SWEDISH GOVERNMENT INQUIRIES

Documentation

2024-02-23

Inquiry Commission on Offshore Wind Power
KN 2023:01
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Regulations and procedures for offshore wind power in Denmark, Finland, Germany and the United Kingdom / England

(Revised version 2024-02-23)[1]

Table of content

About this documentation

The Inquiry Commission on Offshore Wind Power ('the Commission') has been deployed by the Swedish government to develop a new legislative framework for Sweden's planning and permitting of offshore wind power. We are tasked to deliver our report on June 28th, 2024.[2]

In September–November 2023, the Commission visited Denmark, Finland, Germany and the United Kingdom. We met with relevant ministries and

[1] Minor edits to the chapter on United Kingdom / England. See page 64.

[2] Directives 2023:61, decided 2023-05-04, available in Swedish on this link.

authorities, as well as representatives of the wind power and fisheries industries. Some of the meetings were held after the trips, on Teams.

The purpose of the trips was to gain a thorough understanding of not only each country's planning and permitting systems, but also the considerations behind them and the systems' pros and cons.

The four countries were selected to provide a spectrum of relevant aspects:

- Denmark, Finland and the United Kingdom have (or, in Denmark's case, had) hybrid systems that in different ways combine a governmentally planned system with a possibility/responsibility for developers to identify sites and/or manage the offshore grid connection. Germany, on the other hand, has a highly governmentally planned system, to which it has transitioned from a developer-driven system.
- Denmark, Germany and the United Kingdom have mature systems, that have developed over many years and led to several wind farms being constructed. Finland, on the other hand, has just recently started to develop a new system for its exclusive economic zone.
- Finland and Germany share Sweden's geopolitical challenges associated with offshore wind farms in the Baltic Sea.

The Commission was represented by its secretariat and various experts. Which experts varied from trip to trip, but experts from the Swedish Ministry of Climate and Enterprise, Ministry of Defence, Armed Forces, Energy Agency, Agency for Marine and Water Management and TSO Svenska kraftnät each participated in at least one trip each.

The trips were both helpful and fruitful. We have therefore decided to publish this documentation. The intended audiences are the stakeholders of our process in Sweden, as well as potentially the international offshore wind policy community at large.

The purpose of the documentation is rather to summarise how we've understood the systems on a high level, than to give a comprehensive and detailed account of each country's (constantly evolving) regulations. We have also prioritised "getting around" to publish the documentation, with the limited time available, over fact-checking every detail.

Thus, the report should not be considered, or quoted, as an authoritative source of information on the four countries' systems. For such purposes, we refer to primary source information from each country.

The report aims to be up to date as of January 2024.

We extend our appreciation to all colleagues in the four countries who have taken their time to receive us and to review the documentation.

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Regulations and procedures for offshore wind power in Denmark

Table of content

1. Introduction

On 27–28 September 2023, the Commission visited Copenhagen and met with the Danish Energy Agency, Syddansk University/the Danish Taxation Agency, the Danish Maritime Authority and the Danish Ministry of Defence. We also met with Green Power Denmark and wind power developers Copenhagen Infrastructure Partners, RWE, Vattenfall DK, and Ørsted.

On 29 September 2023, the Commission made a study visit to the offshore wind farm Krieger's Flak, operated by Vattenfall DK.

On 22 November 2023, the Commission met on Teams with the Danish Fishers Producer Organisation and the Danish Pelagic Producers Organisation.

This documentation has been reviewed by the Danish Energy Agency, The Danish Maritime Authority and the Danish Ministry of Defence. The responsibility for any inaccuracies lies, however, with the Commission.

2. Denmark's offshore wind ambition and current pipeline

Denmark's government has established a target that 12.6 GW of offshore wind power should be commissioned by 2030.

As shown in in Figure 1 below, 2.3 GW is presently commissioned.

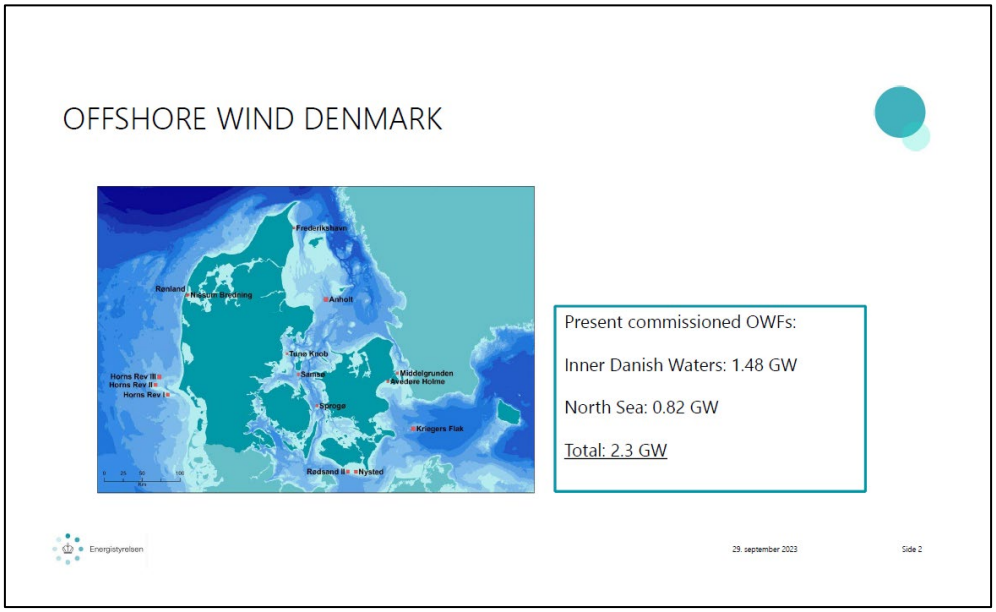

Figure 1: Presently (as of September 2023) commissioned Offshore Wind in Denmark. Source: The Danish Energy Agency (minor edit by the Commission).

Thus, an additional 9 GW is needed to meet the 2030 target.

Figure 2 below shows the roadmap for this development.

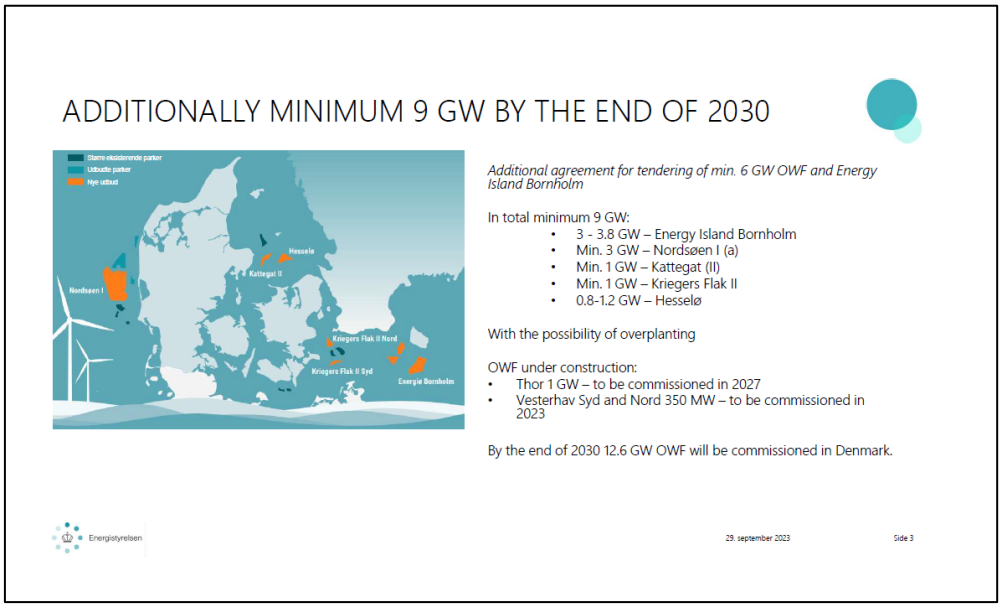

Figure 2: Roadmap to reach 2030 target. Source: The Danish Energy Agency.

As shown in the figure, 1,350 MW is under construction in two wind farms. A political agreement exists for a total of 9 GW of additional tendering.

3. Memorandum overview

Historically, there have been two ways to develop offshore wind farms in Denmark: through public tenders and through an open-door process. The open-door process has now been discontinued.

The process for tendered farms is explained in sections 4 to 12.

The discontinued open-door process is explained in section 13.

Defence interests and views among the fishing and wind power industries are discussed in sections 14 and 15.

4. Governance and decision-making for tendered farms

Figure 3 below outlines the governance and decision-making structure for tendered farms.

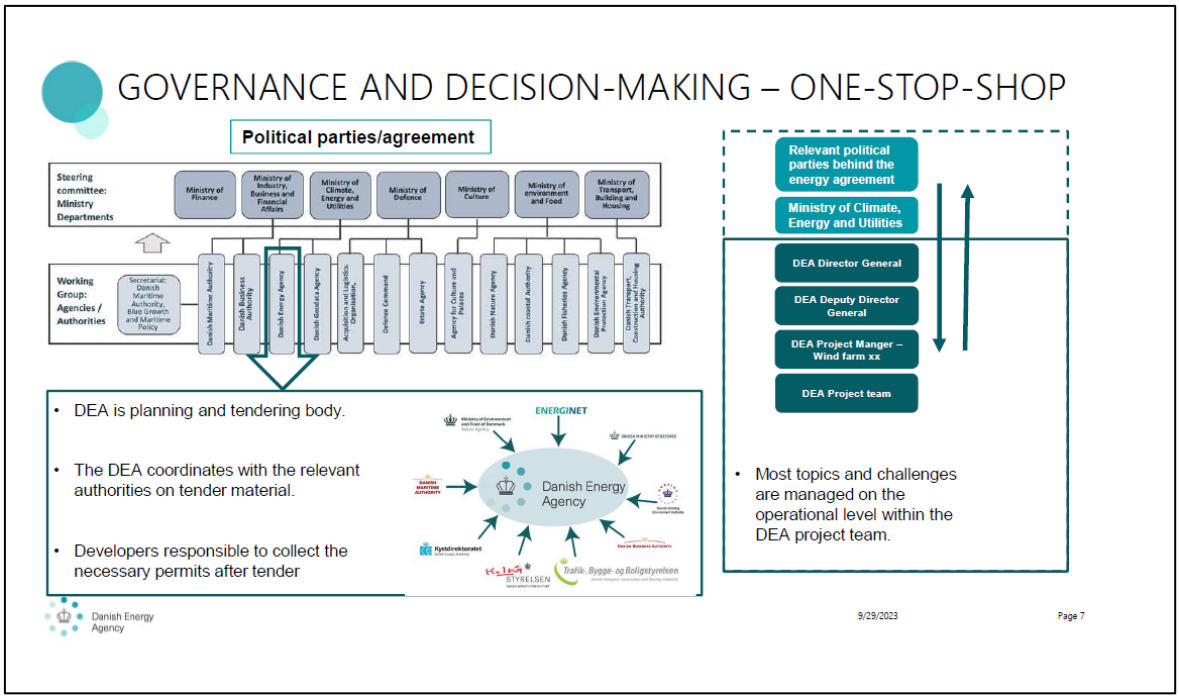

Figure 3: Governance and decision-making for tendered farms. Source: The Danish Energy Agency.

As indicated in the figure, Danish energy policy is largely built on broad political agreements across the parliament. Based on these agreements, processes such as choosing and tendering sites are done through cross-ministerial and cross-agency working groups. The Danish Energy Agency coordinates the processes on an agency level. It also acts as a one-stop shop in relation to the developers. In preparing and executing the tender, the agency coordinates with other relevant agencies.

5. Rough screening ('Step 1')

The first step in the process of choosing sites to tender is a rough screening.

The result is a series of sites that are submitted for consideration in the maritime spatial planning process.

The screening is undertaken by the Energy Agency and the Maritime Authority, in continuous dialogue with other relevant authorities such as the Ministry of Defence and the transmission system operator (TSO) Energinet.

The screening includes an economic ranking of potential sites, considering wind conditions and sea depth.

6. Maritime spatial planning

As indicated in Figure 4 and Figure 5, the Maritime Spatial Plan has four types of zones. One type is development zones, which include zones for renewable energy and energy islands.

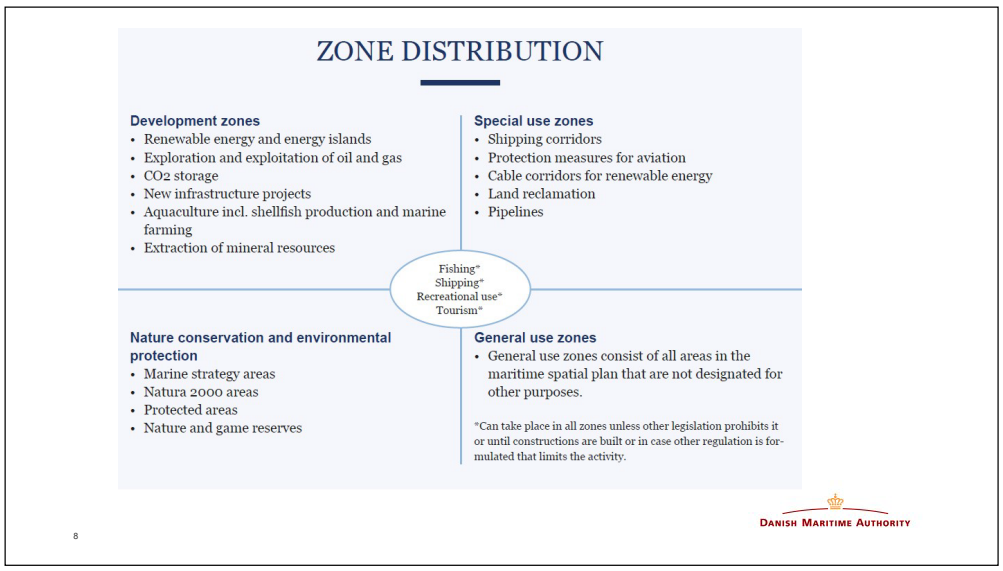

Figure 4: Types of zones in the Danish Maritime Spatial Plan. Source: The Danish Maritime Authority.

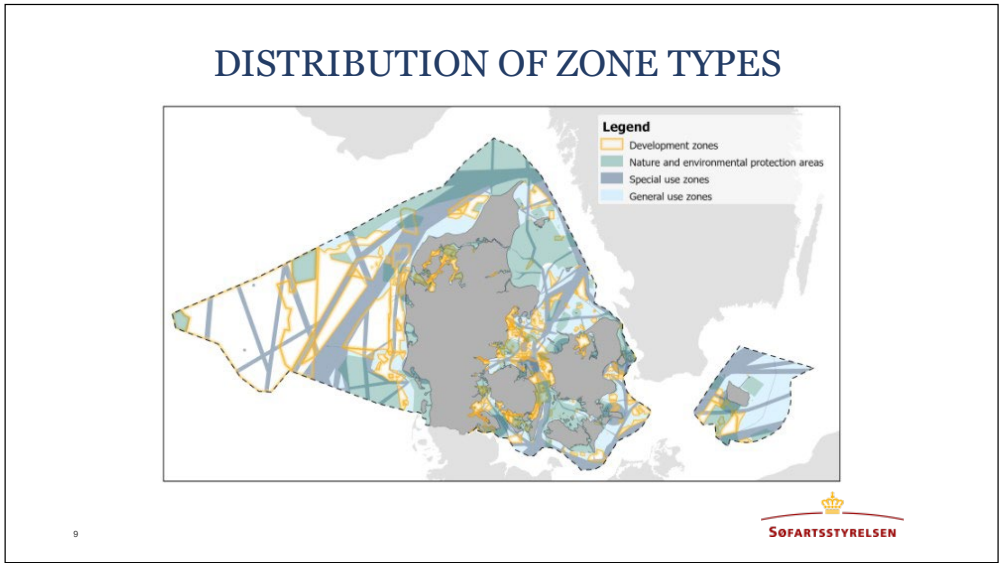

Figure 5: Distribution of zone types in the proposed Danish Maritime Spatial Plan of March 31st 2021. Source: The Danish Maritime Authority (minor edits by the Commission). Note that the slide shows allocations in the first proposal which was sent into consultation in 2021. An altered plan was adopted in September, 2023, and an amendment to the plan was sent into consultation in November, 2023

The Maritime Spatial Plan is binding. This means that permits for offshore wind can only by granted in the zones dedicated for such development.

Figure 6 below shows the development zones for renewable energy in the proposed Maritime Spatial Plan from March, 2021. (An altered plan was eventually adopted in September, 2023.)

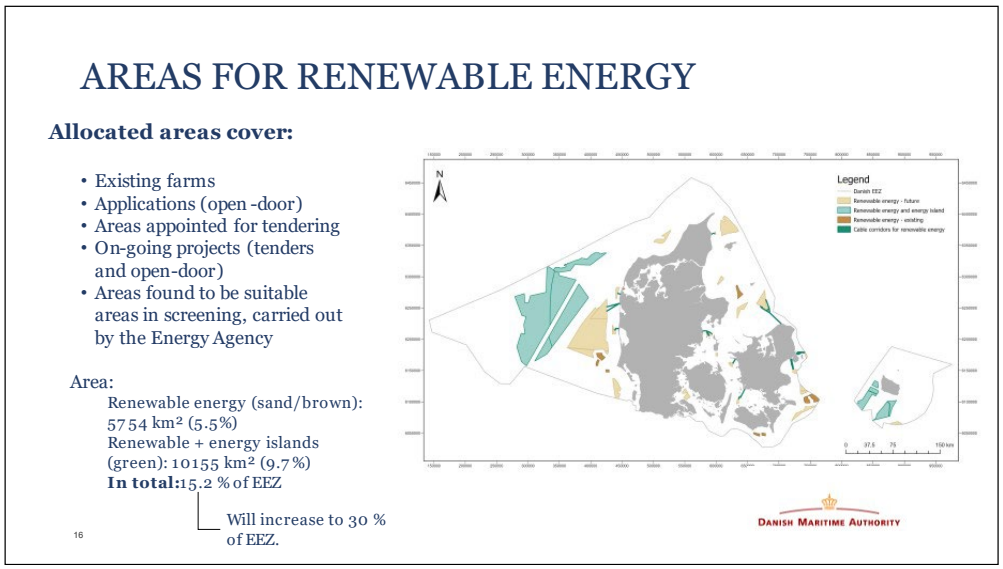

Figure 6: Slide explaining development zones for renewable energy in the proposed Danish Maritime Spatial Plan in March, 2021. Source: The Danish Maritime Authority (minor edits by the commission).

As indicated on the bottom of the slide, the latest adopted Maritime Spatial Plan (September 2023) allocates 15.2% of the exclusive economic zone (EEZ) for renewable energy. As of November, 2023, a draft amendment, based on the latest political agreement, was sent into consultation. The amendment includes an increase in area for renewable energy to 30%.

Although an environmental permit is not guaranteed within a development zone, the government's localisation suitability considerations in relation to opposing interests such as defence, fisheries, and shipping are considered through the Maritime Spatial Plan. Thus, the need for such considerations in the permitting process is usually already covered through the plan.

Notably, the plan does not indicate special planned areas for fisheries in the same way as in Sweden.

7. Fine screening ('Step 2')

The development zones in the maritime spatial plan are fine-screened in a process coordinated by the Energy Agency.

In this process, consultancy services are employed. An economic evaluation is performed within the site, and early de-risking is conducted to identify showstoppers.

Which areas are finally to be included in tenders, and to what capacity, are then decided by the Ministry of Industry, Business and Financial Affairs upon the proposal of the Energy Agency.

8. Preliminary investigations ('Step 3')

The third and last step in the process includes preliminary investigations and a strategic environmental assessment. This is coordinated by the Energy Agency and the TSO Energinet. In this step, consultancy services are again employed. The process involves collection of new data on wind, waves, seabed, and birds.

The content of the preliminary investigations is summarised in Figure 7 below.

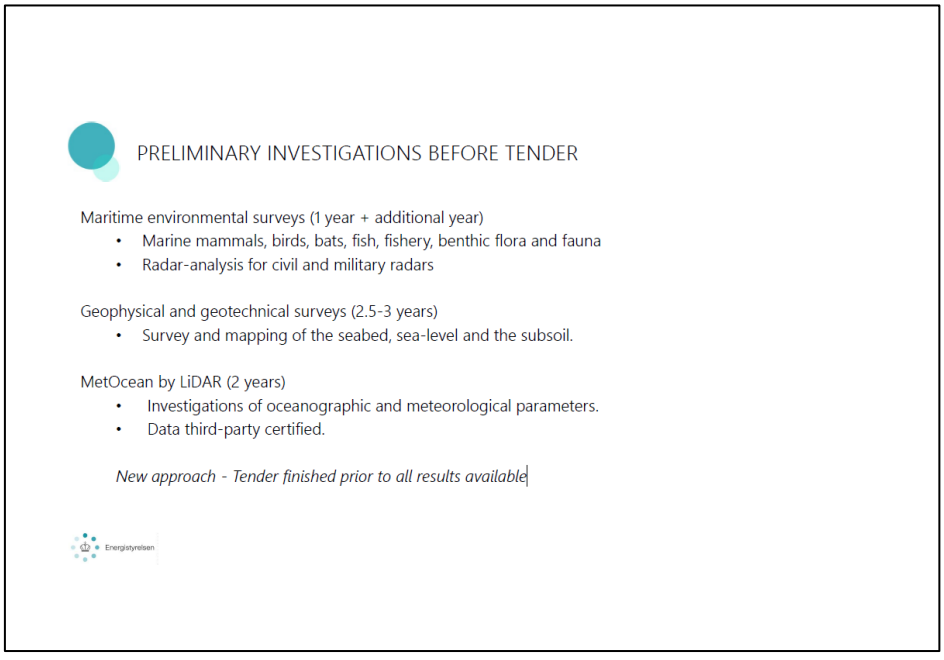

Figure 7: Slide explaining the scope of preliminary investigations. Source: The Danish Energy Agency.

The three-step process explained above is summarised in Figure 8 below.

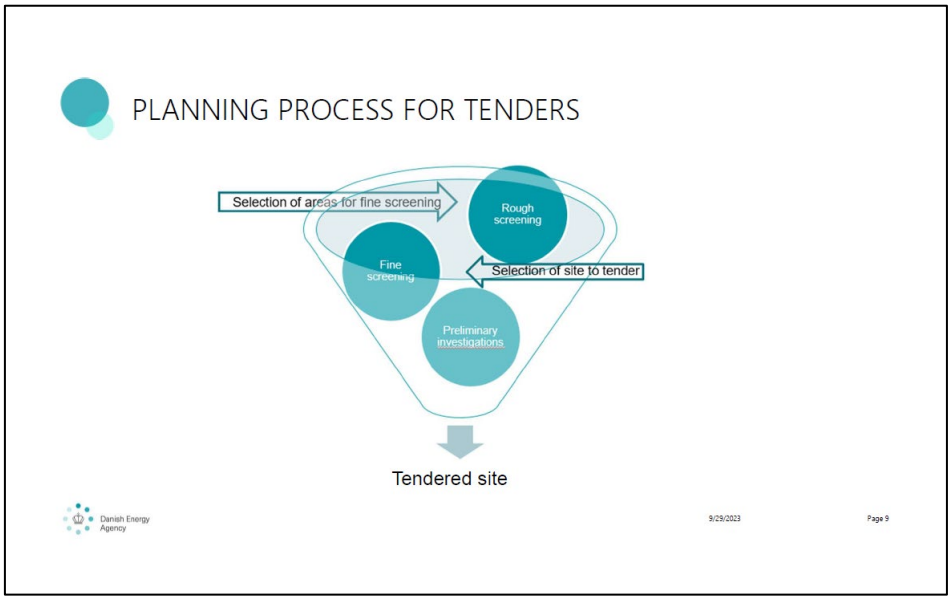

Figure 8: Slide explaining the three-step process for site development before tendering. Source: The Danish Energy Agency.

9. Future sequencing

Historically, the three steps have been carried out before the tendering. In the upcoming tenders, to save time, the tender process and preliminary investigations are done in parallel. This is illustrated by the draft milestones for the upcoming tender of Kattegat Offshore Wind Farm in Figure 9 below.

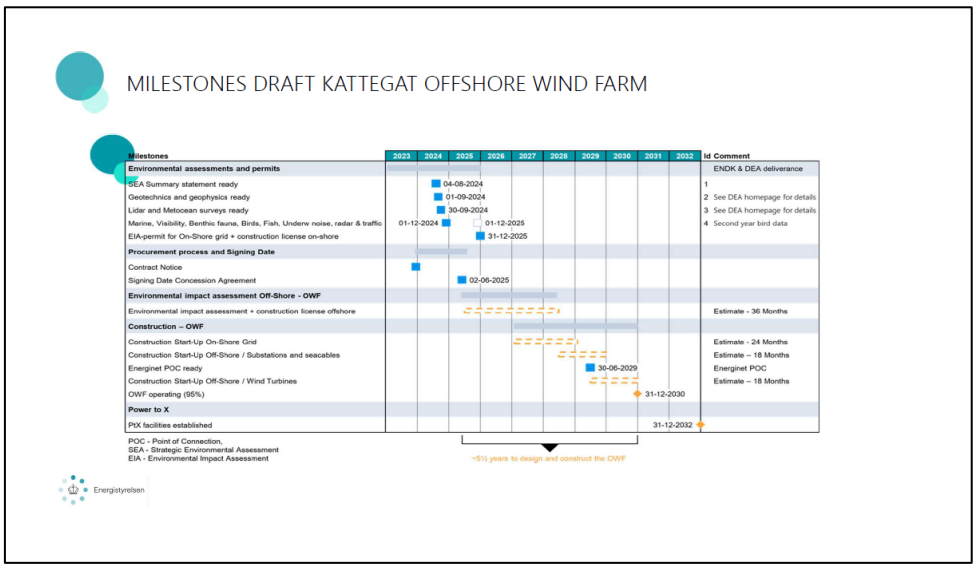

Figure 9: Milestones draft for upcoming tender of Kattegat Offshore Farm. Source: Danish Energy Agency.

10. Structure of tender and evaluation

The tender is public. As explained in Figure 10 below, price is the only evaluation criterion, but pre-qualification criteria include social responsibility, sustainability, and environmental and nature inclusion.

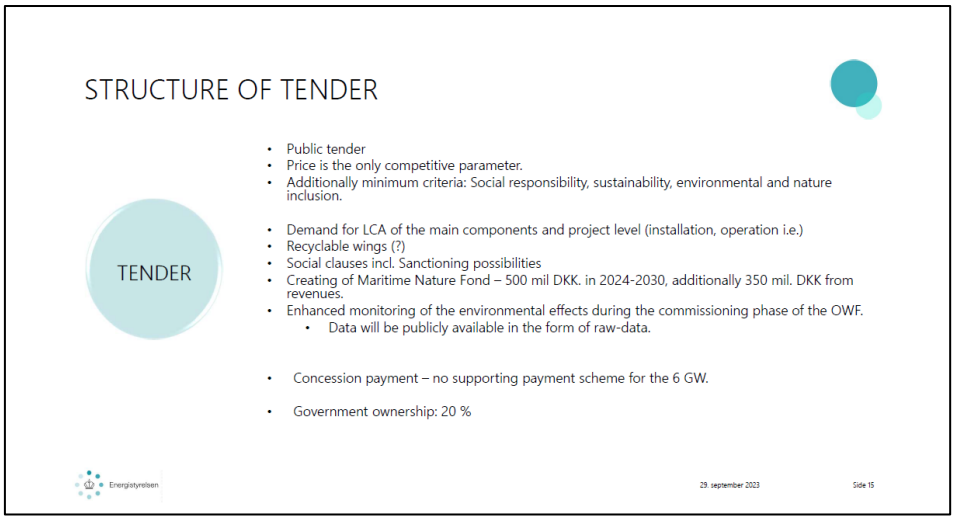

Figure 10: Slide presenting structure of upcoming tenders. Source: The Danish Energy Agency.

As indicated at the bottom of the slide, the tender will result in a concession payment only. Thus, the tenders will not include supporting payment schemes, such as CfDs.

As also indicated, the political agreement on the upcoming tenders stipulates a 20% government ownership of the wind farms. The details of this have yet to be developed.

To summarise, the Danish tendering structure aims at saving time, creating transparency, de-risking projects for the developers, and saving costs. See Figure 11 below:

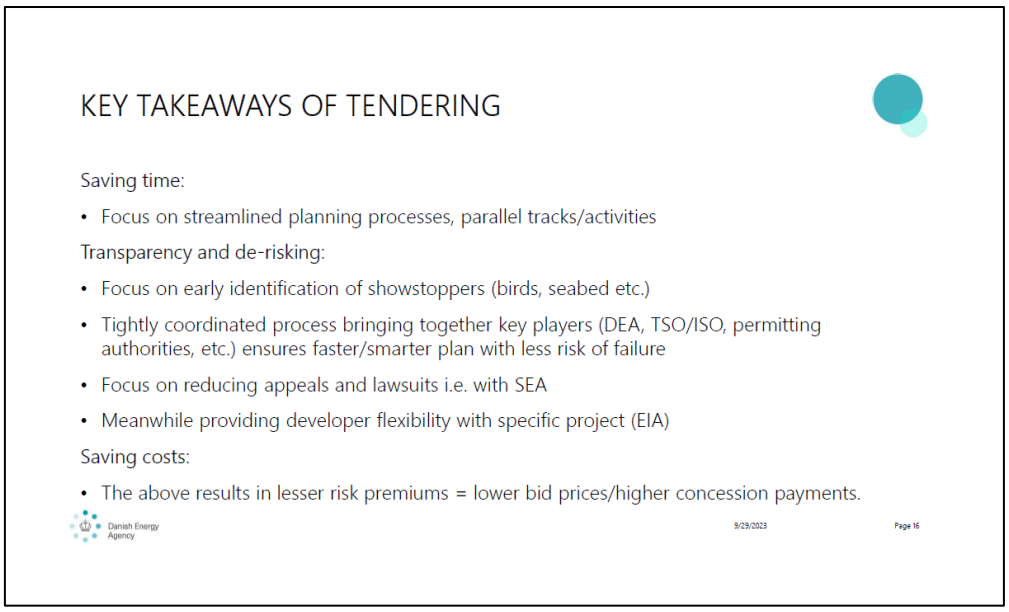

Figure 11: Slide explaining key takeaways of the Danish tendering structure. Source: The Danish Energy Agency.

11. Grid connection

For tendered farms, the TSO Energinet is obliged to provide a grid connection (1 GW) and strengthen the grid to accommodate this if necessary. The TSO must also ensure that grid connection is available in due time. If not, the developer is entitled to compensation.

As explained in Figure 12 below, Denmark's basic setup for grid connection of tendered farms is under development.

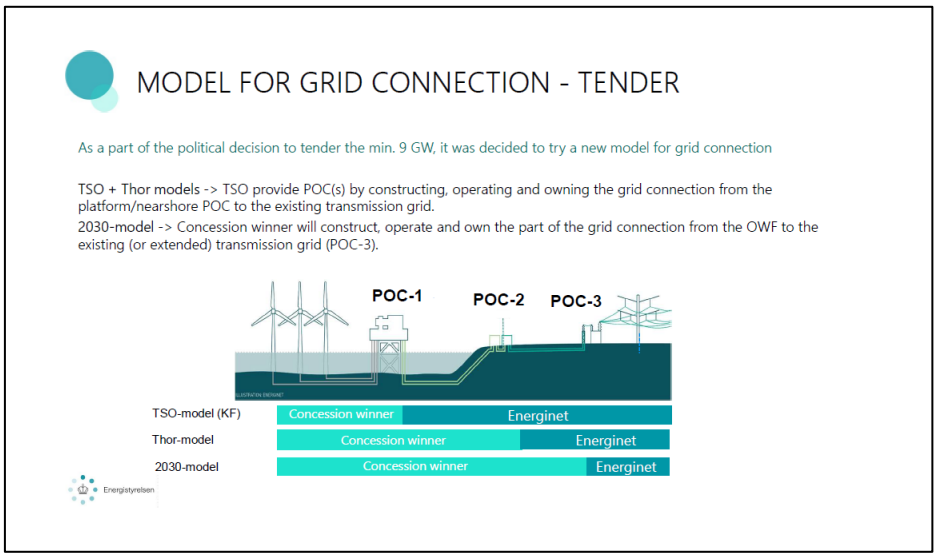

Figure 12: Slide indicating the models for grid connection for tendered sites. Source: The Danish Energy Agency.

For the latest tendered farm, the Thor wind farm, Danish TSO Energinet will build a near-shore point of contact (POC-2), to which it will extend the grid. In the upcoming tenders, the '2030 model' instead means that the developer will construct, operate, and own the part of the grid connection from the wind farm to the existing (or potentially slightly extended) transmission grid (POC-3 in the figure).

12. Permitting process

As discussed, prior to the designation of an area for tendering, the Energy Agency conducts preliminary investigations. This includes studies on the suitability of the area at strategic level and a strategic environmental assessment.

Following the tendering, it is up to the developer to develop an environmental impact assessment for the wind farm.

The right obtained in the tender is an exclusivity to conduct further investigations, for a certain period. If, according to the investigation, the project can be compatible with relevant interests, a licence to establish the wind farm, and then to operate it, can then be granted by the Energy Agency.

The construction and operation of the farm also requires certain other permits from other authorities. It is up to the developer to secure these, although the Energy Agency continues to facilitate this process.

13. The discontinued open-door scheme

Denmark's open-door scheme was discontinued in late 2023.

The scheme, as it was

The scheme was originally instated in 1999 and allowed for developers to initiate a development process in all waters that were not already reserved for the government's tendering of wind farms.

The process meant that the developer could be granted an exclusivity for a certain area, with a right to examine subsea conditions for a possible wind farm. The developer then had a certain time frame to conclude the examinations and submit an application to establish the farm.

The Maritime Spatial Plan was still binding, meaning that a final permit could only be granted in areas indicated as development zones for renewable energy. It was possible to receive a permit to examine areas that were not in such zones, but the Maritime Spatial Plan would then need to be amended before a permit to establish the wind farm could be decided.

If multiple developers were to apply for the same area, a first-come, first-served principle was applied.

The developer then had to obtain the necessary permits from involved authorities and apply for a grid connection (if such was wanted) with the TSO Energinet. This was done bilaterally between the TSO and developer.

The revision and discontinuation of the scheme

In June 2021, a political agreement was made to limit the open-door scheme to coastal waters, within 15 kilometres from the shoreline.

The revised legislation went into force on 1 July 2022. During the time preceding this, 44 new projects were submitted in waters outside of the 15 km limit. Many of these were large (eight were over 1 GW), which was not within the intention of the open-door scheme.

In December 2021, the tender for the Thor wind farm was concluded. For the first time, the tender resulted in a negative winning bid for subsidies (thus, a in a concession payment). This raised concerns that it would violate EU state aid rules to have a combination of a tender system, where developers need to pay a concession fee, and an open-door scheme, where no concession was requested. More specifically, it was discussed whether the absence of a concession payment in the open-door scheme constituted state aid to the developers within that scheme.

For this reason, the handling of applications under the open-door scheme was administratively paused in March 2023.

The system was then permanently discontinued in December 2023.

14. Defence interests

The Danish Ministry of Defence conveyed the following key messages:

The Ministry of Defence and the Armed Forces are engaged in the steering committee and the working groups that determine the sites (see Figure 3 above). Defence interests do not technically have a veto, but they are highly considered in the process.

The government's clear capacity target (12.3 GW by 2030, see Section 1) is a key factor in the process, as the processes between ministries and agencies do not address 'whether', or 'how much' offshore wind should be allowed, but rather 'where' it should be localised.

All involved authorities generally adopt a pragmatic and solution-oriented approach. For example, a solution was found in one instance by moving an

existing defence practice area in order to accommodate a better localisation for wind farms.

It should be remembered that the context is different in Sweden, and that the situation in the Baltic Sea in particular is more difficult and sensitive to handle.

It is mostly a matter of unclassified information that needs to be shared with the other authorities in the planning process. There have been instances in which confidential defence interests have been restraining factors. In these cases, it has been sufficient that the Armed Forces indicate this to the other parties; the Armed Forces have not been 'challenged' to explain or disclose further.

Some key aspects in the process are listed in Figure 13: Slide explaining key defence interests addressed in the site identification process. Source: The Danish Ministry of Defence. below.

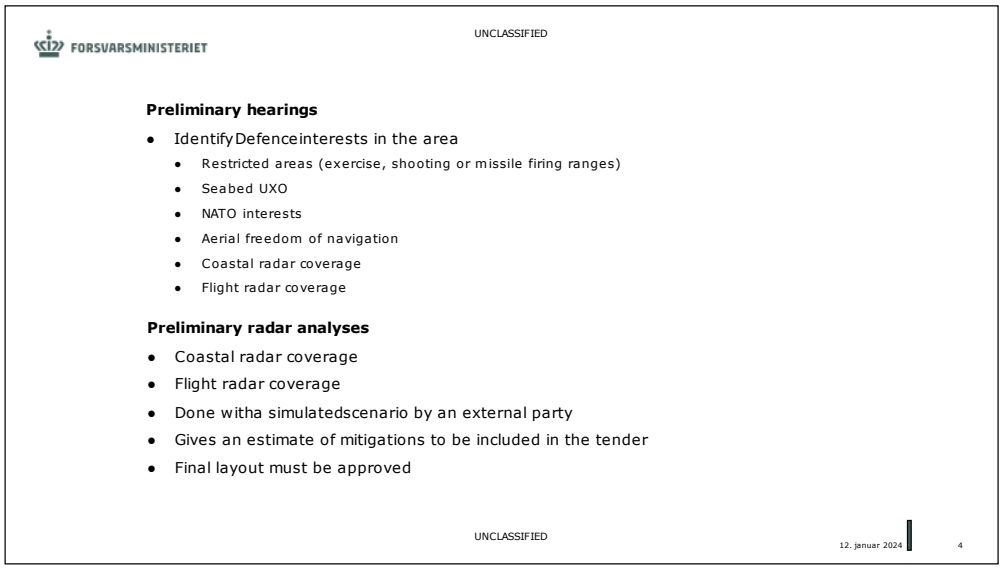

Figure 13: Slide explaining key defence interests addressed in the site identification process. Source: The Danish Ministry of Defence.

The basic principle is that the developer must bear all costs associated with compensating adverse defence interest impacts. Regarding radar shadowing, the Armed Forces accepts gap-filling radars mounted on wind farms as a compensatory measure.

From a defence interest perspective, it is generally positive that the open-door procedure has been discontinued. The procedure made planning more complicated, as there were unknowns on where, when, and how large different projects would be. This uncertainty is particularly difficult from a military perspective.

15. Views among actors

Views within the fishing industry

Key messages from the Commission's meeting with the Danish Fishers Producer Organisation and the Danish Pelagic Producers Organisation included the following:

The development of offshore wind power has generally impacted the fishing industry in a negative way.

In particular, the decision-making has failed to address the cumulative effects of multiple wind farms. The impact assessment is only done ad hoc, for each farm seeking a permit.

The Danish regulatory structure does not identify particular areas designated for fishing, for example in the Maritime Spatial Plan. Instead, fishing is generally allowed in all waters.

Five years ago, the general assessment was that it would be possible to continue fishing within wind farms, or at least net-fishing (trawling is not allowed due to cabling and other bottom structures). This has, however, proven harder than anticipated.

Reports also show that wind farms are reducing fish supply. It is being discussed whether this could, for example, be due to electromagnetic disturbance from the cables.

Thus, it is crucial that impact assessments and follow-up studies are done.

The process for compensation to the fishing industry needs to be reformed. Today, agreements are made bilaterally between the developers after permitting has been concluded. Instead, clear compensation schemes should be included in the permitting process. One reason for this is that each farm's

impact in itself might be small, but its contribution to the cumulative effects is much more significant.

The Danish Maritime Spatial Plan does not identify areas designated for fishing. Instead, fishing is generally allowed wherever it is not prohibited. This has previously been a working setup, but is increasingly problematic as the wind farms grow bigger. It is probably necessary to reserve areas for fishing going forward.

Views among wind power developers

Key messages from the Commission's meeting with Green Power Denmark and wind power developers Copenhagen Infrastructure Partners, RWE, Vattenfall DK, and Ørsted included the following.

The Danish tender system generally has a good distribution of risk between the government and the developers. The government has carried out several studies (biodiversity, etc.) and most key issues have been resolved, such as Natura 2000, species protection, etc. This means that the developers generally can rely on approved permit applications for the tendered site.

The government's studies on the physical conditions, such as MetOcean, geophysical etc., also provides valuable site-specific insights which actively will be used in the bid-preparation. Such data also helps to identify potential risks such a mad, glaciers etc.

It has been a challenge for the Danish authorities to find the right framework for the tenders. The Energy Agency has changed the framework between each round.

Some developers consider that the current tender material is unbalanced, arguing that the majority of the associated risks are put on the tenderer, that too little flexibility exists, and that guarantee/penalty levels are not market conform.

It is important that the Swedish government clarifies its objectives in designing any tenders. Is the most important objective to secure fiscal means to the government, to make sure that the wind farms are eventually constructed, or that other, social or environmental, objectives are met?

The open-door scheme was basically a good system, but in the end too many applications were submitted, and the system 'imploded'. The system was really meant for smaller, near-shore projects. Denmark has not, however, had a good transition from the open-door system. A good transition is key for any systems change.

If a tender system results in price risk sharing/subsidies, many developers consider two-sided contracts for difference as the best format.

It is important to note that Denmark has different conditions for offshore wind power than Sweden. The Danish seas have better wind speeds and are generally shallower. This and other seabed factors make it more expensive to build wind farms in the Baltic Sea than in Danish and German waters.

Although Sweden clearly has a more complex defence interests in the Baltic Sea than Denmark has in the North Sea, there is also a difference between the countries when it comes to intergovernmental processes and mandates (notably, developers present here have built offshore wind in the strait between Taiwan and China)

Some advice to the Swedish government: Start with a clear objective about the role of offshore wind power. This will make it easier to designate areas for offshore wind. The Danish government has a clear target for how much installed capacity is to be achieved, and this is an important success factor.

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Regulations and procedures for offshore wind power in Finland

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Introduction

On 10–11 October 2023, the Commission visited Helsinki and met with the Finnish state-owned enterprise Metsähallitus, the Ministry of Economic Affairs and Employment, the Finnish Wind Power Association, and wind power developers Ilmatar, OX2, RWE, and Skyborn Renewables, Suomen Hyötytuuli, as well as the Finnish Defence Forces and Fingrid.

On 19 October, the Commission met with the Finnish Fishermen's Association (Suomen ammattikalastajaliitto SAKL ry) via Skype.

This documentation has been reviewed by the Ministry of Economic Affairs and Employment and Fingrid. The responsibility for any inaccuracies lies, however, with the Commission.

Two-pronged regulations in Finland

Regulations in Finland differ between Finland's territorial waters and its exclusive economic zone.

In the territorial waters, pre-developed areas are auctioned off by Metsähallitus in a tendering process. In the exclusive economic zone, there are no specific regulations for offshore wind power and permits can be applied for under the Act on the Exclusive Economic Zone of Finland.

Targets for expansion

The Finnish government's targets for the expansion of offshore wind power are on a general level: That by 2030, the first industrial-size offshore wind power projects in Finland shall be in production, and that by 2035, several projects shall have been built in both territorial waters and the exclusive economic zone.

Apart from that, the government does not currently have any binding quantitative targets.

Non-binding targets exists, through the Baltic energy market interconnection plan (BEMIP), based on Trans-European Networks for Energy (TEN-E) regulation. These are not, however, confirmed by energy and climate strategy.

Finnish territorial waters

Maritime spatial planning

There are three layers in Finland's maritime spatial planning: The Finnish Maritime Spatial Plan, the regional land use plans, and the municipalities' plans for land use.

Finland's Maritime Spatial Plan covers both the exclusive economic zone and Finland's territorial waters. The plan that currently applies is called the Maritime Spatial Plan for Finland 2030. The plan was developed by the Regional Councils of coastal areas and provides information as a basis for

more detailed regional plans as well as regional development and permit procedures. The Maritime Spatial Plan is not part of the system for land use planning and has no binding legal effect. The plan is updated at least every ten years.

Under the Land Use and Building Act, building a large offshore wind farm requires a reservation in the current regional land use plan. A regional land use plan is an outline plan of land use in the region or a sub-area of the region. It presents the principles for land use and social structure in the region. The regional land use plans are drawn up and adopted by the Regional Councils.[1]

The municipalities usually plan for wind power in their area through so-called partial master plans, which are prepared for each wind farm. The partial master plans are usually designed so that building permits can be granted based on them. A municipal land use plan is required for a wind farm to be built within the municipality.

Any property taxes for the offshore area are paid to the municipality outside which the public water area is located. The property tax thereby functions as an incentive for the municipalities to plan for and approve wind power projects. The authorities and actors that the Commission has been in contact with were of the opinion that municipalities in Finland therefore generally have a positive attitude toward the establishment of wind power installations.

Metsähallitus

An important starting point for regulation of the water areas included in Finnish territory is Metsähallitus's assignment. Metsähallitus is a state enterprise that manages state-owned land and water areas in Finland. In property matters, Metsähallitus has the role of property owner for state-owned areas. The 2016 Act on Metsähallitus stipulates that Metsähallitus must operate on a commercial basis. Agreements entered into with Metsähallitus are to be viewed as private agreements.

[1] A Regional Council is a regional authority and interest organisation for the municipalities of a region in Finland.

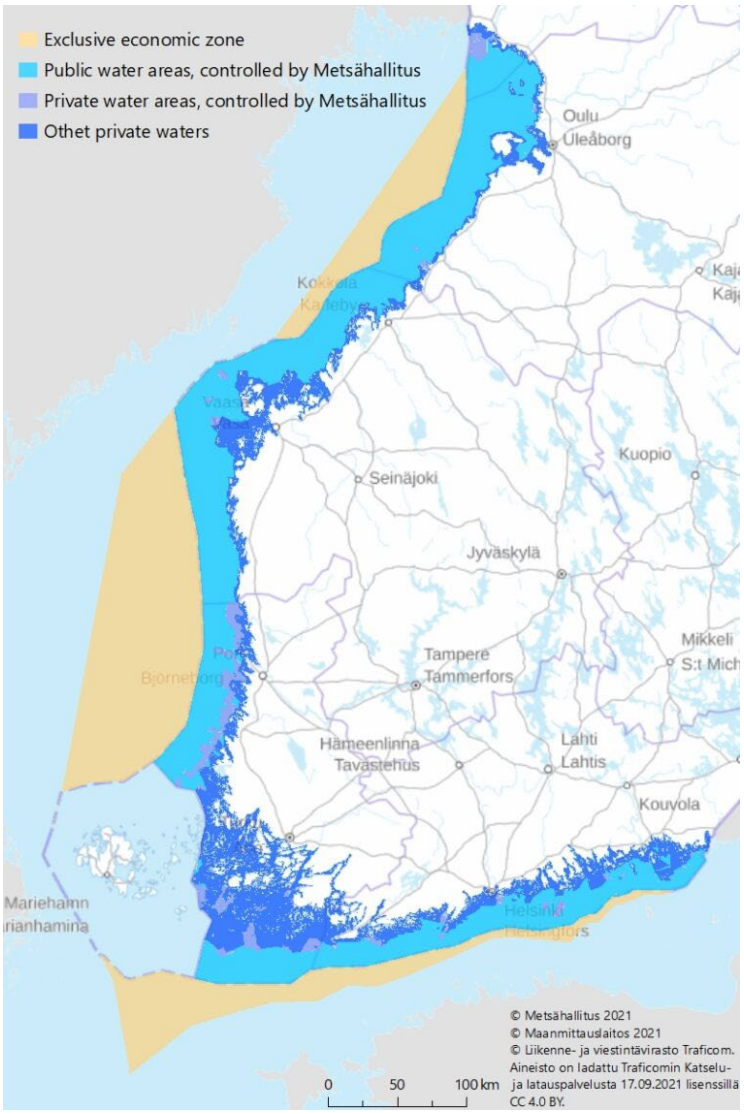

Figure 1: The zones in the Finnish sea area and the area managed by Metsähallitus. Source: Metsähallitus's website.

The Act on the Right to Transfer State Real Estate Assets applies for the leasing and sale of state-owned areas. Under this act, Metsähallitus must obtain permission from the Finnish government to lease out areas for offshore wind power. When the government has decided on permission to lease out, Metsähallitus is tasked with auctioning off the areas concerned in a competitive tendering process (tendering procedure). The first project was leased out in 2022. In November 2023, the government decided to begin

tendering procedures for five areas for offshore wind power. Two areas will begin their tendering procedures in 2023 and the others in 2024.[2]

Tendering procedure

The areas suitable for tender are identified by Metsähallitus through studies based on pre-established criteria. In the subsequent planning phase, many different interests must be taken into account, including those of the Finnish Defence Forces. The views of the municipality or municipalities affected are also very important. Connection to the main grid is not part of the tender, but Metsähallitus maintains a close dialogue with Fingrid, which is the transmission system operator authority.

The competitive tendering process, or auction, is conducted in several stages and takes about one year to complete. A special company is formed for the project and placed on the market. Suitable developers are invited to participate in the tender. It is key that the process in this stage complies with applicable EU requirements on competition and market-based prices. The tender is conducted in several rounds and includes both qualitative and financial criteria. When the auction is over, Metsähallitus presents a proposal to the government, which in turn makes the final decision on who is awarded the tender. The tenders of participating parties are not made public.

The developer with the winning tender and Metsähallitus together form a company until a plan for land use has been drawn up. Metsähallitus then ends its ownership in the company. The wind power project area remains in the ownership of the state even after a partner for electricity production has been chosen and the project rights have been transferred. The project rights and rental income that the electricity-producing partner pays comprise a part of the earnings that Metsähallitus brings to the state.

If the developer chooses to not realise the wind farm, it is usually stipulated in the agreement with Metsähallitus that the developer loses their rights to the project. Various fees may also be imposed if the developer does not keep to the project schedule.

[2] https://www.metsa.fi/en/press-releases/metsahallitus-to-launch-the-competitive-tendering-process-for-two-offshore-wind-power-projects/

Grid connection

The project's environmental impact assessment includes investigating different alternatives for connection. Once the project company has a permit to build the wind farm and a legally valid land use plan, Fingrid can enter into an agreement for grid connection. Fingrid indicates where it is possible to connect the wind farm. The project company is responsible for the expansion up to the connection point.

Finland's exclusive economic zone

Permits to construct facilities in the exclusive economic zone are granted by the Government. Applications are submitted to the Ministry of Economic Affairs and Employment by the developer. The Ministry of Economic Affairs and Employment also handles applications for study permits. A number of developers currently have permits to conduct seabed studies in the exclusive economic zone. Pursuant to the Act on the Exclusive Economic Zone of Finland, such a study permit does not grant exclusive rights to an area or priority in a permit process. The Finnish government has not yet granted any permit applications to build wind farms.

Just like the Act on the Exclusive Economic Zone of Sweden, the Act on the Exclusive Economic Zone of Finland is not particularly adapted for offshore wind power. For example, it does not contain rules on who should be granted priority and how exclusive rights to an area should come into effect. According to the Ministry of Economic Affairs and Employment, several of the permit applications that have been submitted concern the same area. However, efforts are under way in the Ministry of Economic Affairs and Employment to introduce a new legislative framework. This work includes ensuring that the regulations are in compliance with EU regulations on state aid.

Transmission network

Fingrid is the transmission system operator (TSO) in Finland. According to Fingrid's calculations, there will likely be 20 GW of onshore wind power by 2030. Assuming that consumption from industry and private individuals increases, 20 GW will correspond to the estimated demand. This can be compared to the fact that Fingrid has received applications for renewable electricity production equivalent to 338 GW. These are broken down into 166 GW onshore wind power, 89 GW offshore wind power, and 81 GW solar power.

There are already today a large number of onshore wind power projects, which reduces the need to speed up the expansion of offshore wind power. However, there is a political desire to develop offshore wind power as well as a great deal of interest from developers.

An expansion of the transmission network is currently under way in Finland, and Fingrid plans to invest approximately 4 billion euro in the network by 2033. The planning of the transmission network expansion would benefit if Fingrid could point out future connection points and indicate where and when connection should take place. They currently have an obligation to provide connections to projects even if the connection is expensive and takes a long time. It would be beneficial for the electricity grid, for example, if the expansion of offshore wind power was implemented in southern Finland because the electricity is needed there. The areas for offshore wind power that are being tendered now are farther north and not optimal from a connection standpoint. Fingrid is involved in maritime spatial planning, but it is not binding.

Fingrid is currently investigating the most suitable way to enter into agreements with developers of offshore wind power and other electricity producers. Fingrid does not have the possibility to reserve capacity for projects that will be realised in a number of years. If another project is completed earlier, it must be given priority for connection. It needs to be clearly established that the developer will not back out of the project before Fingrid can enter into an agreement on capacity allocation.

Finnish Defence Forces

The Finnish Defence Forces have an active role in the planning of onshore and offshore wind power. Approval from the Defence Forces is required for a project to be implemented. At the developer's initiative, the Defence Forces can have a dialogue on the design of the project and conditions for approval. They are also active in the municipalities' planning. Even if the Defence Forces cannot reveal exactly where it is possible to build, they can help to delineate suitable areas. In the sea, only projects located north of Åland have been approved thus far.

The Defence Forces have a system for approval that is based on three levels: green light, yellow light, and red light. Green light means that the project can be approved without further investigation and red light means that it does

not meet the conditions for approval. If the project is assessed to have a yellow light, the application is forwarded from the Defence Command to the VTT Technical Research Centre of Finland. VTT sends the results of the investigation to the Defence Forces, which give the final opinion on whether the project can be approved or not.

The Defence Forces are generally opposed to their own radar being replaced or compensated by radar placed on wind turbines. The technology that is available to developers does not match the Defence Forces' own in quality, and the radar installations are also too poorly protected if they are placed on wind turbines. Each country must work with these issues based on its own conditions. Finland has no submarines, for example, which places greater demands on their underwater interception abilities.

In the parts of Finland in which the Defence Forces have opposed the expansion of onshore wind power for reasons of defence, the municipalities have protested. The municipalities want wind power because it generates income for them.

Metsähallitus has good contact with the Defence Forces and feels that the cooperation and the security classification system generally work well. For the Defence Forces, it is easier to handle security classification in relation to a state actor such as Metsähallitus, than with private actors.

The Ministry of Economic Affairs and Employment handles defence-related commercial matters, such as wind farm ownership. There are special rules regarding the right to own property.

Views within the fishing industry

At the meeting with the Commission, the Finnish Fishermen's Association expressed, among other things, the following views:

The Finnish planning system as such for the territorial waters is essentially functional.

There are special areas dedicated for fishing in the regional land use plans. Commercial fishing participates in the Regional Councils' planning process. But the areas are not binding, and we are not convinced that the areas play a particularly large role in practice in the planning of wind farms.

The greatest problem thus far has been that it is resource-intensive for commercial fishing to participate in all processes surrounding wind power expansion. We need to express our opinions both in the planning work (maritime spatial plans, regional land use plans and in Metsähallitus' planning) and then later often in relation to each project.

Commercial fishing has nowhere near the resources required to participate actively and in a substantiated way in these processes. It is a bit of a David and Goliath situation in that the wind power sector is a multi-billion-dollar industry.

There is also a lack of research on how fishing is affected by wind power. For example, whether the migratory routes of fish stocks are affected by noise from the wind farms or electromagnetic disturbance from cables. This makes it difficult to express opinions.

For projects in the exclusive economic zone, everything is more unclear now. Commercial fishing is monitoring the legislation work being conducted.

Views among offshore wind power developers

In the meeting with the Commission, the developers have presented how they assess the project development climate in Finland. The views expressed, included the following:

A more transparent tendering process for the areas in Finland's territorial waters would be preferable. Metsähallitus does not, for example, provide information on how different tenders have been evaluated.

Likewise, a clearer timetable for the expansion of Finland's territorial waters and an accelerated process would be preferable. Metsähallitus is good at finding suitable locations for expansion, but it takes a long time and Metsähallitus is not considered very agile by many developers.

It is currently unclear which rules apply in Finland's exclusive economic zone, including whether the rules for property tax will be applicable. The lack of rules surrounding exclusive rights negatively impacts the ability to make investment decisions. Clear regulation of exclusive rights and a clarification of what other rules will apply would be preferable. This should

include questions such as the timeline of the auctions, criteria for selecting developers, handling of existing Consent to Exploit applications.

The possibility to connect to the transmission network is key to all projects and the process needs to be better coordinated with other permits.

The cooperation with Finland's Defence Forces functions relatively well, better than in Sweden. The Defence Forces in Finland are more accessible.

Sweden and Finland would benefit from cooperating on offshore wind power in the Bothnian Bay. Expansion in each country will cause a cumulative impact on, for example, migratory birds and maritime shipping. Joint investigations into the effects would facilitate matters for developers and authorities. Access to infrastructure to build and operate the wind farms also needs to be provided.

It is important to proceed based on the current situation when planning for future regulations. Auction-based systems do not necessarily contribute with the same advantages if implemented today, as compared to how things were several years ago. Rapid expansion of renewable energy is crucial for the climate transition. There can therefore be great value in utilising the developers' resources and willingness to drive their projects forward instead of introducing administratively heavy systems.

If a tendering system is introduced in the exclusive economic zone, it is important that the expansion is not delayed, for example due to staffing shortages in key positions among agencies. It is also important to value existing projects. For example, project development progress could be considered in the criteria when granting exclusivity in the future model set by the government after then change in legislation.

SWEDISH GOVERNMENT INQUIRIES

Documentation

2024-02-22

Inquiry Commission on Offshore Wind Power
KN 2023:01
Mattias Schain
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Regulations and procedures for offshore wind power in Germany

Table of content

1. Introduction

On 4–6 October 2023, the Commission visited Hamburg and Berlin and met with the Federal Maritime and Hydrographic Agency (BSH), the Federal Ministry for Economic Affairs and Climate Action, the transmission system operator (TSO) 50Hertz, and with the German Ministry of Defence.

Two meetings were also held with the offshore wind industry. These included the German Offshore Wind Energy Foundation, the Federal Association for Offshore Wind Energy (BWO), and developers Copenhagen Infrastructure Partners, Ibedrola, RWE, Skyborn Renewables, Vattenfall, and Örsted.

On 23 October 2023, and 29 November 2023, respectively, the Commission had meetings on Teams with the Federal Network Agency (BNetzA) and the fisheries' organisation Deutscher Fischerei-Verband.

This documentation has been reviewed by the BSH and 50 Hertz. The responsibility for any inaccuracies lies, however, with the Commission.

2. The German government's offshore wind ambition

Germany currently has an installed capacity of 8.3 GW of offshore wind power production, mainly in the North Sea. Figure 1 below shows the current wind farms and project pipeline.

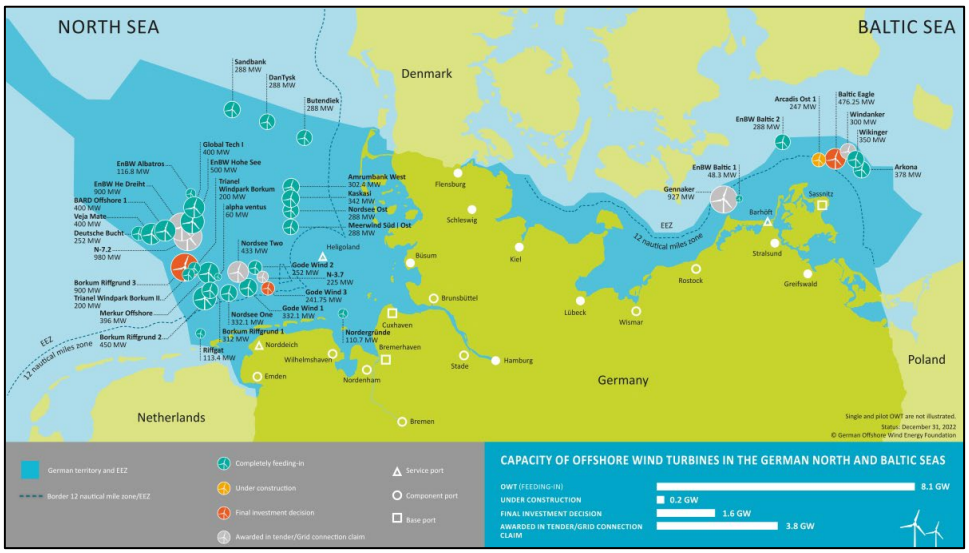


Figure 1: Current wind farms and project pipeline in the North Sea and Baltic Sea. Source: The Federal Ministry for Economic Affairs and Climate Action.

Figure 2 below outlines the government's offshore wind targets, notably including a short-term expansion from today's 8.3 GW to a minimum of 30 GW by 2030.

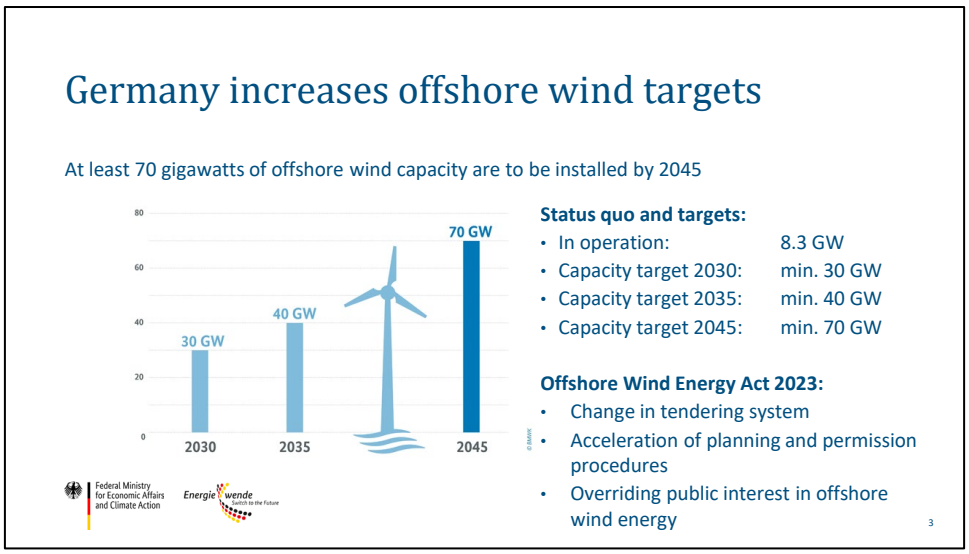


Figure 2: Slide outlining Germany's offshore wind targets. Source: The Federal Ministry for Economic Affairs and Climate Action.

As indicated in the figure, the newly adopted Offshore Wind Energy Act accelerates the development by, among other things, establishing offshore wind energy as an overriding public interest.

3. System overview

Figure 3 below shows an overview of the German system for offshore wind planning and tendering.

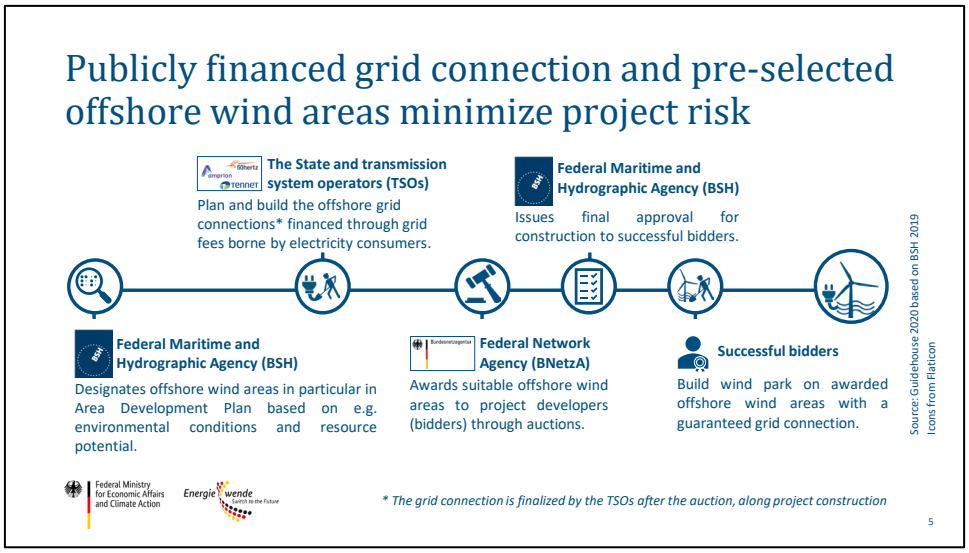


Figure 3: Overview of the German system for offshore wind planning and tendering. Source: The Federal Ministry for Economic Affairs and Climate Action.

As indicated in the figure, the system is government-driven. The BSH designates sites, the TSOs supply the sites with grid connections, the BNetzA tenders the sites and the BSH handles final permitting. This centralised process aims at minimising the project risk for the developer, through thorough planning, pre-investigations, and guaranteed timely grid connection.

4. The Maritime Spatial Plans

The Maritime Spatial Plans in Germany are binding, and offshore wind power can only be developed in the development areas designated in the plans.

The Maritime Spatial Plans for the exclusive economic zone (EEZ) are decided at a federation level, by the German state. The plans for the territorial sea are decided by each coastal federal state (Lower Saxony, Schleswig-Holstein, and Mecklenburg Western Pomerania, respectively).

Figure 4 below shows the planning process for the exclusive economic zone.

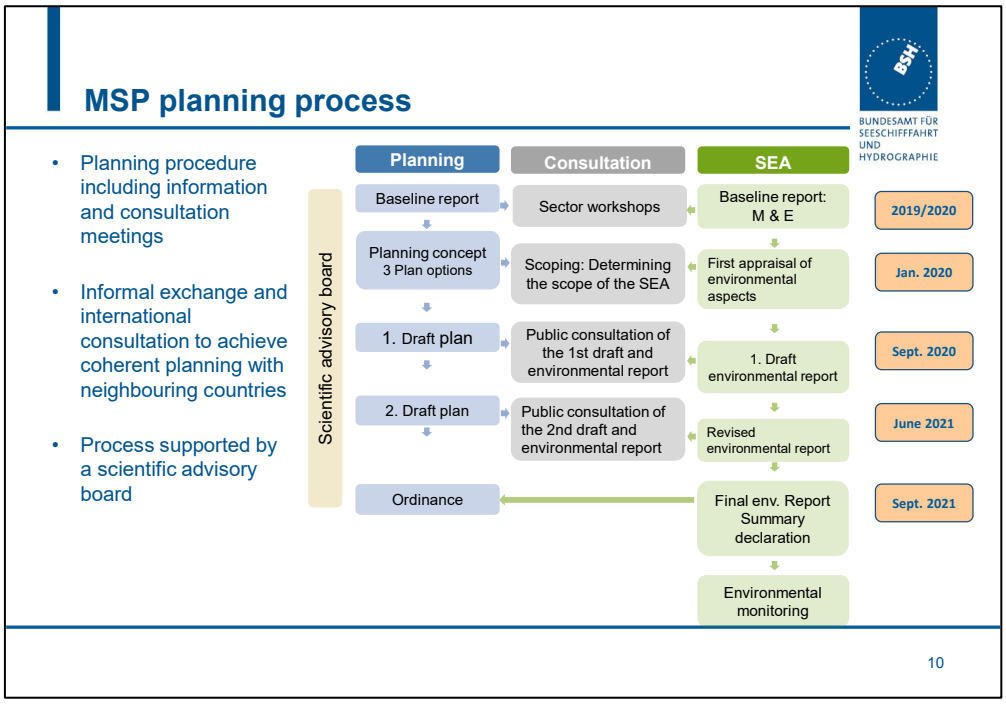


Figure 4: The planning process for the Maritime Spatial Plans. Source: The Federal Maritime and Hydrographic Agency (BSH).

As shown in the figure, a holistic approach is taken, including national and transnational coordination and stakeholder dialogue.

The planning aims to balance the protection of the maritime environment and the implementation of political goals, such as renewable energy targets.

The process is supported by a scientific advisory board and a data and knowledge base regarding, for example, main concentration areas for protected bird species, fisheries, and shipping density. Examples of such data are shown in Figure 5 below.

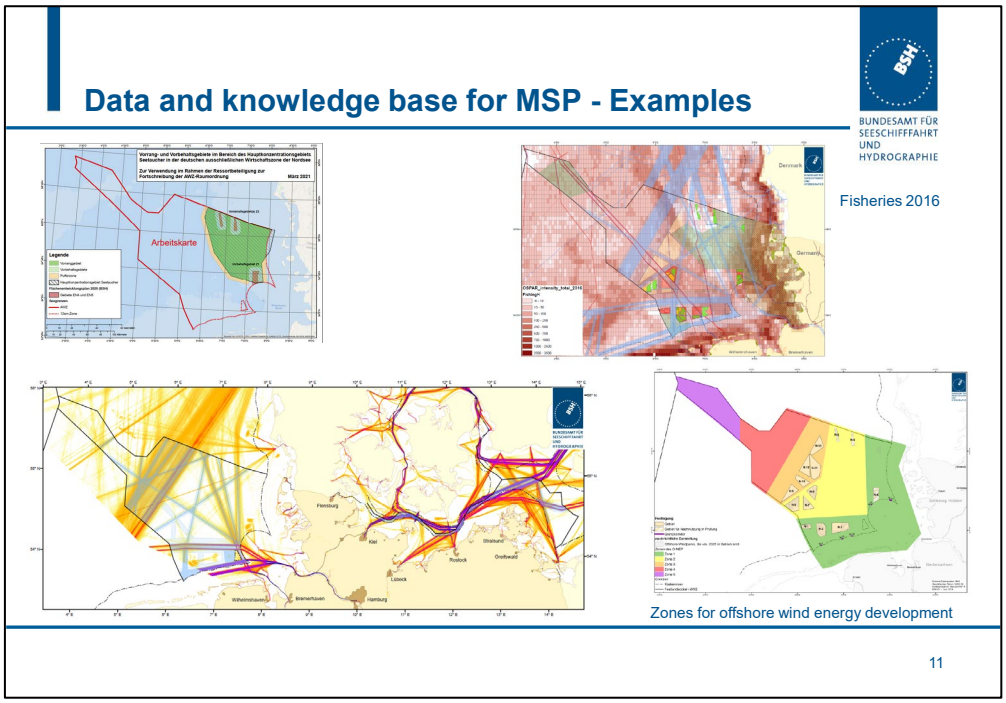


Figure 5: Slide with examples of data and knowledge bases for the maritime spatial planning. Source: The Federal Maritime and Hydrographic Agency (BSH).

Figure 6 and Figure 7 below show the current Maritime Spatial Plans for the German exclusive economic zone in the North Sea and the Baltic Sea. Areas in orange are designated for wind power development.

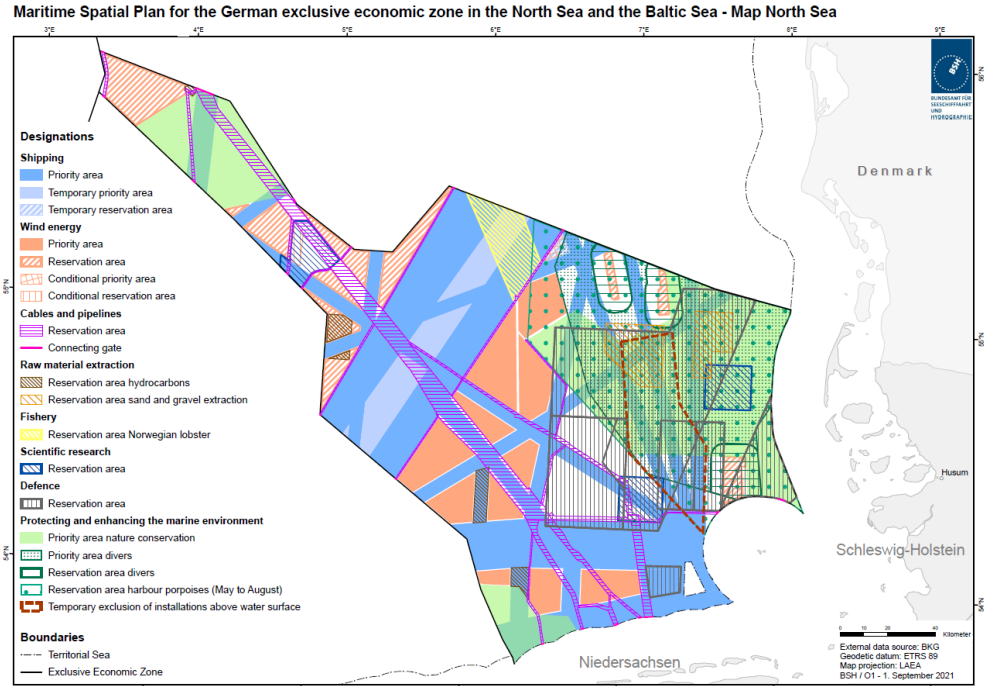


Figure 6: The German Maritime Spatial Plan for the North Sea. Source: The Federal Maritime and Hydrographic Agency (BSH).

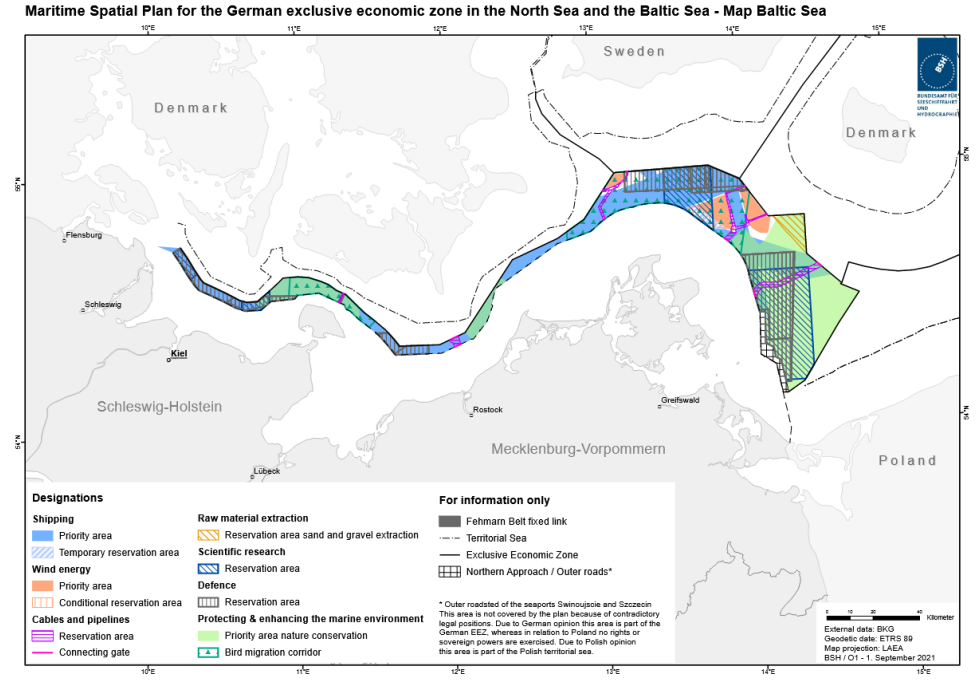


Figure 7: The German Maritime Spatial Plan for the Baltic Sea. Source: The Federal Maritime and Hydrographic Agency (BSH).

5. Site Development Plan

Based on the Maritime Spatial Plan, a Site Development Plan is developed.

As explained in Figure 8 and Figure 9 below, the Site Development Plan designates the specific sites and plans the structure of the grid connections.

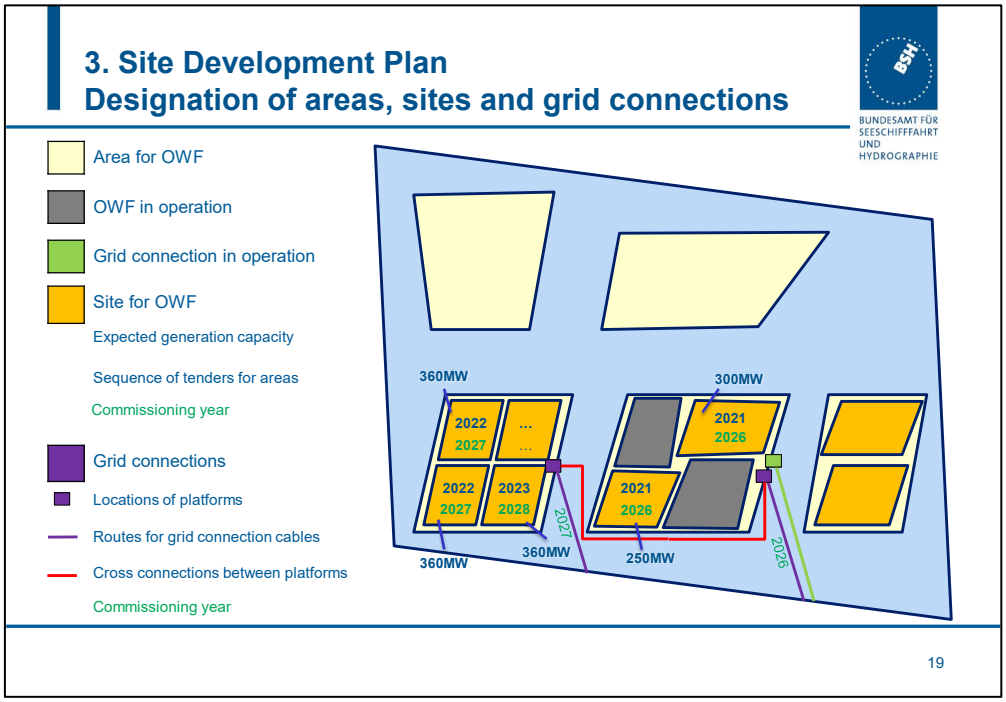


Figure 8: Slide explaining the structure of the Site Development Plan. Source: The Federal Maritime and Hydrographic Agency (BSH).

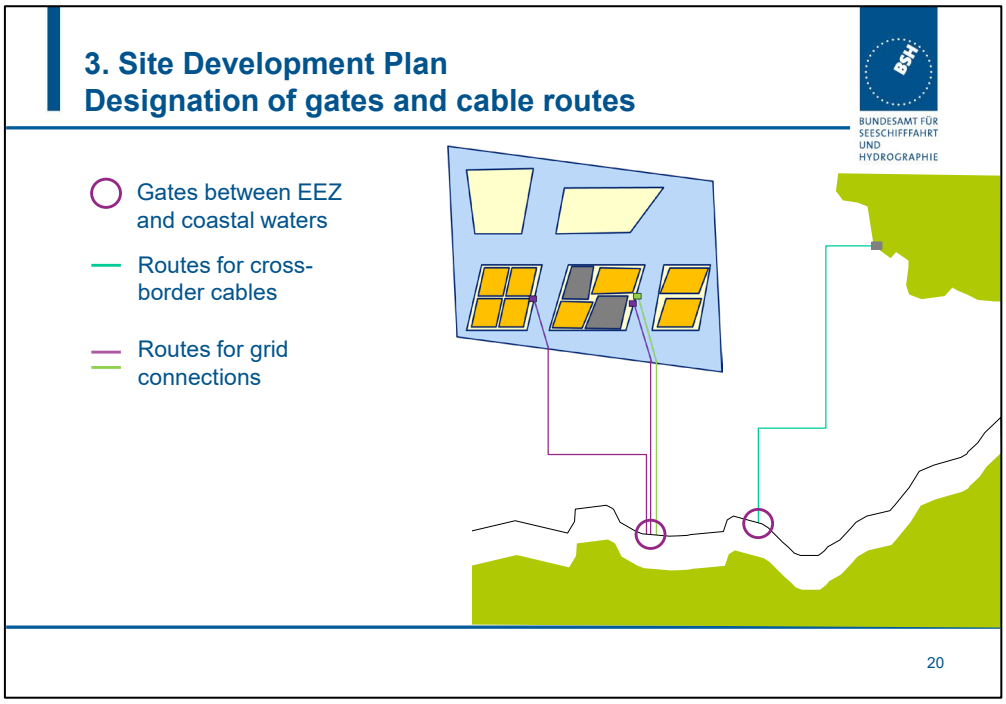


Figure 9: Slide explaining the structure of the Site Development Plan. Source: The Federal Maritime and Hydrographic Agency (BSH).

Furthermore, the Site Development Plan specifies the calendar years for the tendering of areas and the commissioning year and quarter for the offshore windfarm on the respective area, standardized technology principles and planning principles. Additionally, the Site Development Plan specifies the cable routing.

As explained in Figure 10 below, the sites designated in the Site Development Plans are to be within the wind power areas in the Maritime Spatial Plan. Exceptions are possible but require special procedures.

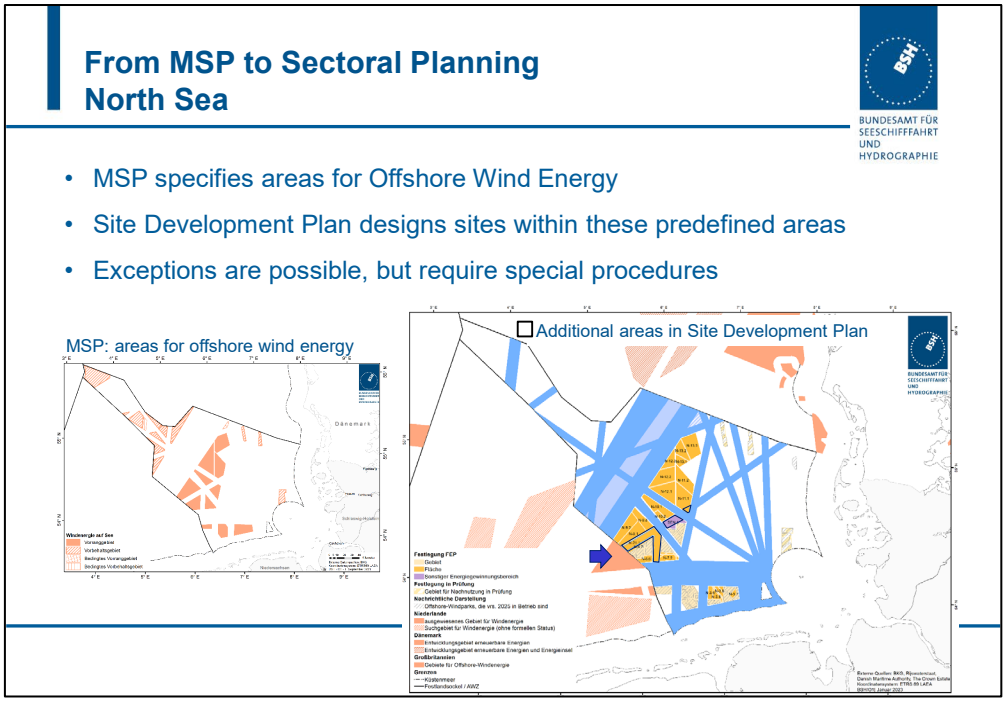


Figure 10: Slide explaining relationship between Maritime Spatial Plan and Site Development Plan. Source: The Federal Maritime and Hydrographic Agency (BSH).

The latest Site Development Plan was published in January 2023. The plan adds sites of 24.7 GW for 2026 ongoing. With the 10.8 GW of offshore wind farm capacity which will be installed up until 2026 the total installed capacity of offshore wind farms will increase to 36.5 GW.

A part of the plan for is included in Figure 11 below.

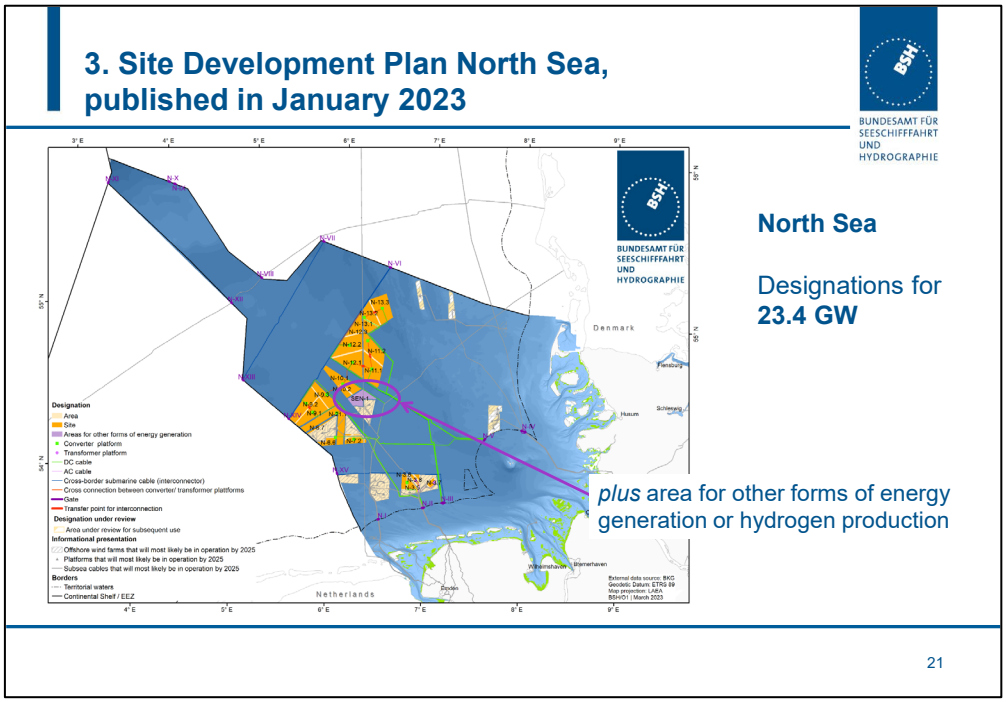
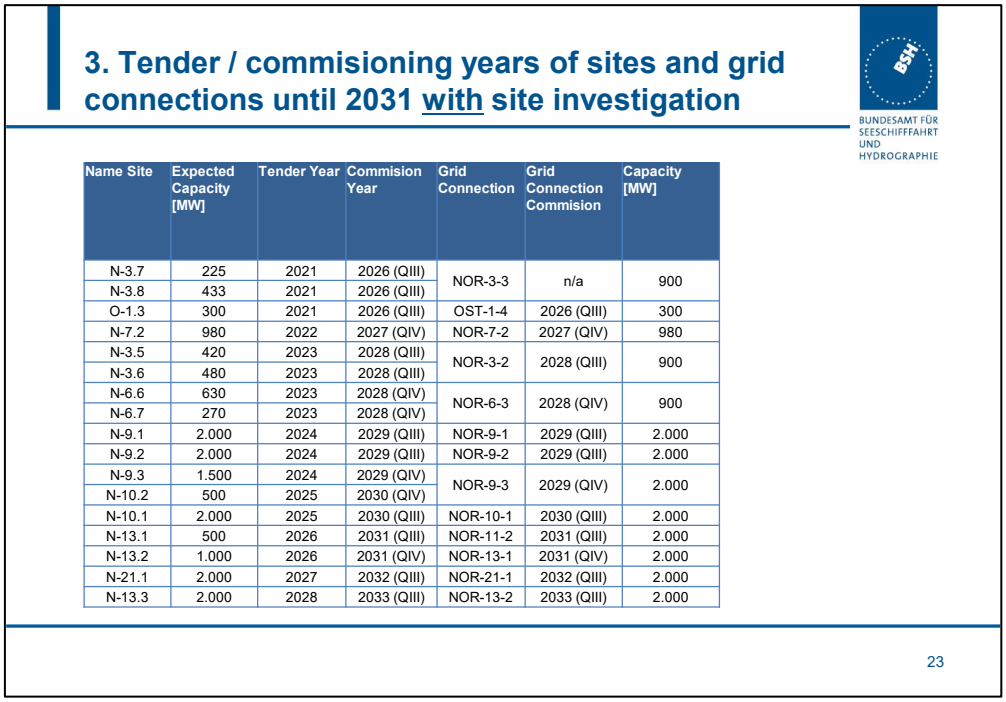


Figure 11: Slide showing the latest Site Development Plan's part for the North Sea. Source: The Federal Maritime and Hydrographic Agency (BSH).

Based on the Site Development Plan, a time schedule is established for when each site will be tendered, commissioned, and connected to the grid.

Figure 12 below shows the time schedule for the sites *with* site pre-investigation (see next section) that will be commissioned during the upcoming decade. Notably, it's a detailed schedule, with time indications as detailed as quarters of a year.



3. Tender / commisioning years of sites and grid connections until 2031 with site investigation

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Name Site	Expected Capacity [MW]	Tender Year	Commision Year	Grid Connection	Grid Connection Commision	Capacity [MW]
N-3.7	225	2021	2026 (QIII)	NOR-3-3	n/a	900
N-3.8	433	2021	2026 (QIII)			
O-1.3	300	2021	2026 (QIII)	OST-1-4	2026 (QIII)	300
N-7.2	980	2022	2027 (QIV)	NOR-7-2	2027 (QIV)	980
N-3.5	420	2023	2028 (QIII)	NOR-3-2	2028 (QIII)	900
N-3.6	480	2023	2028 (QIII)			
N-6.6	630	2023	2028 (QIV)	NOR-6-3	2028 (QIV)	900
N-6.7	270	2023	2028 (QIV)			
N-9.1	2.000	2024	2029 (QIII)	NOR-9-1	2029 (QIII)	2.000
N-9.2	2.000	2024	2029 (QIII)	NOR-9-2	2029 (QIII)	2.000
N-9.3	1.500	2024	2029 (QIV)	NOR-9-3	2029 (QIV)	2.000
N-10.2	500	2025	2030 (QIV)			
N-10.1	2.000	2025	2030 (QIII)	NOR-10-1	2030 (QIII)	2.000
N-13.1	500	2026	2031 (QIII)	NOR-11-2	2031 (QIII)	2.000
N-13.2	1.000	2026	2031 (QIV)	NOR-13-1	2031 (QIV)	2.000
N-21.1	2.000	2027	2032 (QIII)	NOR-21-1	2032 (QIII)	2.000
N-13.3	2.000	2028	2033 (QIII)	NOR-13-2	2033 (QIII)	2.000

23

Figure 12: Example of site time-planning schedule. Source: The Federal Maritime and Hydrographic Agency (BSH).

6. There are currently two tracks for the site development and tendering process

As explained in Figure 13 below, Germany currently has two tracks for the development and tendering of the sites identified in the Site Development Plan.

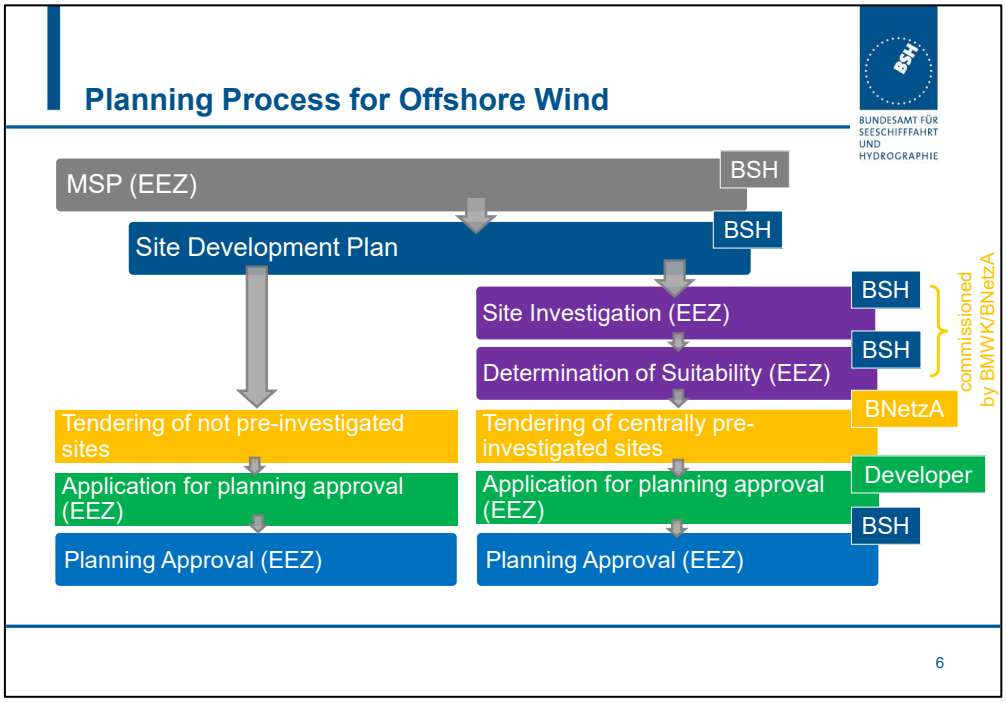


Figure 13: The two tracks for development and tendering of sites. Source: The Federal Maritime and Hydrographic Agency (BSH).

In the track to the left on the f Figure 13, the sites are tendered without further pre-investigation by the authorities.

In the track to the right on the Figure 13, the BSH pre-investigates the sites (the purple steps).

The current legal framework indicates a 50/50 split in-between the two tracks. Although the track with pre-investigated sites de-risks the projects and increases the sites' values in the tender, the process is resource-dependent and relatively time-consuming.

7. Site investigations, suitability assessments and strategic environmental impact assessments

As shown in the figure, the pre-investigated sites undergo site investigations and suitability assessments by the BSH.

The goals and responsibility division of this process is outlined in Figure 14 below. As explained in the figure, the goals of the process are two-fold: to provide bidders with all necessary information and to firmly determine the suitability of the site.

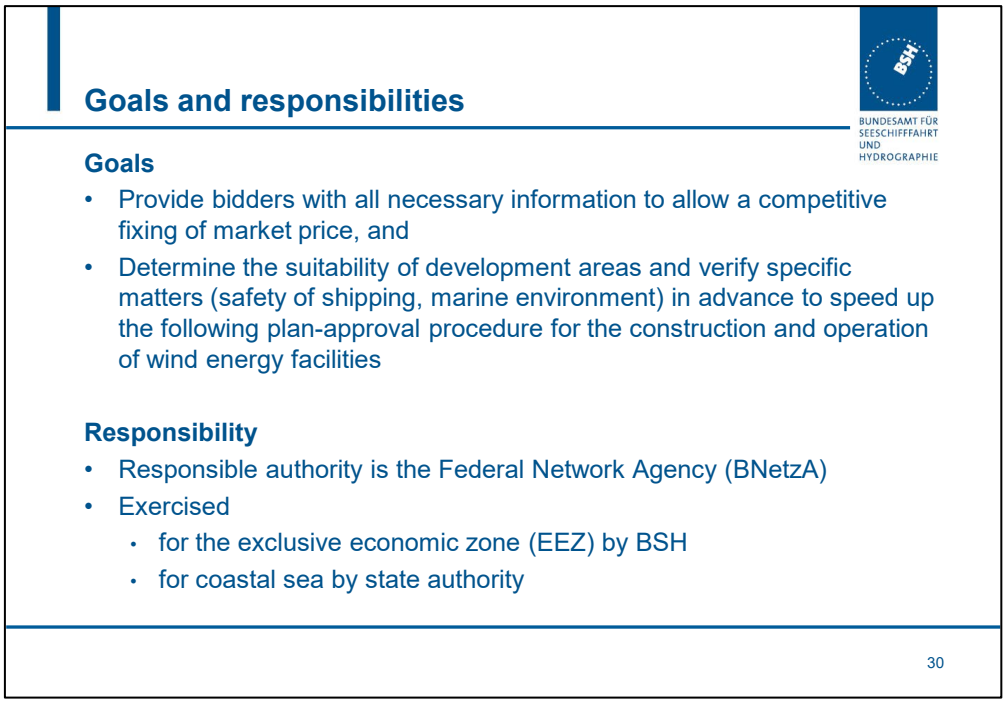


Figure 14: Slide explaining the goals and responsibility division of the pre-investigation of sites. Source: The Federal Maritime and Hydrographic Agency (BSH).

The scope of the investigations is outlined in Figure 15 below.

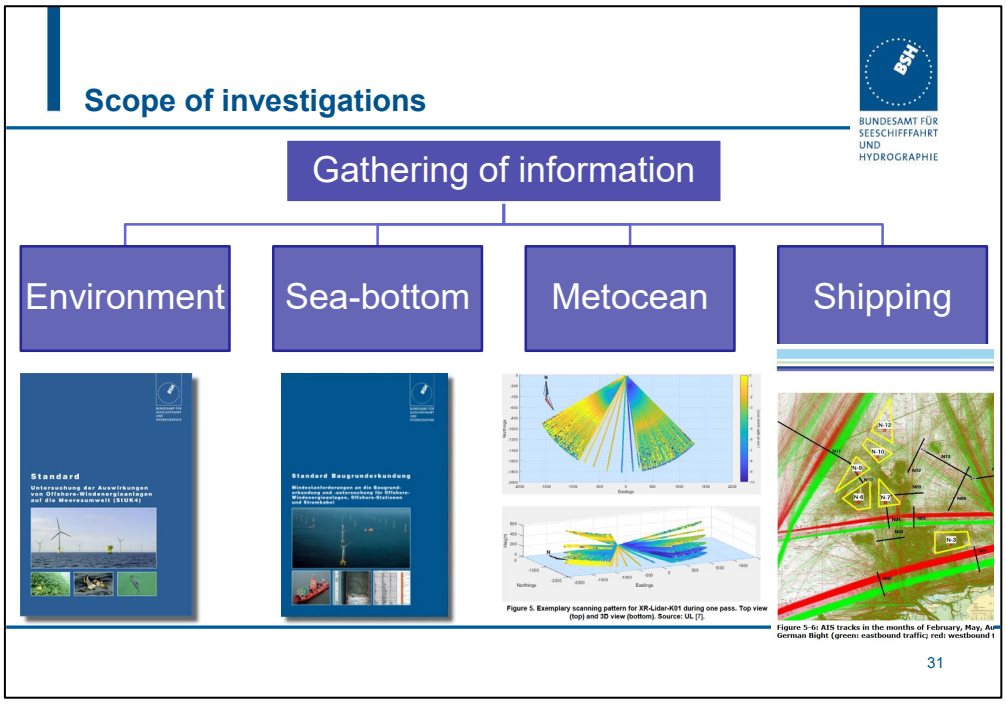


Figure 15: Slide explaining the scope of pre-investigations. Source: The Federal Maritime and Hydrographic Agency (BSH).

As explained in Figure 16 below, the suitability assessment includes several aspects, and results in a strategic environmental assessment.

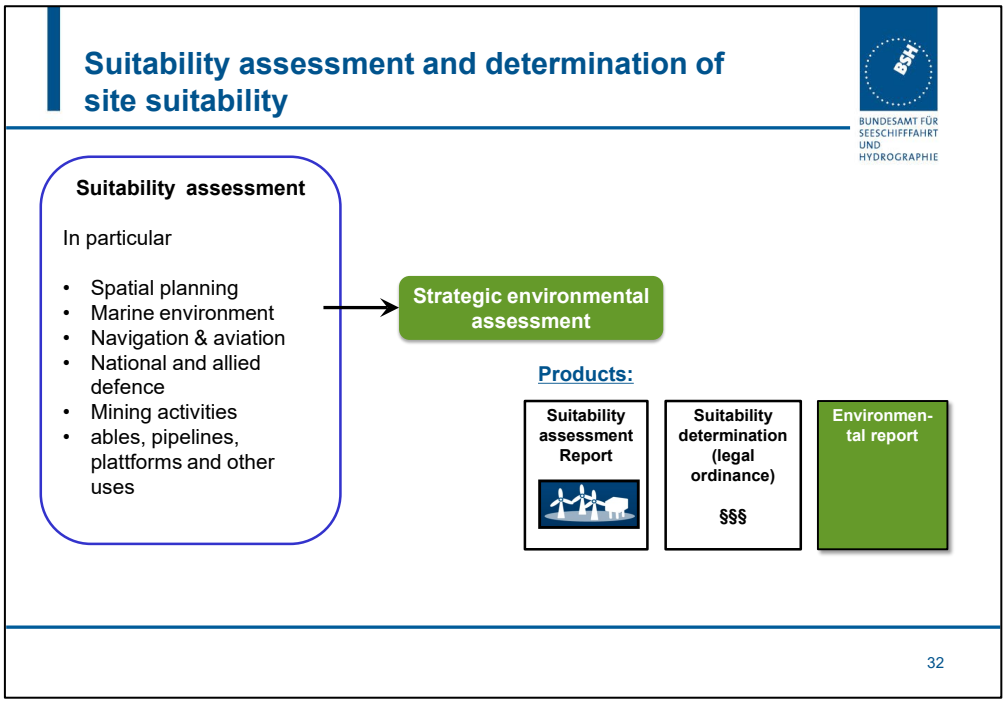


Figure 16: Slide outlining the process and products of the suitability assessment. Source: The Federal Maritime and Hydrographic Agency (BSH).

The gathered raw data are made publicly accessible online, in the PINTA database. The data can be downloaded and assessed by developers, in preparing their bids in the tender. Figure 17 below includes screenshots of the database.

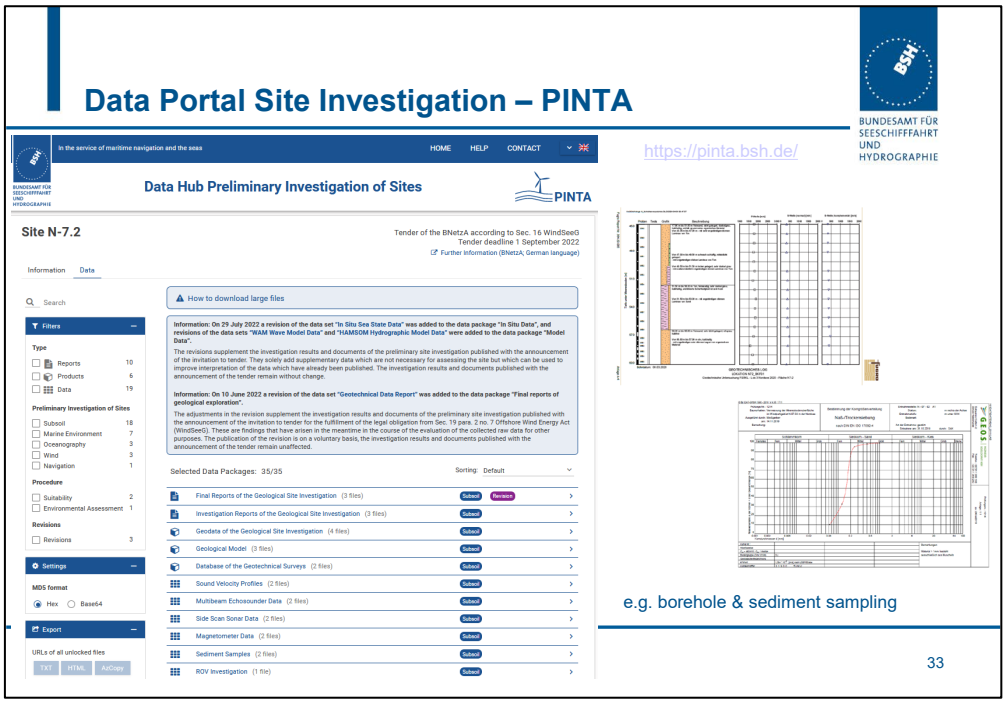


Figure 17: Slide with examples from the PINTA database of site investigation data. Source: The Federal Maritime and Hydrographic Agency (BSH).

The approximate cost for an assessment of two sites is EUR 6–8 million. This is borne by the BSH, but eventually recovered indirectly in the tender from the winning bidder.

Strategic environmental assessment and environmental impact assessment

As explained in Figure 18 below (see 'SEA' and 'EIA' tags to the far right), strategic environmental assessments (SEAs) and environmental impact assessments (EIAs) are conducted throughout the planning process.

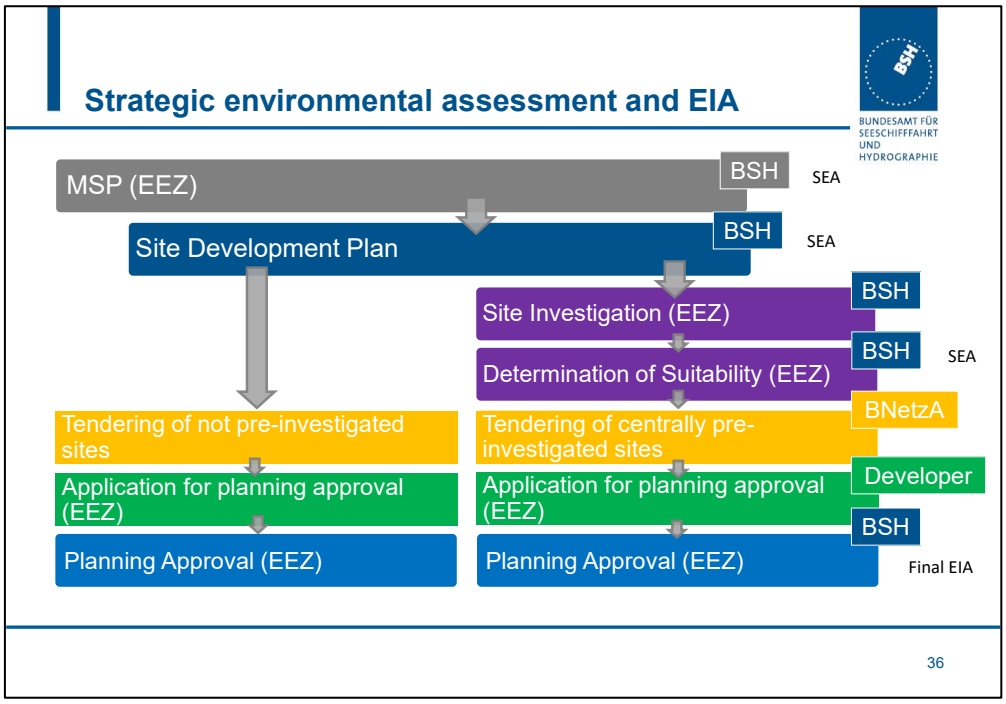


Figure 18: Slide illustrating at what steps strategic environmental assessments (SEAs) and environmental impact assessments (EIAs) are carried out during the planning process. Source: The Federal Maritime and Hydrographic Agency (BSH).

Each strategic environmental assessment goes into further detail.

The first assessment, for the Maritime Spatial Plan, considers all activities with plan designations on a broader level.

The assessment for the Site Development Plan focuses on renewable energy, on the designated sites, and on the effects on the marine environment. At this level, BSH has an idea of technical specifics for the wind farms, but does not yet know the wind farms' layouts nor what turbines will be used.

On the third and last level, the BSH assesses the specific site. At this level, BSH aims for certainty that the site is ultimately suitable for a wind farm and that there will be no obstacles for a permit.

As part of the final permitting process, an environmental impact assessment is conducted by the BSH. The base for the assessment is an EIA report, provided by the developer.

By performing strategic environmental assessment in different phases with increasing detail, and not redoing everything at each stage but focusing on the additionality of each step, the process becomes more efficient.

Both the strategic environmental assessment and the environmental impact assessment follow standards by the BSH for how the impacts of wind farms should be surveyed and assessed. This is explained in Figure 19 below.

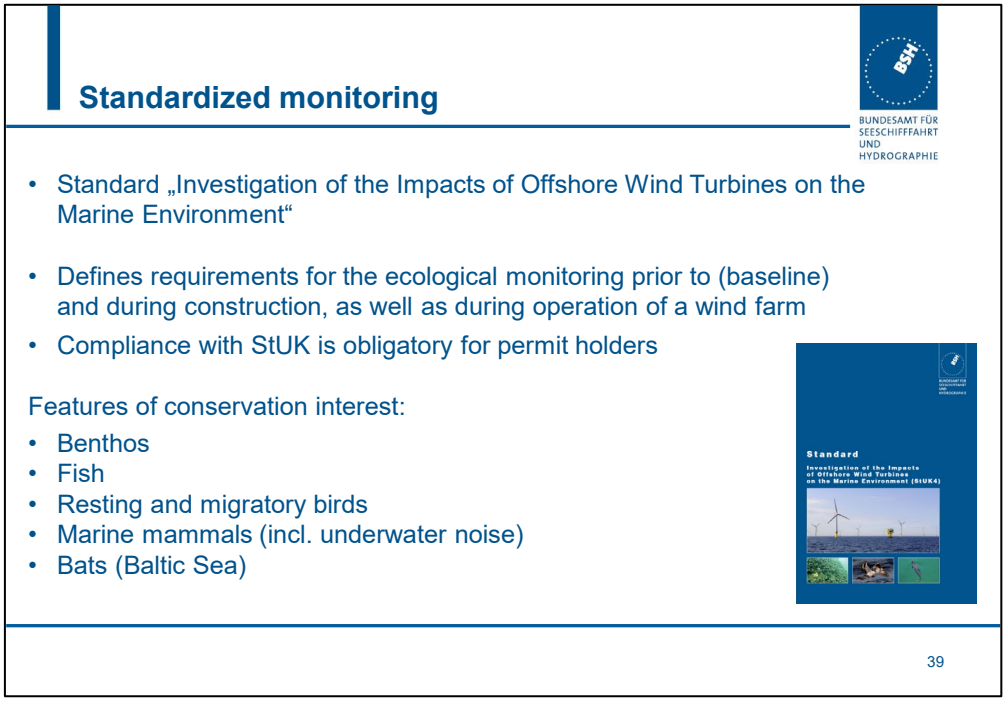


Figure 19: Slide explaining the published standards that are used for the SEA and EIA. Source: The Federal Maritime and Hydrographic Agency (BSH).

The standards also define the requirements for the monitoring during construction and operation. Such monitoring is mandatory.

The structure of the BSH's strategic impact assessments for wind farms is presented in Figure 20 below.

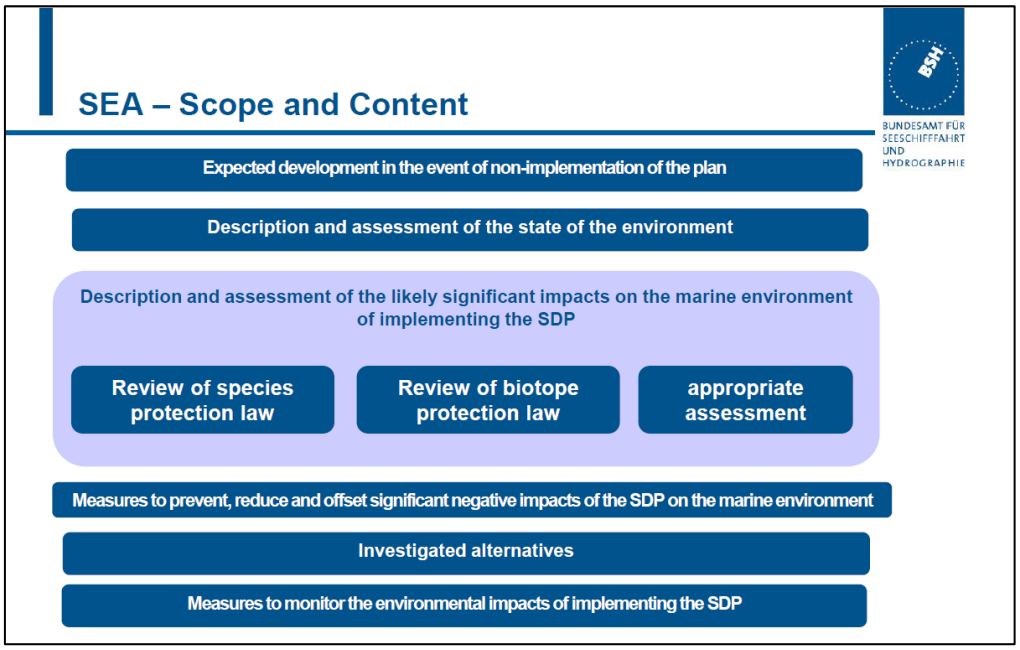


Figure 20: Slide explaining the scope and content of the SEAs. Source: The Federal Maritime and Hydrographic Agency (BSH).

The content of an environmental impact assessment is similar.

8. The tendering system

The site tendering is done by the Federal Network Agency (BNetzA).

The latest tendering round was done in 2023. As shown in Figure 21 below, four pre-investigated sites (red arrows, 1.8 GW in total) and four non-pre-investigated sites (yellow arrows, 7 GW in total) were tendered.

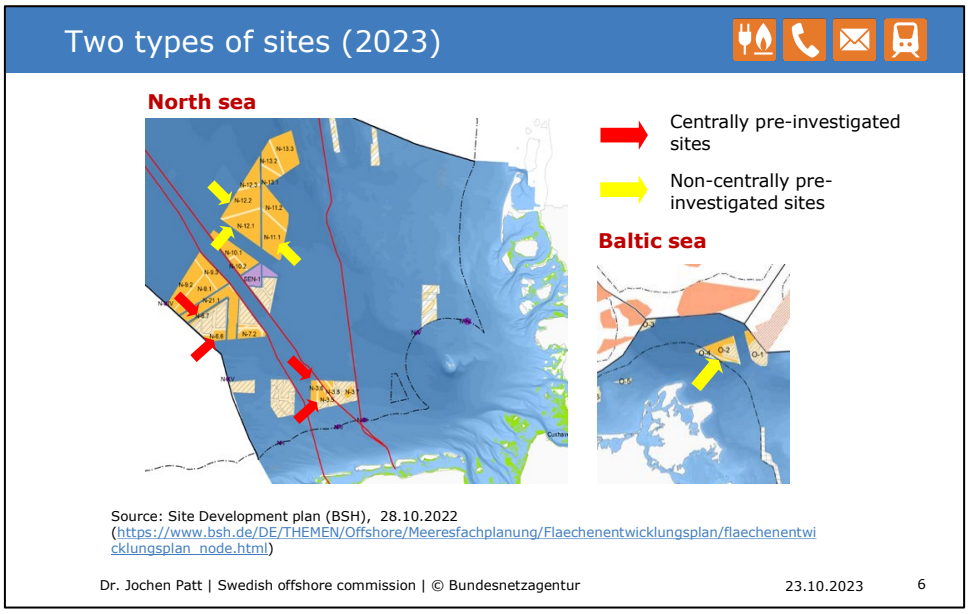


Figure 21: Slide showing the eight sites tendered in 2023. Source: The Federal Network Agency (BNetzA).

The tenders were based on a new tender design for offshore wind energy. This design, which is explained in Figure 22 below, differentiates between sites that are centrally pre-investigated and sites that are not. For the latter, a multi-step design allows for bids for both support and concession payments.

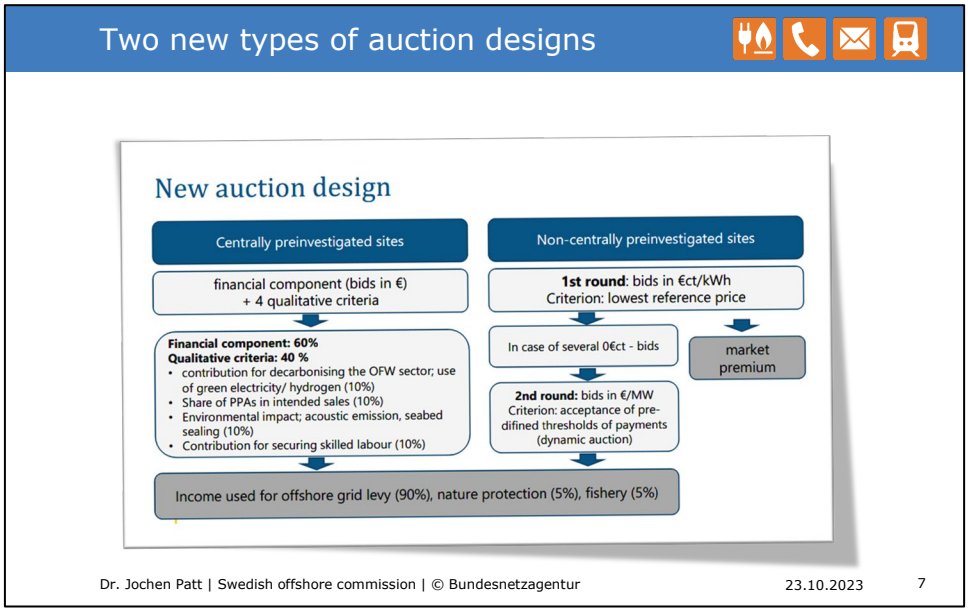


Figure 22: The two types of auction designs introduced in the 2023 tender. Source: The Federal Network Agency (BNetzA).

For the centrally pre-investigated sites, the evaluation is done in one step. Only bids for concession payment are possible (not for a market premium/subsidy). The evaluation is weighed 60% on the level of the concession payment, and 40% against four different qualitative criteria.

The sites that are not centrally pre-investigated have a different design. In a first step, the developers placed bids for a market premium/subsidy. If several zero-bids were submitted, as was the case in 2023, the tender went to a second step, where developers placed concession payment bids in a dynamic bidding procedure. The tender was evaluated solely on the level of the concession payment bid.

As shown at the bottom of the figure, the income is mostly used to levy the grid connection cost (see below), but 10% is split equally between funds for nature protection and sustainable fishery.

The result of the 2023 tender is presented in Figure 23 below.

Figure 23: Slide presenting the results of the 2023 tender. Source: The Federal Network Agency (BNetzA).

Notably, the proceeds (over EUR 13 billion in total) were significantly higher than expected.

Neither of the tender designs have pre-qualification criteria. The seriousness of the bidders is instead controlled through requirements of financial security/collateral to be deposited. This is explained in Figure 24 below.

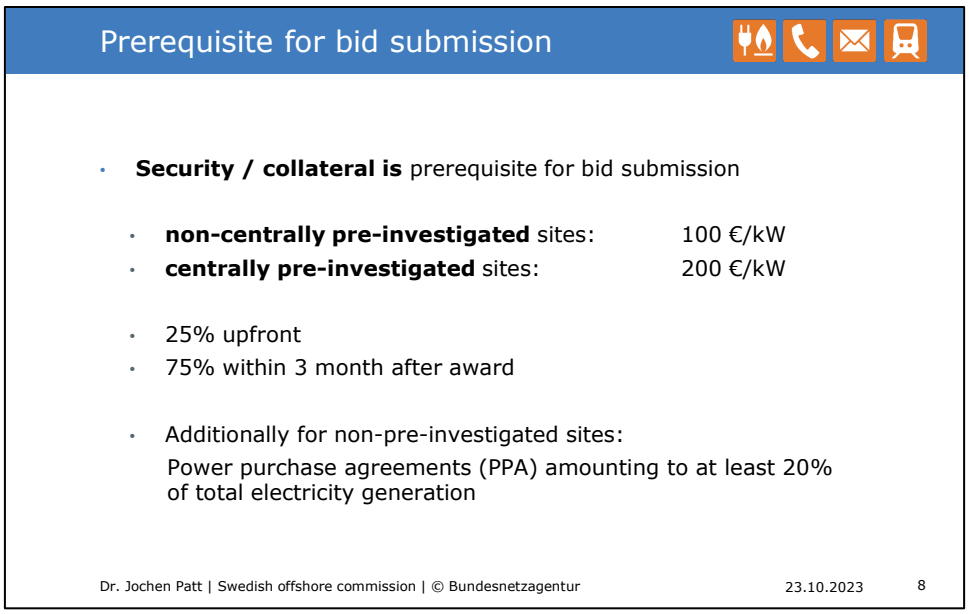


Figure 24: Slide explaining security/collateral for bid submission. Source: The Federal Network Agency (BNetzA).

As noted in the figure, the security/collateral was EUR 100 or EUR 200 per kW.

To quantify this: as the non-centrally pre-investigated sites in the North Sea were 2 GW each, the security/collateral for each of those parks was EUR 100 x 2,000,000 kW = EUR 200 million, of which 25% was to be deposited up front.

The procedure after the tender is outlined in Figure 25 below.

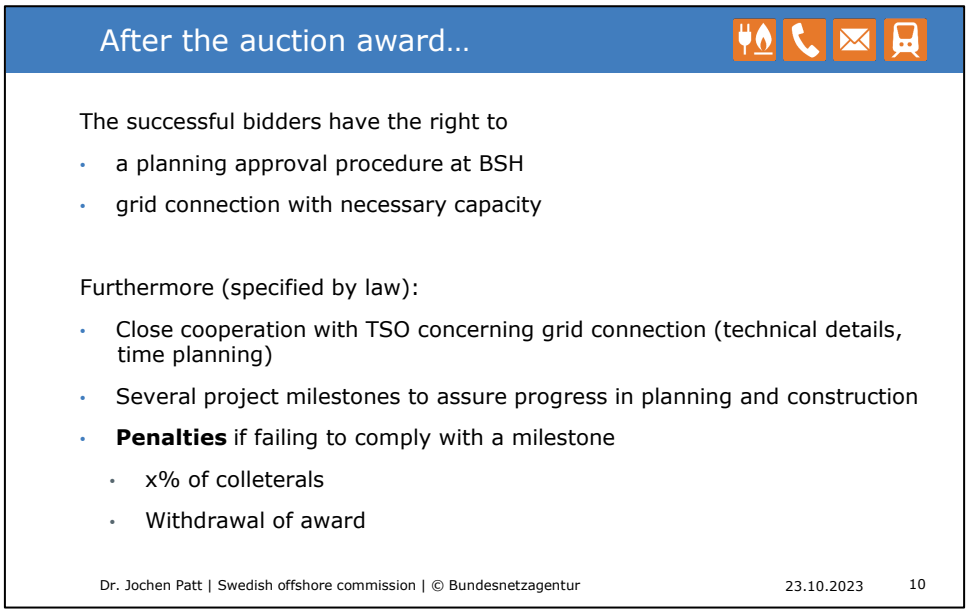


Figure 25: Procedure after the auction award. Source: The Federal Network Agency (BNetzA).

As explained in the figure, the winning developer is obliged to meet certain milestones. Failing to do so will mean forfeiting both the award and a certain percentage of the collateral deposited. The percentage depends on what milestone was not met.

9. Permitting

The permitting takes place after the developer wins the tender, and is handled by the BSH.

The procedure is outlined in Figure 26 below.

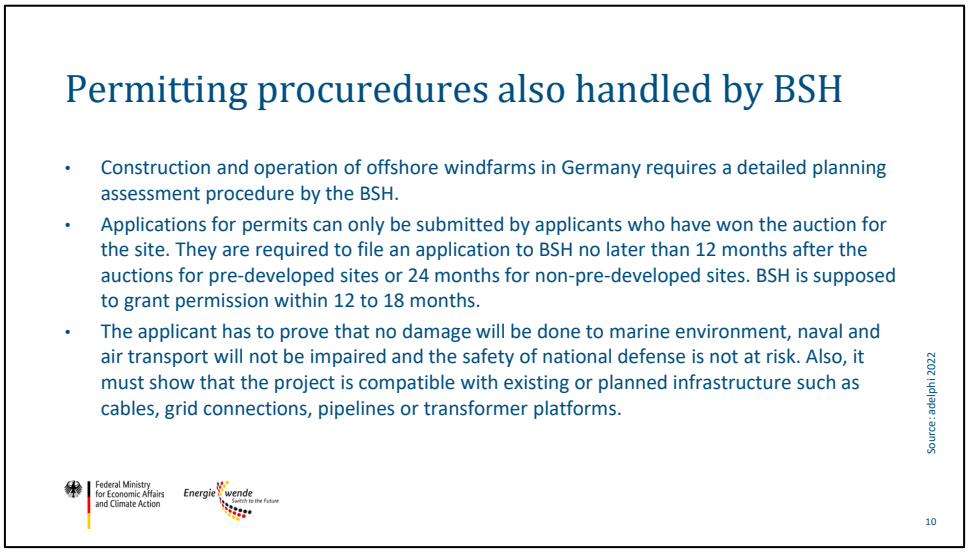


Figure 26: Slide presenting the permitting procedure. Source: The Federal Network Agency (BNetzA).

As explained in the figure, the permitting procedure follows a strict time schedule.

10. Grid connection

5. The grid connection for each site is determined in the Site development Plan and further detailed in the Network Development Plan.

The TSO is responsible for establishing the offshore grid connections including converter stations), and the necessary onshore transmission grid expansions to transmit the electricity from the offshore wind farms throughout Germany.

Figure 27 and Figure 28 below show the kind of grid expansion projects this entails for one of the TSOs, 50Hertz.

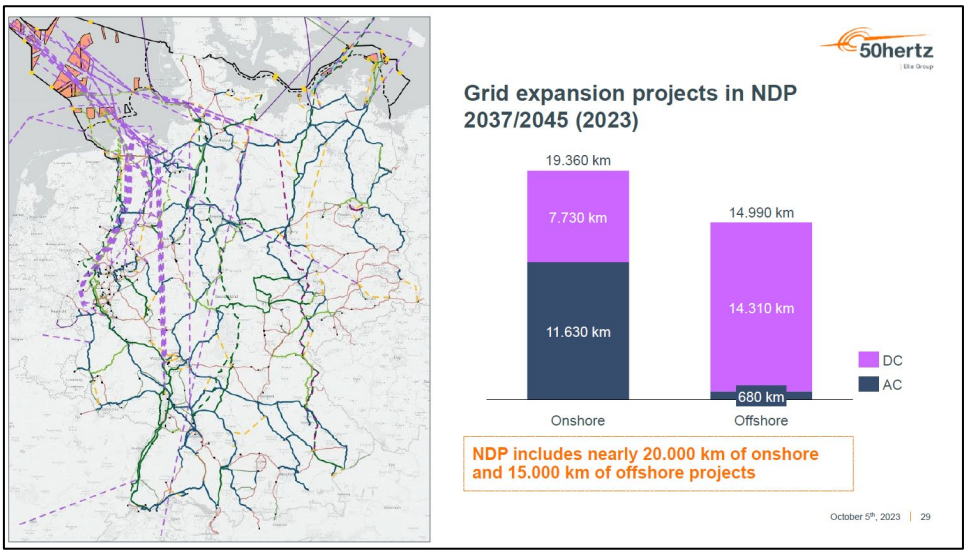


Figure 27: Slide outlining 50Hertz' grid expansion projects in the current Network Development Plan (NDP). Source: 50Hertz.

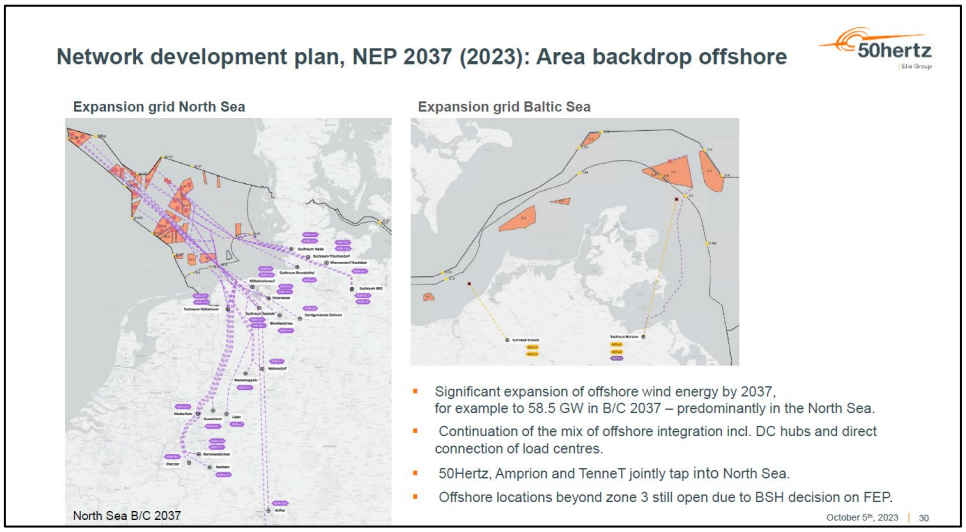


Figure 28: Slide outlining 50 Hertz's grid expansion projects pertaining to offshore wind farms in the current Network Development Plan. Source: 50 Hertz.

The offshore grid connection is financed by the TSO through grid levies, a levy the grid users (consumption side) have to pay. However, as mentioned above, 90 % of the proceeds from the tenders are used to reduce the grid levy.

Standardisation of technical choices and solutions is important to keep costs down and to streamline the process. Tennet's recent 2,000 MW 525 kV converter platform is an important such standardisation. Furthermore, the

Site Development Plan sets out various standardisations for future offshore grid connections.

Onshore landing corridors for cables are a scarce resource. A cable requires a safety distance of about 500 metres. Environmental protection areas and local community acceptance limit the possibility of where cable corridors can be placed. Planning and coordination are therefore key.

Preparation of the seabed is time-consuming. The project time for an AC connection is about seven years, and for a DC connection ten years.

11. Defence interests

Due to the clear political ambitions to expand offshore wind production, the question from a defence perspective is not so much 'if' wind farms should be allowed, but rather where and how.

The Defence Ministry and the Armed Forces are engaged in both the maritime spatial planning and the development of Site Development Plans. Besides the permitting process, these are the primary forums where defence interests are addressed.

A challenge related to this, is that more coordination relating to maritime security is needed in general. Germany's large-scale offshore wind development ties not only into maritime defence capability, but also protection of critical underwater infrastructure, NATO, the EU, and harbour availability.

Germany has legal possibilities to prohibit foreign investments in critical infrastructure. For example, a bidder can be prohibited from taking part in a tender. The Federal Network Agency (BNetzA) would initiate that process, start a dialogue with the Ministry of Economic Affairs, and involve necessary agencies. This possibility has, however, never been used.

12. Views among actors

Views within the fishing industry

Key messages from the Commission's meetings with the fishing industry included the following:

Under German law, fisheries generally have a relatively low standing. It has long been legal practice that fisheries do not have rights to particular areas, but instead a general right to fish in waters that are not legally occupied by other interests.

With the development of offshore wind power, this has meant that areas available for fisheries are being steadily and significantly reduced.

This development is being aggravated by a technical aspect of German legislation. Wind farms need to pay a standardised fee to a fund for environmental conservation. This fee is reduced if fisheries are not allowed inside the park. In other words, wind farms are incentivised to advocate for restrictions on fishing within the park. The wind farms do this to the BSH with reference to safety considerations.

The maritime spatial planning as such has been a serious, positive, and structured effort to balance opposing interests. The BSH has a thorough understanding of the fishing industry's situation.

However, in the end, fisheries are seldom a determining factor for wind power site localisation in the planning. This is mainly because of the strong German policy objective to massively increase power supply from offshore wind. In the consideration between opposing interests, energy wins. But it is also because it is generally considered that fishing can be re-localised to other waters. However, the cumulative effects of the many wind farms mean that available areas in the North Sea are steadily diminishing.

Five per cent of the tender proceeds are earmarked for sustainable fishery. Although this is not a straight-up compensation for reduced revenues, it is still understood as a compensatory measure. With the proceeds levels of the last tender, the funds will be significant.

Views among wind power developers

Key messages from the Commission's meetings with the wind power industry included the following:

Germany's binding Maritime Spatial Plan, Site Development Plan, and other clear and transparent frameworks are very important and beneficial to offshore wind development. They create clarity and certainty for the developers.

Likewise, the planning processes solve conflicts of interest, making it very unlikely for a permit application to ultimately be declined.

It is also good that one and the same authority, the BSH, does most of the planning. This makes the planning more coherent.

It is also positive that the BSH is a one-stop shop for the permitting process.

In general, it is good that sites are being pre-investigated before being tendered. The industry has high trust in the BSH's investigations. The BSH has had a long time to build this competence. It is important to understand, however, that the industry and the authorities are competing for the same labour pool, and it can be difficult for the public sector to compete on salaries.

It is positive that the grid connection is thoroughly and firmly planned. In the previous German system, the grid connection was the developers' responsibility, to solve bilaterally on an ad hoc basis with the TSO. This was changed in 2006. It is positive that the state has taken responsibility for the connection, and that clustered solutions have been introduced. This also reduced the number of cables and onshore landings.

The transition between systems is very important. The transition in Germany was not carried out in a good way, and incurred losses for the industry.

One key mistake was that the government stopped all developments until the new system was implemented. In the meantime, mature projects went into a stalemate. The projects should have instead been allowed to continue under the old system, while the new system was being built.

Furthermore, the government stopped too many projects, too late in their development. The government did not properly evaluate the maturity of the projects.

In developing a legal framework, Sweden should consider that capacity targets and clear policy objectives are key. What goals does the government want to achieve? Are these objectives from the point of view of energy policy? From the point of view of the industry? From the consumers' point of view? Where does Sweden want to be in 2045? This informs the design of both legal frameworks and tendering systems.

Pre-qualification for the tenders is good, to make sure that the winning bidder has the actual capacity to carry out the project. It can be noted that neither of the two main winners of the 2023 tender (BP and TotalEnergie[1]) has any experience of offshore wind farms.

Two-sided CFDs is the most adequate support scheme.

Qualitative evaluation criteria are positive, but are in reality hard to design and to evaluate properly, especially if the aim is to actually distinguish between competing developers. Appropriate qualitative criteria require clear underlying objectives. In the 2023 tender, there were some very ill-advised criteria, such as one for trainee engagement.

Un-capped bidding in the tenders could be problematic, as it leads to very high concession payments, which are then transferred to the electricity consumer.

[1] Neither of these were represented at the meetings.

SWEDISH GOVERNMENT INQUIRIES

Documentation

2024-02-23

Inquiry Commission on Offshore Wind Power
KN 2023:01
Mattias Schain
mattias.schain@gov.se

Regulations and procedures for offshore wind power in the UK/England

(Revised version 2024-02-23)[1]

Table of content

[1] A previous version, published on 2024-02-23, did not include fact-checking amendments by the Crown Estate to section 3.

1. Introduction

On 7–8 November 2023, the Commission visited London and met with the National Grid ESO, the Marine Management Organisation, the Crown Estate, the Ministry of Defence, the Royal Navy, the Department for Energy Security and Net Zero, and Offshore Wind Champion Tim Pick.

On 20 November 2023, the Commission met on Teams with the Scottish Pelagic Fishermen's Association and the Scottish White Fish Producers' Association Limited. On 27 November 2023, the Commission met on Teams with Renewable UK and wind power developers RWE, SSE, Equinor and BP.

This documentation has been reviewed by the Department of Energy Security and Net Zero, the Crown Estate, the Marine Management Organisation and Offshore Wind Champion Tim Pick in their respective parts. The responsibility for any inaccuracies lies, however, with the Commission.

The memorandum is focused on England

Many of the relevant plans and decisions for offshore wind power in the UK are made by the devolved authorities of Wales, Scotland, and North Ireland in their respective territories.

However, on a systems level, these processes are mainly the same as in England. Also, our meetings came to mainly focus on England. For simplicity, this memorandum therefore focuses on the system as it works in England.

The memorandum follows a flowchart

The flowchart in Figure 1 below outlines the planning, tendering, and consenting (permitting) process for offshore wind power in England. The memorandum will work its way through the flowchart, step by step, referring to it as 'the flowchart'.

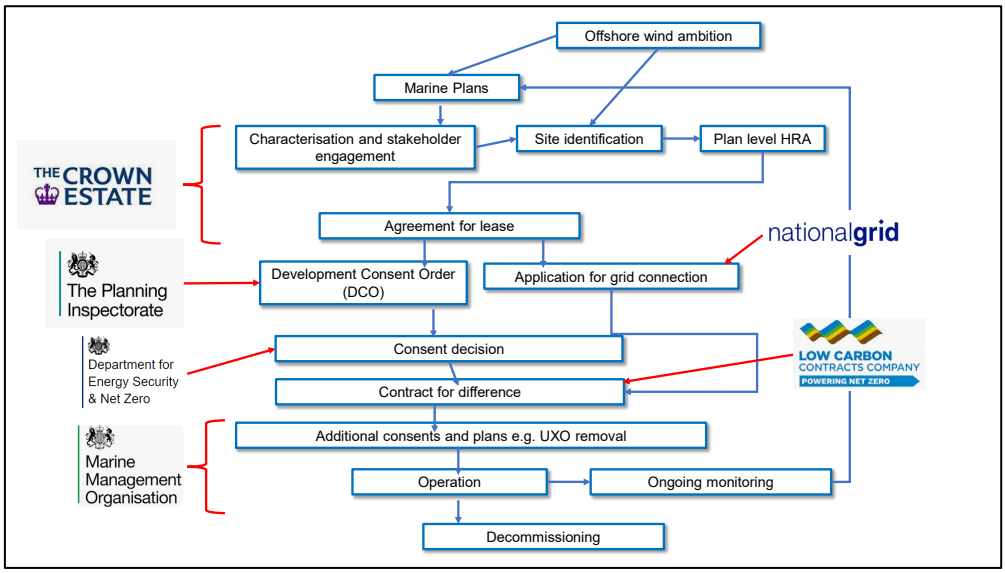


Figure 1:Planning, tendering, and consenting process for offshore wind in England. Originally provided to the Commission by the Marine Management Organisation, but with minor amendments made by the Commission.

2. The UK government's offshore wind ambition and the current standing

In April 2022, the UK government announced an ambition to deploy up to 50 GW offshore wind power (including up to 5GW coming from floating offshore wind) by 2030.

Figure 2 below quantifies that ambition, in the context of the historical commissioning and current pipeline.

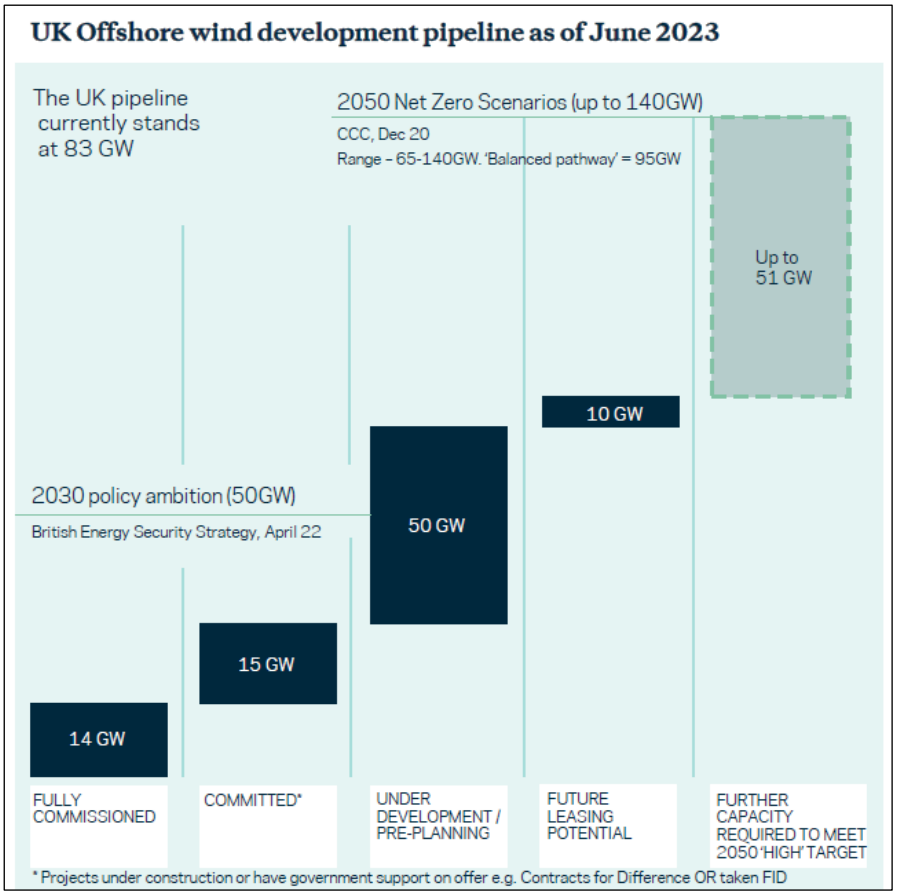


Figure 2: UK offshore wind development pipeline as of June 2023. Source: The Crown Estate.

As shown in the figure, the UK currently has 14 GW commissioned (column 1), and another 15 GW committed (column 2). This leaves 21 GW (50 - 14 -15) that must be commissioned by 2030 to meet the government's policy ambition of 50 GW that year. As 50 GW are currently under development or in pre-planning (column 3), this ambition seems to be in reach.

The Crown Estate, which manages offshore leases, has identified 10 GW in future leasing potential from ongoing leasing rounds (column 4).

A net-zero scenario by the Climate Change Committee indicates that the UK could need up to 140 GW offshore wind power by 2050, which would mean that up to an additional 51 GW would need to be realised (column 5).

3. The seabed lease by the Crown Estate

The Crown Estate is a unique business established by an act of parliament which manages a portfolio of land as well as the seabed and much of the coastline around England, Wales and Northern Ireland. The Crown Estate is responsible for leasing areas of seabed for offshore wind, and leads the process to identify which sites will be developed.

The Crown Estate leases the seabed to developers in a tender process. The steps associated with the lease are highlighted in Figure 3 below.

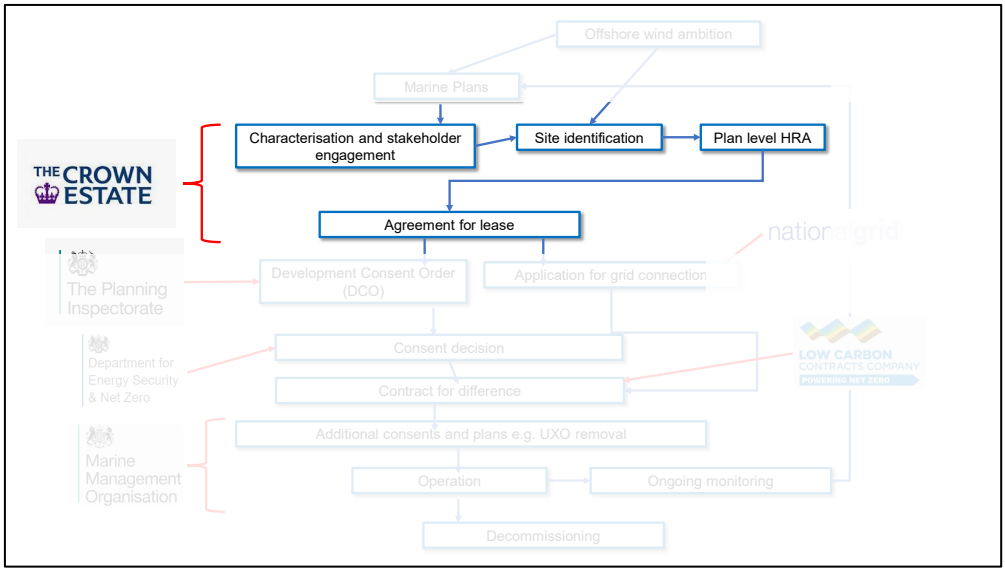


Figure 3: The flowchart with the Crown Estate's lease process highlighted.

Previous seabed leasing rounds

The seabed leases are carried out in rounds. In each round, several areas are tendered at once.

Figure 4 below shows the production potential in each of the previous major leasing rounds.

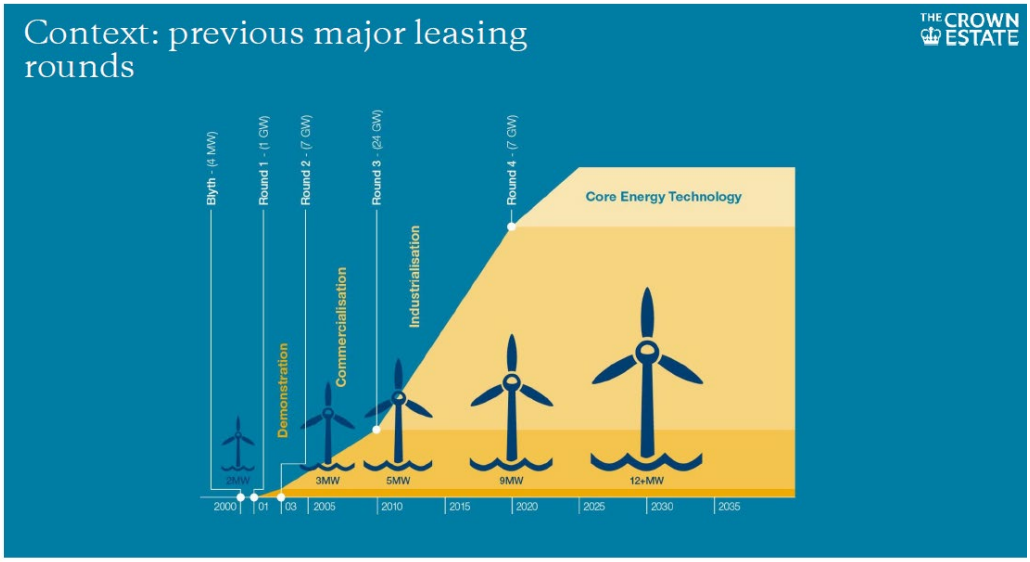


Figure 4: Production capacity of previous major seabed leasing rounds. Source: The Crown Estate.

As shown in the figure, the two first rounds were quite modest by today's standards, while Round 2 of 2003 and Round 3 of 2010 tendered seabed with 7 GW and 24 GW, respectively. Round 4 of 2020 tendered another 7 GW, grossing the leased potential to 39 GW.

The rounds have resulted in the leases shown in Figure 5 below.

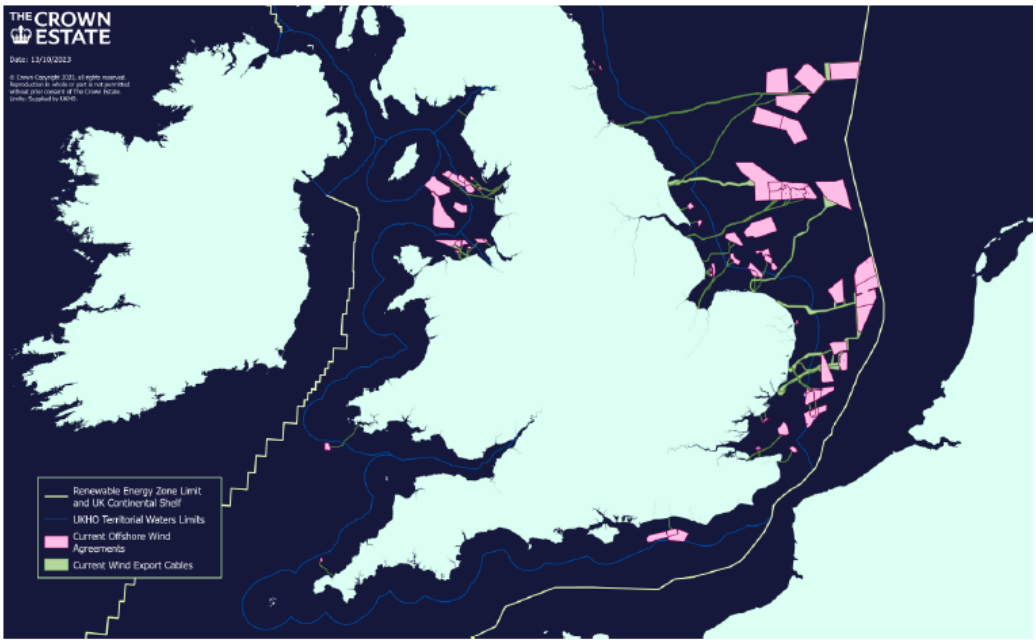


Figure 5: Current Seabed leases for offshore wind. Source: The Crown Estate.

Figure 6 below shows the results of the latest seabed lease, Round 4.

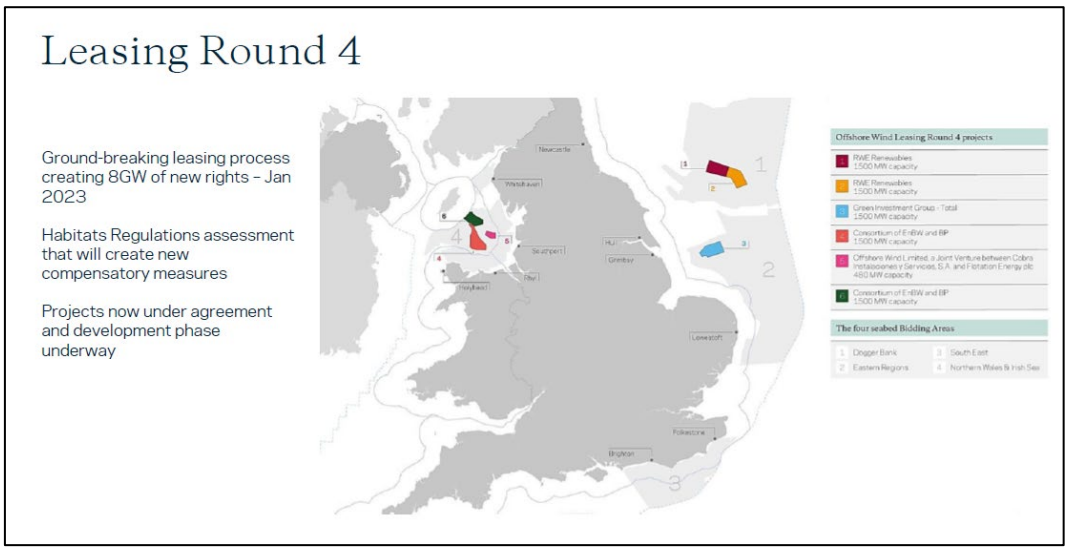


Figure 6: Result of seabed leasing, Round 4. Source: The Crown Estate.

As shown in the figures, a total of 8 GW rights were allocated to six different developers.

How it is decided what sites to tender and when

As indicated in the flowchart, the decisions on *how much* to tender and *when* are primarily informed by the government's policy ambition.

The decisions on *where* are informed by the marine plans and dialogues with different stakeholders and authorities. Examples of key dialogues are with the Ministry of Defence and the transmission system operator (TSO) National Grid ESO. Extensive stakeholder engagement and spatial analysis is core to the spatial design process, to ensure the best available data and evidence is used to support site identification.

The decisions on where are further informed by assessments on where, on the one hand, production conditions are the best (lowest LCOE) and, on the other hand, where the opposing interests (constraints) are the lowest and thus a consent (permit) can be expected. Feasible routing from offshore to onshore and connection to the grid has been a constraining factor (see section 5.) and addressed in later leasing rounds on high level, so the grid could maintain the planned capacity.

In preparation for Leasing Round 5, relative levels of constraint were mapped as part of this process, as shown in the heatmap in Figure 7 below. This formed the basis of further discussions with stakeholders to take into account any considerations not captured by spatial data.

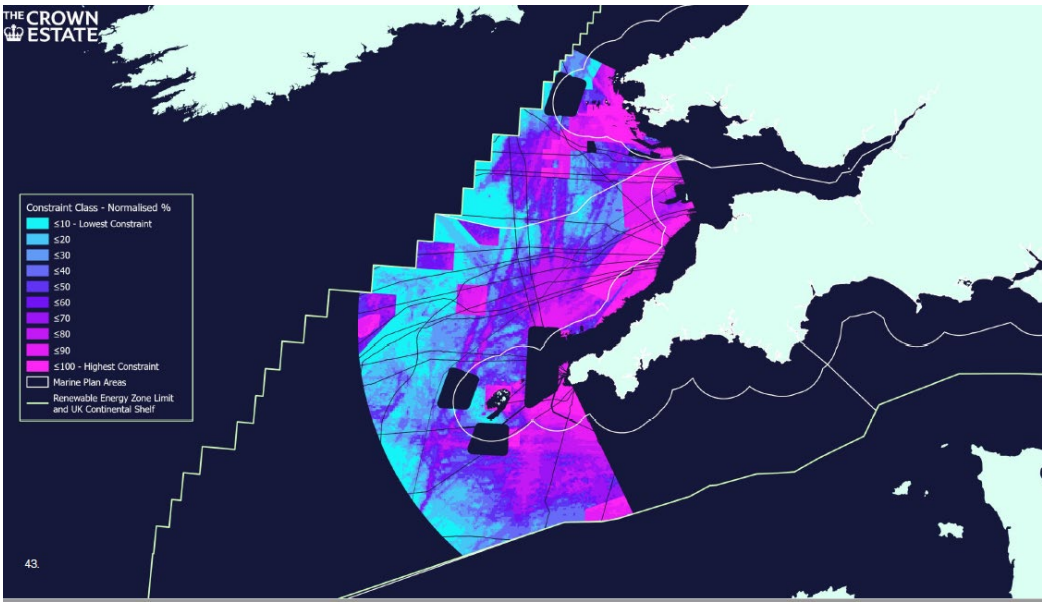


Figure 7: Heat map assessment in preparation for Leasing Round 5. Pink shows a higher degree of constraints, and light blue a lower. Source: The Crown Estate.

In previous allocation rounds, the areas offered for lease were significantly larger than needed for the production allowed under the lease agreement. It was then up to the developer to carry out the necessary wind and seabed investigations, and plan optimal park layout within the leased area.

For the upcoming allocation, Round 5, another approach is taken. Three clearly pre-defined project development areas will be tendered, yet still with some excess area in relation to planned installed capacity within the specified development area. These are shown in Figure 8 below.

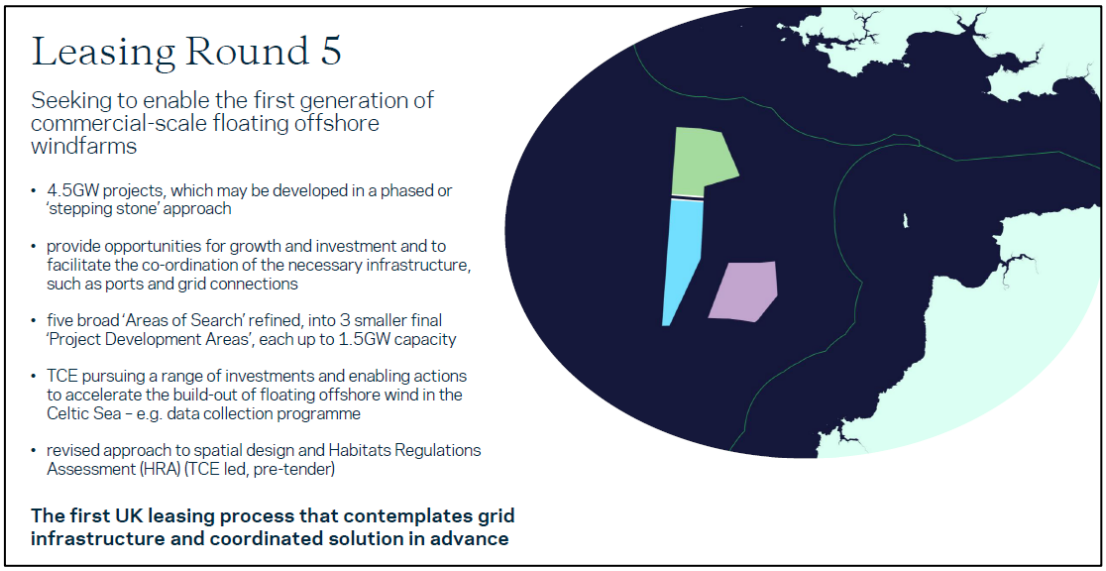


Figure 8: Slide presenting Leasing Round 5. Source: The Crown Estate.

As explained in the figure, the tender will include a total of 4.5 GW of floating wind power. The purpose of that technology choice is to accelerate the development of floating wind power.

Tender evaluation

The leasing process for Round 5 consists of several stages. In the first two stages, potential bidders must demonstrate that they can meet necessary legal, technical and financial eligibility criteria and satisfy all other requirements. When bidders have demonstrated that they meet these criteria, the final decision on PDA allocation is strictly financial via an ascending clock auction, where bids are based on annual Option Fee Bids offered.

4. Marine plans

As indicated in the flowchart, the marine plans play an important role in informing the Crown Estate's decision on where sites should be leased.

Unlike some other countries, for example Germany, the UK's marine plans do not specifically map where sites can or should be allocated. The role of the plans is different.

The role of marine plans vs. wind farms as Nationally Significant Infrastructure

The structure of the plans, and their provisions that are of relevance to offshore wind, will soon be explained. However, it should first be clarified that specifically in relation to offshore wind farms larger than 100 MW, the marine plans are only one among many policy documents that the decision maker must have regard to.

More specifically, such wind farms constitute *Nationally Significant Infrastructure Projects (NSIPs),* alongside, for example, airports and highways.

Such infrastructure is assessed outside of local planning processes and is decided at Secretary of State level.

While authorisation of other forms of proposals must be *in accordance* with the marine plans to obtain a consent, it is according to the Planning Act sufficient that Nationally Significant Infrastructure Projects *have regard* to the marine plans.

In a statutory perspective, this means that marine plans are of equal weight as 'any national policy statement which has effect in relation to development of the description to which the application relates' or 'any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision'.[2]

How the marine plans work in relation to offshore wind

The UK has six marine plans, covering 11 marine plan areas.

[2] Planning Act 2008, paragraph 104.

Marine plans are reported on by the Marine Management Organisation not more than three years after adoption or publication of the last report. In these reports, it is recommended to the Secretary of State to either retain, amend or replace the plan.

The marine plans are built on *policies*. While some policies apply across the whole marine plan area, other policies apply only to specific areas within the plan area.

For example, in the South West Marine Plan, there are three policies that specifically address offshore wind:

- SW-REN-1 is a policy of general support. It applies to the whole marine plan area, and establishes that in the consenting process, '[p]roposals that enable the provision of renewable energy technologies and associated supply chains, will be supported'.
- SW-REN-2 protects leased areas. It only applies to areas currently held by someone under a lease or an agreement for lease for renewable energy generation. The policy establishes that in such areas, proposals (for other types of developments and activities) should not be authorised 'unless it is demonstrated that the proposed development or activity will not reduce the ability to construct, operate or decommission the existing or planned energy generation project'.
- SW-REN-3 supports the development of certain technologies inside certain areas of specifically high potential. As shown in Figure 9 below, the marine plan identifies areas (in blue) close to the coast as having high potential for future development of fixed-foundation offshore wind power.

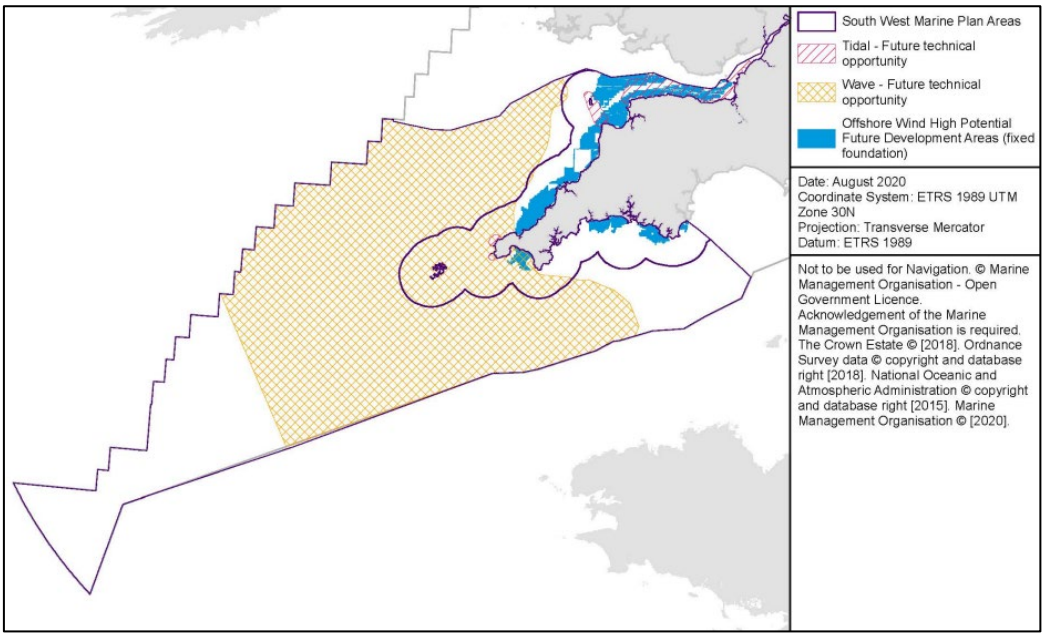


Figure 9: Areas with policy SW-REN-3 in the South West marine plan, 2021. Source: South West Marine Plan Technical Annex (publishing.service.gov.uk) p. 125.

The marine plans also establish policies that *constrain* development of offshore wind.

One such example, again from the South West Marine Plan, is policy SW-DEF-1. It applies only to certain Ministry of Defence areas within the marine plan. The policy establishes that proposals inside or affecting these areas, 'should only be authorised with agreement from the Ministry of Defence'. Figure 10 below shows the SW-DEF-1 areas (blue and red) in the plan.

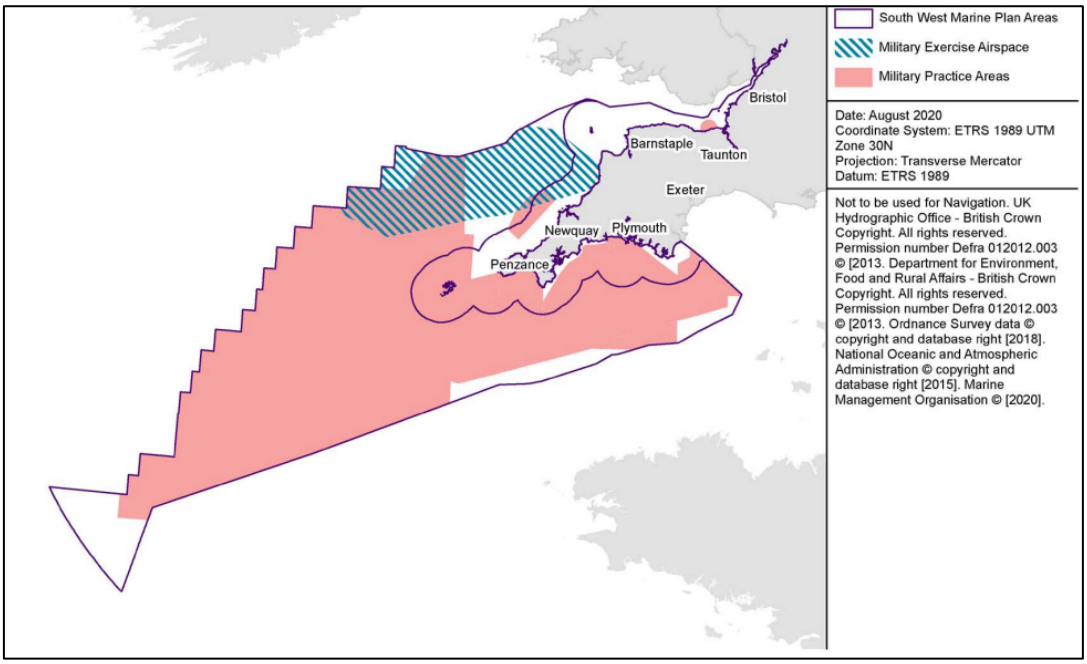


Figure 10: Areas with policy SW-DEF-1 in the South West marine plan, 2021. Source: South West Marine Plan Technical Annex (publishing.service.gov.uk) p. 245.

Notably, this has not made it impossible to establish wind farms in these areas. The three areas being tendered by the Crown Estate in the upcoming seabed Leasing Round 5 (see Figure 8 above) are within the blue-striped, blue Military Exercise Airspace area. This has been enabled through the dialogue between the Crown Estate and the Ministry of Defence discussed in Section 3.

The prevalence of Ministry of Defence areas clearly varies between marine plan areas. As shown in Figure 11 below, there are significantly fewer such spaces in the East Marine Plan:

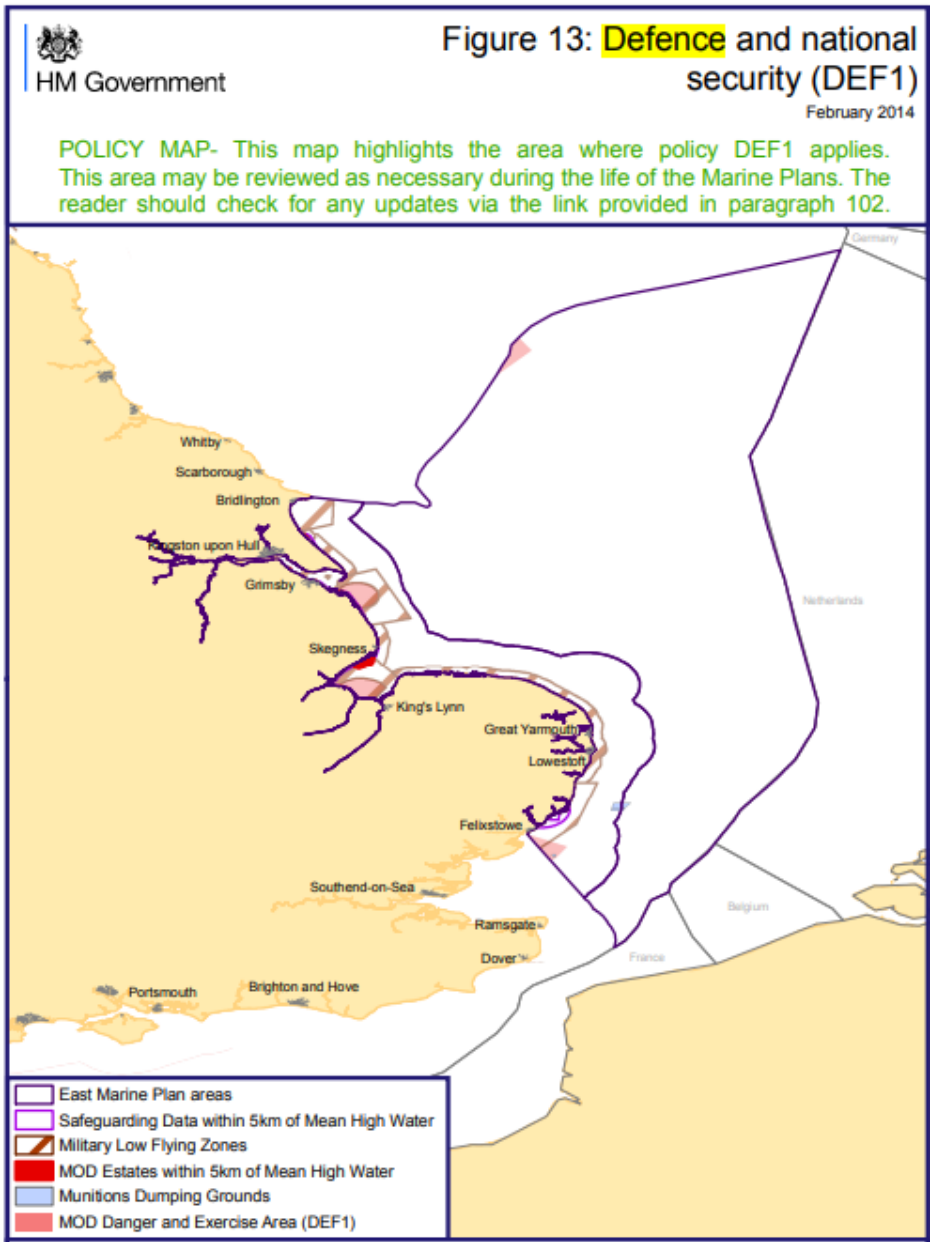


Figure 11: Areas with policy DEF1 in the East marine plan, 2014. Source: East Inshore and East Offshore Marine Plans (publishing.service.gov.uk), p. 110.

Returning to the marine plan for South West, another example of restraining policies for offshore wind are those relating to fisheries:

- Policy SW-FISH-2 applies to the whole marine plan and establishes that proposals (including offshore wind) that 'may have significant adverse impacts on access for fishing activities must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts

so they are no longer significant'. If it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.

- Policy SW-FISH-3 has a similar restraining function, but in relation to essential fish habitats (certain areas). The policy addresses proposals that may have significant adverse impacts on such habitats, including spawning, nursery and feeding grounds, and migratory routes. It establishes that such proposals 'must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant'. The policy is supported by maps that show spawning hotspots (Figure 12 below), juvenile hotspots and adult hotspots.

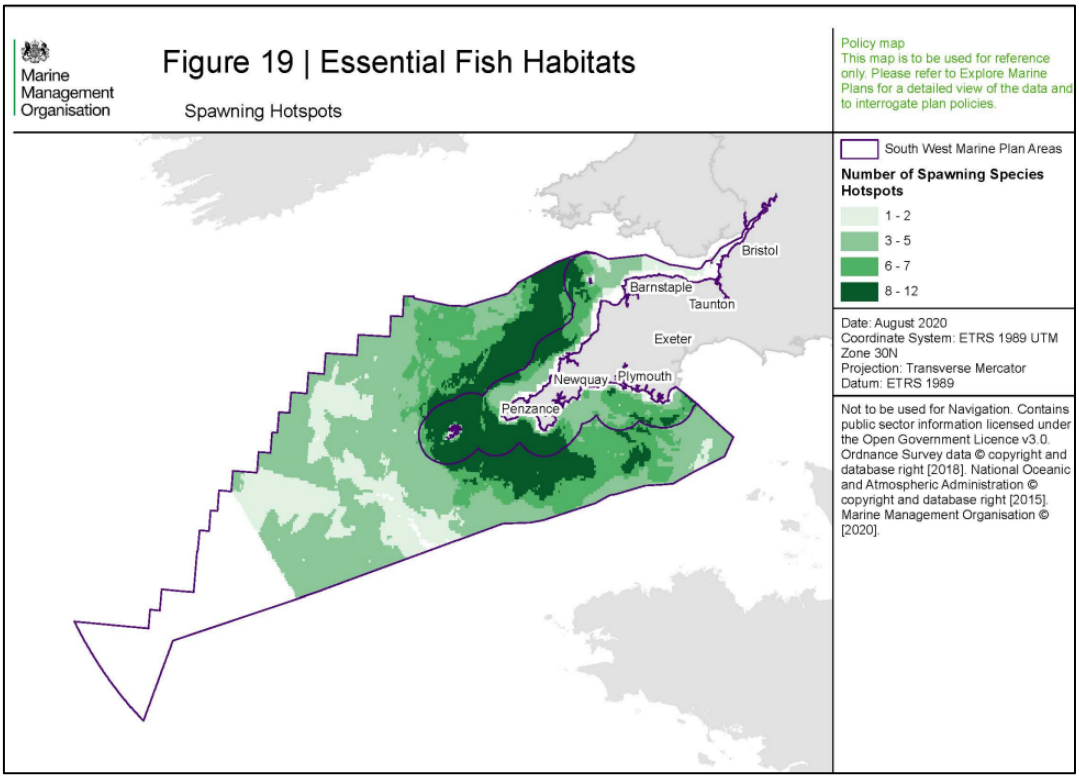


Figure 12: Areas where SW-FISH-3 applies in relation to Essential Fish Habitats, spawning hotspots, in the South West marine plan, 2021. Source: South West Marine Plan Technical Annex (publishing.service.gov.uk), p. 168.

The future of marine planning

The Marine Management Organisation recognises the changing and increasing uses of England's marine environment and that the second generation of English marine plans will likely differ to meet these challenges.

More specifically, the current plans tend to 'stack' policies on top of each other, without prioritising in-between them (each plan has around 55 policies, like those outlined above).

The increasing volume of development in the marine environment (not least from offshore wind) is leading to the sea space becoming busier, and means that marine plans will need to evolve to reflect this changing context.

Thus, although coming plans will continue to maximise co-existence, options for how plans could prioritise spatial allocation where co-existence isn't possible, are being explored.

5. Grid connection

As highlighted in the flowchart in Figure 13, the developers' work to obtain a grid connection comes after the lease is secured, and in parallel with the consenting process.

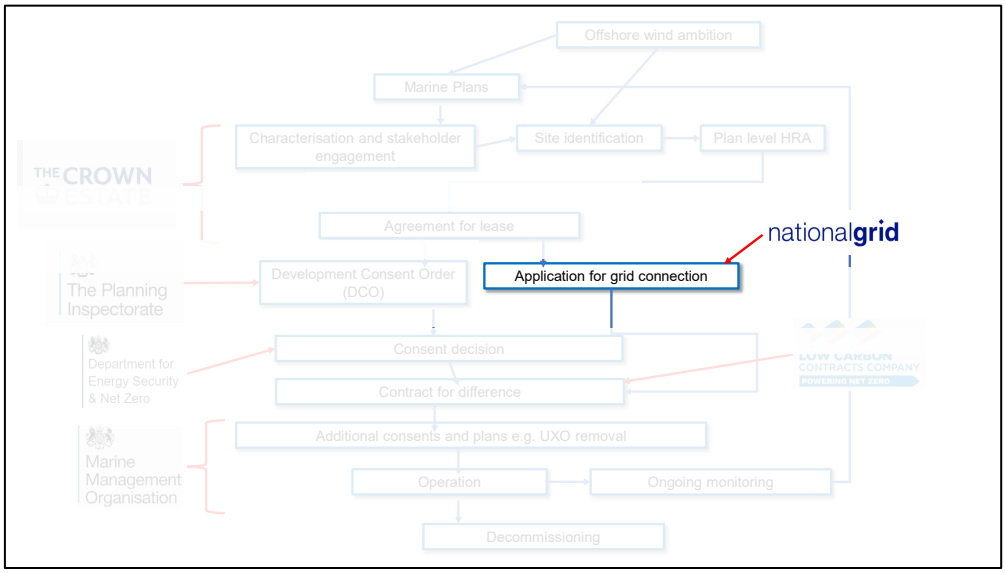


Figure 13: The flowchart, highlighting the grid connection step.

Current process ('CION' regime)

The seabed cable to an onshore grid connection point has so far been completely the responsibility of the wind park developer.

The Crown Estate has conducted dialogues with the National Grid ESO on a general level, which has somewhat informed the allocation of tendered seabed. But the lease agreement has so far not come with any kind of more tangible grid connection plan or commitment from the coastline transmission system operator.

Thus, once the lease is secured, the developer has applied for a grid connection offer from the system operator.

The process applied up until now is called 'CION' (Connection and Infrastructure Options Note).

As indicated in the figure, the process operates under a strict timeline. Once the application has been submitted and the fee paid, the system operator has three months to develop a Connection and Use of System Code (CUSC) offer and release a Transmission Owner Connection Offer (TOCO) to the developer. The consecutive review and negotiation process must take no more than three months. The full CION process takes five months on average.

Short-term amendments to the process

The CION process has shown to have significant challenges relating to the in the electrification era in general, and offshore wind in particular.

First and foremost, it has created a massive connection queue. In 2022 alone, 1,500 grid connection applications were received by the system operators. It has also resulted in extensive grid modifications and costs, as the locations for the offshore wind farms have not been aligned with the actual need for capacity and evaluation of suitable connection points to the grid.

As connection applications are handled on a first-come, first-served basis under the CION regime, this means that although a connection offer can be produced in five months, the connection date could be multiple years in the future. Connection dates stretching out a decade or more into the future are not uncommon.

However, the queue management is considered inefficient, as it, for example, assumes that all projects will be realised and then stacks the agreed maximum capacity on top of each other.

This is currently being addressed on a short-term basis by the National Grid ESO in several ways. Measures includes provisions such as amnesty for transmission entry capacity, allowing holders to withdraw without penalties, and more intelligent queue management, with realistic assumptions on what projects will be realised and how they will temporally utilise their capacity (most production and consumption entities will not constantly utilise their maximum allowed capacity).

From CION to Holistic Network Approach

In relation to offshore wind, the current CION regime means that an inefficient radial (individual cables reaching out from the grid to each park) will be built to each park.

Such a radial connection structure not only creates an inefficient and costly grid. The 'spaghetti bowl' of cables from the parks on the seabed, and through the onshore coast areas, also creates significant and unnecessary impact on both the environment and coastal communities.

In response to this, the projects that won the seabed leases in 2021–2022 are required to consider coordination (where appropriate)

On a longer perspective, the Holistic Network Design programme has been deployed. The programme is outlined in Figure 14 below.

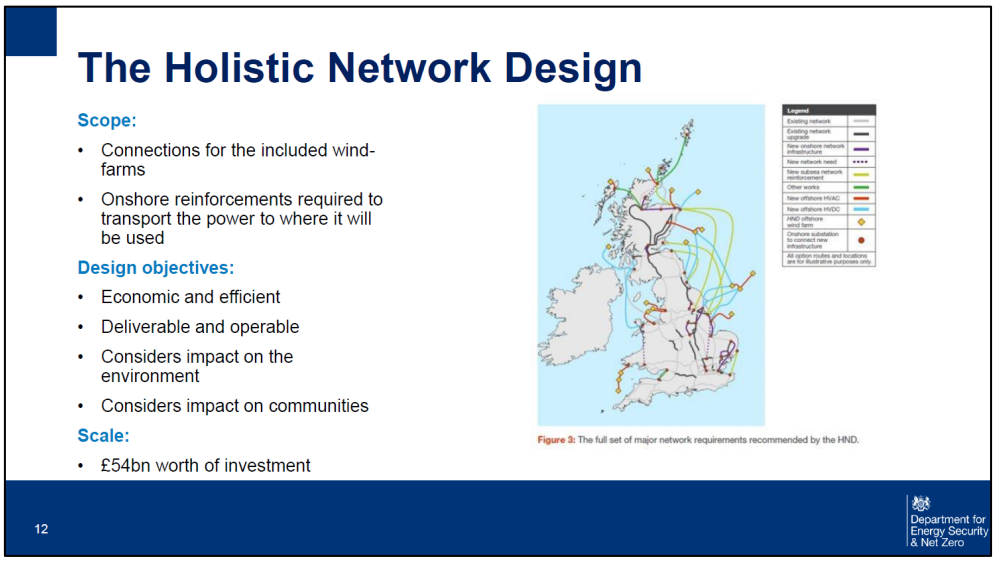


Figure 14: Slide presenting the Holistic Network Design programme. Source: Department of Energy Security and Net Zero.

The programme is based on, and aims at supporting, the government's ambition of 50 GW offshore wind by 2030. It marks a shift from a mainly reactive to a more proactive/anticipatory grid development approach in relation to offshore wind, and from radial to interconnected connections.

As shown in the figure, it includes both offshore interconnectivity in-between the wind farms and the onshore transmission projects necessary to facilitate the government's 2030 ambition.

6. Consenting (permitting)

The consenting process

As highlighted in the flowchart in Figure 15 below, the consenting process is contingent upon the developer securing the seabed lease.

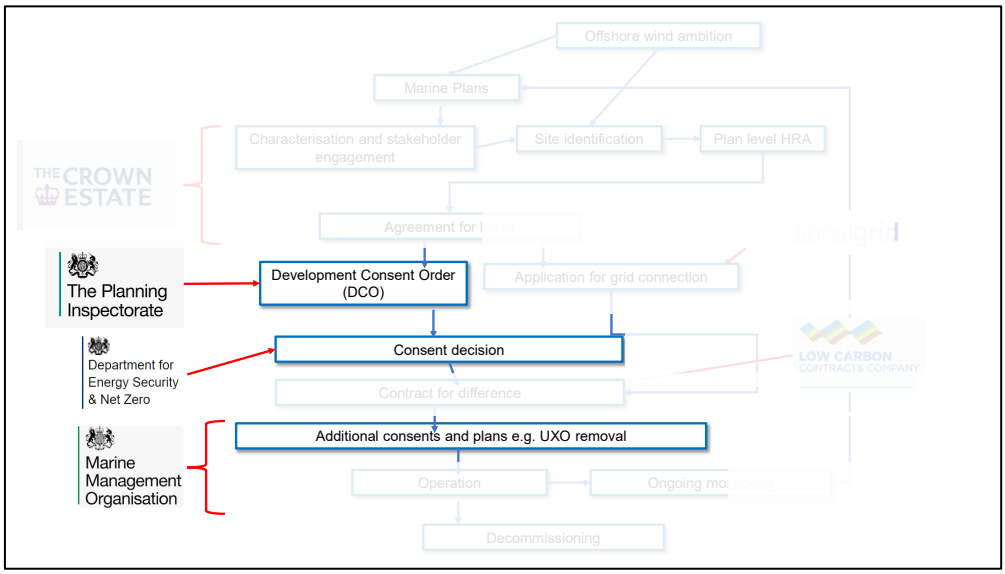


Figure 15: The flowchart, highlighting the consenting steps.

As shown in the figure, the consenting process is done in two steps.

The main consent is obtained as a Development Consent Order, a 'bundle' of consents for development classified as a Nationally Significant Infrastructure Project (NSIP).

Such an order is decided by the Secretary of State at the Department for Energy Security and Net Zero, upon preparations by the Planning Inspectorate. The formal examination and decision process takes one year; however, a significant amount of pre-application engagement is required (by statute).

A statutory presumption exists in favour of consenting, if the application is in accordance with the government's National Policy Statement (NPS) for Renewable Energy, has significant support from the NPS, and benefits outweigh adverse impacts.

Additional consents pertaining to the marine environment (marine licences) are then obtained from the Marine Management Organisation. Such consents can include removal of unexploded ordnances (UXOs) from the sea bottom.

Strategic compensation through the Marine Recovery Fund

In recent years, the scale and complexity of offshore wind applications has put pressure on the current planning and consenting system. As part of the British Energy Security Strategy, the UK is designing a new Offshore Wind Environmental Improvement Package.

The package includes, among other things, Marine Recovery Funds (MRF), into which developers can choose to contribute to meet their environmental compensation obligations.

These allows for compensation measures to be delivered at a strategic level. Consenting provisions could be used to order each project to pay for 'their part' of the cumulative effects, through payments to the fund.

7. Contracts for difference (CfD)

The contract for difference (CfD) step comes after the consenting step, as indicated in the flowchart in Figure 16 below.

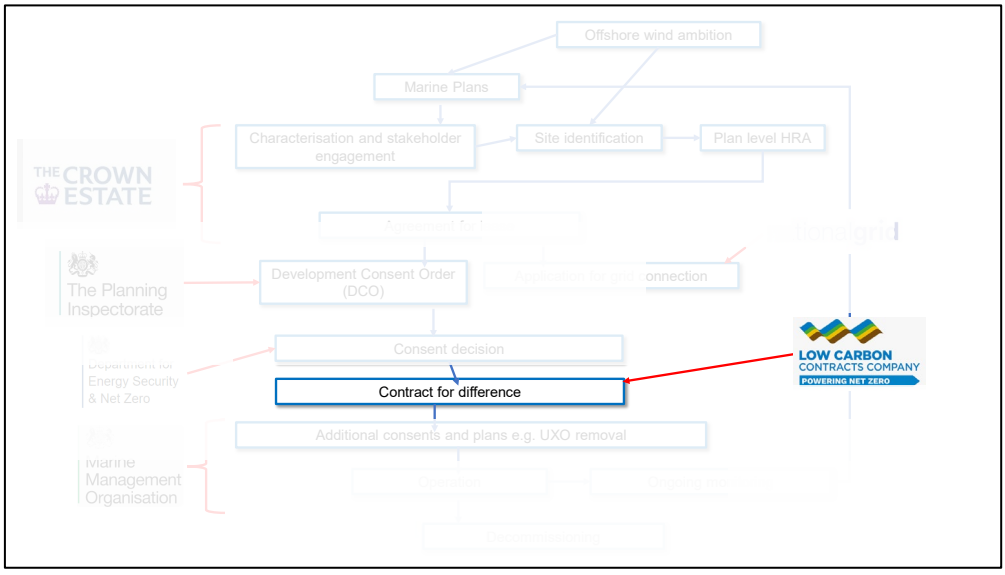


Figure 16: The flowchart, highlighting the CfD step.

The UK applies a two-sided CfD system. How such a system works is not further explained in the memorandum.

Notably, the UK system means that offshore wind developers in England will take part in two separate auction schemes: one by the Crown Estate for leasing the seabed (as described above) and one to obtain a CfD contract, several years later.

CfD contracts are administrated by the Low Carbon Contracts Company, a governmental company that also administrates other schemes, such as a capacity market.

CfD contracts are offered in auctions, called allocation rounds. Since the first round was launched in 2014, five allocation rounds have been finalised. The latest, AR5, was concluded in September 2023.

In the allocation rounds, separate auctions are held for each eligible technology (solar PV, onshore wind, offshore wind, remote island wind, tidal stream, and geothermal).[3]

Notably, in AR5, there were no bids for CfDs for offshore wind. It was reported that the auctions' £44 per megawatt-hour price cap was too low, failing to take account of the industry's increased supply chain costs.[4]

8. Long-term development themes

Strategic Spatial Energy Plan

- Apart from the development themes and projects discussed above, the government's Department for Energy Security and Net Zero (DESNZ) highlighted the development of a Strategic Spatial Energy Plan. As explained in Figure 17 below, the plan has a long-term aim to enable a coordinated, whole-systems approach to the planning of generation and network infrastructure.

[3] UK government (2023-09-08): Contracts for Difference Allocation Round 5 results

[4] BBC News (2023-09-08): No bids for offshore wind in government auction

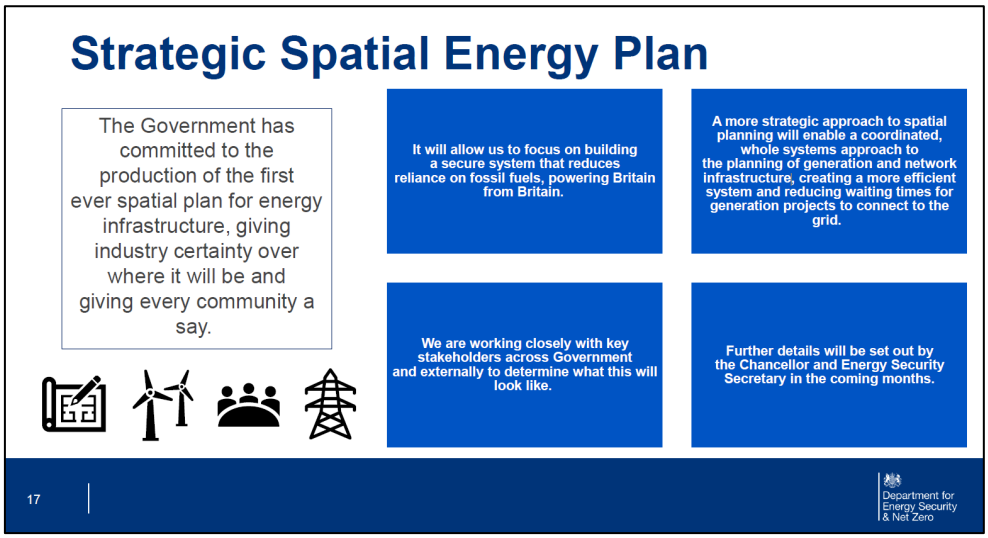


Figure 17: Slide outlining plans for a Strategic Spatial Energy Plan. Source: Department for Energy Security and Net Zero (DESNZ).

Future Framework for grid planning

DESNZ also pointed beyond the Holistic Network Design programme, where a planned Future Framework aims to facilitate the grid connections of yet-to-be-planned seabed leases (post-2030).

The Future Framework considers the long-term approach for developing and delivering offshore wind for projects connecting from 2030. This builds on existing work delivered through the Offshore Transmission Network Review (OTNR) which has now concluded.

The Future Framework was published in July 2023, and is outlined in Figure 18 below.

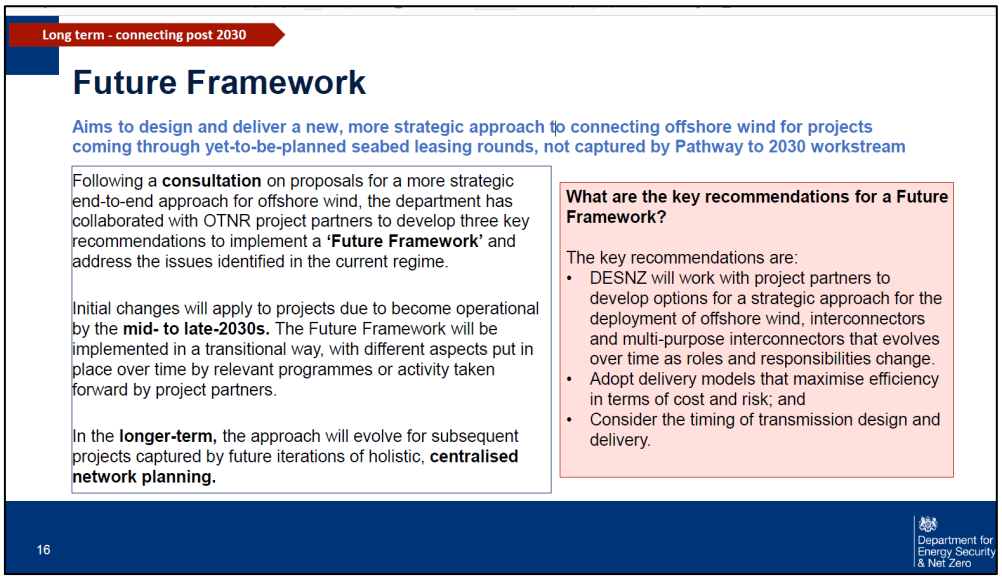


Figure 18: Slide outlining plans for a Future Framework for the connection of offshore wind. Source: Department for Energy Security and Net Zero (DESNZ).

9. Defence interests

In relation to defence interests, planning and consenting are based on two principles: that offshore wind parks must not adversely impact defence capability, and that the developer must pay for mitigation measures that are necessary to achieve this.

Based on these principles, defence interests are addressed throughout the planning, consenting, and development process:

- First, there are defence policies in the marine plans, as explained above.
- Second, the Crown Estate engages in a mainly informal stakeholder dialogue with the Ministry of Defence on which areas to tender. This dialogue is, in practice, the key component in ensuring that the development of offshore wind does not adversely affect defence capabilities.
- Third, in developing the park layout and technology, the developer engages in a mainly informal dialogue with the Ministry of Defence on how to avoid, minimise, or mitigate adverse effects on defence interests.
- Fourth, in consenting, conditions are included on mitigation of adverse effects for defence.

The consenting conditions are usually broadly formulated, for example to the effect that 'the developer must reach an agreement with the Ministry of Defence on radar mitigation efforts'. Such a condition can then be fulfilled by an agreement in which the developer agrees to compensate the Ministry of Defence for installation of additional radars.

- Fifth, in constructing and operating the park, the dialogue between the developer/operator and Ministry of Defence is continued.

Initiatives to further develop co-existence with defence interests

Air Defence and Offshore Wind Windfarm Mitigation Task Force

To facilitate the co-existence of air defence and offshore wind, the Air Defence and Offshore Wind Windfarm Mitigation Task Force was formed in 2019.

The participants and successes to date are described in Figure 19 and Figure 20 below.

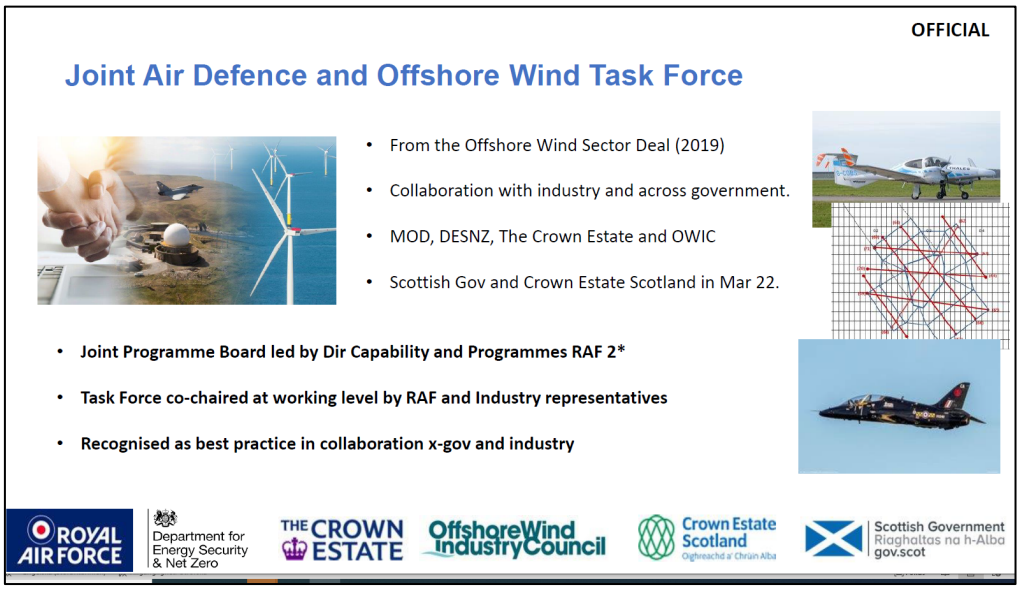


Figure 19: Slide outlining participants in the Air Defence and Offshore Wind Windfarm Mitigation Task Force. Source: The Royal Air Force.

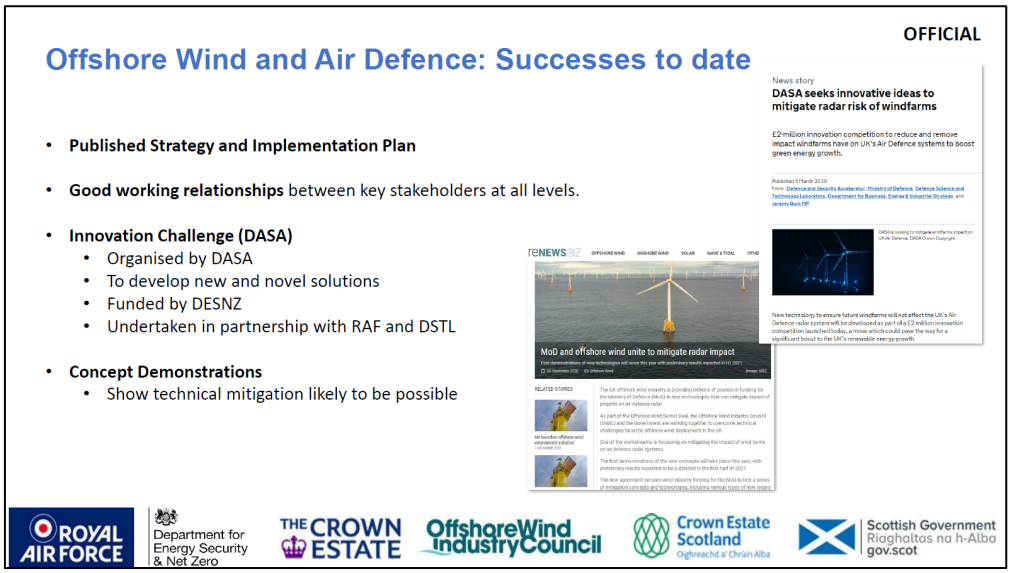


Figure 20: Slide outlining successes of the Air Defence and Offshore Wind Windfarm Mitigation Task Force. Source: The Royal Air Force.

As explained in the figures, the task force offers a structured platform both for an ongoing dialogue, on an overarching level, and for deploying concrete initiatives.

An example of the latter is the Innovation Challenge, mentioned in Figure 20. The challenge is a call for proposals, under the government's Defence and Security Accelerator, for novel and innovative models to understand the effect of disparate technologies to reduce the impact of offshore wind farms on UK air defence.[5]

NJORD programme

Another measure to enable mitigation of adverse effects on a strategic level is the NJORD programme. This is a Ministry of Defence programme, funded by the mitigation compensation paid by the developers, that provides an acquisition framework to procure mitigating solutions to offset the impacts of foreseeable wind-farm projects on air defence.

The anticipated potential solutions for the procurement include, but are not limited to, the following:

- Replace the current AD radar fleet.

[5] DASA competition: Windfarm Mitigation for UK Air Defence Stream

- Gap Fill Radar / Supplementary Radar.
- Adjunct System / Modification to AD radar fleet.
- Unmanned Air Vehicle (UAV)s.
- Low orbit satellite technology.
- Optical Trackers.[6]

10. Views among actors

Offshore Wind Champion Tim Pick

In May 2022, the UK government deployed an 'Offshore Wind Champion' to independently advise the government and industry on the development of the UK's offshore wind sector. The selected Champion, Tim Pick, was formerly a lawyer in the energy sector.

In parallel, The Offshore Wind Acceleration Taskforce was established following publication of the British Energy Security Strategy in April 2022 and closed in March 2023. The Taskforce was chaired by the Minister of State for Energy Security and Net Zero and Tim Pick. The Taskforce brought together Government, industry and regulators to accelerate the deployment of offshore wind projects in response to the Government's increased ambition of 50GW of offshore wind by 2030, including up to 5GW of floating offshore wind.

The Offshore Wind Champion, Tim Pick, submitted his report to the Prime Minister on 5 April 2023. The report contains recommendations for government, regulators, industry, and the Crown Estates to consider in order to accelerate the deployment of offshore wind projects in the UK.

The key messages of his report include:

- Offshore wind is without doubt a UK success story, particularly in terms of the scale of deployment, innovation and cost reduction achieved to date.
- It is essential to upgrade the UK's national grid for a world of high renewables penetration, and widespread electrification of homes and businesses. Grid connections are increasingly becoming the rate-limiting

[6] Ministry of Defence (27 April 2023): Programme NJORD Prior Information Notice (PIN) (bidstats.uk)

factor for our offshore wind deployment. The estimated £54 billion rollout of the Holistic Network Design needs to proceed at pace, on almost a wartime footing. Similarly, the queue arrangements for grid connections need further reform to reflect the new world we find ourselves in.

- The UK's institutional architecture needs to deliver more robust national level, holistic, strategic 'stewardship' of our rapidly evolving energy system. Who is responsible for systems-thinking, and asking questions such as whether the timing and location of that new offshore wind generation capacity is optimal, from a national cost-benefit perspective, in relation to the timing and location of expected new onshore wind and solar capacity, the new nuclear fleet, and the location and type of forecast electricity demand?

Although not specifically addressed in the report, Mr Pick pointed to the fact that the UK system might not sufficiently address the question of minimising production costs, LCOE, in the site selection process. The increased LCOE this leads to is then recovered by the developers through higher strike prices in the CfDs. In other words, neither the Crown Estate nor the developers have a real incentive against 'pushing' wind farms further off the coast. Instead, the cost for this is transferred to the consumers collective through the CfDs.

Views within the fishing industry

The Commission's interview to obtain a fishing industry perspective was conducted with the Scottish Pelagic Fishermen's Association, which organises eight producer organisations in Scotland, and the Scottish White Fish Producers Association Limited, which is the largest of these. Thus, unlike the rest of this memorandum, the focus was Scotland rather than England.

Key messages included the following:

It is important that offshore wind planning not only addresses the need for renewable energy, but also the need for food supply.

The Scottish planning process as such is mainly sufficient. It includes the participation of the fishing industry. But the plans have not been adhered to. This will create severe cumulative effects for the fishing industry, which were not intended in the planning. Specifically, in the Crown Estate Scotland's

latest allocation round, 15 sites were put on tender, but not with the ambition that all 15 sites should be leased and developed. But when the round was concluded, all 15 sites were in fact leased. Although the pre-defined target was merely to lease sites to develop 10 GW production capacity, 25 GW capacity was leased in the end.

Experience has showed the importance of clearly and concretely establishing mitigation and compensation measures as conditions in the consenting. It is not adequate to rely on general conditions or undertakings, as these often lead to disagreements further down the line.

It is essential that fishing does not indirectly bear compensation costs for offshore wind development. For example, to address adverse effects on fishes' breeding areas, a measure could be to reduce fishing quotas. But if that is done, the fishing industry must be adequately compensated.

Early and then continuous dialogue between the involved industries and responsible authorities is key.

Views among offshore wind developers

Key messages from the Commission's meeting with RWE, SSE, Equinor, and BP, facilitated by RenewableUK, include the following. (Note that these are views shared by individual developers and don't necessarily reflect industry wide positions.)

The UK system has mainly been a success story, balancing proactive site allocation by the Crown Estate and revenue stabilisation through the CfD programme.

The system is generally stable and predictable. It is based on bi-party agreements, and provides a clear target, a firm legislative framework, and a long-term coordinator in the Crown Estate.

The two-step auction system is beneficial, as it allows for an informed CfD bid to be produced close to the investment decision, after the site has been properly examined. However, the two-step system is becoming increasingly challenging as the winning bids in the seabed lease auctions are rising steeply. In seabed lease bidding, it is not obvious that this cost can later be recovered in the CfD auction.

It has been positive to be able to optimise site layouts within the quite large boundaries of the lease. Also, upfront payments for the lease have been reasonable, thus not burdening the projects with liquidity challenges before revenues.

Consenting has generally not been a problem but is becoming trickier, as interactions between onshore cable infrastructure and local coastal communities increase.

The most significant challenge now is the grid connection issue. The previous, reactive regime has led to connection dates far into the future, and somewhat of a 'spaghetti bowl' situation on the sea bottom. A more coordinated and collaborative approach, with anticipatory grid development, is obviously necessary.

A message to Swedish wind power developers is that a developer-driven/open-door regime may seem appetising at first, as it allows for quick and diverse initial site development. Such a regime might also be sufficient if offshore development ambitions are low, aiming for just a few, dispersed wind farms. But with higher ambitions, the system needs to be able to handle the full process, all the way to commissioning, as well as development at scale. Eventually, coordination problems will then inevitably materialise, which the government will need to handle. This is particularly true as the sea space is limited and claimed by other interests, such as defence and fishery. In the UK's case, the need for firmer governmental involvement has now become clear in relation to grid connections as well as cable onshoring and local coastal communities.