Designing an effective offshore wind market:

How to optimise marine spatial planning to deploy offshore wind quickly and responsibly

CARBON TRUST | OFFSHORE WIND | Net Zero INTELLIGENCE UNIT

Policy briefing authors

Megan Smith
Associate Director, Offshore Wind Advisory

Caroline Coccoli
Manager, Offshore Wind

Ivan Savitsky
Manager, Offshore Wind

Chloe St George
Research and Communications Executive, Net Zero Intelligence Unit

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About this policy briefing

This is the fourth in a series of policy briefings by the Carbon Trust, aiming to help policymakers design effective offshore wind markets. For many countries, offshore wind will hold the key to energy security and a cost-effective Net Zero transition. The first briefing introduced six policy pillars fundamental to approaching offshore wind development at a whole systems level. This edition dives into one of those pillars in detail and provides a guide to using marine spatial planning to support the site development stage of offshore wind deployment.

This is a collaborative policy briefing written by the Carbon Trust's offshore wind experts with input from the Net Zero Intelligence Unit. It draws on the Carbon Trust's experience providing offshore wind market insight and strategic advice across European, Asian and American markets. Additional thanks to Stefania Omassoli and Kieran Hymers.

Who we are

The Carbon Trust is a global climate consultancy of more than 400 experts with offices in the UK, the Netherlands, South Africa, Singapore and Mexico. As climate pioneers for more than 20 years, the Carbon Trust works at the forefront of the global offshore wind industry, collaborating with governments, developers and innovators to make fixed and floating offshore wind a viable commercial energy generation solution.

The Net Zero Intelligence Unit provides experience-led insights to accelerate global progress towards Net Zero. The Unit is a dedicated team focussed on raising ambition, awareness and action on Net Zero by drawing on the Carbon Trust's experience of working with businesses, governments and financial institutions globally.

Executive summary

Developing offshore wind farms quickly and responsibly is critical

Tripling renewable energy capacity by 2030 as countries agreed at COP28 will require highly efficient deployment of offshore wind. Looking to 2040 and beyond, offshore wind will be critical to reaching Net Zero as it has significant electricity generation benefits thanks to high and consistent wind speeds offshore, and the potential to deploy at scale.

However, finding suitable areas to develop large-scale offshore wind projects is not straightforward. Geological, environmental and socioeconomic suitability must all be considered. Good management at early stages of offshore wind development can avoid stalled or cancelled projects and can help ensure offshore wind deployment doesn't have unintended consequences for marine life and marine users.

Marine spatial planning is often regarded as a silver bullet for managing offshore wind and other marine sectors – the reality is more complicated

Marine spatial planning (MSP) is a process used to manage various human activities that take place at sea, including fishing, shipping and marine conservation. It involves analysing and allocating marine areas to these different activities. In the context of offshore wind, MSP involves selecting areas or zones for potential offshore wind development with consideration for other marine users and the marine environment.

In theory, MSP can help governments and leasing authorities optimise the number, scale and location of offshore wind projects, ease consenting by minimising conflict with other stakeholders, and reduce the likelihood of challenges during development.

In practice however, MSP is not always the idealised, infallible process described in academic literature. This is partly due to MSP's inherent limitations and ineffective application. In these instances, MSP can result in a lengthy, data-intensive or procedure-heavy process that is inadequately linked to the wider development process and limits progress.

Three principles are key to optimising marine spatial planning for efficient offshore wind development

The Carbon Trust has synthesised and collated different approaches to MSP in eight key markets. How governments choose to approach MSP will depend on existing regulatory frameworks, internal capacity and other contextual factors. We have identified three main principles that all governments should consider, to ensure that MSP leads to efficient offshore wind development:

1. **Alignment with other aspects of the regulatory framework**
2. **A standardised process, applied at regular intervals**
3. **Clarity and transparency about the planning process and its outcomes**

These principles are drawn from our analysis of MSP approaches in The Netherlands, Germany, Belgium, France, the UK, Japan, China and the US alongside our experience working directly with governments to deliver MSPs. They will be critical for MSP to facilitate responsible offshore wind development along the timescales needed to meet government targets and Net Zero ambitions.

The role of marine spatial planning in offshore wind development

What is marine spatial planning?

Marine spatial planning (MSP) is seen as the key approach to managing the many activities taking place at sea within environmental limits. Although governments have been allocating marine space for conservation purposes or specific marine activities for decades, the concept of MSP and its implementation is relatively new. In 2009, UNESCO defined it as 'the process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that are usually specified through a political process.[1]

MSP is distinct from other marine management approaches due to its:

- **Focus on using the best available science**
- **Engagement with stakeholders throughout the planning process**
- **Consideration of multiple sectors and priorities, rather than just one**

Since MSP emerged, it has been recommended by scientists, researchers and policymakers alike as a means of improving ecosystem-based management, promoting co-existence among marine users and stimulating growth of the blue economy.[2]

How is marine spatial planning used to facilitate offshore wind development?

The World Bank, among other global institutions, recommends MSP as an essential first step in the development of an offshore wind market. Most mature offshore wind markets use marine spatial plans to inform development, which can comprise several different activities.

Although approaches to MSP vary from market to market, most marine spatial plans involve some or all of the following steps:

1. Spatial constraints analysis/zoning to identify development areas or sites
2. Stakeholder engagement to raise awareness and gather additional information
3. Scenario analysis and impact assessments to understand the costs and benefits of development in certain areas

1. Spatial constraints analysis (or 'zoning')

Spatial constraints analysis helps to identify zones suitable for offshore wind development that minimise spatial conflict with other sectors. As well as sufficient wind resource, a site must also have suitable meteorological and oceanographic conditions and seabed geology for fixed turbines or floating platforms. In addition, there are several environmental and socio-economic factors to consider. The number of traditional and emerging marine activities (particularly in coastal and near-shore areas), as well as the increased urgency of preserving marine biodiversity in the face of climate change, have made it more complicated to site and develop offshore wind projects in the past 20 years.

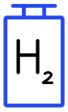
[1] Marine spatial planning: a step-by-step approach toward ecosystem-based management - UNESCO Digital Library

[2] Narrowing the gap between marine spatial planning aspirations and realities | ICES Journal of Marine Science | Oxford Academic (oup.com)

Spatial constraints analysis considers numerous marine sectors, including:

Offshore wind

Shipping and navigation

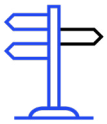


Other energy generation sources (including oil and gas, other marine renewable energy generation)

Tourism and recreation

Commercial fishing and aquaculture

Biodiversity and scientific research, including Marine Protected Areas



Areas of cultural, archaeological, and historical interest

Defence

Areas of importance to Indigenous communities

Beyond merely identifying the sectors active in each area, spatial constraints analysis should ideally identify high priority areas for each sector. For example, those with the highest energy generation potential, economic value or cultural importance. Given the vast array of marine sectors, there is a high likelihood that activities will overlap over space and time. A constraints analysis hopes to identify and minimise such overlaps. However, this is not a simple process, and conflict is not always avoidable.

One key challenge is the requirement for a significant amount of high-quality and high-resolution data. Information such as wind resource, seabed conditions and grid connection potential help identify suitable areas to develop offshore wind while data on other marine uses, such as shipping routes, fishing practices and conservation efforts is necessary to minimise conflicts. Using inadequate or outdated data may lead to erroneous analysis, reducing the usefulness of the marine spatial plan.

Additional data and more sophisticated modelling may be required to predict how marine activities change. The time spent fishing in a particular area, for example, will change as fish populations move, meaning that even marine spatial plans developed with highly accurate data and predictive modelling may need to be updated as a result.

Those responsible for MSP can use the best available data to identify zones that are both optimal for offshore wind development in terms of wind resource and seabed conditions, and where development is more likely to proceed without conflict.

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2. Stakeholder engagement

Engaging stakeholders who may be impacted by offshore wind development is key. It allows current marine users to inform the government of potential impacts of offshore wind development on their current activities, and allows offshore wind industry stakeholders to provide additional context and advice for managing these impacts. Stakeholder engagement may also reveal additional data sources and assumptions previously unknown to government agencies which conduct the planning.

Engagement can range from formal, public consultation to more collaborative engagement with specific stakeholder groups, such as Indigenous communities and commercial fisheries. It can be carried out during planning stages as well as during project development. In general, it is expected that the earlier local communities are engaged regarding a potential offshore wind development and its potential impact, the less conflict there will be. Inviting them to inform the planning process early on can reduce the likelihood of legal challenge or disruptions to project development further down the line when significant capital has been invested. Meaningful engagement, which incorporates a wide range of stakeholders, balances their needs and interests, and aims to incorporate learnings, is key to realising these benefits.

While early engagement can help reduce misinformation, it is key that planning authorities and project developers work in a collaborative and efficient manner, to avoid stakeholder fatigued caused by excessive or uncoordinated efforts.

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3. Scenario analysis and impact assessments

MSP can involve testing a range of scenarios (such as different locations and sizes of zones dedicated for offshore wind development) to find a solution that meets policy objectives, minimises impacts on other marine industries and the environment, and facilitates synergies where possible.

By identifying zones where offshore wind can be developed, and where it cannot, MSP will effectively inform the 'total' amount of offshore wind capacity in the area or jurisdiction to which it applies.

In carrying out MSP, planners should consider existing offshore wind targets while ensuring to identify areas of sufficient size and generation capacity to attract developers. MSP and the plans themselves should be flexible enough to accommodate changing circumstances over time, including different energy generation scenarios, targets and technological innovation.

MSP can also be used to conduct plan-level, as opposed to project-specific level, assessments of environmental and social impacts. Cumulative impacts, those that are observed at the level of multiple wind farms rather than individual wind farm impacts, are currently poorly understood, which makes these types of plan-level assessments difficult.

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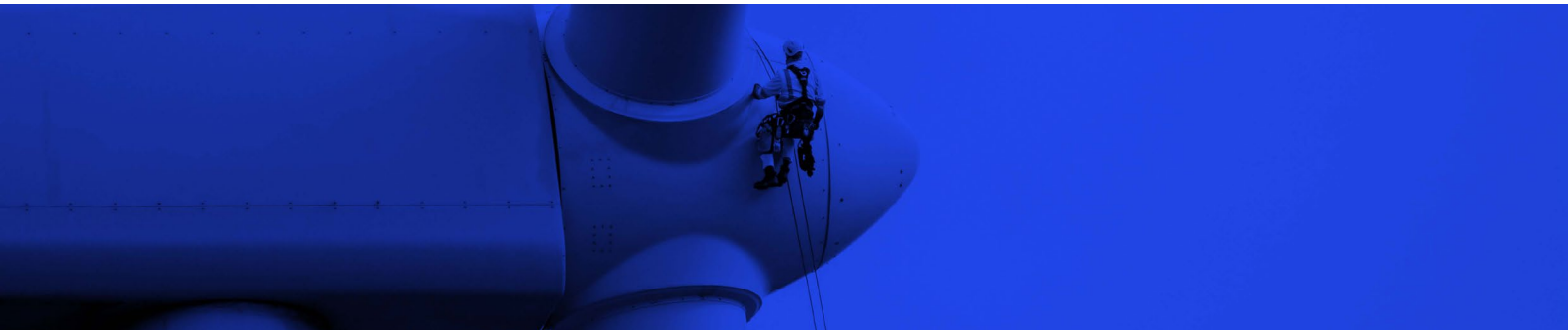

Marine spatial planning helps facilitate offshore wind development, but results vary

Although MSP is typically used to support a number of marine activities, from an offshore wind perspective, the objectives of MSP are clear: to optimise the amount of offshore wind that can be developed and increase efficiency of project development.

Our analysis shows that more intensive MSP processes don't necessarily lead to better optimisation of space or reduced conflict compared to more light-touch approaches. The number of MSP activities conducted does not determine the effectiveness of offshore wind development as much as how these activities are carried out.

Both extensive and lean marine spatial planning processes can help optimise the amount of offshore wind that can be deployed, but only with consistent application

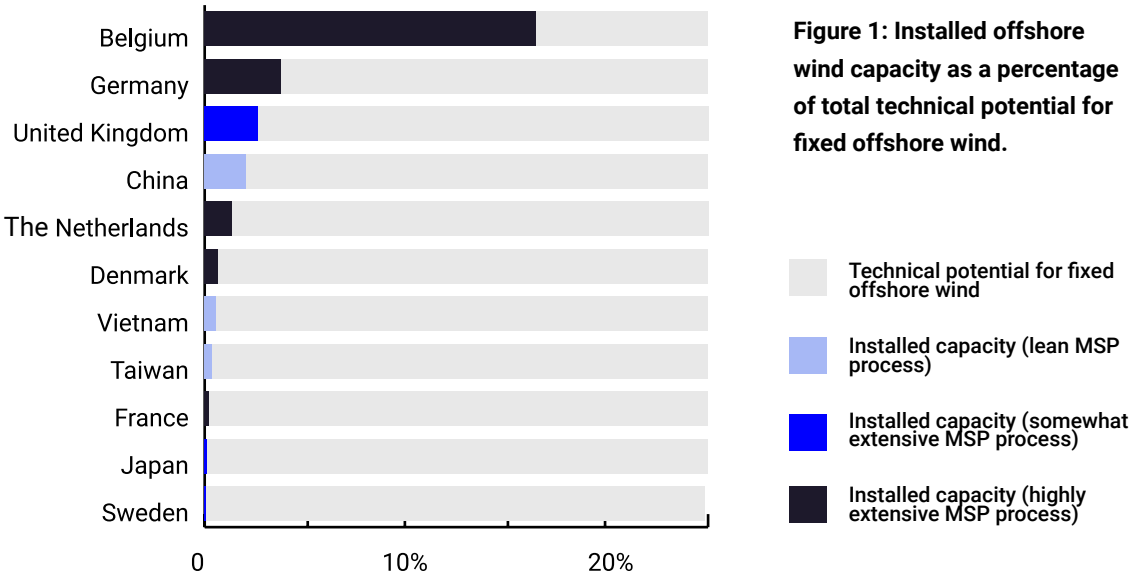

Figure 1: Installed offshore wind capacity as a percentage of total technical potential for fixed offshore wind.

Figure 1[3] shows installed offshore wind capacity as a percentage of the total technical potential for fixed offshore wind in that region.[4] Countries where the highest amount of technical potential has been exploited – almost exclusively in the relatively crowded North Sea – tend to have extensive, well-established MSP processes. These often involve a central government authority conducting spatial constraints analysis and facilitating consultation with other marine stakeholders, and result in multiple leasing rounds.

That being said, in China, MSP for offshore wind development is effectively an exercise in zoning (allocating specific areas for specific uses). This streamlined, top-down approach has still resulted in a sizeable percentage of offshore wind technical potential being converted into installed capacity. In other countries, by comparison, a lack of consistent and national-scale marine planning has contributed to delays in market development, despite significant availability of suitable sites.

[3] Data from 4COffshore and World Bank technical potential for offshore wind development at the country level, split into potential for fixed and floating foundations.

[4] Calculated against technical potential for fixed offshore wind because floating offshore wind not yet considered commercial in most markets.

Marine spatial planning can help reduce consenting risk and timeframes, but piecemeal approaches cause inefficiencies and delays

A significant risk to offshore wind developers is an unsuccessful application for consent to build. By the time consent applications are submitted in the UK, developers may have spent around seven years in early scoping studies, site leasing, and pre-consenting studies prior to reaching the statutory consent timeline. Minimising the risk of rejection is therefore of the utmost importance.

In theory, MSP can help minimise this risk, as well as reduce consenting timeframes. During the consenting process, offshore wind developers can point to spatial constraints analysis completed at the MSP stage, which outlines that sites have been selected to minimise conflict.

We calculated the average time taken between when site exclusivity is granted, consent is authorised, and projects are fully commissioned across eight markets where MSP has been employed to support offshore wind development (Figure 2 and Figure 3). Again, there was little correlation between the number of stages in the MSP process (how extensive it is) and the timeframe.

Country	How extensive is MSP process	Median time between site exclusivity, consent authorised (Y)	Average time between site exclusivity, consent authorised (Y)	Number of wind farms	Time range
China	Low	0.0	0.1	137	2007-2022
Germany	High	0.0	0.4	30	2001-2022
The Netherlands	High	0.0	0.3	14	2001-2019
Belgium	High	1.7	1.9	11	2003-2015
France	High	4.1	4.0	9	2012-2020
Japan	Medium	4.3	4.7	5	2015-2022
United Kingdom	Medium	4.8	5.1	61	2001-2022
United States	Medium	6.3	7.0	5	2008-2022

Figure 2: Offshore wind development timeframe from site exclusivity to consent authorisation

Country	How extensive is MSP process	Median time between site exclusivity, full commissioning (Y)	Average time between site exclusivity, full commissioning (Y)	Number of wind farms	Time range
China	Low	0.0	0.1	137	2007-2022
Germany	High	0.0	0.4	30	2001-2022
The Netherlands	High	0.0	0.3	14	2001-2019
Belgium	High	1.7	1.9	11	2003-2015
France	High	4.1	4.0	9	2012-2020
Japan	Medium	4.3	4.7	5	2015-2022
United Kingdom	Medium	4.8	5.1	61	2001-2022
Germany	High	9.3	7.9	27	2001-2023
France	High	11.4	10.6	8	2012-2020

Figure 3: Offshore wind development timeframe from site exclusivity to full commissioning

The fastest consenting timeframes are observed in China, where MSP is a light-touch, top-down exercise and there is no auction process. But shorter consenting timeframes are also observed in the Netherlands, where MSP processes are more extensive.

Why is this the case? In the Netherlands and Belgium (and Germany since 2017) MSP and the steps that follow it (more detailed site surveys, grid connections and permits) are all organised by the government prior to auction.[5] Markets employing this more centralised approach observe shorter consenting times because each step can follow the previous steps relatively seamlessly.

[5] BSH - Sectoral Planning

Figure 2 and 3 Data compiled from 4COffshore

In France and the UK, by contrast, MSP is no less extensive, but marine planning processes are employed alongside more decentralised development models. In this approach, governments identify suitable areas for offshore wind development (MSP) before inviting developers to identify specific project sites within that area and bid on these sites through an auction. This minimises upfront costs for governments, however in France and the UK, the average time it takes to secure consents after gaining exclusive access to sites is more than twice as long as in Belgium. Governments choosing to pursue a decentralised approach should ensure that MSP processes and outputs are closely aligned with subsequent stages in the development cycle (site leasing, consenting) to avoid unnecessary delays.

For example, France had only installed 2 MW of offshore wind at the end of 2021,[6] despite their 2016 plan outlining a target to deploy 500 MW by 2018.[7] To accelerate development, the French government introduced the 2023 Acceleration Bill, which outlines a more streamlined and mandatory spatial planning process. It identifies zones for accelerated permitting, is better aligned with auction processes and introduces more efficient public consultation processes (for whole areas rather than individual projects).[8] This complements earlier steps to combat delays in France, such as introducing large-scale zoning to replace zoning exercises that considered only a small portion of the marine area.[9]

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Marine spatial planning can be effective in identifying suitable development areas but needs to be supported by sufficient commercial consideration and research

Recent experience in the US provides an example of the complexities of MSP. In the US, the identification of suitable offshore wind areas is undertaken centrally, by federal agencies.[10] However, state governments and stakeholders also play an important role in offshore wind development, which adds complexity to the MSP process. Regulation differs between states, and state issues are hard to capture at national level.

In the recent Gulf of Mexico auction round for site leases, there was notably lower activity than in previous American and global leasing rounds. Indeed, no bids at all were received for two out of the three sites: Galveston I and II in Texas. In this case, the MSP and site leasing selection process identified areas that were ultimately not attractive or practical enough for developers, and have therefore not succeeded in accelerating offshore wind development.

Although the ultimate reason for the lack of bids is unclear, factors such as relatively low wind speeds, risk of seasonal hurricanes, and limited political will for clean energy in states such as Texas may have reduced the attractiveness of these sites. This demonstrates the importance of ensuring sufficient consideration of commercial needs during MSP and subsequent development stages (i.e. leasing and/or auction rounds).

Likewise, in the Gulf of Maine, the call area selection process has identified areas for potential offshore wind development. Early indications suggest that the areas farther from shore may be more attractive to developers due to the decreased likelihood of spatial conflict with commercial fisheries. Co-location of offshore wind farms and existing fisheries is a pressing issue for the industry. This is an area in which MSPs may need to be supplemented with additional research to capture local nuances, as the extent to which co-existence is possible

[6] Policy choices and outcomes for offshore wind auctions globally - ScienceDirect

[7] 1 - Synthèse_EN_relu_3A_5CD-modifs-ok - relecture VS (ecologie.gouv.fr)

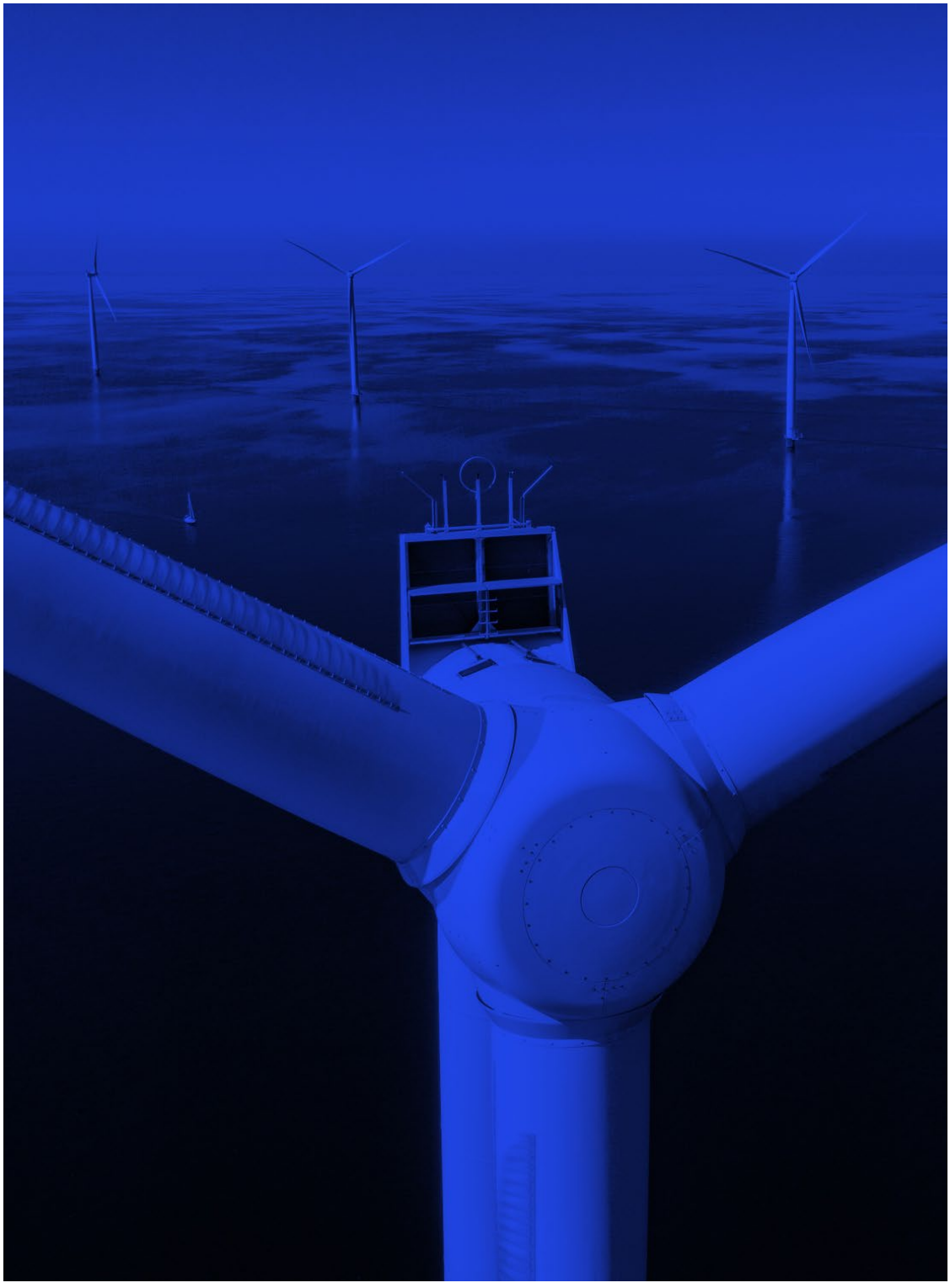
[8] France passes Renewable Energy Acceleration Bill | en:former (en-former.com)

[9] French offshore wind: Let the grand reboot begin! – everoze

[10] Primarily the Bureau of Ocean Energy Management (BOEM), with support from other departments including the National Oceanic and Atmospheric Administration (NOAA)

can differ on an individual wind farm and fishery basis. The State of Maine, through the Maine Offshore Wind Research Consortium, is also supporting research to identify technological, regulatory and legal changes needed to facilitate co-existence between floating offshore wind and fisheries.[11] These types of research initiatives will not only help inform co-existence opportunities in the Gulf of Maine, but also help planners address co-existence in MSP.

Co-location of offshore wind farms and existing fisheries is a pressing issue for the industry and an area in which MSPs may need to be supplemented with additional research to capture local nuances.



[11] Maine Offshore Wind Research Consortium | Governor's Energy Office

The Carbon Trust's principles for effective marine spatial planning for offshore wind

1. Align the marine spatial planning process, and its outputs, to other aspects of the offshore wind regulatory framework

MSP must be closely aligned with leasing, consenting and permitting frameworks in order to help streamline development. In many mature offshore wind markets in Europe, notably Germany, Belgium and the Netherlands, national governments have published a clear explanation of how these processes and frameworks interact. This helps industry and other stakeholders to understand anticipated timelines for offshore wind development and plan ahead.

Aligning these frameworks will become even more important as markets mature, and government and industry collectively move towards new technologies and applications. There has been significant effort among academics and researchers to explore the possibility of co-locating different marine activities in the same area as offshore wind development (for instance, fishing, seaweed aquaculture, and floating solar renewable energy.) [12,13, 14,15] Co-existence, co-use or multi-use between offshore wind and other marine sectors is explicitly promoted in the most recent marine spatial plans for Germany (2021)[16] and the Netherlands (2021).[17] The Swedish government, which seeks to increase offshore wind energy development in the coming years, has indicated the need for additional join-up across regulatory frameworks to facilitate coexistence between marine industries. The recent Swedish Marine Spatial Plan for the Gulf of Bothnia, the Baltic Sea and the Skagerrak/Kattegat (2022)[18] highlights that for some marine activities, further guidance, conditions or regulation may be prescribed by licensing agencies to promote coexistence. In parallel to the development of this plan, the Swedish government commissioned further research on the administrative, regulatory and legal barriers to co-existence between offshore wind, fisheries, aquaculture and nature conservation.[19] Other countries seeking to promote co-existence or co-use alongside offshore wind development should follow a similar approach.

PRACTICAL STEPS: ALIGNING MSP WITH LEASING, CONSENTING AND PERMITTING REGULATIONS

- Determine how MSP outputs will be used, ideally before the planning process. For example, in some markets, MSP outputs need to be adopted or validated by government representatives (ministers).
- Use development areas identified during MSP to inform leasing rounds. Governments will need to decide whether to lease particular sites (as seen in Belgium, the Netherlands) or allow developers to propose their own sites within wider areas (as seen in the UK, US).
- Update consenting and licensing frameworks based on additional information found during the MSP process.
- Investigate whether concepts promoted in the MSP, such as co-existence between marine industries, face regulatory barriers. Consider whether additional regulation or research is needed to supplement the MSP.

2. Create a standardised planning process, and apply it at regular intervals to facilitate a pipeline of projects

MSPs need to be updated frequently, as the data and assumptions that underpin them can become outdated. For instance, over time, innovation in technology can reduce the significance of spatial conflict and encourage co-location between different marine sectors. Therefore, MSPs should follow a standardised and replicable process.

Having all relevant marine data in a single place and using these data in a replicable MSP process also enables frequent and standardised leasing rounds, which is a common thread among markets with high installed offshore wind capacity.

In the UK, The Crown Estate conducted spatial constraints analysis to identify offshore wind development areas ahead of each of its leasing rounds in 2000 (Round 1), 2003 (Round 2), 2010 (Round 3) and 2019 (Round 4). For each successive round, the seabed authority was able to rely on existing datasets and a standardised process. This involves gradually narrowing down the total available area to specific project development areas, starting by prioritising cost-efficient zones and then eliminating areas with physical constraints. Following this, other constraints are considered and used to inform increasingly targeted rounds of engagement. This consistent MSP process enabled frequent development rounds, which in turn contributed to market confidence and a healthy pipeline of projects.

Similarly, the Scottish government relied on previous planning processes and datasets to launch a new plan and leasing round just two years after publishing its first sectoral marine plan for offshore wind.[20,21] The original plan considered offshore oil and gas assets to be a constraint to offshore wind development but following stakeholder feedback and a recognition of the increasing potential for co-location, this constraint was removed. The new leasing round allowed exploration into additional sites and resulted in new offshore wind development areas being assigned for targeted oil and gas decarbonisation. Offshore wind now supplies energy to offshore oil and gas assets at Scotland's Hywind Tampen site. This highlights the need for standardised processes and iteration, to react quickly to changing profiles and emerging data.

PRACTICAL STEPS: CREATING A CONSISTENT AND REPEATABLE PROCESS

- **Governance:**
  - Roles and responsibilities in government should be clear; the MSP process will likely require coordination between the energy department and many other departments.
  - Governments should be mindful that MSP for offshore wind development is not a one-off, one-time exercise and avoid under-resourcing or resourcing for a short period of time. MSP will be relevant at intervals throughout the development of an offshore wind market, to facilitate a pipeline of projects.
  - Alignment between different regions within a market can be beneficial; in the US, the Bureau of Energy Management applies a standard approach and communicates with state institutions.
- **Data management:** Try to collate existing data, target gaps, and have a process for evaluating data needs over time. New markets can make a first attempt to allocate areas for offshore wind development using high-level information and then increase the quality and resolution of data for future leasing rounds.
- **Stakeholder engagement:** Ensure that stakeholders are informed about what the standard process is, and what their feedback will be used for.
- **Iteration:** The frequency of revision should be informed by the scale of ambition for offshore wind development and the available resource in government, among other considerations.

3. Ensure that the planning process is transparent to allow the industry to plan for future development

A transparent process increases industry confidence that MSP has been conducted thoroughly and carefully, and that the industry's various concerns have been addressed. This certainty helps to reduce risk for offshore wind developers and allows them to plan for future development.

Early and sustained engagement with industries and stakeholders that may be affected by offshore wind development is key to maintaining transparency. However, governments should consider that there are many different mechanisms for conducting stakeholder engagement; it need not necessarily take place entirely within the MSP process.

That said, government officials working on MSP should understand that it is an inherently political process. Elected officials will have to make trade-offs with respect to their priorities, and governments in power may prioritise certain approaches or even certain industries over others. Low political support for offshore wind, will limit the extent to which MSP can facilitate offshore wind development. Equally, one recent study asserts that recent MSP activities in Germany were used strategically to encourage development of offshore wind at the expense of other marine activities.[22]

PRACTICAL STEPS: CREATING A TRANSPARENT PROCESS FOR DEVELOPERS

- Explain any assumptions within the plan. Unclear or untested assumptions can create issues, for instance if the MSP assumes that co-existence can occur well but practically this is not possible or satisfying to stakeholders, and vice versa.
- Indicate when MSP outputs will be revised, based on new assumptions and data. This is especially important for considering emerging technologies, like floating offshore wind.
- Maximise transparency of data sources to increase consistency and reduce redundancy; The Crown Estate's Marine Data Exchange is a good example of this in action.
- Clarify how and when suitable areas for offshore wind development will be made available. For instance, some governments choose to lease:
    - Low-cost areas first, such as those with high wind resource, low-cost grid connection, or those requiring established technology rather than emerging technologies. This can help to provide confidence to the market.
    - Specific areas over time. Making the whole of the seabed available at once could create pressure on the supply chain, leading to higher costs and abandoned projects.

[12] Sustainable co-location solutions for offshore wind farms and fisheries need to account for socio-ecological trade-offs - ScienceDirect

[13] Effects of temporary exclusion of activity due to wind farm construction on a lobster (Homarus gammarus) fishery suggests a potential management approach | ICES Journal of Marine Science | Oxford Academic (oup.com)

[14] Introducing the world's first commercial-scale seaweed farm located between offshore wind turbines (aboutamazon.eu)

[15] EU-SCORES: Win-wins of offshore energy multi-use parks - Offshore Energy (offshore-energy.biz)

[16] Maritime_Spatial_Plan_2021.pdf (bsh.de)

[17] A4 brochure (europa.eu)

[18] Marine Spatial for the Gulf of Bothnia, the Baltic Sea and the Skagerrak/Kattegat (havochvatten.se)

[19] Coexistence With Offshore Wind (havochvatten.se)

Conclusion

Rapid deployment of offshore wind with minimal impacts on other marine users is critical for a just, sustainable energy transition. Marine spatial planning involves several activities which can be leveraged to achieve these dual aims, including analysing zones to identify constraints, modelling impacts and benefits of development under different scenarios and consulting affected stakeholders. These activities could play an increasingly important role in future, as countries explore greater opportunities for co-existence between multiple marine users.

However, marine spatial planning as it is currently applied does not always promote efficient offshore wind development and harmonious use of marine space. As our analysis of eight key markets demonstrates, conducting a greater number of these activities within MSP does not guarantee success. But how this planning is carried out and how it connects to the rest of the regulatory framework is extremely important.

Regardless of the specific activities included, governments should ensure that MSP processes are transparent, replicable, and aligned with key regulatory frameworks such as leasing, consenting and permitting frameworks.

This policy briefing is the fourth in a series aiming to help policymakers design effective offshore wind markets. All policy briefings in the series, as well as further information on our strategic advisory work on offshore wind, are available on the Carbon Trust website.

[20] Innovation and Targeted Oil and Gas (INTOG) leasing round

[21] Sectoral marine plan - offshore wind for innovation and targeted oil and gas decarbonisation: initial plan framework - gov.scot (www.gov.scot)

[22] Planning for a sustainable marine future? Marine spatial planning in the German exclusive economic zone of the North Sea - ScienceDirect