



Rijksoverheid

Additional Draft North Sea Programme 2022-2027



9 Spatial Planning

9.1 Spatial layout 2022-2027

9.1.1 Balanced developments

The North Sea is a valuable and vulnerable ecosystem which, at the same time, has a large number of functions such as maritime traffic, fisheries, wind energy, oil and gas extraction, sand extraction, defence and recreation. The Dutch section of the North Sea is among the most intensively-used seas in the world.

The previous chapters, 3 to 8, describe the policy and the spatial demands of the various functions and activities. Chapter 9 explains how, during this present planning period, these various functions and activities can be given a place in the area. A long-term horizon for the North Sea in 2050, when all functions have been successfully made more sustainable, is the guiding principle in that regard. The use of the North Sea must be efficient and safe, and the various functions and activities must also be in line with the preconditions for a healthy ecosystem. Finding the right societal balance to enable this is the main challenge for spatial planning at the North Sea.

The National Strategy on Spatial Planning and the Environment (Nationale Omgevingsvisie - NOVI) establishes the policy choice aimed at meeting the climate goals for 2030 and 2050 by achieving the required production of sustainable energy largely by means of wind farms in the North Sea. The NOVI concludes that space on the North Sea will be scarcer than ever in the future. The tension between nature conservation and restoration, food supply, offshore wind energy, maritime traffic and the other national interests contained in the NOVI means that choices, some of them difficult, will have to be made. These are choices that have either already been made or are in development, relating to merging, separating and prioritising use, to investment in sustainability and know-how, and to adaptive policy. Multiple use of space, based on the area's qualities, is conceptualised by means of area surveys, area passport guides, and the policy and assessment frameworks for passage and shared use (see sections 10.1 to 10.3). Exploration of the options for - and creation of - a more sustainable economy also plays a role in this respect (see chapter 8).

The North Sea Agreement (NSA) contributes to reaching the required spatial assessment for the various functions. Central to this is finding the right balance between the transitions relating to food, nature and energy. In doing so, the interests of other users, such as maritime traffic and sand extraction are taken into account as well. The three transitions are closely related:

- The marine ecosystem is under pressure. The use of the North Sea is set to increase during the present planning period and subsequent years, not least due to energy provision being made more sustainable and the increase in maritime traffic. Increasing use of the North Sea can solely be justified if it is accompanied by the regeneration and preservation of the North Sea's ecosystem. The ecological carrying capacity is a precondition for its individual and cumulative use. In addition, the North Sea ecosystem is not a static concept. Objects and installations create new habitats and may make a contribution to nature itself. Also, the consequences of climate change give rise to dynamics. New knowledge, deepening of understanding and additional monitoring of the North Sea are necessary in order to be able to optimise policy and management.
- The number of wind farms and associated activities on the North Sea, such as expansion of the storage of offshore energy and transmission from storage at sea to land will expand considerably. This is a choice aimed at meeting the conditions of the Dutch Climate Agreement and the Paris Agreement. In view of the interests of the ecosystem and other functions, it is important to reach a careful consideration. The technological dynamics associated with offshore wind energy demand an adaptive approach to planning, for instance in relation to future developments in know-how on the ecological capacity, the potential of measures to help nature adapt, the use of hydrogen, the creation of artificial islands at sea and the development of alternative ways of obtaining offshore energy. Exploration and recovery of fossil fuels is being gradually phased out.
- The North Sea is crucial to the fisheries sector and firmly rooted in the socio-economic and cultural fabric of local communities. It is vitally important for the fisheries to transform the sector into a viable and sustainable industry, the nature and scope of which is in step with the new situation in the North Sea. This transition demands re-orientation and, ultimately, restructuring of the fleet. This is not only an ecological necessity and an economic reality, but also a social requirement. In addition to the fisheries, increasing conceptualisation and development in the field of aquaculture and mariculture are demanding space in the North Sea.

The transitions in the areas of nature, food and energy are not only mutually linked; they must also be coordinated with other functions such as maritime traffic, sand extraction, defence and recreation. This chapter presents integrated solutions that are focused on social benefits in the long term, in a context of adaptive spatial planning.

9.1.2 Outline of spatial planning developments

Offshore Wind Energy

The NSA provides a framework for agreements on the increase in offshore wind energy and the space this requires. An increase in offshore wind energy is needed if emissions of CO₂ from the energy we produce are to be reduced and accordingly, to meet worldwide, European and national climate targets. In order to meet the EU-level 'reduction of emissions by 49 per cent in relation to 1990 before 2030' climate target, Dutch offshore wind farms must produce 49 TWh of electricity from renewable sources from that baseline year. That amounts to around 11.5 GW of installed wind power generation capacity. In April 2021, the EU targets were tightened, necessitating a 55 per cent CO₂ reduction in 2030. The Extra Opgave¹ (Extra Task) steering committee suggests that this acceleration requires 10 GW of offshore wind energy capacity in addition to the existing plans and wind farms. Further to this, the widely-supported and adopted Boucke motion² has asked the Dutch government to designate space for at least 10 GW in 2021, intended for offshore wind energy. In the long term the aim is that energy supply in the Netherlands is entirely CO₂-neutral by 2050. According to scenarios³ drawn up by the Netherlands Environmental Assessment Agency (PBL), this requires between 38 and 72 GW of offshore wind energy (see chapter 5).

The Roadmap Offshore Wind Energy 2030 (a document that sets out, among other things, where and when the new wind farms will be built – more elaborate definition in text box 9.3.2) shows previously designated wind farm zones in which wind farms could be created in order to reach 10.8 GW. In order to achieve a reduction in CO₂ of 49 per cent in 2030, there is a shortfall of 0.7 GW. This means that, in combination with the 10 GW that is required to reach a CO₂ reduction of 55 per cent not later than 2030, additional space is required to accommodate 10.7 GW. Accordingly, this North Sea Programme (NSP) designates wind farm zones.

¹ Parliamentary Papers II 2020-21, 32 813, no. 683.

² Parliamentary Papers II 2020-21, 35 668, no. 21.

³ Climate-neutral energy scenarios, 2050: Scenario study in relation to the integrated infrastructure exploration 2030 - 2050. Berenschot & Kalavasta, 2020.

In addition, this NSP shows the search areas for the challenge of further developing offshore wind energy beyond 2030, the starting point being the Netherlands Environmental Assessment Agency's 'minimum scenario' (38 GW total offshore installed wind power capacity in 2050). Above and beyond the space in the existing Roadmap 2030 (10.8 GW), plus the zones allocated in this Programme (10.7 GW), there is still a need for space for 17 GW in the period after 2030. For the designation of these future wind farm zones, the North Sea Programme 2022-2027 will be partially revised following finalisation in March 2022.

Nature

The marine nature areas make a contribution to the statutory targets enshrined in the Birds Directive, the Habitats Directive and the Marine Strategy Framework Directive (MSFD), and to the development of the ecological network of nature areas (see chapter 3). In meeting these targets, the Netherlands is contributing to the EU ambitions relating to biodiversity in 2030 as part of the European Green Deal. The spatial agreements in this NSP that are proposed on the basis of the NSA go beyond that. The widely-supported aim for regeneration and preservation comes at a time when the effects of climate change, fisheries and large-scale creation of offshore wind farms are a cause for concern. The increase in various activities on the North Sea and the claims on physical space are only permissible if the ecosystem of the North Sea can cope with them. The 'Monitoring, Research, Nature Restoration and Species Protection' (MONS) programme is working on addressing gaps in knowledge on the strength of the ecosystem (see chapter 11).

Food supply

The further development of offshore wind energy will result in a reduction of fishable acreage. In addition, the sector has to deal with closing of fishing areas in order to meet the statutory requirements relating to nature, and to agreements in the NSA. New traffic separation schemes for maritime traffic could also lead to measures that restrict fishing. Routing measures of this kind are not addressed in this NSP, but will be explored in the medium-long term. A reduction of fishable acreage will increase the pressure on the remaining fisheries. This displacement effect cannot be quantified specifically at present, nor can it be separated from other significant developments that have consequences for the fishing fleet (such as the ban on electric pulse fishing and Brexit). Similar developments are on-going in neighbouring countries. So it is important to consider the fisheries sector in the context of developments in the entire international North Sea region and of the EU Common Fisheries Policy.

Other forms of food provision at sea are mariculture and aquaculture. Shared use of the space in wind farms could create possibilities for this (see chapter 4).

Maritime traffic

Maritime traffic on the North Sea is both varied and intensive. Spatial developments on the North Sea may have an impact on shipping and shipping routes. The construction of future wind farms requires extra clearway reservations and possible routing measures aimed at guaranteeing passage through international waters, safety of navigation at sea and access to sea ports. In addition, maritime navigation will increasingly be using the northern polar routes. Despite national and international efforts to restrict global warming as much as possible, these navigable routes are becoming increasingly open for international navigation due to the melting of polar ice.

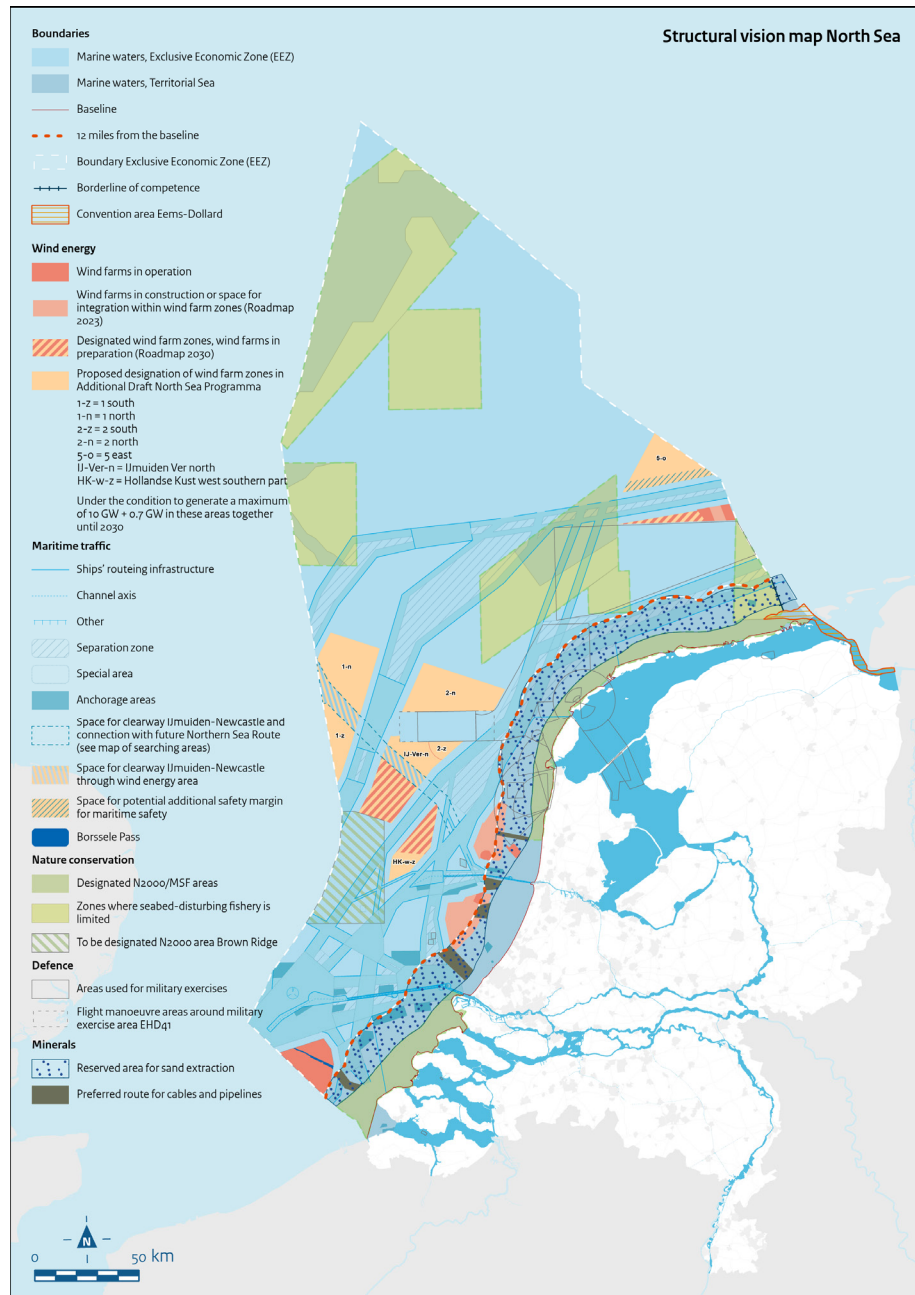
The northern shipping routes are important for connecting the polar route, as well as for the accessibility of the Scandinavian countries and the Baltic Sea. The increasing intensity of maritime traffic necessitates international agreements on ships' routeing. These routes are essential to guaranteeing the accessibility and the competitive position of the Dutch sea ports. A consequence of wind farm development is that measures are required to be able to ensure smooth and safe navigation of ships. Within wind farm zones passage for smaller non-route bound vessels is permitted in specially designated passages, intended for vessels with a length of up to 46 metres (see section 10.1). Safety margins are used outside the wind farms, under the terms of the 'Design criterion safe distances between shipping routes and offshore wind farms, dating from 2013 (see appendix 3).

Section 9.3.2 addresses measures for the safety of navigation in and around wind farm zones. Section 9.4 describes developments beyond 2030, for which spatial planning-related indications have been indicated on a map of search areas. The increasing dimensions of vessels have been taken into consideration when devising these measures (see chapter 6). A study into the cumulative effects on shipping safety and accessibility will start in autumn 2021. This study considers both the existing wind farm zones and the search areas for the period after 2030.

9.1.3 Reading guide

Section 9.2 gives an introduction to the proposed spatial planning policy for the topics of nature, fisheries/food supply, offshore wind energy, maritime traffic, sand extraction, cables and pipelines, and military activities. This section addresses the structural vision and the spatial planning policy. Map 3, the structural vision map, visualises this policy. Section 9.3 makes the case for the designation of new wind farm zones and describes the relationship with ecological capacity and the implications for other functions. In this regard conditions, starting points and points for action are described which should be further addressed in the Roadmap 2030+ and subsequent wind farm site decisions. Section 9.4 describes the search areas and spatial exploration that will be under consideration in terms of wind energy and maritime traffic in the period following 2030. This will be addressed in the partial review of this NSP, which is being prepared from 2022 onwards. Section 9.5 deals with the relevant land/sea interactions, and section 9.6 with maritime spatial planning in an international context.

In the event of conflicting translations, the Dutch version of this policy document prevails over the English translation.



Map 3: Structural vision map North Sea

9.2 Structural vision map 2022-2027

The North Sea Programme (NSP), according to article 4.1 of the Water Act, forms the structural vision for the North Sea as referred to in article 2.3(2) of the Spatial Planning Act. The structural vision map offers an overview of all spatial and planning functions on the North Sea in the policy period 2022-2027. This section focuses on spatial impact of each function. Information on fisheries is not included on the structural vision map as, in principle, fisheries have access to all areas, except where there are restrictive measures in place

Nature in relation to fisheries (food supply)

The NOVI outlines the 'achievement of a good-quality living environment in the Netherlands' and as a follow-up to the Sustainable Development Goals, to guarantee 'a good-quality living environment, while improving and protecting nature and biodiversity' interests at national level. The transition to sustainable fishing practices is also listed in the NOVI as a national interest.

In order to achieve the conservation targets for Natura 2000 and MSFD areas, measures will be taken in the areas specified below in accordance with the agreements in the NSA.

- *Brown Bank (Natura 2000)*:
 - designate the Brown Bank as a Birds Directive area⁴ in 2021;
 - draft a Natura 2000 management plan within three years of designation;
 - possible measures (for the fisheries or otherwise) as a result of in-depth analysis of effects.
- *Frisian Front (Natura 2000 and MSFD) before 2023*:
 - draft a Natura 2000 management plan;
 - expand the closed area for seabed-disturbing fishery by 1,014 km²;
 - make part of the area a 'no fisheries zone' of 1,649 km²;
 - designate an individual zone with an area of 100 km² for oyster recovery;
 - designate a separate individual zone with an area of 100 km² at the edge to study the long-term effects of beam trawling and electric pulse fishing;

⁴ In terms of the delineation of the sites the site decision for the IJmuiden Ver wind energy area takes into account the Birds Directive designation procedure.

- *Dogger Bank* (Natura 2000):
 - expand the Natura 2000 area before 2023, with the aim of increasing the zone closed to seabed-disturbing fishery by 557 km²;
 - ban on seine fishing (*flyshoot*) in the 1,326 km² of management zones before 2023;
 - adapt the management plan.
- *Cleaver Bank* (Natura 2000):
 - expand the area closed to seabed-disturbing fishery (excluding Botney Cut) by 552 km² before 2023;
 - potentially adapt the management plan.
- *Central Oyster Grounds* (MSFD) before 2023:
 - expand the area closed to seabed-disturbing fishery by 1,062 km².
- *Borkumse Stenen* (MSFD) before 2023:
 - expand the area closed to seabed-disturbing fishery by 558 km².

An article 11 procedure under the terms of the Common Fisheries Policy (CFP) is started for the North Sea coastal zone, as per the VIBEG II agreement. The aim is to move the areas that are currently closed and for these spatial restrictions to apply to both Dutch - and foreign - flag fishing vessels.

An independent study was recently started into the spread of honeycomb worm reefs (*sabellaria*). Independent research will be conducted before 2025 into whether the *Hollandse Kust* zone, *Vlakte van de Raan*, the *Borkumse Stenen*, the *Cleaver Bank*, the *Dogger Bank* and the *Central Oyster Grounds* meet the selection criteria for designation as Special Protection Area under the Birds Directive areas (see chapter 3). Spatial restrictions that apply under the current policy, such as in the *Voordelta* and the *Raan Flats*, will continue to apply. At international level, the aim is to overturn the applicable restrictive measures relating to fisheries in the Dutch section of the *Plaice Box*.

The EU's biodiversity strategy includes the stipulation that in 2030, at least 30 per cent of the total sea area administered by Member States will be protected. At least one third of that area must be strictly protected. Between 2021 and 2023, the European Commission and the Member States will devise legally-binding targets for the restoration of the natural environment, criteria, definitions and pre-conditions. The relevant agreements in the North Sea Agreement concerning these aspects, will form the starting point for the Dutch standpoint in this process.

Wind energy

Spatial planning in relation to offshore wind energy is further elaboration of the national interest referred to in the NOVI, which concerns 'achieving a reliable, affordable and safe power supply, that is CO₂-neutral by 2050, and the accompanying main infrastructure'. The Climate Agreement states that offshore wind energy has an important role to play in this respect. This supplementary draft NSP interprets spatial planning in relation to offshore wind energy for the period 2022-2027, with a long-term horizon, as follows:

Wind farm zones in which wind farms have already been constructed or are planned to be constructed, or in which there are (preliminary) site decisions, or where according to the Roadmap for Offshore Wind Energy 2030 site decisions are planned, will remain wind farm zones. The *IJmuiden Ver* (north) and the southern part of the *Hollandse Kust* (west) zones will be reconfirmed as designated wind farm zones.

The following applies in comparison with the Policy Document on the North Sea 2016-2021 as part of the National Water Plan 2016-2021 (see the structural vision map):

- The boundary of *Hollandse Kust* (west) has been adjusted on the western and eastern boundaries to ensure that there is a fluid boundary along the adjacent shipping routes. The boundary to the north has been adjusted to make room for a clearway between *IJmuiden* and *Newcastle*.
- In the southern section of *IJmuiden Ver* (north), space has been reserved for a clearway (see section 9.3.2 for the width of this).
- The southern boundary of the *IJmuiden Ver* wind energy area has been adjusted due to the proposed designation of the *Brown Bank* as a Birds Directive area.
- The designation of *Noord Hinder* as a wind energy area has been discarded, as this area is situated in the vicinity of the Port of Rotterdam and is too small.
- *Hollandse Kust* (northwest) and *Hollandse Kust* (southwest) have been discarded as wind farm zones, considering the interests of fisheries, nature and maritime traffic. Designation of these areas will not be reconsidered as part of the partial review for the period after 2030.
- Newly designated as wind farm zones are the areas 1, 2 and 5 east.
 - Area 1 is divided into the sections 1 south and 1 north, between which a clearway will be created (see section 9.3.2 for the width of this).
 - Area 2 is divided into the sections 2 south and 2 north. On the map, 2 south is depicted as a sub-section bordered by the *IJmuiden Ver* (north) wind farm zone and military training area *EHD41*. Section 2 north lies to the north of *EHD41*.

- Area 5 east is an area that borders the East-Friesland shipping route. This area borders Germany. Wind farms are planned on both sides of the border, adjacent to the route for through shipping. Therefore, together with Germany an assessment is being made on the essential width of the required safety margins. Space for a wide safety margin has been sketched onto the structural vision map.
- The designation of wind farm zones 1, 2 and 5 east, and the reconfirmation of wind farm zones IJmuiden Ver (north) and the southern section of Hollandse Kust (west) is subject to the condition that all these areas, together, generate no more than 10.7 GW until 2030. Another condition is that this development does not exceed the ecological carrying capacity.
- There is extra space available in these areas for the creation of wind farms (potential capacity of 16.7 GW). This 'space' designation offers the necessary flexibility to be able to accommodate the limitations and interests relating to other functions, ecological values and options for landfall in the subsequent process leading to site decisions. The conditions, starting points and points for action in this regard are described in section 9.3.
- The wind farm zones (and individual sections thereof) that are rejected for the period up to and including 2030 will be reconsidered for the period after 2030. This will be done during a partial review of this NSP, which will also involve other search areas (see section 9.4).
- However, the Hollandse Kust (northwest), Hollandse Kust (southwest) and Noord Hinder have been discarded indefinitely as wind farm zones and will not be reconsidered in the partial review referred to above.

Food/Fisheries

The space available for trawl fishing will continue to decrease as a result of the expansion in nature conservation areas and wind farms. In order to use the space on the North Sea efficiently and, in doing so, create alternative forms of food supply, the focus will shift to aquaculture and passive fishing, in areas such as wind farms. In addition, the NSA and the 'Cutter Vision' (Kottervisie) form a basis for research and innovation, in order to study effects on and possibilities for fisheries and/or developing them. The NSA also specifies that international consultation is on-going on overturning the restrictive measures relating to fisheries in the Plaiice Box.

Maritime navigation

Maintaining and further developing the main infrastructure for mobility, including the shipping routes, is designated as a national interest in the NOVI. The structural vision map shows the existing ships' routing infrastructure, plus existing anchorage areas and clearways. Section 9.3.2 describes the possible required reservations for clearways in the context of the new offshore wind farm zones. Section 9.4 elaborates on future developments, including the Northern Sea Route.

Sand extraction

Guaranteed availability of sufficient and affordable sand contributes to national interests in terms of water safety and climate resilience, and to interests in the field of residential construction, mobility and business climate. The strip of sea enclosed by the continuous NAP-20m depth line at a distance of 12 nautical miles from the coastline, continues to be reserved for the extraction of sand for coastal defences and for filler sand for construction and infrastructure. The extraction of shells is permitted seawards of the NAP-5m depth line, in quantities that do not exceed natural growth.

Oil and gas recovery

The safe distance to mining installations which should be maintained by helicopter flights may, under certain conditions, be adjusted from 5 to 2.5 nautical miles. Oil and gas recovery on the North Sea remains within the limits of the Climate Agreement and is being phased out. The existing gas infrastructure is being investigated for its suitability for possible repurposing to transport hydrogen. Re-use of existing infrastructure limits the spatial impact and ecological effects of hydrogen pipeline transport. Over time, specific platforms may serve as sites for carbon capture and storage (CCS).

Temporary parking facility modernisation and new drilling platform construction

Within the framework of the Wadden Sea area Agenda, agreement has been reached with all parties on seeking a joint solution for a temporary parking facility in the vicinity of the port of Den Helder to facilitate the modernisation and new construction of drilling platforms.

Cables and Pipelines

The establishment and maintenance of high-quality digital connectivity is of national importance, as is the required main infrastructure for the establishment of reliable, affordable and safe energy supply.

Cables and pipelines are situated and constructed in such a way that they do not form a danger or impediment to other national interests. During the period in which this NSP is effective, national government will further assess how to deal with conflicts between national interests. There is a safety and maintenance zone of 500 metres to either side of cables and pipelines in the North Sea. When creating wind farms, the principle is that a zone of 500 metres in relation to existing pipelines and electricity cables should be adhered to; this rises to 750 metres in the case of telecommunications cables. With a view to efficient use of space, maintenance zones for cables and pipelines may, where possible, be reduced.

When planning the construction of new cables and pipelines, national government aims to route these in parallel, where possible, in consultation with the instigator. Preferential routes have been determined (see structural vision map) where these cross the established sand extraction zone, taking into account the availability of sand that can be extracted and the potential locations of landing points for cables and pipelines. In order to use the space on the North Sea efficiently, electricity cables, telecommunications cables and pipelines must be bundled where possible. The assessment framework for activities on the North Sea has been expanded and tightened in order to be able to implement this bundling policy (see section 10.5).

Spatial planning procedures for future cable routes will be based on the choices made in the Investigation of cable landing points for offshore wind energy (VAWOZ)⁵. This is done in conjunction with the drafting of a new Offshore Wind Energy Roadmap 2030+, and the preparation of site decisions.

Where initiatives at sea cover a wide area, national government may specify space to be reserved for the future routing of cables and pipelines. Moving and bundling existing cables in the area in question at a later date involves sizeable costs and is therefore not something that is being pursued.

The envisaged increase in shared use in wind farms demands that maintenance zones must also be applied to 'infield' cables in a wind farm. Research has shown that there must be clearance of 250 metres available on either side of infield cables to facilitate safe maintenance.

National government has specific instructions on how new pipelines and telecommunications cables must be constructed in relation to existing wind farms and wind farm zones. Cables and pipelines that are no longer in use (those that fall under the Wet Beheer Rijkswaterstaatswerken (Public Works (Management) Act) and were laid after 2000) shall be cleared, except where the benefit to society of leaving them in place outweighs the cost.

Military activities

Ensuring national security and offering space for military activities is a national interest covered in the NOVI. The existing areas designated for military purposes will remain in place (see structural vision map). Moving EHD41 was considered, but this is not possible before 2030 due to the presence of mining platforms. This situation may change in the medium-long term. In order to create extra space for wind energy in the longer term, the possibility of moving EHD41 beyond 2030 is being explored. As far as EHD42, a military exercise area that overlaps with search area 4, is concerned, the possibility of shared use is being investigated (see section 9.4). A precondition for potential future decisions on EHD41 and EHD42 is that the operational usefulness of the exercise areas is guaranteed.

Conservation of underwater cultural heritage

The NOVI earmarks conservation and strengthening of cultural heritage as a national interest. Archaeological heritage in and on the sea bed forms part of this. The policy is that archaeological heritage in the sea bed remains in situ, where possible. By making an inventory of archaeological find sites at an early stage, it is possible to rhyme maintenance in situ with spatial planning developments. Where it is not possible to conserve such artefacts in situ, it may be preferable to excavate the site of the archaeological find and, in so doing, secure its informative value (see section 7.5).

⁵ Effects Analysis, Investigation of cable landing points for offshore wind energy (VAWOZ), Assessment memorandum, Ministry of Economic Affairs and Climate, September 2021..

9.3 New wind energy search areas in relation to nature and other use

Wind farm zones are designated on the basis of a coherent consideration which combines ecological effects, the consequences for other functions, on-schedule completion of the planned wind farms and cost-effectiveness for society. The substantiation of choices is described in section 9.3.1. Conditions, starting points and points for action in terms of the subsequent process are associated with the designation and reconfirmation of wind farm zones that focus on the balanced development envisaged in this NSP. These are described in section 9.3.2. The condition relating to being able to cover follow-up costs and the costs of spatial integration in good time is described in section 9.3.3.

9.3.1. Reasoning behind choices relating to new wind energy search areas

Selecting suitable search areas up to and including 2030

The draft NSP of March 2021 identifies search areas for the construction of wind farms aimed at reducing CO₂ to meet 2030 targets. An initial selection procedure determined which search areas (see map in section 9.4) could be rejected as wind farm zones up to 2030.

- Search areas 3, 6 and 7 cannot be developed before 2030, as it will not be possible to establish cable landing points (for transmission of offshore energy to land) in time. Where search area 3 is concerned, its isolated position and the distance from the wind energy area were factors that influenced this as well. In relation to search areas 6 and 7, the creation of electricity infrastructure is at present either not viable or not sufficiently cost-effective. In the longer term, transmission via molecular energy carriers, such as hydrogen, may play a role in this respect.
- Search area 4 cannot be developed before 2030 as it overlaps with military exercise area EHD42. According to investigations, moving EHD42 has not been deemed possible. The possibilities of combined use demand further investigation, which cannot be completed in time for a decision on creation of a wind farm before 2030.
- Search areas 8 and 5 median strip involve increased safety of navigation risks that are currently being assessed. Further considerations on this require more time. As area 5 median strip has an impact on an international shipping route and borders on German territory, it is necessary to consult with and look into this in collaboration with Germany.

The areas referred to above are included in this spatial plan as search areas for the task of generating offshore wind energy beyond 2030, but will not be considered potential wind farm zones before 2030.

Dealing with as yet unused sections of existing wind farm zones

The NWP 2016-2021 designates the as yet unused wind farm zones of IJmuiden Ver (north), Hollandse Kust (southwest) and Hollandse Kust (northwest). In addition to this, there is also space in the southern section of Hollandse Kust (west) that has not been used so far. Considerations have taken place on whether these areas need to be reconfirmed, and if this is possible.

- For IJmuiden Ver (north) providing space for 2 GW there may be synergy gains to be made in relation to the development of IJmuiden Ver. This makes IJmuiden Ver (north) relatively quick to develop. As a result, IJmuiden Ver (north) can be earmarked for reconfirmation.
- The southern section of Hollandse Kust (west), where there is space for the missing 0.7 GW that is key to delivering the 49 per cent CO₂ reduction target, could similarly be quickly and cost-effectively developed. So the southern section of Hollandse Kust (west) will also be eligible for reconfirmation. Moreover, in the northern section of Hollandse Kust (west) site decisions are already being prepared.

- Having considered the ecological effects^{6, 7, 8, 9, 10, 11}, effects on other use^{12, 13, 14}, possibilities for cable landing¹⁵ and cost-effectiveness for society^{16, 17, 18} it has been concluded that both IJmuiden Ver (north) and the southern section of Hollandse Kust (west) can be reconfirmed as wind farm zones. This is explained in section 9.3.2. This also covers the associated conditions, starting points and points for action for the subsequent process.
- Hollandse Kust (southwest) and Hollandse Kust (northwest) are particularly unsuited to use as wind farm zones considering fisheries, nature and maritime traffic. As in the remaining areas there is sufficient space to perform the task arising from the target of 55 per cent CO₂ reduction, these areas will be discarded as wind farm zones. Not just in the period before 2030 but after 2030, too.

⁶ Advice on future assessment of ecosystem effects from offshore wind farms, Advice for KEC, Deltares (Van Duren), October 2021

⁷ Cumulative population-level effects of habitat loss on seabirds 'KEC 4.0' report Co70/21, Wageningen University & Research (Soudijn et al.).

⁸ Cumulative impact assessment of collisions with existing and planned offshore wind turbines in the southern North Sea
Analysis of additional mortality using collision rate modelling and impact assessment based on population modelling for development according to roadmap 2030 and Versnelling, Bureau Waardenburg (Potiek et al.), October 2021.

⁹ Windenergie op zee volgens Programma Noordzee, Advies voor het vermijden van effecten op populaties van zeezoogdieren door de versnelde aanleg van windparken in de periode 2016 – 2030 (Offshore Wind Energy in accordance with the North Sea Programme. Recommendations for the avoidance of effects on populations of marine mammals due to the accelerated creation of wind farms in the period 2016 - 2030), Heinis en De Jong, October 2021.

¹⁰ Aanvullende Passende Beoordeling voor het Aanvullend Ontwerp van het Programma Noordzee 2022-2027 (Supplementary Appropriate Evaluation for the Amended Draft of the North Sea Programme 2022 - 2027), Pondera (Van de Bilt et al.), October 2021

¹¹ Aanvullende planMER voor het Aanvullend Ontwerp van het Programma Noordzee 2022-2027, Pondera (Van de Bilt et al.), oktober 2021.

¹² Same reference as 11

¹³ Aanvullende analyse van de economische effecten van inrichtingsvarianten voor de Noordzee tot 2040/2050, Wageningen Economic Research (Roebeling et al.), June 2021.

¹⁴ Inzicht in de sociaaleconomische waarde van de zoekgebieden windenergie op de Noordzee 2030-2050 voor de Nederlandse visserij, Wageningen Marine Research (Deetman et al.), December 2020

¹⁵ Same reference as 5.

¹⁶ Same reference as 13.

¹⁷ Same reference as 14

¹⁸ Determination of the cost levels of wind farms (and their grid connections) in new offshore wind energy search areas, WOZ2180096. BLIX Consultancy BV & partners, December 2020.

New wind energy search areas

In search areas 1, 2 and 5 east from the draft NSP of March 2021, development of wind farms is possible before 2030. These areas are displayed on the structural vision map as designated wind farm zones. This takes into account the retention of space for the military exercise area EHD41. For this designation the ecological effects¹⁹ effects on other use,²⁰ possibilities for cable landing²¹ and cost-effectiveness for society²² have been identified and carefully considered. In determining the cost-effectiveness for society, energy yield and construction costs, including cable landing²³, were considered. Estimations were also made regarding possible measures for the safety of maritime traffic²⁴ and potential yield loss by fisheries²⁵.

The reconfirmed and new areas together, provide physical space to accommodate 16.7 GW. Designation of these wind farm zones is subject to the condition that a maximum of 10.7 GW is developed until 2030. Section 9.3.2 describes conditions, starting points and points for action that are associated with determining the final areas that will be used to achieve 10.7 GW within the total available space in the designated areas. These concern the ecological carrying capacity, possibilities for cable landing, dealing with other use (maritime traffic, mining and fisheries) and multi-functional use within wind farms (including recreation, fisheries, aquaculture and alternative sustainable forms of energy). Designating an overcapacity of space now gives the flexibility to leave wind farm zones (or parts thereof) vacant at a later stage in order to achieve optimum spatial integration, and to limit ecological effects. Sand extraction is not addressed in the conditions, starting points and points for action; the designated wind farm zones are situated too far from the coastline for that. Preparation of the site decisions will address how to deal with archaeological values, according to the legal frameworks.

¹⁹ Same references as 6, 7, 8, 9, 10 and 11.

²⁰ Same references as 11, 13 and 14.

²¹ Same reference as 5.

²² Same references as 13, 14 and 18.

²³ Same reference as 5.

²⁴ Same reference as 13.

²⁵ Same reference as 14.

9.3.2. Conditions and agreements for the follow-up programme offshore wind energy

Follow-up programme in the context of spatial adaptive planning

Designation of wind farm zones

The designation of new wind farm zones and the reconfirmation of existing zones encompasses a spatial reservation in the PNZ/NWP. This is the first step in a process that after the preparation of a roadmap will result in wind farm site decisions, in which the locations of wind farms are determined in more detail. According to Article 3(2) of the Offshore Wind Energy Act, a site decision can only be taken in the duly designated wind farm zones. For the designation of wind farm zones, an integrated assessment is carried out, making use of a wide range of studies. An Environmental Impact Assessment (EIA) and Appropriate Assessment are also required.

Roadmap

The Ministry of Economic Affairs and Climate Policy will draw up the Offshore Wind Energy Roadmap in consultation with other departments, and a participation process by various stakeholders. The roadmap specifies those designated wind farm zones in which site decisions are actually due to be prepared. This process is accompanied by an integrated assessment, making use of studies into the ecological effects and possibilities for the integration of other functions.

Site decisions

On the basis of Article 3(1) of the Offshore Wind Energy Act, the Minister of Economic Affairs and Climate Policy in consultation with the Minister of the Interior and Kingdom Relations, the Minister of Infrastructure and Water Management and the Minister of Agriculture, Nature and Food Quality will take a site decision. In this decision, the location of a wind farm is determined, together with the essential preconditions relating to ecological effects and other functions. This integrated assessment is supported by arguments based on detailed studies, area surveys and a project EIA, including an Appropriate Assessment.

Tendering and construction

Once a site decision has been taken, this is followed by issuing the site through a tendering procedure. Based on this procedure, the future wind farm operator is selected. The operator can then prepare and implement the construction work.

Relationship with cable landing points

The plans for wind farm zones and site decisions on the one hand and the electricity infrastructure on the other are based on consultation and coherence. Separate procedures apply to the cable routes for the offshore grid. Promising cable routes are first investigated in an informal survey process. For those routes identified as potentially successful, spatial procedures follow, in which the various alternatives/variants for cable routes are investigated. Only if there are possibilities for a cable landing point is a wind energy area designated. A site decision is only taken for locations from which the generated electricity can be transmitted to shore.

Knowledge development

Within the process described above, which including realisation will take between 8 and 10 years, constant use is made of the latest knowledge and insights. With regard to knowledge on the ecological effects, use is made of the Ecology and Cumulation Framework (KEC). The KEC is updated from time to time, on the basis of the most recent insights, obtained by monitoring existing wind farms. This means that in the time between the spatial reservation of the wind farm zones and the actual site decisions, knowledge gaps can be addressed using the latest knowledge and new insights, considering the ecological carrying capacity, optimum spatial integration and the possibilities for multiple use.

The designation of wind farm zones is subject to the conditions, starting points and points for action listed below, in relation to the follow-up process. This takes into account the establishment of the Roadmap 2030+ and the preparation of site decisions. Consensus on these conditions, starting points and points for action has been reached within the North Sea Consultation body, the group of stakeholders, including national government, that deals with the implementation of the North Sea Agreement.

1. Maximum 10 GW + 0.7 GW by 2030

The designated wind farm zones IJmuiden Ver (north), the southern section of the Hollandse Kust (west) and wind farm zones 1, 2 and 5 east offer maximum space for 16.7 GW of wind energy. The underlying precondition is that of this total, a maximum of 10.7 GW will be developed until 2030. The areas in which and the order according to which the available space will be used for wind farms will be determined in the framework of the Roadmap Offshore Wind Energy 2030+. The Ministry of Economic Affairs and Climate Policy will draw up this roadmap in consultation with other departments. This be subject to an integrated assessment. The (sub)areas not used will be reconsidered as wind farm zones for the period after 2030, whereby the search areas for beyond 2030 will also be taken into consideration. This re-evaluation is part of a partial review of the PNZ.

2. Ecological carrying capacity: research and measures to help nature adapt

The development of wind farms is only possible within the ecological carrying capacity and subject to the application of the precautionary principle. The conditions and points for action listed below take this into account. In determining the ecological effects of wind farms in the new wind farm zones, research has shown that for the majority of species and N2000 areas, the development of 10.7 GW of wind farms is possible within the ecological space.^{26, 27, 28} For a limited number of species and aspects, this is critical - based on the current state of knowledge, and taking related uncertainties into account. Specific agreements on these issues have been included.

2.1 The conducted studies show that the ecological carrying capacity on the North Sea is limited; here the precautionary principle applies in relation to the conservation goals and achieving good environmental status according to European legal frameworks. Designation therefore takes place under the condition that the relevant knowledge gaps are addressed before irreversible steps are taken. At the moment that site decisions are taken, the necessary ecological space must have been demonstrated. Wherever necessary, mitigating measures must be taken. Nature-reinforcing measures can also contribute to the ecological space.

- 2.2 To remain within the ecological capacity, the aim is to increase knowledge and to take measures to help nature adapt. The uncertainties and knowledge gaps described below help set the course for the necessary research into the nature-inclusive development of offshore wind energy. We must prevent the wind farms taking up so much ecological space before 2030 that the realisation of wind farms after 2030 becomes more complicated. For that reason, the vulnerabilities relating to the wind energy task after 2030 will be further mapped out. In the framework of the Monitoring, Research, Nature Restoration and Species Protection Programme (MONS) and the Offshore Wind Ecological Programme (Wozep), the necessary research will be carried out over the coming years. An additional boost is needed in order to address the identified knowledge gaps in time.
- 2.3 For two species, the ecological limit has been reached, based on the current state of knowledge and the current (draft) working standards. The species in question are the herring gull and the northern gannet.²⁹ There are however specific uncertainties about the density of the herring gull population and the extent to which the northern gannet avoids wind turbines. Further investigation into these aspects may reveal that there is still sufficient ecological space available for these two species. Before irreversible steps are taken, the relevant uncertainties will be further addressed.
- 2.4 The development of 10.7 GW appears viable within the ecological space for the black-legged kittiwake and the great black-bagged gull.³⁰ As yet it is uncertain whether this applies to every possible distribution of 10.7 GW over the available space. This will be further investigated in order to determine the spatial distribution of the future wind farms.

²⁶ Same references as 6, 8, 9, 10 and 11.

²⁷ Achtergronddocument Passende Beoordeling Aanvullend Ontwerp Programma Noordzee vogels, vleermuizen, vissen en benthos, Bureau Waardenburg (Gyimesi et al.), Oktober 2021.

²⁸ Windenergie op zee 2016-2030 inclusief zoekgebieden voor versnelling aanleg, cumulatieve effecten op zeezoogdieren, Heinis, oktober 2021.

²⁹ Same references as 8, 10, 11 and 27

³⁰ Same references as 8, 10, 11 and 27

- 2.5 In determining the effects on marine mammals, it has become clear that harbour porpoises are the most vulnerable. On the basis of current knowledge, the development of 10.7 GW is only viable if during the construction of wind farms, a noise standard of SELSS (750 m) = 160 dB re 1 μ Pa_{2s} is applied.³¹ At present, the noise standard of SELSS (750 m) = 168 dB re 1 μ Pa_{2s} applies. There are indications that in determining the effects, better account can be taken of differentiation of noise frequencies that cause hinder to porpoises. For that reason, the necessity of tightening up the noise standard has been investigated. In this regard, it is necessary to take account of the long-term task for offshore wind energy and international developments. The wind energy sector and the North Sea Consultation are involved in all these studies and considerations.
- 2.6 According to estimates, area 5 east is more sensitive to the ecosystem effects described than other wind farm zones to be designated or reconfirmed³². The use of area 5 east is therefore only possible subject to the condition of ecological integration, both with regard to the wind energy area and the cable landing point. The vulnerability of the Wadden Sea is an important point for attention in that respect.
- 2.7 In general, the knowledge base on ecosystem effects needs to be reinforced. The research this requires is also relevant for the long term task with more search areas in the northern North Sea. Adjustments in wind farm layout may make it possible to mitigate ecosystem effects to some extent.
- 2.8 The focus on nature enhancing measures is expected to influence the overall status of the North Sea ecosystem in a positive way, and hence also the possibilities for the growth of wind energy from an ecological point of view. In the realisation that nature is not inherently 'makeable', viability and expected effects will first be investigated. This refers for example to measures to improve the survival or breeding success of critical species in the Netherlands or in the surrounding countries. Whether the latter will be feasible requires further attention. Nevertheless, the international dialogue on the necessity of a cross-border approach to the development of wind energy and other use in balance with the capacity of the ecosystem must be intensified: see also condition 10.

³¹ Same references as 9, 10, 11 and 28

³² Same references as 6 and 11.

³³ FSA Routing Baltic, Report no. 32774-1-MO-rev.1.0, MARIN (Koldenhof et al.), October 2021.

3. Shift to the north

The ambition in designating and using wind farm zones is to put all possible effort into a 'shift to the north'. This is because of:

- a. administrative agreements with among others Groningen, to invest in and stimulate electricity infrastructure in and around Delfzijl;
- b. stipulations within the North Sea Agreement, against the background that wind farm development in the north has fewer effects on other functions such as fisheries and maritime traffic, and may also have less ecological impact. This will be further investigated;
- c. the long-term offshore wind energy task, with economies of scale in the north after 2030 due to improved cost effectiveness and possible opportunities for transmission via molecular energy carriers (hydrogen) and connectivity with the energy infrastructure from and to other North Sea countries (energy hubs).

The intended 'shift to the north' ties in with the search areas for wind energy after 2030, almost all of which lie in the north (see section 9.4). For the period through to 2030, a possible first step could be taken by making use of wind energy area 5 east. This of course subject to the condition of ecological integration, as described in point 2.6.

4. Interaction with maritime traffic

- 4.1 Through wind energy area 1 and IJmuiden Ver (north), a clearway between IJmuiden and Newcastle is required, also connecting with the Fair Isle Passage and with the future Northern Sea Route. The minimum necessary width for this clearway will be 6,400 metres. In particular in wind energy area 1, the location of the clearway will be further specified. As long as mining platform K13-A remains in position and also in coherence with the safety zone required for that platform, the width of the clearway through this wind energy area will be 7,400 metres.
- 4.2 Wind energy area 5 east shares a boundary in the south with the East Friesland shipping route, which continues through to the German EEZ, along which route there are also wind farms planned. Safety margins along this route will be determined in consultation with Germany. Against this background, space for a wide safety margin has been displayed on the structural vision map. To the west, area 5 east shares a boundary with the international shipping route towards the Baltic Sea, known in Germany as route SN10. On the basis of the safety study (Formal Safety Assessment, FSA)³³, a connecting corridor through area 5 east has been decided against. The issue of dealing with the shipping route to the Baltic Sea in combination with the area 5 median strip will be addressed during the partial review.

4.3 As a result of the construction of wind farms, the risks to shipping safety are increased. These increased risks will be evaluated on the basis of model studies. Mitigating measures will be necessary in order to limit the risks as far as possible. These measures have been mapped out in qualitative terms. Over the coming years, they will be elaborated in greater detail when drawing up the roadmap 2030+, and the site decisions to be taken. Taking the required measures is a precondition for the further development of wind farms. At the very latest when the definitive PNZ is adopted, consequential costs and their coverage will have been charted out.

5. Interaction with mining

In some parts of the designated wind farm zones - above all in wind energy area 2 north - there are mining platforms that will remain in production after 2030. Research will have to show how many GW can be realised in these particular areas, before 2030. Also with regard to the other wind farm zones, in consultation with the mining sector, an assessment will be made of how wind energy and mining, and possibly also CO₂ storage, can be combined in time and space.

6. Interaction with fisheries

With regard to drafting this PNZ, the current value for fisheries in the search areas has been determined³⁴. In the framework of the North Sea Agreement, funds have been reserved for adapting the nature and size of the cutter fleet, with improved sustainability being a key objective. The measures are elaborated in the Cutter Vision. Over the course of the further development of offshore wind energy, a decision will be taken on the necessary additional funds needed for mitigating measures. At the very latest when the definitive PNZ is adopted, consequential costs and their coverage will have been charted out. National government will closely monitor which actual effects occur for fisheries in practice and how the fishermen intend to alter their activities if less space is available for fishery and if a whole series of developments takes place simultaneously. National government will remain in consultation with the fisheries sector on these issues.

³⁴ Same reference as 14.

³⁵ Recreational shipping may only sail in a wind farm via the through passage.

³⁶ Same reference as 18.

³⁷ Same reference as 5.

7. Multifunctional use

The starting point is that whenever possible, wind farms should be available for multifunctional use. This includes recreational shipping³⁵, forms of fishery and aquaculture, and renewable energy generation other than by wind turbines. National government will guide these developments by means of area assessments (in preparing the site decisions) and in more detail, in the event of issuing area passport guides following the release of sites (see section 10.2).

8. Density of wind turbines

In determining the potential capacity that can be installed in a particular area, 10 MW per km² has been assumed, whereby the areas are not entirely filled, with a view to further spatial integration. The density of 10 MW per km² will remain the starting point in the further elaboration of the roadmap and in site decisions, in order to ensure an efficient use of the North Sea within the carrying capacity of the ecosystem. 10 MW per km² is a higher density than previously adopted, which at the time was 6 MW per km². Higher density will result in lower electricity output. Studies by Blix³⁶ have shown that profitable wind farms still remain possible in the designated wind farm zones. At the same time, there may be other advantages to lower densities, such as fewer ecological effects or more possibilities for multifunctional use. For that reason, the starting point of 10 MW/km² may be altered, if research shows that efficient use of space remains possible, and that this results in an improved balance between energy production, combined use and ecological capacity.

9. Relationship with cable landing points

The generated wind energy must consequently be transmitted to land, for the time being via electricity cables. Based on the results of the VAWOZ 2030³⁷, an initial selection has been made of potentially feasible routes. Over the coming years, possible cable routes will be investigated for all new zones to be designated. It remains uncertain whether all these routes are actually viable, desirable or even permissible; this will only become clear when the studies have been carried out in the framework of spatial procedures. In distributing the maximum volume of 10.7 GW over the designated wind farm zones in the Roadmap 2030+, there will be intensive consultation with the studies into the cable routes, in order to ensure compatibility. The site decisions for wind farms and decisions on accompanying cable routes will also be implemented as a coherent process. This will ensure that for each wind farm, the offshore location and cable route are viable, so that both the construction of the wind farm and the cable landing point for electricity can be achieved.

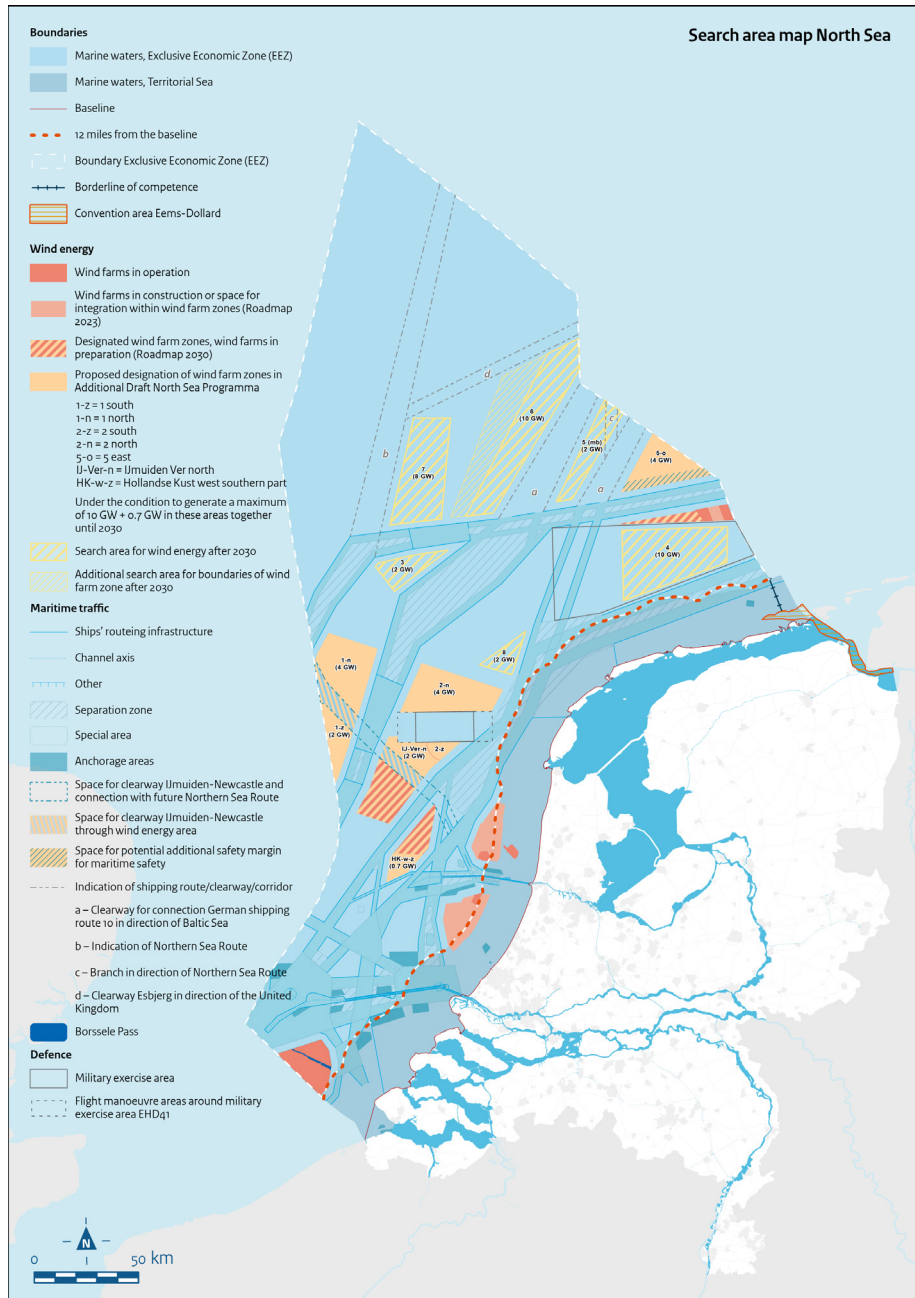
10. International cooperation

Within the planned growth of offshore wind energy, international cooperation is becoming increasingly urgent. The tension between offshore wind energy, nature objectives, fisheries and other use is by definition a cross-border issue; other North Sea countries are also looking to find the right balance in this. Spatial developments and measures in the neighbouring countries will have effects on the ecological space in our part of the North Sea, and vice versa. There are also European frameworks and guidelines that call for international coordination in the field of achieving good environmental status and spatial planning. Ecological effects, research into those effects and measures that can be taken in order to encourage nature enhancement must therefore be seen in an international perspective. This can for example result in taking nature-enhancing measures at locations where they are most effective for good environmental status and protection of species in our country and in neighbouring countries.

Other examples of subjects that can best be viewed in the international context of the North Sea basin include: safeguarding the safe and efficient passage of international maritime traffic, international links between energy infrastructure and energy hubs and the protection of nature conservation areas. All these elements call for greater mutual consultation and coordination between the various North Sea countries in order to arrive at the balanced development of the North Sea. The match between European fisheries policy, European biodiversity policy and the elaboration of European climate goals will also require greater attention over the coming years. Against that background, the Netherlands has taken the initiative of developing a cross-border strategic approach together with the surrounding North Sea countries, so that among others spatial planning can be carried out in better mutual consultation. See section 9.6.

9.3.3. Structural coverage of integration costs

Before the definitive adoption of the PNZ as part of the NWP in March 2022, the integration costs of offshore wind energy at sea and on land will need to be structurally covered. With regard to offshore wind energy, this includes measures to help nature adapt, ensure fisheries and shipping safety, while in relation to onshore activities, it concerns the integration of the electricity infrastructure, the ecological boost package for the Wadden area and agriculture. If the required cover (for part of the integration costs) cannot be achieved, accordingly a proportional share of the expected wind energy until 2030 will not be developed.



Map 4: Search area map North Sea

9.4 Search areas and spatial reconnaissance

Search areas for wind energy beyond 2030

Over the coming decades, considerable further growth of offshore wind energy is expected, which in turn will demand additional space. The necessary space will be designated in a partial review of this PNZ. Preparation for this review will start following the adoption of this programme. The minimum scenario of 38 GW offshore wind energy according to the Netherlands Environmental Assessment Agency (PBL) will serve as the starting point for the scale of this task. In addition to the spatial reservations for wind energy previously made within the PNZ, on the basis of the 38 GW scenario, space will be required for a further 17 GW. The search areas map (map 4) shows the potential search areas in question. Together, these offer space for around 34 GW, which amounts to twice the required total. The ecological vulnerabilities and shipping safety risks of these areas have already been partially mapped out. Other studies still have to be started. Social costs and benefits have already been investigated and may have to be further investigated given the latest insights into energy hubs and energy transmission using molecular energy carriers such as hydrogen. For the wind farms beyond 2030, these too will have to fit in with the ecological capacity of the North Sea. For each search area, the following additional points for attention will have to be considered (non-exhaustive list):

Search area (#GW)	Points for attention and studies
3 (2 GW)	Relatively small search area, investigate the possibilities for connection with other wind farm zones.
4 (10 GW)	Overlap with military exercise area EHD42, investigate the possibilities of multiple use. In the southern section, additional shipping safety risks and need for more space between shipping route and wind energy area.
5 central strip (2 GW)	Shipping safety risks and routing measures of the clearway to the Baltic Sea will be further investigated in a Formal Safety Assessment. Consultation with Germany already underway.
6 (10 GW)	The search area map indicates additional search space (in a lighter colour). This offers the possibility, in the event of designation, of optimising the boundaries of this area in relation to nature, fisheries, maritime traffic or other use. Possibilities of energy hubs and energy transmission via molecular energy carriers such as hydrogen are being investigated. This includes an assessment of whether the existing gas infrastructure can be used in order to limit the spatial and ecological impact.
7 (8 GW)	This area is less unfavourable for fisheries than other areas, but the social cost effectiveness analysis (MKEA) revealed negative social benefits. The possibilities of energy hubs and energy transmission via molecular energy carriers such as hydrogen are being investigated. These developments may increase cost effectiveness. Investigation is underway into whether existing gas infrastructure can be used to limit the spatial and ecological impact.
8 (2 GW)	This is a relatively small search area requiring a higher density than 10 MW/km ² . Decisions will still have to be taken on the feasibility of wind farms in this area, taking account of high shipping risks, probably relatively extensive ecological effects, but fewer unfavourable effects for fisheries than elsewhere.

Maritime traffic

Guaranteeing safe international navigation of ships from the Dutch EEZ to the Baltic Sea and vice versa, and the need to ensure optimum use of the existing Polar route led to the decision to designate the following spatial indications for shipping routes, clearways and corridors. The growing size of ships and the necessity of routing measures as a result of new wind farms beyond 2030 also play a role.

- Northern Sea Route (NSR) connection. A number of routes are being investigated internationally. In the Dutch section, search space has been identified for a new route west of search area 7. Space has also been indicated for connecting routes for connections between seaports and the NSR.
- Esbjerg - United Kingdom clearway, north of search areas 6 and 7, to continue to facilitate the existing shipping route between Denmark and the United Kingdom.
- A clearway towards the Baltic Sea that connects with the German shipping route 10 (SN10). To guarantee international navigation from the southern North Sea towards Denmark and the Baltic Sea, in consultation with Denmark, Germany and Belgium, a clearway will be specified that connects to the SN10. Different options for the design of this clearway are being investigated in a Formal Safety Assessment (FSA). This included a consideration of the safety risks. This national clearway consists of connections with the SN10 and the NSR.
- This FSA is an essential building block for integrated consideration in an international context in order to determine the viable potential of search area 5 median strip, including the consequences for accessibility and safety of navigation, and for the investigation of possible mitigating measures.

9.5 Land-sea interactions

The spatial decision-making process at sea and in the main water system is organised differently from the process on land. On land and in large parts of the coast on the landside of the low waterline, national government, provinces, municipalities and water authorities have a shared responsibility for spatial policy. In all cases where activities on sea and on land require a coherent decision, coordination is required between the various layers of government, while respecting the responsibilities and powers of each.

In this section, the land-sea interactions that demand attention from multiple levels of government during the planning period are described. This provides public authorities with a compact overview of the joint agenda for the spatial-ecological and spatial-economic decision and policy-making process on the use of the sea.

9.5.1. Ecology, biodiversity and nature

In all large waters and the surrounding areas (such as dunes and islands), there are tasks for nature, biodiversity and nature recovery/nature development. The programmes of measures for the WFD, MSFD and Natura 2000 together ensure the good ecological status of the waters that form the transitions between land and sea, including all transitional waters. The dune areas also deserve attention. The EU Biodiversity Strategy (EBS), a vital spearhead within the EU Green Deal, aims to place biodiversity in Europe on the road to recovery, at the latest by 2030. During the coming planning period, the EBS for 2030 for the Netherlands and the neighbouring countries around the North Sea has to be elaborated. The ambition is to achieve 30 percent area protection, of which one-third strict protection, while ensuring the cross-border coherence among protected nature areas.

Based on the criteria for area protection elaborated and adopted by the EU in 2021 and the nature recovery targets to be laid down in law, clarity will be provided on which additional actions are (possibly) necessary for nature areas at the land-sea interface. This is specifically relevant with regard to migratory birds, migratory fish and their respective habitats. National government and local and regional authorities (primarily provinces) will work together on this, each from their respective responsibilities. Cooperation of this kind is also relevant in the implementation of

the Zero Pollution Action Plan of the EU, in order to reduce air, water and soil pollution to levels that are not harmful to people and nature. This action plan will be further elaborated in the EU in 2021.

9.5.2 Energy: offshore production, conversion into hydrogen and connection to land

The offshore energy transition and the shore landing of energy produced offshore during the planning period will be a dominant focus area for national and regional governments.

The shore landing of energy, in the form of electricity or hydrogen, offers huge opportunities for the regions concerned. In the transition to a CO₂-neutral society by 2050, the availability of green energy will become increasingly important. Moreover, offshore wind energy is crucial for the Netherlands in order to achieve its climate goals and at the same time retain employment in the country. The supply of electricity from the sea is already an important reason for (foreign) companies to establish themselves in the Netherlands and this importance is only set to grow further. Shore landing regions are already responding, as reflected for example by Groningen's hydrogen ambitions. Realisation of these ambitions will depend entirely on the timely availability of a substantial energy supply. Over the coming decades, this will determine the development of the region. For the regions Rotterdam, Zeeland and the North Sea Canal area as well, timely availability of energy is important to make a start on creating a hydrogen chain that in the long term could take over the role of fossil energy in these areas.

To facilitate shore landing by 2030, a start must be made on the spatial procedures in good time, since the procedures themselves will take between 8.5 and 10 years. Once it becomes clear where, how much and in what form energy from the sea will be brought to land, there will also be clarity on the nature of the infrastructure that will have to be created on land and what economic effects this will bring about. By bringing the electricity from offshore wind energy to shore, mainly at locations where there is high demand, the volume of new infrastructure that has to be built on land can be limited. This could place severe demands on the municipalities close to cable landing locations near industrial clusters. In the short term, the infrastructure already in place will make certain regions more attractive than other regions but in the long term (after 2030), other potential cable landing locations will become available to make the shore landing of offshore wind energy as efficient as possible.

On the road to 2040, the possibilities for the shore landing of energy in the form of molecular energy carriers such as hydrogen are expected to grow. The big advantage of transport of this kind is that in part, infrastructure already installed offshore (pipelines) can be used, and that more energy can be transmitted simultaneously through a single pipeline, thereby restricting the spatial impact both on and offshore.

The Ministry of Economic Affairs and Climate Policy is responsible for the necessary onshore and offshore infrastructure. The main energy infrastructure and sustainable industry infrastructure programmes are collaborating with the Investigation of cable landing points for offshore wind energy (VAWOZ) on the energy infrastructure in the Netherlands, with a view to regional opportunities.

9.5.3 Carbon capture and storage (CCS) and storage and transmission of hydrogen

Within the Climate Agreement there is attention for capture and storage of CO₂, including the agreement that CO₂ will only be stored beneath the seabed. The aim is above all to restrict the emission of CO₂ by specific industrial sectors. In the future, storage locations in the (deep) seabed will also be relevant for the large-scale production and storage of green/blue hydrogen or the realisation of negative emissions.

The CO₂ captured at source will be transmitted from the industrial clusters to the North Sea by pipeline. A maximum (ceiling) for this transmission has been laid down in the Climate Agreement: until 2030, there will be a maximum of 7.2 megatons of industrial CO₂, supplemented with a maximum of 3 Megatons of CO₂ from the electricity sector. In 2020, together with Energie Beheer Nederland (EBN) and the Gasunie, the Port of Rotterdam Authority demonstrated the feasibility of a robust basic infrastructure (or backbone) for the capture and transmission of CO₂ from companies in the port area, which could then be stored in (empty) oil and gas fields beneath the seabed. This work took place in the so-called Porthos project³⁸ (Port of Rotterdam CO₂ Transport Hub & Offshore Storage). The possibilities of a large-scale CO₂ transport infrastructure are also being investigated in the CCS Aramis (Maasvlakte) and Clean Underground Sustainable Transport (CUST, North Sea Port) projects.

³⁸ www.porthosco2.nl/

In the planning period 2022-2027, the various stakeholders will continue to discuss the ideal way to arrive at well-supported decisions on the infrastructure, both for CO₂ transport from land to the North Sea, and for hydrogen from sea to land.

9.5.4 The onshore component of more sustainable maritime traffic

Making activities at sea more sustainable, in particular the activities of maritime traffic off the coast, will be continued over the coming period. This will help reduce the acidification of the sea, and will help reduce the deposit (of substances like nitrogen) in the dune areas from activities at sea. To make it possible to achieve more sustainable maritime traffic, physical alterations will be necessary in the ports. This is a task in which national, provincial and municipal government and the port authorities have a shared role.

9.5.5 Marine protein: proteins, fish, fish farming, shellfish and shellfish farming, mariculture and saline agriculture

More sustainable fisheries are a central element of the North Sea Agreement and of the Cutter Vision of the Ministry of Agriculture, Nature and Food Quality. The policy and policy measures for existing shellfish farming and mariculture in inland waterways such as the Oosterschelde, in the Wadden Sea and in the coastal waters will be continued. For the production of shellfish for human consumption, protected shellfish waters have already been designated. These are the Wadden Sea, the Voordelta, Grevelingen, the Oosterschelde and the western part of the Westerschelde.

Following the North Sea Agreement, an investigation was launched in 2021 into the possibilities for a sustainable blue economy based on marine proteins. It turned out that the cultivation of fish, shellfish and crustaceans outside the coastal zone is complex and not (yet) economically profitable. For that reason, space at sea for testing sustainable innovations in the food production of marine proteins will be an area of attention for national government, to be tackled in collaboration with the fisheries sector(s) during the planning period. As part of the NSP, national

government (Ministry of Agriculture, Nature and Food Quality and Ministry of Infrastructure and Water Management) will also be conducting research into the ecological space for large-scale production of seaweed (up to 400 km²). This research will also provide an insight into the logistics of ports from which the work can be carried out, and into the locations for processing the harvest. The Ministry of Agriculture, Nature and Food Quality will also examine the cultivation of marine proteins on land. This is possible for seaweeds and certain fish species, and may offer logistic advantages and deliver better business cases. At the land-sea interface, there are also opportunities for the cultivation of saltmarsh vegetables such as sea lavender, sea lettuce and glasswort, as well as potatoes and tomatoes. Among others in Zeeland (the aquaculture area around the Colijnsplaat/Kats) and on Texel practical testing is already underway. This could offer prospects for areas that suffer from salinisation and areas along the coast. The strategy for food from the sea will take on more concrete form over the coming planning period.

9.5.6 Ports

All Dutch seaports and inland shipping ports are subject to the policy outlined in the Havennota (Port Policy Document) 2020-2030³⁹. With regard to the interaction between land and sea, the Port Policy Document pays specific attention to (sea) ports and the hinterland in transition. The policy efforts are structured according to eight integrated themes, including accessibility and logistics, economy and innovation, sustainability, spatial environment and labour market. Based on the characteristics of the port areas, the agenda-setting efforts of national government in the Port Policy Document are focused on the clusters mainport Rotterdam and Moerdijk, Amsterdam Noordzeekanaalgebied, Zeeland/Scheldebekken, Groningen/Eemsmond and the Dutch inland shipping ports.

In current policy, the Port of Rotterdam occupies a special position due to its economic size and scale. This means that if there is an equal social score, projects in the mainport Rotterdam take precedence over investments in the other ports of national importance. However, in part based on the recommendation from the Council for the Living Environment and Infrastructure (2016)⁴⁰ 'Beyond Mainports' which suggests broadening the vision on mainports, the Ministry of Infrastructure and Water Management intends, more than in the past, to consider the allocation of funding to the mainport in conjunction with the development of other important clusters, such as the Brainports and Greenports and the logistic system of seaports and inland shipping ports.

Other seaports such as Scheveningen, Harlingen and Den Helder are primarily of local or regional importance in terms of storage and transshipment. When it comes to investments in accessibility, these seaports receive support from local and regional governments and as such are not directly eligible for MIRT (multi-year infrastructure, spatial planning and transport programme) investments by national government. Although in economic terms the port of Den Helder is not of national importance, given the combination of civilian and military interests, it is a national seaport of a special category. Den Helder is the homeport of the Royal Netherlands Navy and the Coastguard. The Defence Organisation is appointed as National Harbourmaster in accordance with the Shipping Traffic Act. There is potential for further development in northern Noord-Holland based on offshore wind energy and the focus on hydrogen. To reinforce maritime development in the region, national government is willing to invest up to 5 million euros as part of the third round of Region Deals.

³⁹ Parliamentary Papers II 2020-21, 31 409, nr. 306.

⁴⁰ www.rli.nl/publicaties/2016/advies/mainports-voorbij

9.6 Maritime Spatial Planning and international cooperation

International cooperation in the maritime spatial planning process (MSP) is aimed at ensuring ‘that maritime spatial plans are coherent and coordinated across the marine region concerned’. This is a requirement in Article 11 (2) of the MSP Directive.

To implement this requirement, an official working group, the North Sea Maritime Spatial Planning Collaboration was established in 2020, with the task of specifying collaboration between the North Sea countries in a structural way. The cooperation includes coordinating spatial planning with the relevant Member States and the authorities in third countries in the North Sea region. Norway is a member of the working group, and the United Kingdom, Ireland and Iceland have been invited to join.

The objectives of the MSP working group are:

- to act as a platform for long-term cooperation on the cross-border aspects of maritime spatial planning;
- to draw up cross-border strategies and plans for the efficient and optimum use of the North Sea;
- to exchange and generate new data and information;
- to exchange experiences and best practices;
- to coordinate knowledge from various bodies (hydrographic services, OSPAR, international cooperation on (wind) energy on the North Sea);
- to coordinate, initiate and harmonise new cross-border projects (co-financed by the EU) that are able to support maritime planning in the North Sea countries.

Cooperation between the North Sea countries is self-evident and is already taking place with regard to numerous subareas of maritime spatial planning: bilaterally, multilaterally (as in the European Expert Group for MSP of the European Commission, OSPAR, IMO and ICES and in projects like North SEE Interreg, SEANSE (ecological effects of offshore wind farms) and North Seas Energy Cooperation. There are consultation meetings on (safety of) maritime traffic, environmental conditions, nature areas, fisheries, monitoring and offshore wind farm developments. There are also exchanges and consultation meetings on the plans of the various North Sea countries.

In September 2021, the EU project *Emerging topics in ecosystem based maritime spatial planning for the North and Baltic Sea Regions* (eMSP NBSR) was launched. This project deals with emerging topics for cross-border MSP, such as climate change and the EU Green Deal. This project is set to run until the start of 2024, and will involve participants from all EU North Sea countries, and the majority of Baltic Sea countries.

Investigating greater international cooperation in the North Sea

Section 2.3 deals with the international strategic ambitions for the North Sea. These include expanding the area of protected nature areas to include 30 percent of EU waters, with strict protection for one third of that area, nature recovery targets to be laid down in legislation, enhanced ambitions for energy from the sea within the limits of the good environmental status and the transition to a fully sustainable blue economy.

In May 2021, the European Commission (EC) published a strategy on the transition to a sustainable blue economy. One of the objectives of the EC is to draw up a tailor-made strategy for each European sea basin. The overarching goal is to expand strategies of this kind into neighbouring countries, with which the EU shares sea basins, living marine resources and geo-economic characteristics. In line with this objective, the Netherlands started in 2021 to investigate the benefits of closer cooperation between North Sea countries, aimed at achieving shared international and national goals, such as the marine-related sustainable development goals of the UN for 2030, and the goals laid down in the Marine Strategy Framework Directive (MSFD).



The implementation of the NSA, the underpinning of spatial choices on offshore wind energy, nature areas and ships' routing infrastructure, and the research to be undertaken in each of those fields, have a clear international dimension: see also section 9.3.2, condition 10. There is coordination with other North Sea countries on cross-border issues and effects. For the future, it is important that this cooperation will be further strengthened. Spatial pressure on the North Sea is growing; the blue economy must be made sustainable, the protection and reinforcement of nature demand greater efforts, and there are opportunities for international connections for the energy infrastructure. The process of developing a North Sea basin strategy is taking place in dialogue with the other North Sea countries, the Dutch coastal provinces and the North Sea Commission. The EC will be invited to share its experiences in drawing up strategies for other sea basins.

The aim is to draw conclusions on a North Sea basin strategy with all stakeholders in the first half of 2023. In the meantime, the Netherlands will work to achieve results on the shorter term through the existing North Sea collaboration bodies and within OSPAR. Examples include cooperation aimed at the harmonisation of standards, cross-border shipping routes and measures for reinforcing biodiversity and nature, as outlined in this NSP.

Section 1.6 discussed international consultation and harmonisation of this spatial plan as part of the NSP/NWP.





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Disclaimer:

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