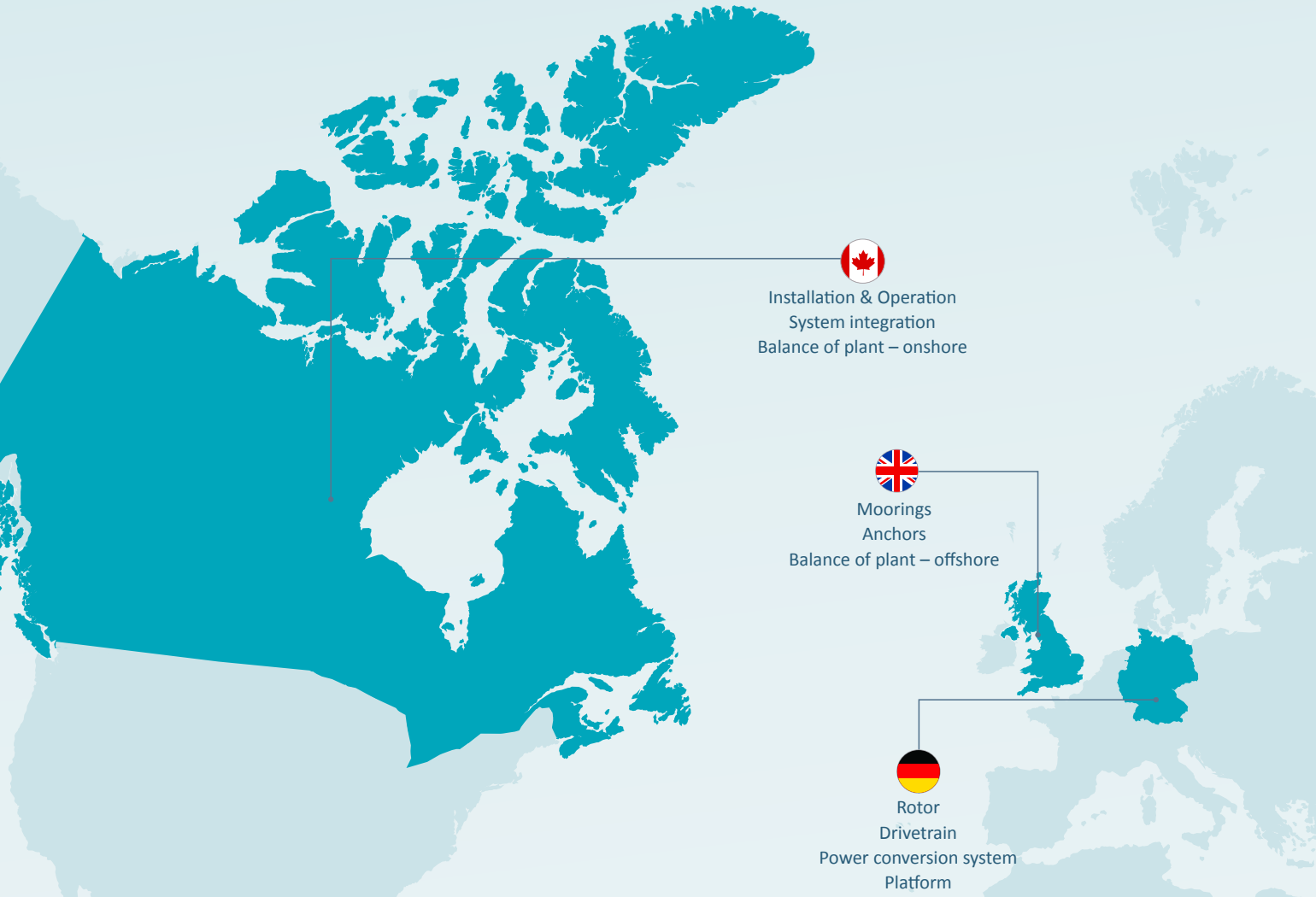
CorPower Ocean is a Swedish wave energy developer with a full-scale device to be shortly deployed in Portugal, to be followed by another three devices for a pilot farm in 2024.

CorPower Ocean's supply chain spans across 13 different European countries. In addition to coastal territories, countries as diverse as Germany, Italy and Switzerland will also benefit from an ocean-energy-powered Europe.

Sustainable Marine's Pempa'q 'rise of the tide' project: A European-Canadian partnership

The tidal developer Sustainable Marine, a UK-German venture, is operating a transatlantic project between Europe and Canada. The Pempa'q project will deliver 9 MW of tidal capacity into the grid – removing 17,000 tonnes of CO_2 emissions by year and powering up to 3,000 homes.

In the first phase, a 420kW PLAT-I tidal energy platform will be installed at Fundy Ocean Research Centre for Energy in Nova Scotia. The project is the result of teams working together on both sides of the Atlantic: the R&D, engineering and operational planning taking place in the Europe and the integration, installation and operation in Canada. Currently the Pempa'q project employs 35 staff members in the UK, Germany and Canada.



Setting Europe on a path for ocean energy global leadership

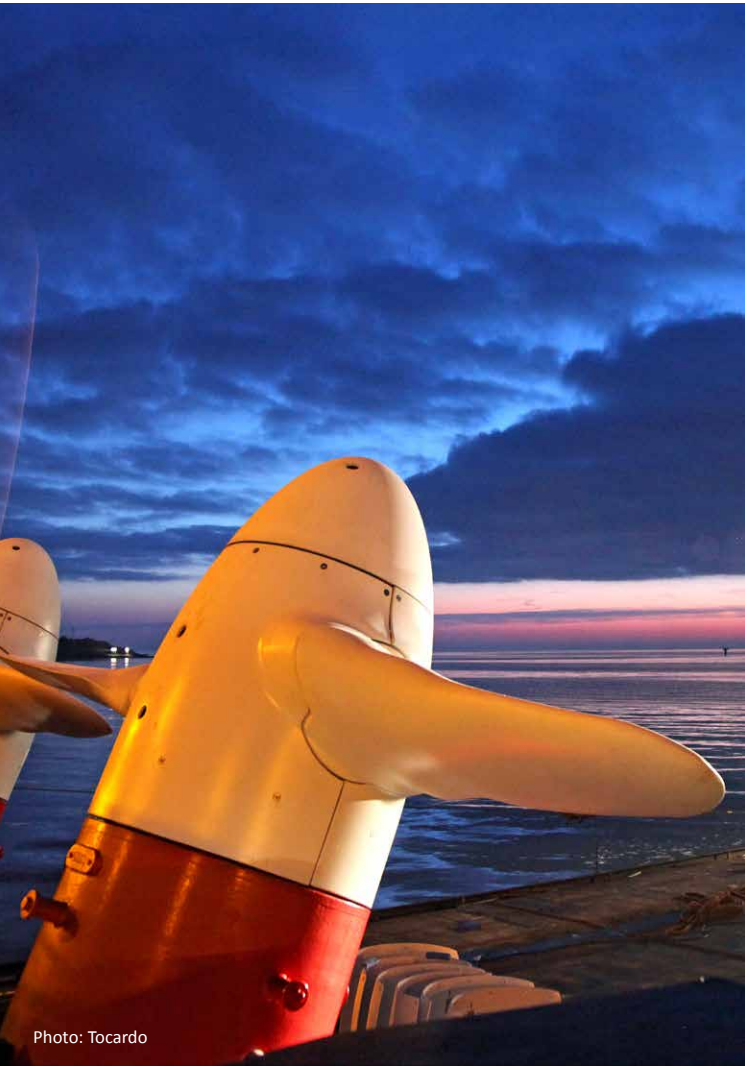


Photo: Tocardo

Action Plan to deliver the economic benefits & jobs in Europe

The previous chapters of this Roadmap show that the economic, industrial and social opportunities of ocean energy are huge. With appropriate political and funding interventions, ocean energy can create economic activity worth €140bn and 500,000 direct and indirect jobs in Europe. But if these benefits are to be realised, the work must start now.

Europe can only secure global leadership if it moves to establish the first domestic markets. China, the US, Canada and other players are pursuing their own ocean energy strategies.

The EU Offshore Renewable Strategy 2025 & 2030 deployment targets help to create the ideal framework to establish a clear market for wave and tidal. The European Commission must now follow through on its Offshore Strategy commitments and work with Member States and regions to put in place a supportive framework to allow the first ocean energy projects to be deployed for 2025.

The following action plan shows how this can be done. The action plan is structured in five categories of actions: supportive political & strategic framework, technology development, financial mechanisms, knowledge sharing and sustainable consenting practices.

SUPPORTIVE POLITICAL & STRATEGIC FRAMEWORK FOR OCEAN ENERGY

Objective & impact	Actions	Main actors	Timeline
Include ocean energy deployment targets in the revised National Energy and Climate Plans in 2023 so that they collectively result in at least 1 GW and up to 2.6 GW by 2030[2]. ➔ Attract necessary investment with clear signals on future markets.	Assess national resource potential & consult the national ocean energy sector.	National energy ministries in cooperation with the ocean energy sector and the European Commission	2023
	Develop national strategies for ocean energy deployment to realise the targets.		
Include ocean energy into wider planning processes – such as plans for maritime, infrastructure plans & energy networks, industrial strategies and skills/education strategies. ➔ Ensure the wider supportive eco-system is in place to support the scale-up of ocean energy into a large industrial sector.	Mapping of short, medium & longer-term needs of ocean energy, in terms of infrastructure and industrial and human capacities.	Ocean energy industry ETIP Ocean	2023 & continued to 2030 and beyond
	Undertake cross-cutting work to ensure that key national strategies & plans explicitly account for ocean energy's scale up needs. These can include infrastructure & grid planning, industrial strategies & production facilities, interconnections with other countries, MSP and zoning.	National governments	
Introduce a target for innovative renewables in the Renewable Energy Directive. ➔ Attract necessary investment and bring a range of new technologies to market, including ocean energy, that will diversify the post-2030 energy mix and balance a grid with high penetration of variable generation.	Support the European Parliament's proposal on the innovation target.	National governments European Commission	2023

[2] The EU Offshore Strategy has a target of 1 GW by 2030, but the ocean energy sector has a more ambitious target of 2.6 GW.

TECHNOLOGY DEVELOPMENT

Objective & impact	Actions	Main actors	Timeline
Continue the technological push by delivering on the sector's Strategic Research & Innovation Agenda (SRIA). ➔ Demonstrate improved performance, reliability, availability, maintainability and survivability. ➔ Reduce LCOE and risk. ➔ Reinforce the industrial supply chain. ➔ Attract private investors to the sector and reduce the cost of this investment to projects. ➔ Understand dismantling and recycling operations introducing eco-design requirements from the first stages of development with a circular economy approach. ➔ Estimate potential benefits to the global energy system due to the integration of wave or tidal resources.	**R&D and prototype phase:** • Development of novel wave energy devices – 15 projects. • Advanced mooring and connection systems for floating devices – 10 projects. • Development of other ocean energy technologies – 4 projects.	The ocean energy industry and research community Public funders	2025 & continued to 2030
	Demonstration phase: • Demonstration of ocean energy devices – 20 projects. • Improvement of PTO and control systems – 15 projects. • Improvement of tidal blades and rotors – 8 projects. • Application of innovative materials to improve circularity – 8 projects. • Improvement of foundations and connection systems for bottom-fixed devices – 10 projects. • Logistics and marine operations – 12 projects. • Data collection, analysis and modelling tools – 12 projects.	The ocean energy industry and research community Public funders Private investors	
	Pre-commercial phase: • Demonstration of ocean energy pilot farms – 16 projects. • Integration in the energy system – 10 projects. • Standardisation and certification – 5 projects.	The ocean energy industry and research community Private investors	

€ FINANCIAL MECHANISMS TO SUPPORT TECHNOLOGY DEVELOPMENT AND PAVE THE WAY TO THE MARKET

Objective & impact	Actions	Main actors	Timeline
Finance ocean energy research and innovation to progressively increase TRL to 9. ➔ Learnings from real sea deployments are brought back to the lab and integrated into the next generation of wave and tidal devices.	Establish, finance & execute structured technology development programmes such as Horizon Europe, CETP, Interreg, national/ regional programmes including revenue support, which ensure that all SRIA topics are fully addressed.	European Commission (DG RTD, CLIMA + ENER, CINEA) National & regional governments (Funding agencies, energy & innovation ministries)	2025 & continued to 2030
Finance ocean energy demonstration projects through the Innovation Fund, InnovFIN EDP and its InvestEU successor. ➔ Unlock large ocean energy demonstration projects to dramatically reduce costs and bridge the gap to commercialisation.	Amend the Innovation Fund evaluation criteria and structure to be more suitable for ocean energy projects.	European Commission (DG CLIMA) in cooperation with the ocean energy sector	2025 & continued to 2030
	Ensure the InvestEU successor to InnovFIN EDP can take on the degree of risk inherent in offshore renewable demonstration projects and offers terms which allow these projects to remain economically viable.	European Investment Bank European Commission (DG RTD & DG ECFIN)	
Set up an Insurance and Guarantee Fund for ocean energy. ➔ Deliver affordable immediate coverage from commercial insurers who are attracted into market, and long-term lower financing costs.	Complete the design of the Insurance & Guarantee Fund and secure public guarantees to operationalise it.	Industry (project developers & insurance brokers) EU, national or regional financial institutions	2025 & continued to 2030
Make available revenue support for ocean energy projects. ➔ Allow the initial larger scale demonstration projects to attract the private investment needed for financial close and deployment.	Put in place mechanisms that allow ocean energy projects to secure a Feed in Tariff which covers their costs. This can be sector-specific auctions, ringfenced budgets or project-specific arrangements.	National governments – typically energy or climate ministries – in the countries where pilot farms are in planning: France, Faroe Islands (DK), Greece, Italy, Ireland, Portugal, Spain and the Netherlands	2025 & continued to 2030

KNOWLEDGE SHARING

Objective & impact	Actions	Main actors	Timeline
Create an 'innovation ecosystem' for ocean energy by sharing experience and information from projects while respecting IP and confidentiality requirements. ➔ Learnings from real sea deployments are brought back to the lab and integrated into the next generation of wave and tidal devices. ➔ Increased learnings, new ideas and synergies, and reduced duplication of efforts.	Organise events (workshops and webinars) where ocean energy stakeholders can exchange and learn from each other. Communicate about and disseminate key sectoral publications.	Ocean energy sector: developers, researchers and other stakeholders, including ETIP Ocean and the SET Plan IWG	2025 & continued to 2030
Collaborate with different renewable energy technology communities. ➔ Identify concrete collaboration actions and topics to address jointly. ➔ Build a deeper understanding of how ocean energy can optimally fit into the wider energy, industrial & infrastructure systems and planning systems.	Establish a platform for a structured dialogue to share knowledge and tackle common challenges.	Ocean energy sector ETIP Ocean and the SET Plan IWG	2025 & continued to 2030
Provide reliable information on the ocean energy sector to support policymaking at EU and national level. ➔ Informed EU and national policies that address the sector's key requirements.	Publish up-to-date information about key topics such as the international market development, grid balancing benefits and ongoing development of ocean energy.	Ocean energy sector: developers, researchers and other stakeholders, including ETIP Ocean and the SET Plan IWG	2025 & continued to 2030
Raise public awareness of ocean energy and its societal benefits. ➔ Increased acceptance of and public opinion on ocean energy.	Communicate about the successes and benefits of ocean energy on several social media platforms for a maximum outreach, such as Twitter, LinkedIn and YouTube.	Ocean energy sector: developers, researchers and other stakeholders, including ETIP Ocean and the SET Plan IWG	2025 & continued to 2030

SUSTAINABLE CONSENTING PRACTICES

Objective & impact	Actions	Main actors	Timeline
Establish 'go-to' zones for renewable energy and sandboxes for demonstration projects in Member States' Marine Spatial Plans with simplified consenting processes. ➔ Accelerate the development of renewable energy projects, including emerging technologies. ➔ Decrease the costs of the consenting process in these locations.	Identify 'go-to' zones and sandboxes based on resource characteristics & availability of supporting infrastructure. Data collected at the sandboxes is made available to all project developers.	farms are in planning: France, Faroe Islands (DK), Greece, Italy, Ireland, Portugal, Spain and the Netherlands. In cooperation with the ocean energy industry	2025 & continued to 2030
Establish a legal framework with national single points of contact to simplify and shorten consenting processes for ocean energy. ➔ Accelerate and reduce costs of consenting processes. ➔ Ensure that future projects integrate knowledge previously obtained by the industry.	Set a time limit of one year for the whole consenting process for single devices or small pilot farms, including a 3-month lead time for consent applications. Appoint one agency to be responsible for all the requirements of the consenting process, including providing guidance documents. Adopt an Adaptive Management approach.	National/regional consenting authorities	2025 & continued to 2030
Provide financial support for environmental research and monitoring. ➔ Increase knowledge on environmental impact and support consenting processes.	Launch dedicated monitoring calls (e.g. EMFAF, CETP, LIFE+) or fund environmental monitoring in all deployment projects	European Commission National/regional governments & funding agencies	2025 & continued to 2030
Set up a platform for developers and consenting authorities to share experience on consenting. ➔ Increase knowledge on & facilitate the consenting process by learning from others.	Organise workshops where developers and consenting authorities can share experiences.	Ocean energy sector ETIP Ocean National consenting authorities	2025 & continued to 2030

ETIP OCEAN

European Technology & Innovation Platform for Ocean Energy

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WavEC
Offshore Renewables

The European Technology and Innovation Platform for Ocean Energy (ETIP Ocean) is a recognised advisory body to the European Commission, and is part of the EU's main Research and Innovation policy the Strategic Energy Technology Plan (SET Plan). ETIP Ocean defines research and innovation priorities for the ocean energy sector and promotes solutions to the industry, European and national policy makers. ETIP Ocean also informs and supports the SET Plan's 'Ocean Energy Implementation Plan'.

From 2016-2018 ETIP Ocean has been managed by Ocean Energy Europe (OEE) in partnership with the University of Edinburgh, which represents the European Energy Research Alliance (EERA). For the 2019-2021 phase OEE and the University of Edinburgh have been joined by TECNALIA and WavEC.