



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

The industrial payoff from the EU Offshore Strategy

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**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 Tecnalía – soon available on the [ETIP Ocean website](#).

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

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# ETIP OCEAN

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Photo: CorPower Ocean  
Photographer: Colin Keldie

## Europe faces a choice

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

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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<sup>1</sup> 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



**1.2M 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



**500,000 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.

<sup>1</sup> 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.

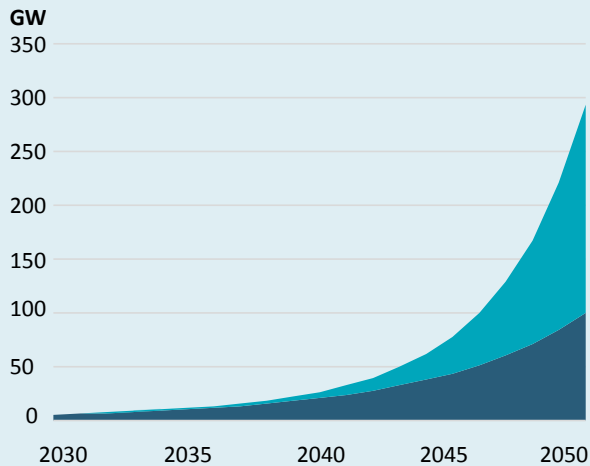
Europe has excellent wave and tidal resources, so under both scenarios there will always be ocean energy powering the continent. But Europe's share of global deployment will depend on which of the 2 scenarios is pursued.

### SCENARIO 1



## Europe leads the global market

### Ocean energy deployments



● Deployments in Europe ● Deployments outside Europe

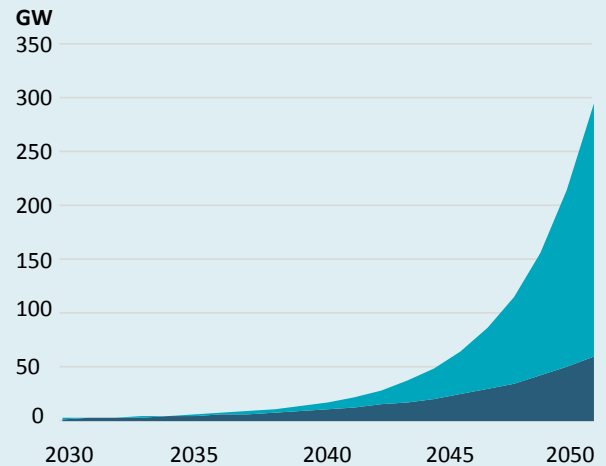
If Europe moves first to establish a domestic market and take a leading global role, then **circa 1/3<sup>rd</sup> of all deployments will take place in European waters.**

### SCENARIO 2



## Europe follows the global market

### Ocean energy deployments



● Deployments in Europe ● Deployments outside Europe

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



Photo: AW-Energy

# The first movers will unlock the greatest economic and social benefits

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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 will 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 ocean energy global market, the economic and employment benefits are significantly greater than when Europe follows.

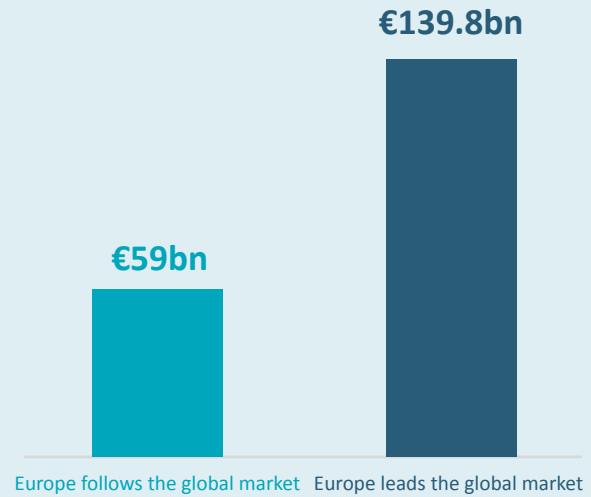


# Gross Value Added & Jobs

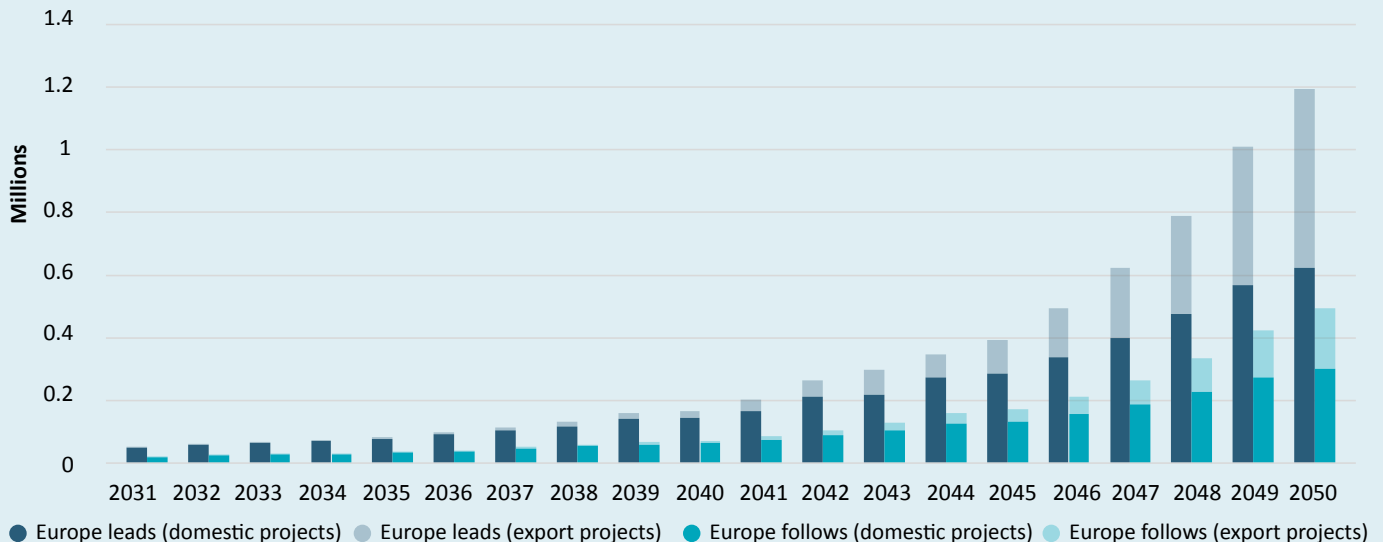
The results are clear – when Europe seizes the opportunity of global leadership, the economic and employment benefits more than double. If Europe moves now, its industry will benefit from additional economic activity worth €140bn and its citizens can access an additional 1.2 million direct and indirect jobs.

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

## Economic benefit to Europe (Gross Value Added)



## Workers employed in European Ocean Energy Sector



# Setting Europe on a path for ocean energy global leadership

The economic and social opportunities are huge. But if they are to be realised the work must start now:

## Deliver on the EU Offshore Renewables Strategy targets for ocean energy

Europe can only establish 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 Strategy 2025 & 2030 targets are the ideal framework to establish a clear market for wave and tidal. The European Commission, Member States and regions must now put in place a supportive framework to allow the first ocean energy projects to be deployed for 2025.

## Continue the technological push by delivering on the sector's Strategic Research & Innovation Agenda

Europe has earned its technological edge by investing in ocean energy research and innovation. This must be maintained to ensure that learnings from real sea deployments are brought back to the lab and integrated into the next generation of wave and tidal devices.

The sector's [Strategic Research & Innovation Agenda](#) sets out 16 priority topics that require further work in the 2021-2025 period. Programmes such as Horizon Europe should be leveraged to ensure that all topics are fully addressed.

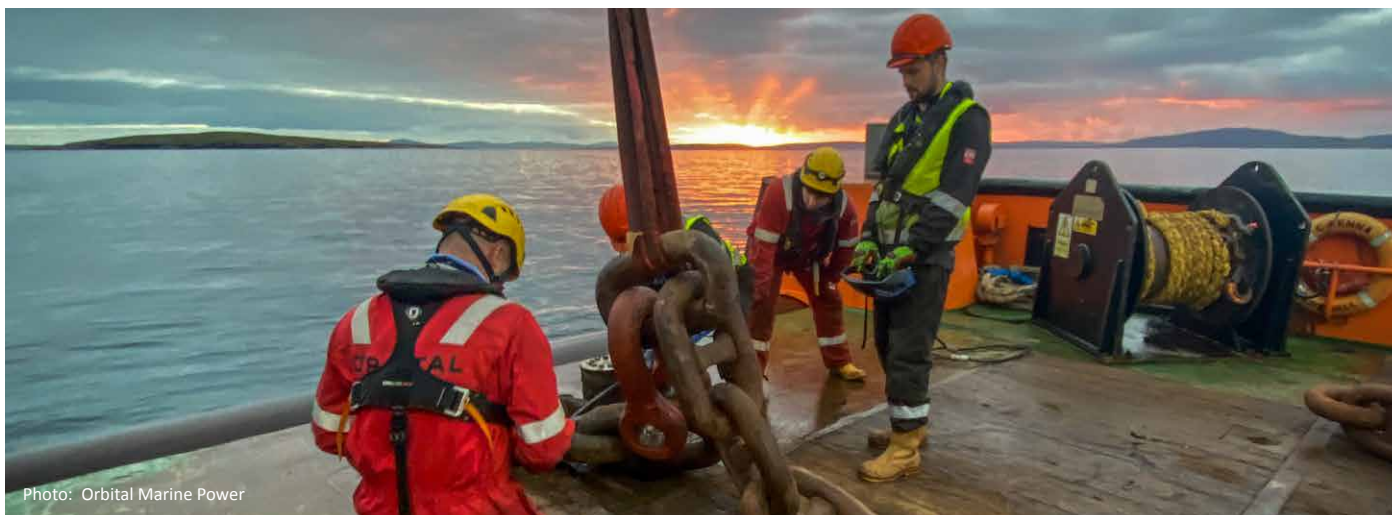


Photo: Orbital Marine Power



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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.