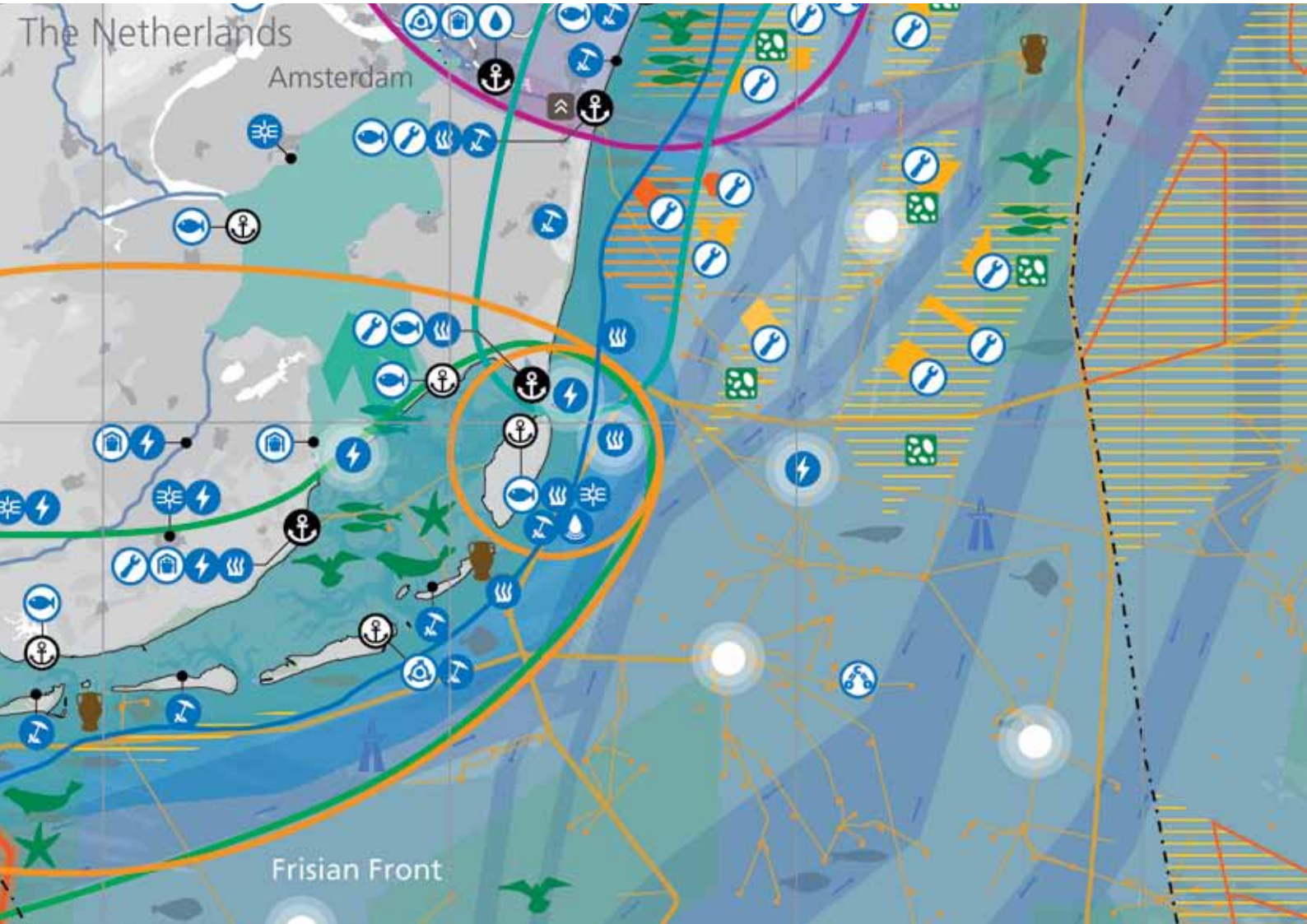
North Sea 2050 Spatial Agenda

"The report of joint research into the long-term potential of sea and coastal areas, translated into a vision, series of ambitions, opportunities, points of action and maps."



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Our reference
IenM/BSK-2014/75484

Appendix(ces)
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Date 28 July 2014
Subject North Sea 2050 Spatial Agenda

Dear Chair,

It is with great pleasure that I hereby offer you the North Sea 2050 Spatial Agenda, partly on behalf of the Minister and State Secretary of Economic Affairs. In the committee debate regarding the North Sea, dated 24 April 2013, I declared that a North Sea spatial agenda would be formulated regarding an entire integrated maritime and marine policy, without taking over any ongoing policy dossiers. An agenda that is in anticipation of the update of current policy[1]. Like the spatial agendas on land, the North Sea 2050 Spatial Agenda works along the lines of vision, potential, ambition, challenges and measures. The North Sea spatial agenda provides themes and topics that could receive further elaboration in the North Sea policy plan for 2015-2021, which is part of the National Water Plan 2 (NWP).

As I indicated in earlier discussions with your House, the North Sea is becoming increasingly busy. This will only increase towards 2050. This obliges us to make smart future-proof choices. After all, waterways, nature areas, wind farms and platforms are planned over several decades. Our choice for a development-focused approach to the sea that gives space for new initiatives and enables the sea to be managed flexibly, means that a long-term perspective is desirable.

The North Sea 2050 Spatial Agenda, makes connections between the North Sea's future opportunities and existing developments and challenges. There is also a connection between the agenda for the sea and spatial agendas on land. As we concluded last year, a number of elements from the RLI's 2011 Advice, "A Sea of Opportunity", form the starting point:
1) think from the sea;
2) do this with all stakeholder parties; and,
3) use the strengths of development and invitation planning.

1the policy document North Sea 2009-2015, which is part of the National Water Plan.

The North Sea spatial agenda is the result of an intensive process of consultation and cooperation in the period June 2013 - March 2014, between a multiplicity of organisations and parties that are involved in the North Sea (from nature, fishing, mariculture, shipping, energy, recreational divers, anglers, tourism, cultural heritage, science and government employees, to artists and children). The effort and creativity that emerged during the sessions have produced a product that functions as a stimulating start document for further development of plans for all existing and potential users of the North Sea.

The strength of the North Sea 2050 Spatial Agenda is a joint framework, which elaborates on a future-proof robust use of the sea. This includes an explicit focus on the consequences for the effects on land. The joint long-term analysis, cohesion between the ecological and economic systems, and the relationship between what is possible globally, on a North Sea scale and in our own part of the North Sea[2], delivers valuable insights to fully utilise the sea's strengths. The spatial agenda has provided a more detailed vision of the sea and has identified five themes on which to focus.

Vision of the sea from the North Sea 2050 Spatial Agenda
It is in the interest of the Netherlands to have a safe, clean, healthy and ecologically diverse North Sea that contributes to economic and social needs. The sea also has an important social-cultural and historical meaning for the Netherlands and is a source of knowledge. The sea can only contribute in optimum form if its natural resilience is further restored and expanded, and its appeal is retained for everyone. Traditional use of the sea is in transition. The core of the new policy for the North Sea is the joint management of desired use in space and time, ecology and economy and the further development of the natural potential of sea and coast. We strive to combine as many functions as possible. In some cases functions will need to be separated, for example for safety reasons or vulnerable ecology.

The five North Sea 2050 Spatial Agenda themes
From the vision on the North Sea in 2050, the spatial agenda mentions five themes on which I would like to focus:
1) building with North Sea nature;
2) energy transition at sea;
3) multiple/multi-functional use of the space;
4) connection between land and sea;
5) accessibility/shipping.

International cooperation and opportunities for export play an important role in all themes. A summary of these themes can be found in Appendix 2.

The North Sea 2050 Spatial Agenda forms the start of a long-term integrated maritime policy that gives direction to trade in the short and longer-term. There is still much to be achieved both at national level as well as on the scale of the entire

2 For the spatial agenda the emphasis lies on opportunities, people, nature, culture and space. Legally reference is made to the EEZ: the exclusive economic zone. This title is not considered to be adequate to the North Sea Spatial Agenda, because the EEZ emphasis lies mainly on legal frameworks for economic activities.

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North Sea. That certainly applies to the marine environment situation towards 2050. The starting point is not to change existing European agreements and obligations regarding fishing and the marine environment.

In the coming year the following three elements will need to be investigated further: 1) the international North Sea strategy, (2) the further exploration of developments in all coastal regions and towns and (3) the question of financing possibilities and division of roles between governments, the business world and knowledge institutes, including the possible role for the Top Sectors. I have included the long-term vision of the North Sea and the long-term research agenda in the design of the new North Sea policy document that you will receive in December of this year as part of the National Water Plan 2. This also comprises a detailled implementation agenda for the period 2015-2021.

Finally
As Appendix, I am also including the publication from the Council of Children, which has formulated its own advice for the North Sea in 2050, under the leadership of the Missing Chapter Foundation. Cooperation, making choices, making clear agreements, rewarding and telling a good story, are the main messages of this advice. I will take these messages with me in the further elaboration of North Sea policy.
The North Sea 2050 Spatial Agenda was realised to an important extent through the cooperation of many stakeholders. With them I would like to start to work on the implementation.

Yours faithfully,

THE MINISTER OF INFRASTRUCTURE AND THE ENVIRONMENT

Ms M.H. Schultz van Haegen

Ministry of Infrastructure and the Environment

Our reference
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Appendix 1: Summary of the five themes

1) Building with North Sea nature

Sustainable food supply from the sea (fishing) and nature are two subjects that demonstrate cohesion and mutual dependency. This partly explains the inherent tensions that exist around these two topics. Nature organisations classify fish-rich grounds as being important natural areas and sketch a vision that traditional (seabed disturbing) fishing impoverishes biodiversity. Conversely, it appears that many fishermen have specific and historic knowledge to bring to the table about nature in the sea. Having a common denominator between the marine ecosystem and the food naturally available in the sea, appears to be useful in discussing both topics. Using the sea and the marine nature in a way that leads to strengthening the marine ecosystem, nature and biodiversity is a shared future vision that has emerged from the North Sea 2050 Spatial Agenda as an ambition for nature.

A healthy marine ecosystem is characterised by its resilience to external influences, such as climate change, and through significant biodiversity. Good environmental status applies as a basic condition for man's use of the sea on the road to 2050. To allow the North Sea ecosystem to recover and to balance the pressure of human use with the marine system's resilience, the Government is currently implementing the European Marine Strategy Framework Directive (MSFD) and the network of Natura 2000 areas at sea. The re-formed European Common Fisheries Policy (GVB) and the further sustainability of the fishing industry will provide a contribution to achieving a good environmental status at sea[3].

Discussions during the North Sea Spatial Agenda process have shown that integrating activities for nature and simultaneously giving space for food supply via sustainable fishing is an important but not simple issue. There are still many knowledge gaps. Much is still not known regarding the working of the marine ecosystem and the influence of long-term natural processes. This also applies to the effects of climate change, such as global warming and the acidification of seawater and the effects these have on species composition. Much research is being conducted (across the world and in the North Sea) in order to better understand these uncertainties. Gaps in the knowledge required for good decision-making cannot be filled by the science domain alone. Good interplay is required between users, governments and other stakeholders as well as the scientific community. Discussions about the North Sea Spatial Agenda showed that this applies particularly to the relationship between nature and fishing.

Without changing the implementation of existing European fishing and marine environment agreements, the interested parties have agreed that they will remain in discussion about the future after 2021. In doing this parties can include developments and new insights (including the results from monitoring the marine strategy and developments in the fishing industry). This will be helpful in adaptive management of the marine environment in the longer term; for example the revi-

In response to questions in the House concerning this I have recently again explained in my letter those actions that will be undertaken in the coming years in the framework of the Marine Strategy. [letter dated 22 April 2014 reference IENM/BSK-2014/72036]3

sion of the Common Fisheries Policy in 2024 and the following six-yearly cycle of marine strategy that starts in 2018.

The transition challenge sketched by the spatial agenda comprises the strengthening of the sea's intrinsic natural strength, both in ecological as well as economic respects. This will mean that by 2050 the sea will have much higher social value. This will not succeed through only nature and environmental protection and addressing current problems in the short term. The spatial agenda argues that more is possible. I would like to stimulate the use of the sea in ways in which it becomes cleaner and more healthy (for example by cultivating seaweed), or recovers more rapidly after use (for example the way in which sand extraction areas are left). In addition, the State Secretary of Economic Affairs will take the initiative for further research into the possibilities for (natural) hard substrate, such as the recovery of oyster beds and the contribution of such things as offshore wind farms to the recovery of biodiversity.

2) Energy transition at sea

The realisation of wind farms will result in energy generation at sea using significantly more space. Leisure and commercial shipping will therefore need to sail around these areas and activities such as fishing are currently being transferred by this development. The challenge is to be economical with space and utilise opportunities to increase energy generation per square nautical mile. The market for tidal and wave energy is focussing increasingly on being able to convert lower current speeds and limited wave heights found in Dutch waters into electricity. The cabinet would like to offer parties the opportunity to test at open sea. Energy farms at sea are an attractive vision for further innovation. Via an explorative study, the Minister of Economic Affairs and I, together with the involved parties, will map out the future social and other advantages and disadvantages of such an integrated energy farm. From the consideration about the use of space in the long term, it emerged from the process of the North Sea 2050 Spatial Agenda that there is a significant need for an energy programme for the 2030-2060 period, which focuses on both gas stocks at sea, the future of wind energy and other forms of energy generation. In that programme numerous other developments, such as a working island for wind energy, opportunities for deep geothermal energy and the international electricity network at sea (*North sea grid*) can also be given a place. After all, investments for this also extend across a similar long term.

3) Multi-functional or multiple use of space

In a busy country with limited surface area, cooperating on spatial challenges is one of the strengths of the Netherlands. We can also use this strength at sea. Multi-functional use of the North Sea in 2050 is based on integrated planning in space and time through combining functions. Sparing the most important ecological areas combined with the challenges for safe and smooth shipping, fishing and recreation, requires smart and different handling of locations at sea to provide added value. Energy areas at sea in which electricity is generated using different techniques is the vision of the North Sea in 2050. The spatial agenda shows that such energy farms, combining wind, tidal and wave energy, are

promising. This also applies to the combination of seaweed cultivation and aquaculture. The combination of aquaculture and/or mariculture with wind farms is less obvious, unless the wind farms were to be located close to the coast. Research is still being conducted into the possibilities for fishing and leisure sailing in offshore wind farms. Safety of commercial and leisure craft and financial and other risks for energy companies are core aspects in this. The starting point in the current policy is not to disturb the seabed because of the cables that connect the wind turbines with the network. According to the spatial agenda's vision, in the future areas will only be demarcated for one function (temporarily or permanently) if the vulnerability or the safety of the area demands this.

4) Connection between land and sea

The requirement to protect our investments on land against the power of the sea has resulted in a strong separation between land and sea. The downside of this is that we no longer see all the aspects of the North Sea as part of the Netherlands. That's why connecting sea and land is a theme in the North Sea 2050 Spatial Agenda. This theme will focus on recreation, tourism, culture and the connections needed to land goods and services. It also concerns logistics and other operational connections to offshore locations and the social and administrative views of land and sea.

5) Accessibility and shipping

Safe and environmentally-friendly shipping, accessibility of Dutch ports and a smooth passage are the current and future ambitions for shipping. It is expected that the increase in shipping traffic and bigger loading streams (containers and bulk) will not lead to an extreme increase in the number of shipping movements towards the ports in Zeeland, Rotterdam and Amsterdam. But this doesn't mean that nothing will change. Larger vessels demand more space and the Willem-Barentsz route along the North Pole will be utilised more and more. Joint studies with governments, ship owners and ports in North West Europe should reveal how this could precisely develop in the long term and the precise consequences this will have for use of space in the north western section of the North Sea. The traffic image at sea will change as a consequence of more intensive coastal shipping, including coastal traffic from and to Great Britain, and the shipping movements to and from offshore activities, for example the construction and maintenance of offshore wind farms. We will need to carefully monitor the effects of this on space, safety and ecology. I&E will discuss with offshore developers the expected traffic resulting from construction and maintenance of energy farms and other area developments at sea. This information will be elaborated into models that can be used to safeguard safety and precautionary measures for the environment.

Attention for **international cooperation/strategy**
The identified themes are relevant to all North Sea countries, to a greater or lesser extent. The division of administrative and political responsibility especially for the territorial waters (up to 12 nautical miles) differ per country. The soon to be expected European directive for maritime spatial planning[4], demands closer international cooperation in planning and to incorporate land-sea interactions in this. The North Sea 2050 Spatial Agenda process has already consulted with the other North Sea countries regarding a North Sea-wide planning and expected developments. This concerned mainly energy, ecology and shipping. International consultation will be intensified when formulating the successor to the National Water plan. Cooperation with the Dutch coastal provinces is also seen as an important extra step. All coastal provinces are members of the 'North Sea Commission' that in 2012 presented an integrated vision on pragmatic cooperation within the North Sea region.5 The coastal provinces have a huge interest in cooperating about the North Sea on sustainable prosperity issues, for example in the tourist industry, connections between ports, energy and climate. That is why I will be consulting with them in the short term to explore how the Government and regions can accelerate towards a North Sea-wide approach from the Netherlands.

Attention for **utilising export opportunities**
The challenges in the 5 sketched themes and development opportunities together with knowledge of the sea and experiences with the broad sectors of hydraulic engineering offer all kinds of opportunities to strengthen export position of the Netherlands. I see this as an intersecting benefit. That is why I will be consulting with all top sectors. All nine actually have a relationship with the North Sea. Developments at sea and the connected coast, demand knowledge, skills and cross-sectoral solutions and cooperation, both in terms of research as well as in tackling barriers. I see opportunities in many areas, but would like to highlight an example, that of energy from the sea. More clarity is needed regarding the perspective of sustainable marine energy techniques, for energy provision in the Netherlands and as export opportunity in the short and long term. That is why the Ministries of Economic Affairs and Infrastructure and Environment are producing a study in the coming months. Important to mention here is the initiative from the European Commission for an Action Plan for Ocean Energy. The objective of this in the period 2014–2020, in collaboration between EU member states, is to help the involved sector to achieve viable applications of promising technologies.

4See my letter of 24 March 2014 TK dossier no 33 601

5The North Sea Commission is part of the international network of coastal region's Conference of Peripheral Maritime Regions.

Appendix 2: North Sea 2050 Spatial Agenda

Content

Introduction: an Agenda for the North Sea 2050 5

1 The North Sea – a marine ecosystem 11

2 A North Sea agenda with possibilities 15
2.1 Building with North Sea nature 17
2.2 Energy transition at sea 25
2.3 Multi-functional or multiple use of space 35
2.4 Connection between land and sea 39
2.5 Accessibility and shipping 49

3 Mapping all developments 59

4 A broad agenda for the North Sea 63
4.1 Utilising export opportunities 63
4.2 International cooperation agenda 67
4.3 Management and governance 69
4.4 Recommendations for an adaptive North Sea agenda 71

5 Conclusions and a new vision on the North Sea 75

Appendix: Overview of parties consulted during the process of the North Sea 2050 Spatial Agenda 79

Photo: Tineke Dijkstra, Hollandse Hoogte.

Introduction: an Agenda for the North Sea 2050

Drawings of the sea

No precise drawing can be made of the use of the North Sea in 2050. Yet mapping out as many possible opportunities, developments and challenges and linking these challenges and opportunities to spatial agendas on land, has proven to be worthwhile. The exploration for North Sea 2050 was carried out from the perspective of the entire North Sea and the Dutch exclusive economic zone, including territorial waters.

The North Sea 2050 Spatial Agenda was realised by examining and mapping out the power and potential of the sea itself, together with interested parties. That is why a northerly perspective has been chosen for this: ***you look 'from' the sea towards the land***. Various ongoing North Sea and coastal-related policy dossiers have been combined within the longer-term perspective.

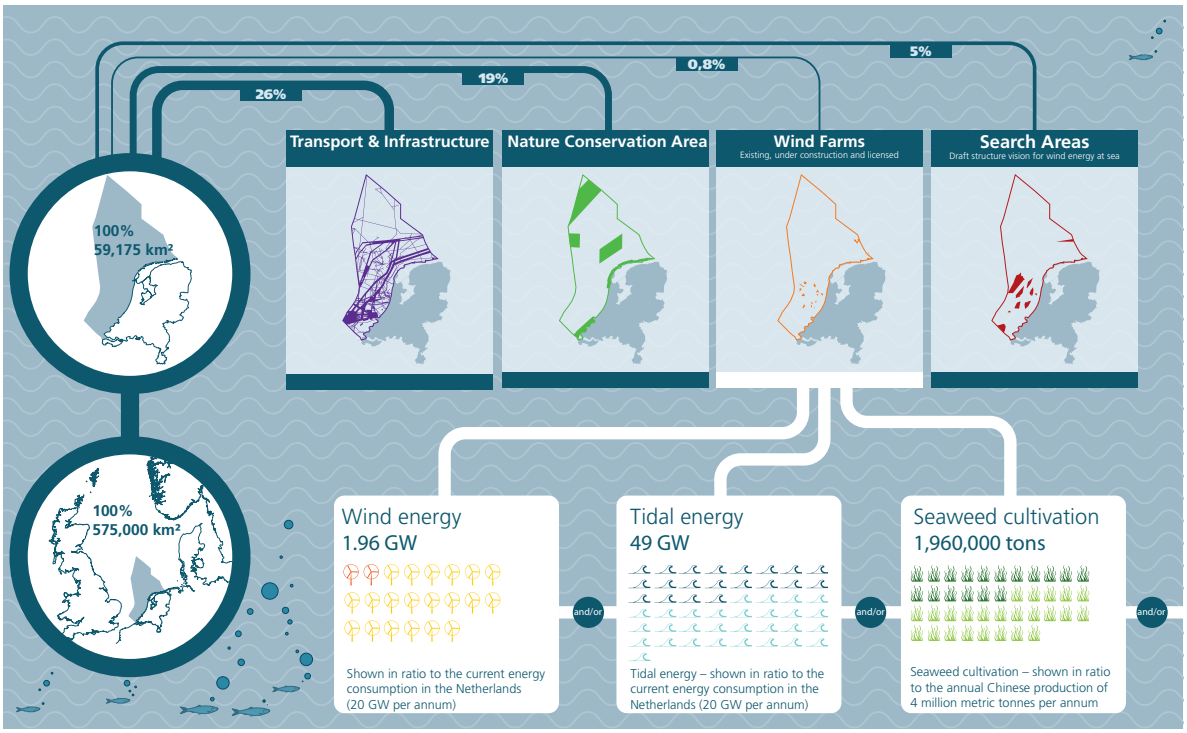
The strength of the North Sea 2050 Spatial Agenda is the joint framework for working with the sea and its relationships with the land. The joint long-term analysis, the cohesion between the ecological and economic system, and the relationship between what is possible globally, on the North Sea scale and in our own part of the North Sea[1] deliver valuable insights that enable full use to be made of the sea.

[1] For the spatial agenda the emphasis lies on opportunities, people, nature, culture and space. Legally reference is made to the EEZ: the exclusive economic zone. This title is not considered to be adequate to the North Sea 2050 Spatial Agenda, because the emphasis for the EEZ lies mainly on legal frameworks for economic activities.

You look 'from' the sea towards land.

The spatial agenda has provided a more detailed vision on the sea and has identified five themes on which to focus.

The starting point for this agenda was not to take over any ongoing policy dossiers, such as the detailing of agreements about the North Sea in the Energy Agreement, the reformed Common Fisheries Policy or the development of the Marine Strategy.



Info-graphic: Use of space North Sea

Opportunities for sustainable economic development of sea and coast

The five possible economic growth sectors of the European Blue Growth strategy have been investigated for the Netherlands: ocean energy, maritime and coastal tourism, aquaculture and mariculture (marine agriculture of algae and seaweed), marine biotechnology and seabed mining.

A spatial agenda has no policy status and does not represent a structural vision in the sense of the Spatial Planning Act. It is a form-free exploration of ambition, potential, challenges and possible measures. The outcomes and agreements made in or following a spatial agenda can influence policy, regulations and financing, for instance through translation in the Dutch National Water Plan and the North Sea Policy Document. Most important for this North Sea 2050 Spatial Agenda is the exploration of future multifunctional use and to reach an integrated overview.

A large number of parties and organisations involved with the North Sea followed an intensive process in the period between June 2013 and March 2014. The effort and creativity that emerged in this process have resulted in a product that functions as a stimulating starting document for further development of concrete and new plans for both existing and potential functions on the North Sea. Those helping included: entrepreneurs, representatives, leisure users, policy makers, managers and implementers from involved government agencies now and in the future (27 children from the Council of Children). They shared their interests, vision, knowledge, insights and wishes regarding the status design, use and management of the North Sea in the future.

Of course, there are many uncertainties and unknown factors on the way to 2050, but the joint exploration of this has proven valuable. At the start of the process much emphasis was placed on making an inventory of stakeholders' future views and visions. Amongst other items, these were 'caught' in the film "bycatch North Sea days". During the North Sea Congress on 13 March 2014 and with much enthusiasm participants discussed visions, potential, opportunities and challenges and worked on a spatial policy. There was also a focus on the interaction between activities on sea and on land. A jointly-supported conclusion emerged through working on the basis of the various stakeholders' commitments and interests. Stakeholders are not competitors by definition. They all want to achieve the best possible result: a clean sea, beautiful nature, leisure opportunities and economic utilisation. All taken together this leads to the big story of the North Sea. The result was converted into 14 map images. These maps also give insight into activities at sea and the land use connected to these activities. Together with the congress newspaper and twelve films this has led to the North Sea 2050 Spatial Agenda[2].

[2] The documents and films, reports and the congress newspaper that substantiate the spatial agenda can be found at Noordzeeloket.nl

From 'A Sea of Opportunity' to a spatial agenda

Cooperation and coordination are required in order to make optimum use of the sea within the boundaries of the marine system. The Council for Living Environment and Infrastructure suggested in 2011 that there is a need for a different spatial concept: integrated area development[3] along the lines of development planning. The Council advised working on integrated objectives focused on protection, innovation and sustainable use of the sea, and to focus less on facilitating the current use and functions that are not desirable on land. They proposed an ongoing development plan, with a clear timeframe and milestones. To achieve this, the Council advised creating a publicly accessible network, from which governments can develop a joint knowledge base together with stakeholders. The stakeholders should be given the responsibility to work with the government to formulate and elaborate the presented challenges. Finally, the Council advised developing policy instruments (and deploying these) that would contribute to sustainable development of the North Sea.

The Government took on board this development-focused approach towards the sea as advised by the Council (spatial development planning). This is characterised by a shift in our approach to the sea: no longer waiting for initiatives that focus mainly on protection against the negative effects of activities, but using a broad framework in which

Workshop with stakeholders at Scheveningen Fish Auction, November 2013 (Photo: Eelco Koolhaas)

experimenting with sustainable activities and projects is possible, and that is geared towards developments. This all aims towards efficient and optimum use of a healthy sea that acknowledges how the sea system works; simultaneously both at the North Sea's international and national levels. The advice 'A Sea of Opportunity' was in outline adopted by the cabinet. The involved ministries[4] are now giving shape to the process of the North Sea 2050 Spatial Agenda. The North Sea 2050 Spatial Agenda is a common framework for all parties and an adaptive agenda for the future.

[3] RLI advice 'A Sea of Opportunity', September 2011; including the accompanying response from the Government and interested parties dated 19 June 2012, discussed in the House of Representatives on 23 April 2013. http://www.rli.nl/publicaties/2011/advies/een-zee-van-mogelijkheden

[4] The Interministerial Consultation Body for North Sea Governance (IDON), in which the ministries cooperate, has served as sounding board for the entire process.

Congress Newspaper, 13 March 2014

The North Sea has many (potential) use possibilities

Perspective on the North Sea in 2050

It has again become clear that the North Sea is not just an area of water behind the dunes, but has its own opportunities and special, sometimes vulnerable qualities. The North Sea is a unique part of the Netherlands. It is an open, dynamic system, where no people live and has significant ecological, economic and social-cultural meaning for the Netherlands as a whole; an open area in which people and activities are exposed to the power of nature. Apart from the Wadden islands there are no sheltered bays or islands on the open sea, which makes working there extremely challenging. Especially in the autumn and winter, wind and storm can result in extremely poor conditions. But it can also be beautifully clear and calm. Many Dutch citizens and visitors to our country from across the world are attracted to the sea in these conditions.

This ***spatial agenda for the North Sea*** in 2050 shows that an integrated long-term area development of the sea in all its potential, will reduce as far as possible the stress on the available space. The North Sea 2050 Spatial Agenda process shows that increasing varied use of the sea does not in itself need to form a threat to the interests of existing users. Even more so: the recent developments and the joint future outlook show that there are many interrelations. Knowledge about the sea, its properties and qualities that interested parties have and is prepared to share are extremely relevant for other users and stakeholders. The shared interest in a healthy and sustainable productive sea, in which there is space for everyone, appears to enable parties to find ways for the future. The Government can promote and support this joint development by paying careful attention to the development of its policy choices and regulations. These will continue to run largely along sectoral lines because changes within uses require this, but this will have to be coupled with an external focus on the interests of others and on the natural value of the sea.

In contrast to the Long-term Infrastructure and Space Programme (MIRT) spatial agendas, this North Sea agenda comprises one section: a description of (potential) development directions with an accompanying vision, challenges and actions for the future. The spatial agenda will be transposed at policy level in the coming realisation of the National Water Plan 2 (NWP2) and the accompanying North Sea Policy Document for 2015-2021.

Animation "A day on the North Sea in 2050"

1 The North Sea – a marine ecosystem

Ecological values

The Dutch North Sea has always been a shallow, nutrient-rich sea with a large natural wealth of species and a large biomass. The natural potential fish stock is sizeable and, particularly in the coastal zone, it is the habitat of a large number of birds of all species. This is largely due to the significant supply of nutrients and the freshwater from rivers that flow into the North Sea from various countries. The relatively shallow depth of the North Sea makes strong interaction possible between surface, water column and seabed processes. This contributes to biodiversity and productivity.

Photo: Karl van Ginderdeuren, Hollandse Hoogte

Ecology and economy connection: method and approach

In the North Sea 2050 Spatial Agenda process, the Government offered participants a stage to share their various visions and ambitions as to how life in the sea could or should look by 2050. All partners share an interest in having a clean and healthy sea. This means that the optimum connection between the ecological and economic strength of the North Sea is an important challenge. The objective is a healthy and sustainable use of the sea that can be of even greater social value in 2050. The joint challenge is to find sustainable solutions to important issues such as food production, wind energy, leisure use, fishing and retaining and developing nature and biodiversity. The trick here is to make connections between global issues and to involve politics, society and the business world in finding solutions.

Challenges: reversal of ecological degradation and decrease in biodiversity

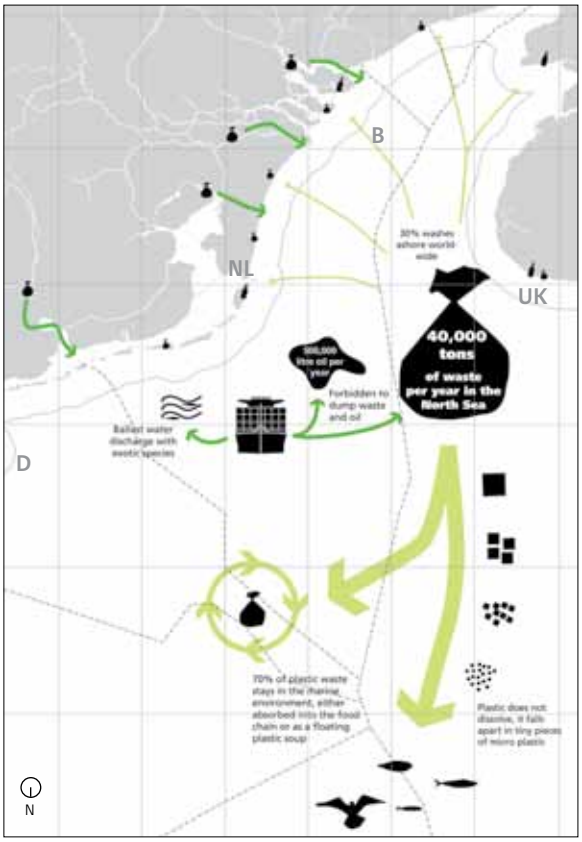
The environmental status of the European seas and oceans is still not as desired or in accordance with European agreements regarding the seas' Good Environmental Status; this also applies to the North Sea [also see frame on Marine Environmental policy]. The initial assessment of the Marine Strategy[5] shows that the effects of physical, chemical and organic disturbances in the previous century have contributed in varying levels to the current state of the marine ecosystem. No one big threat can be identified. Rather it is the totality of the effects of human actions in a natural system that is not yet well understood. Certain is that vulnerable habitats on the seabed have especially been affected by physical damage to the seabed as a consequence of seabed activities, particularly traditional beam trawling.

[5] House of Representatives 2012/2013 no. 33450.1

Fish stock is no longer as diverse as it was; large fish are extremely rare or have disappeared. The population of some vulnerable species, such as shark and ray, has significantly reduced. Others have disappeared, such as the Atlantic sturgeon, skate and flat oyster. Discarding bycatch is a wastage that will be reduced under the new European fisheries policy.

Dikes and constructions keep our country dry and are a showcase as far as hydraulic engineering is concerned, but have unfortunately brought negative effects for nature. Fish species that migrate up river have become scarce because of the barrier effect of dikes and constructions. Populations of marine animals have always been vulnerable to disturbances through leisure pursuits and pile-driving noise for wind turbine foundations.

Non-indigenous species, arriving via shipping and establishing themselves here, or those that have been specifically introduced for purposes of culture (aquaculture) such as the Japanese oyster, have also had their effect on the ecosystem. American razor clams were probably introduced at the end of the 1970s in vessel ballast water and now form 90% of the biomass of seabed life in coastal waters.



North Sea waste streams

Developments and trends to take into account

The last fifteen years have also seen positive developments. The prevailing policy has contributed to this, particularly the Water Framework Directive (WFD), Birds and Habitats Directive (BHD), Natura 2000, Common Fisheries Policy (CFP), the OSPAR treaty and the International Maritime Organisation (IMO), as has the permit-obliged activities at sea. Contamination at sea has decreased significantly; including from vessels, the flow of artificial fertilisers used in agriculture via rivers (eutrophication), industry on land, and discharge by shipping at sea. Most of the commercial fish species are doing much better than before (such as plaice and herring); developments in alternative, more environmentally-friendly fishing practices are undergoing rapid development. Growth in sea mammal populations is showing a cautiously positive reversal. Fish migration is again being given a chance through a small opening in the Haringvliet locks and the potential construction of a fish migration river in the Afsluitdijk.

Coping with uncertainties in the marine ecosystem

Talks in the North Sea 2050 Spatial Agenda process show that integrating activities for nature and simultaneously giving space for food supply via sustainable fishing is an important but not simple issue. There are still many knowledge gaps. Much is still not known regarding the working of the marine ecosystem and the influence of long-term natural processes. This also applies to the effects of climate change, such as global warming and acidification of seawater and the changes this brings to species composition. Much research is being conducted in order to better understand these uncertainties, both in the North Sea as well as across the world. One aspect that requires additional attention is the cumulative influence of man's many uses of the North Sea. Gaps in the knowledge required for good decision-making can not only be filled by the science domain. Good interplay is required between users, governments and other stakeholders as well as the scientific community. Discussions about the North Sea 2050 Spatial Agenda showed that this applies particularly to the relationship between nature and fishing.

Without changing the implementation of existing European fishing and marine environment agreements, the interested parties have agreed that they will remain in discussion about the future after 2021. In doing so parties can include developments and new insights (including the results from monitoring the marine strategy and developments in the fishing industry). This will be helpful in adaptive management of the marine environment in the longer term; for example the revision of the Common Fisheries Policy in 2024 and the following six-yearly cycle of the marine strategy that starts in 2018.

Marine Environmental policy

The Dutch Government wants to have a good environmental status and biodiversity in the North Sea for current and future generations and secure it as an important source for the economy and food supply. The Government wants to do what is necessary to get the marine system in the North Sea in order by 2020, and utilise opportunities for realising sustainable economic growth and a healthy system. For this the Government is executing the marine strategy for the North Sea for the implementation of the European Marine Strategy Framework Directive.

For good environmental status there needs to be an optimum functioning ecosystem that retains its resilience in spite of environmental changes triggered by man. In 2012, the cabinet presented the Marine Strategy for the Dutch section of the North Sea 2012-2020, Part 1. This comprises a description of the current state of the marine ecosystem, the desired good environmental status and accompanying objectives and indicators for 2020. Eleven descriptors (objectives and descriptions) including a qualitative description of the good environmental status by 2020 are used.

The Government uses the KRM Monitoring programme (Marine Strategy Part 2) to ascertain the effect of measures for good environmental status and the extent to which this status can be achieved by 2020. This should take into consideration that the marine ecosystem needs time to respond to the measures taken.

In the KRM Programme of Measures (Marine Strategy Part 3, part of the North Sea Policy Document) these policy and knowledge challenges are elaborated into measures. Important challenges are at play here including reducing pollution from land and via the rivers.

Current users such as the fishing industry and shipping face a huge transition challenge. Sustainable use of the sea and good environmental status are the starting points for new and potential use such as the siting of wind turbines, tidal and wave energy and mariculture. The Frisian Front and Central Oyster Grounds were also mentioned as search areas for seabed protection and the Government wants to reduce litter, including the “plastic soup” comprised of microplastics.

The Government is also working on the Nature Ambition Large Water Areas, which also sketches a long-term vision of North Sea nature in 2050. It offers an inviting perspective for North Sea nature, taking into account the different visions at play in this area in politics, society and the business world. The common denominator of these visions is that nature forms an important basis for sustainable use of the North Sea.

Photo: Tineke Dijkstra, Hollandse Hoogte

2 A North Sea agenda with possibilities

The five North Sea 2050 Spatial Agenda themes

The North Sea 2050 Spatial Agenda views economic future contribution of the sea- via an ecosystem approach - from the own strengths of the sea and the boundaries of the natural marine system.

As indicated in the introduction, the spatial agenda identifies which will play an important role in developments to 2050:

1) Building with North Sea nature;
2) Energy transition at sea;
3) Multiple or multi-functional use of the space;
4) Connection between land and sea;
5) Accessibility/shipping.

Looking at various levels of scale and constructing relationships with the land meant that the discussion also involved administrative arrangements regarding the North Sea as a whole and the cooperation between parties and countries. The spatial agenda thus provides recommendations for governance issues for the entire North Sea. Two additional focus areas are mentioned: international cooperation (particularly with countries around the North Sea) and opportunities for export (of knowledge, expertise and services/products). The five themes and two focus areas are further elaborated upon in the following chapters.

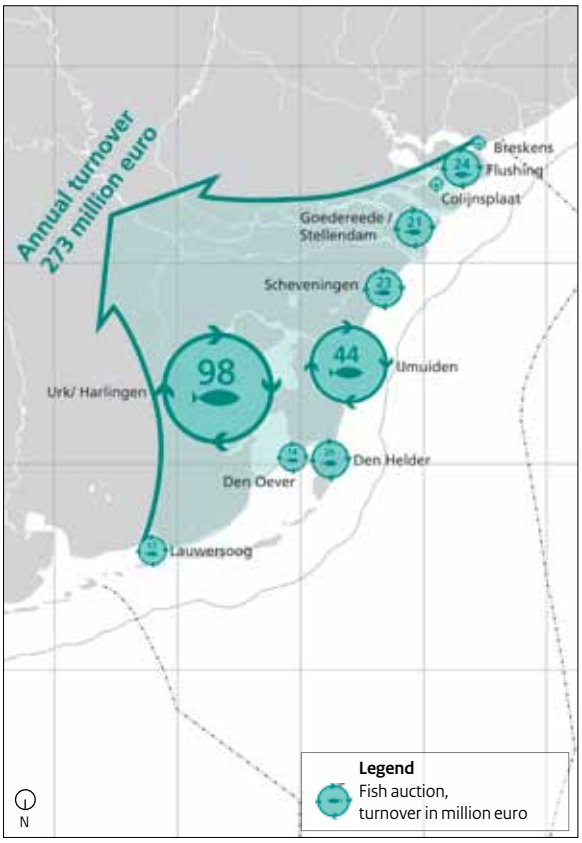
Current use of the sea

The Dutch section of the North Sea is already one of the most intensively used seas in the world. The additional potential contribution of the sea can thus not be seen separately from the contribution it already makes. Shipping and port activities, oil and gas extraction, sand extraction and fishing are the current functions with the highest spatial claim and/or economic interest. Designated areas of natural interest and offshore wind farms will take up considerable space in the future. The ports and oil and gas extraction account for the lion's share of the total added economic value[6]. The spatial agenda is not an economic study focused on future returns from these sectors, but does focus on developments in the coming decades that are relevant for sustainable use of space at sea. The following points are relevant for a good understanding of the use of the sea:

- Efficient and safe shipping is one of the most important policy objectives, which includes internationally determined shipping routes. An important challenge is maintaining and/or improving shipping safety and the accessibility of ports and marinas, now and in the future.

- A sufficient quantity of fill sand for coastal protection/ replenishment (strategic stock) needs to remain available. This will be organised in the sand extraction strategy of Rijkwaterstaat.

[6] As recently shown again by the Dutch maritime monitor 2013 cluster and research by Ecorys into opportunities for Blue Growth in the North Sea Region assigned by the European Commission.



Fish markets and trade streams in NL, source: Visserij in Cijfers, 2010

Mussel cultivation in NL, source: Ministry of I&E, 2013

- Former munition dumps continue to form a hazard to shipping, fishing and sand extractors.
- The North Sea contains many archaeological sites of national and international significance.
- The large number of gas and oil production locations puts pressure on space, particularly as a result of spatial constraints through safety zones and approach routes and the network of cables towards the land.
- Fishing takes place everywhere at sea and provides an important contribution to the Dutch food supply but also particularly in African countries, where much fish from the North Sea is eaten. Although its economic contribution to the Gross National Product is modest, fishing is a direct or indirect income source for thousands of Dutch citizens.
- Significant steps are being taken to make fishing more sustainable, particularly by reducing seabed disturbance and reducing bycatch of non-target species and undersized fish. Although fishing is permitted almost across the entire North Sea within the frameworks of the Common Fisheries Policy (CFP) of the EU, the sector is confronted increasingly with space limitations for fishing or limitations on fishing methods in the coastal area and several areas further out to sea (as a consequence of Natura 2000, offshore wind farms and measures under the European framework Directive Marine Strategy).
- Space on the North Sea is now also used for the construction of offshore wind farms, possibly also supplemented in the future with other energy generation technologies.
- Military exercise areas on the North Sea can also lead to spatial restrictions.
- The beaches and coastal zones are economically important tourist and leisure-time attractions for visitors from home and abroad.

From North Sea 2050 Spatial Agenda to North Sea Policy Document 2015-2021

The North Sea 2050 Spatial Agenda is a prelude to concrete decisions and actions for the coming planning period of the National Water Plan. These decisions and actions are set out in the North Sea Policy Document. The spatial agenda process does not deliver concrete spatial planning decisions, but it does give an indication of locations in which there are opportunities for cooperation on integrated area development at sea. The chapters that elaborate on the various themes give recommendations for the next steps. A total overview of recommendations for an adaptive agenda for the North Sea is stated in paragraph 4.4.

The sandmotor between Kijkduin and Monster

2.1 Building with North Sea nature

'because food and nature are inextricably connected'

The North Sea 2050 Spatial Agenda connects the topics of fishery, aquaculture and mariculture[7] with the natural potential of the sea under the denominator ***building and cultivating with North Sea nature***. The approach appears to deliver added value for other functions where tension exists between human activities and sea life.

Transition in the fisheries sector

An integrated North Sea development with new and traditional use means that there is also space for fishermen who use sustainable catching methods and fish within ecologically sustainable boundaries During the spatial agenda process a lot was learnt about developments in traditional fishing and also about this occupational group's awareness that the short term goals that dominate business strategies do need to fit into a longer-term perspective.. Proactive care for the marine environment will offer market parties sustainable economic opportunities. Current developments concern the entire spectrum of sustainable fishing methods, methods that fit with the use of offshore wind farms and protected marine areas, as well as the marketing of fresh fish, diversification in terms of sales markets and the expansion of the traditional job of fisherman into offering services to other parties at sea. Examples of all these developments have been presented and discussed in the process of the spatial agenda.

Innovation for food from the sea

In formulating the spatial agenda, various possibilities were suggested that can contribute to the future food supply. As well as fish and shellfish farming this mainly concerns the cultivation of seaweed and algae. The strength of this opportunity, the suitability of locations on the North Sea and sustainability were discussed. Whether it would be economically viable to scale up the initiatives is also being examined. This involves the seaweed farm on Texel, ideas from Urk fishermen regarding joint use of wind farms and the interest in mussel bed cultivation in the coastal waters of Zeeland. The relationships between locations at sea and on land have also been highlighted in the spatial agenda dialogue. The farming of seaweed and shellfish can potentially make an additional contribution to the food supply and economy. Marine proteins are a healthy source of food for humans and animals, which makes farming of seaweed a sustainable contribution. Knowledge is available in the Netherlands and is being further developed to ensure that seaweed farming is not organised at the expense of natural processes of the sea. There are significant challenges attached to the possible switch of mussel seed capture installations in the Wadden Sea to cultivation/farming at open sea. In the perspective of the 2050 spatial agenda

[7] The following distinction is made for the North Sea 2050 Spatial Agenda in line with international terminology: aquaculture concerns the farming of shellfish and fish, and mariculture concerns the farming or cultivation of aquatic organisms such as algae and weeds.

recommends that this opportunity should not be overlooked but everything should be done to achieve the best possible results. The discussion about food and nature immediately led to two other important perspectives for food's transition challenges in the long term; traditional fishing on the North Sea and innovation and cooperation.

On closer examination of the North Sea as a system, it appears that nature and food supply are areas that are strongly linked and mutually dependent. This partly explains the inherent tensions that exist around these two topics. These tensions are often portrayed because they are presented as being in competition and as being inherently in conflict. Productive fishing grounds are identified by nature organisations as important natural areas and traditional fishing disturbs the seabed and impoverishes biodiversity. Conversely, it appears that many fishermen have specific and historic knowledge to bring to the table about the nature in the sea. A common denominator between the marine ecosystem and food, that is naturally available there, also appears to be useful in discussing both topics. The themed map of nature & food shows the link. Existing tensions are addressed on the one hand by environmental policy (MSFD and Natura 2000) and the common reformed fishing policy (CFP 2014) on the other.

Fishing

Fishermen from various countries use the entire North Sea. The fish, shellfish and seafood provided by the North Sea is mostly exported, with Africa forming an important sales market. Fishermen can be encountered in specific areas of the sea, depending on what species is being fished and the time of the year. Productive fishing grounds are desirable as this requires less effort and the number of days fishermen can be at sea is limited by regulations. Like quotas for the quantity of a certain fish species, the number of sea days per company is limited. No longer being able to work in certain areas affects a specific group of fishermen. They cannot just go somewhere else and/or need to make more efforts in wild fishing. The increased use of the sea for other functions and the designation of marine-protected areas mean that the fisheries sector is searching for possibilities to restrict the reduction of fishing grounds as far as possible and searching for operational solutions to keep control of costs and increase income. This could be in the fishing industry itself, but also in offering services to other sea users. Fish farming in open sea as known from salmon farming in Norway and Scotland, is not seen as a promising option in the Dutch section of the North Sea, as this cannot be nutrient neutral. The North Sea 2050 Spatial Agenda discussion has taught us that by having an independent vision on a productive sea, the Dutch fishing industry can help the sector in its transition to a sustainable future within ecological boundaries. The knowledge of fishermen of the sea and how sea life works is considerable. This strength must be utilised.

Marine protein

An interesting combination of sustainable growth of fish stocks that does seem suitable for our own section of the North Sea is emerging: the combination of seaweed farming and fish. As well as many useful marine proteins, seaweed contains a wealth of other components that can be used for many applications. NIOZ calculated that approximately 400 km2 of seaweed can be cultivated without any notable effect on primary production in the Wadden Sea area if this were to be placed in areas above the Wadden Islands and to the south of the first shipping lane. Locations of 10 to 25 km2 are being considered. Seaweed farms are new habitats in the water column that are hugely attractive to many organisms. These farms form locations in which primary production takes place, and where fish gather. Fish can be caught here using sustainable methods, currently being considered by fishermen. It is still too soon to make definitive statements about this, but this should make it possible to "herd fish". Shellfish cultivation can be integrated within the same seaweed units or could take place on the seabed beneath the seaweed units.

Seaweed farms are new pelagic habitats with huge attraction for many organisms.

Building with North Sea nature

Building with North Sea nature means using the sea and nature in a way that strengthens the marine system, nature and biodiversity. Building with nature for the North Sea is derived from concrete examples such as the Sand Motor[8]. Based on the challenge of water safety, a combination was made between the recovery and development of nature.

The resilience of the marine ecosystem can be increased through adaptations in the use of the sea or another use of the sea; use that fits within the qualities of the ecosystems and habitats. This precautionary approach is already being applied, for example in assessing where to site foundations for wind turbines (for instance research is being conducted into the effect on fish larvae of underwater noise caused by pile-driving for wind turbine foundations). On the other hand, constructions can be placed on turbines as resting places for cormorants, for example. In the example of seaweed cultivation, an assessment is needed regarding the extent of nutrient absorption before this would have a negative influence on natural processes in the sea. It is also important that any initial harmful effects are superseded by positive effects within a reasonable period. A good understanding of how the natural system works and the way in which this springs back following human intervention is a condition for success. Until now nature policy has focused mainly on preventing harmful effects to the marine ecosystem. Market parties such as sand extractors, fishermen, offshore wind farm developers, oil and gas companies, shipping and maritime tourism are already involved in the transition and will be further limiting their impact on nature, partly as a consequence of European policy.

Given the ambition to maximise natural values and optimise economic use, the broader application of Building with North Sea nature is self-evident. A further development and expansion of this 'Building with Nature' strategy could potentially deliver an additional contribution to the food supply in the long-term and possibly offer other advantages to nature at sea. An initiative[9] from market parties, knowledge institutes and governments is investigating the way in which Building with Nature can strengthen biodiversity and contribute to the recovery of natural "hard" seabed structures/hard substrate.

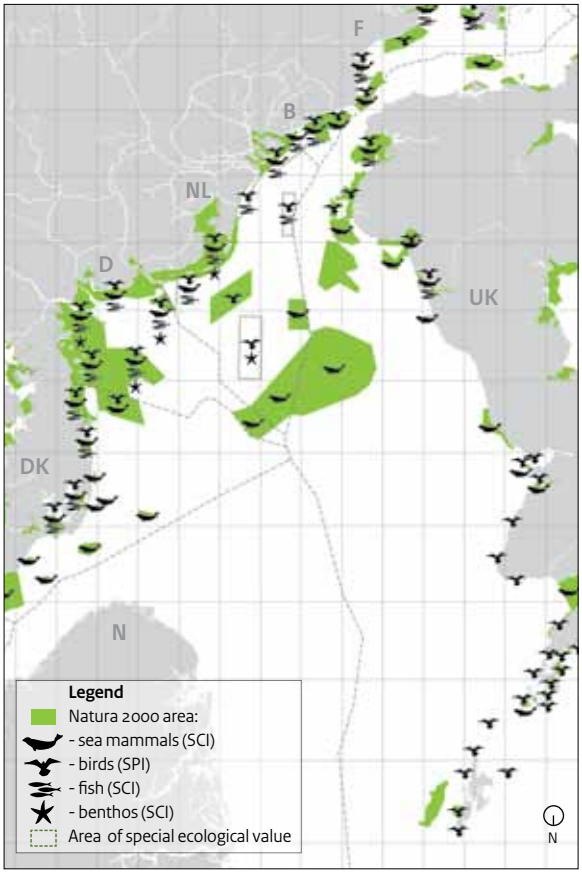
Building on a clean and healthy sea

Using the sea in ways in which the sea becomes cleaner and healthier is a North Sea 2050 Spatial Agenda recommendation that can bring parties closer together and can lead to new methods of sustainable use. This could include the cultivation of seaweed or an adapted design of installations.

> "Eating flat oysters and tuna from our own sea, wrapped in North Sea seaweed - North Sea sushi - is a fantastic future vision. But there is more: anglers enjoy fishing when there are more species of fish to catch, both at sea as well as from the quaysides, dikes and beaches. And the North Sea will become more attractive for those using the beach and water for leisure pursuits if porpoises, dolphins and hopefully larger whales can be seen."

It could also mean ensuring that the ecosystem recovers more quickly after use, for example through the way in which sand extraction areas are left behind. Handling the sea in this way also supports the social support base of the involved market parties.

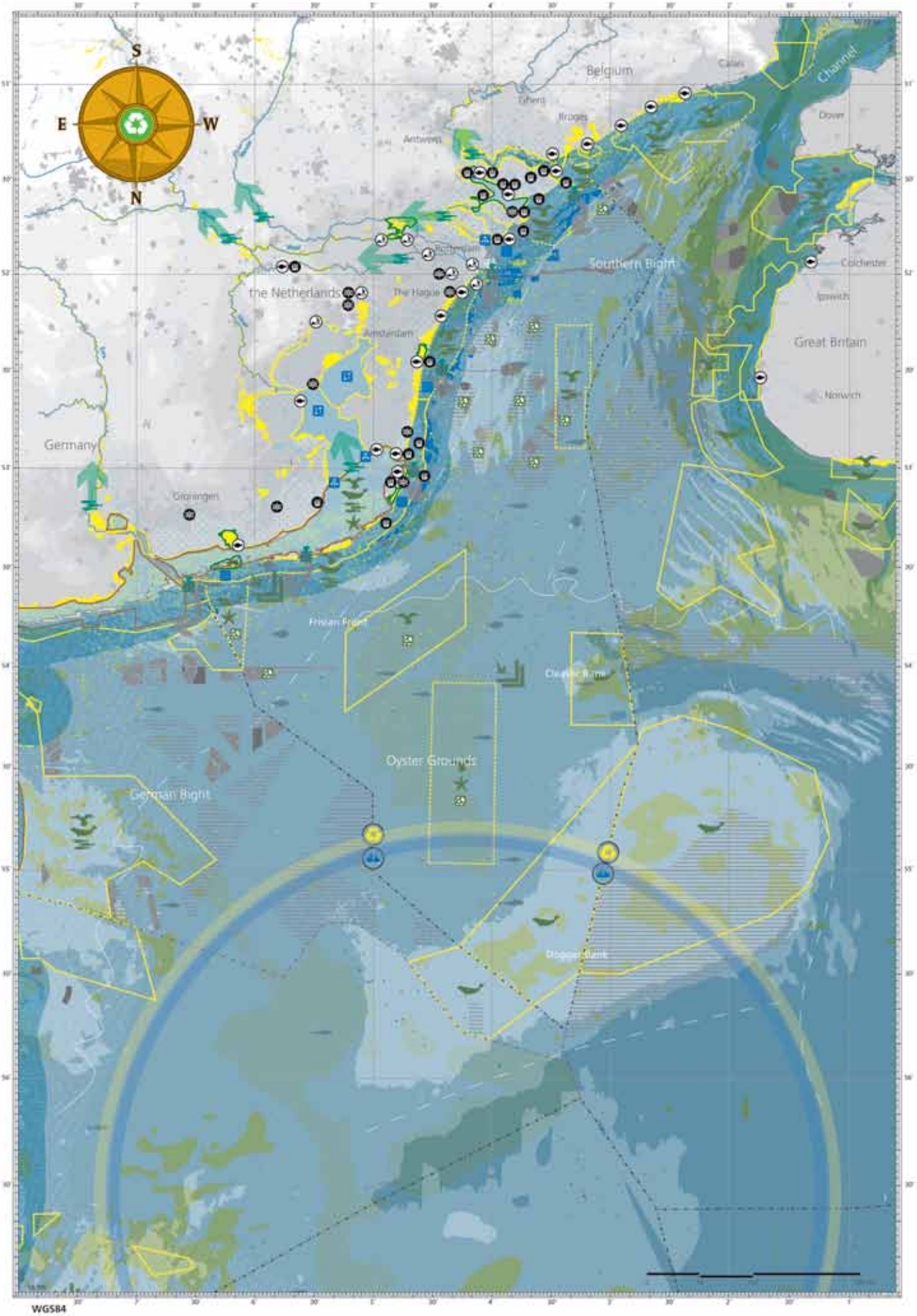
In the Natural Capital Implementation Agenda the Ministry of Economic Affairs is researching how ecosystems can be restored, with the reintroduction of the flat oyster being mentioned specifically. Within existing regulations, in principle, there is a possibility for constructing artificial hard substrate or for applying shellfish beds such as oyster beds for flat oysters on the Central Oyster grounds.



Natura 2000, source: natura2000.eea.europa.eu, 2014

[8] www.dezandmotor.nl

[9] Initiative of WWF. WuR and Delagua regarding the regeneration of shellfish beds in the North Sea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Great Britain
Norwich
Germany
Groningen
Frisian Front
Oyster Grounds
German Bight
WGS84

Themed map of Nature & Food - National

Legend

Situation in 2014

Knowledge export - existing economic sectors

Fishing

Flood defences / water control / building with nature

Protection

Natura 2000 - marine

Natura 2000 - land (selection)

Area of special ecological value

Protected species/to be protected species:

- sea mammals (SCI)

- birds (SPI)

- fish (SCI)

- benthos (SCI)

UNESCO world heritage

National Park (NL)

Voordelta rest area

Seabed system and quality

Rich in sand
Rich in silt
Rich in substrates

Infralittoral

Circalittoral

Deep circalittoral

Permanent objects with potential ecological value

Offshore installation

Wreck

Offshore wind farm: existing / awarded / subsidy application

Designated wind energy area / lease or agreement for lease / search area wind energy within 12-mile-zone

Food

12-mile-zone: breeding ground, concentration area inshore fishing and angling

Salinization agricultural land

Water system and quality

Fresh-salt water gradient (summer salinity ≤33)

Front

Boundary water mass

Challenges and opportunities for 2050

Knowledge export - Blue Growth sectors

Mariculture/Aquaculture

Blue Biotech

Protection

Converting into protected status

Improving ecological quality, entire North Sea

Seabed system and quality

Active/passive recovery of hard substrate

Migration

Recovery of migratory fish

'Flyway' migratory birds

Food

Balanced fish stocks (indicative)

Sustainability of fishing

Coastal safety and sand extraction

Sand replenishment

Sand extraction (active/concept)

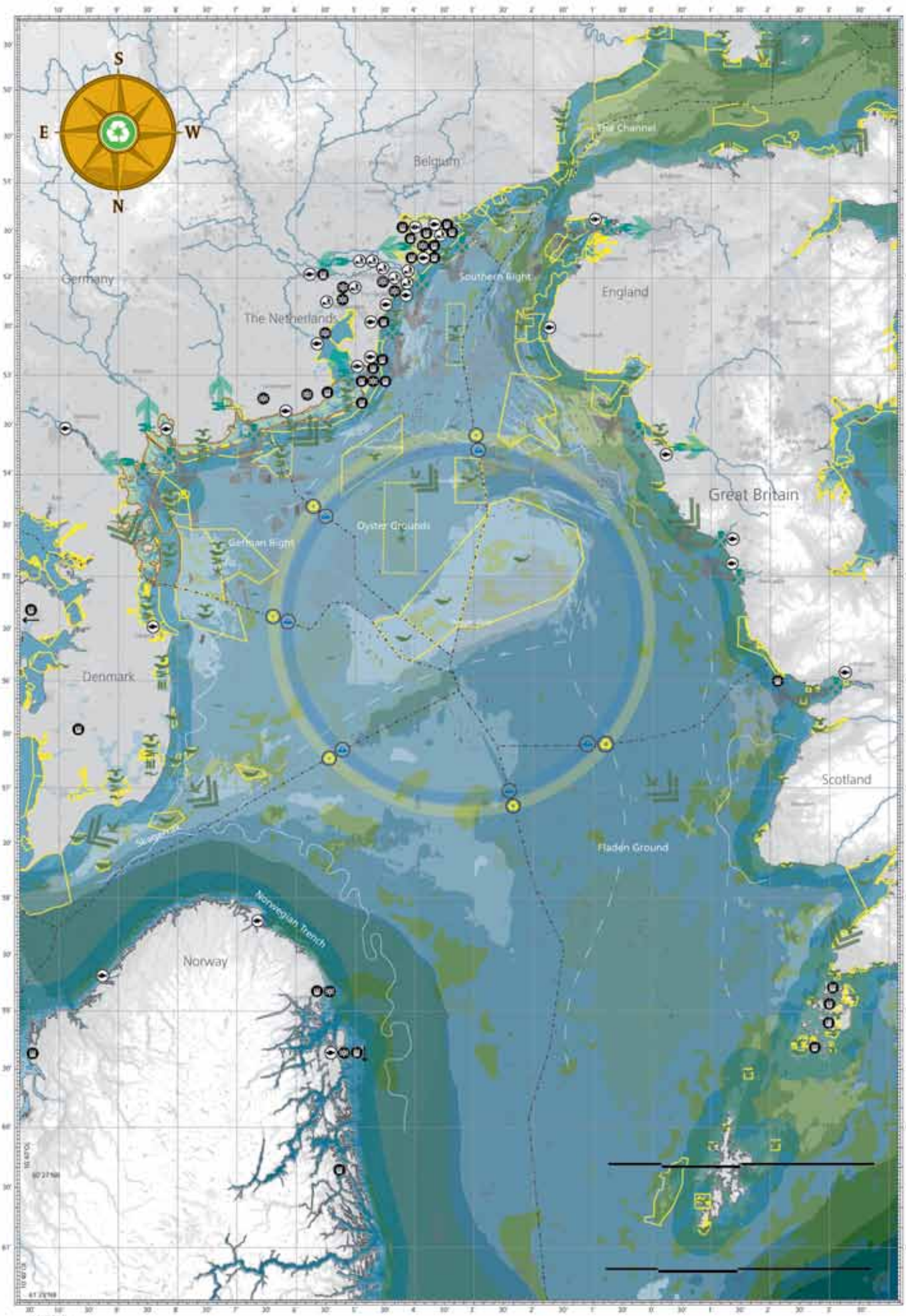
Water system and quality

Promote fresh-salt water gradient

End waste streams

Challenges

The spatial agenda process challenges sea users to give nature a helping hand in the future. The process recommendation ot the spatial agenda to the Ministry of Economic Affairs will be used for the further expansion of this strategy with the objective of building with nature, and utilising natural processes will increasingly apply as the starting point for developments at sea and on land. This may mean adaptation of laws and regulations but in any event requires good agreements between those involved in the entire licence-granting process. It is recommended that the Government guides market parties and licencing authorities on this point and remains open for changes in regulations that may be necessary if these hinder new sustainable methods for using the sea. For example, when issuing licenses for the tidal turbine energy generation pilot in Marsdiep it became clear that the Water Act and the Nature Protection Act make different demands regarding monitoring fish-friendly operations. Pilots involving mussel bed installations at open sea, seaweed cultivation and/or other forms of building with nature depend on the timely issue of licences in order to be able to take advantage of the natural processes of the sea. On the other hand, initiators of experimental plans are advised to consult with the government via the policy desk or licencing authority, at an early stage.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Oyster Grounds
German Bight
Denmark
Scotland
Fladen Ground
Norwegian Trench
Norway
WGS84

Themed map of Nature & Food - International

Legend

Situation in 2014

Knowledge export - existing economic sectors

Fishing

Flood defences / water control / building with nature

Protection

Natura 2000 - marine

Natura 2000 - land (selection)

Area of special ecological value

Protected species / to be protected species:

- sea mammals (SCI)
- birds (SPI)
- fish (SCI)
- amphibians (SCI)
- plants (SCI)
- benthos (SCI)

UNESCO world heritage

Seabed system and quality

Rich in sand
Rich in silt
Rich in substrates

Infralittoral

Circalittoral

Deep circalittoral

Upper slope

Upper bathyal

Mid bathyal

Permanent objects with potential ecological value

Offshore installation

Offshore wind farm: existing / awarded / subsidy application

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Water system and quality

Fresh-salt water gradient (summer salinity ≤33)

Front

Boundary water mass

Food

12-mile-zone: breeding ground, concentration area

Challenges and opportunities for 2050

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Mariculture / Aquaculture

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Converting into protected status

Improving ecological quality, entire North Sea

Migration

Recovery of migratory fish

'Flyway' migratory birds

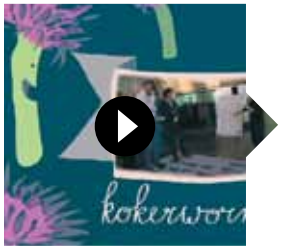
Food

Balanced fish stocks (indicative)

Sustainability of fishing, entire North Sea

Water system and quality

End waste streams



Nature ambition 2050

Sea weed

Urk

Real fishermen tell no yarns

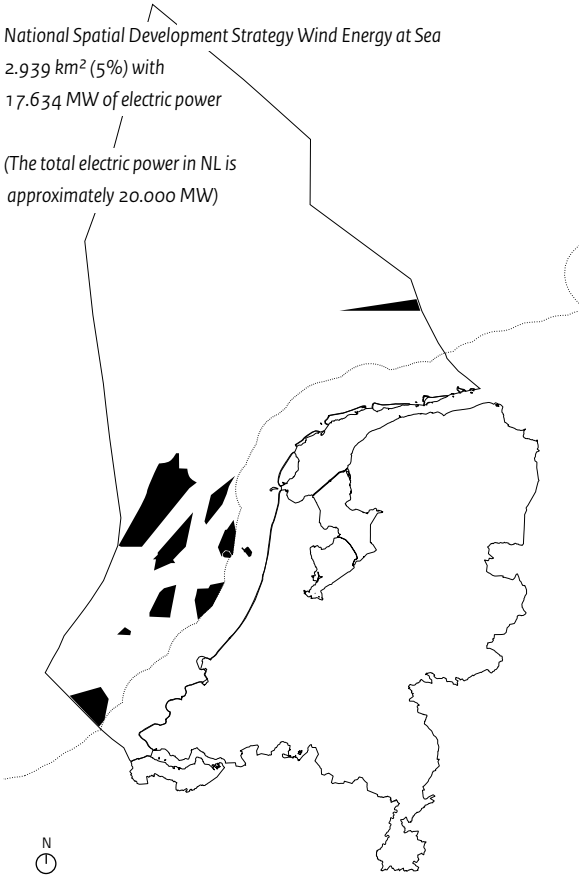
Photo: Rob Poelenjee, Ministerie IenM

2.2 Energy transition at sea

'Do more with the sea and increase returns per square nautical mile'

In the Energy agreement for sustainable growth it was agreed that by 2023 offshore wind farms would be constructed in the Dutch part of the North Sea, with a peak capacity of 4,450 megawatts[10]. These will be able to provide electricity to approximately 5 million homes (based on average consumption per household in 2013). This would involve up to a maximum of 1,000 wind turbines, depending on the size of the turbines. The turbines together will take up a net 1,000 square kilometres of space. Given the turbines' life span of 25 years, the 2013 Energy Agreement will carry us through to 2048. If we succeed in producing wind energy at sea at lower costs (the aim is a 40% cost reduction by 2023), then it may be assumed that wind energy will also "have a future" after 25 years. It also makes sense to re-use wind energy areas at sea and the infrastructure of foundations, cables and transformer sub-stations. These long-term considerations can in themselves be important for the desired reduction in cost price of offshore renewable energy, as depreciation periods can be used that are in line with the technical service life. Transformer stations for example, have a service life of 40 years and cables can last even longer.

[10] The final locations of these farms have not yet been determined; some farms are constructed or are under construction. For some areas licenses have been granted. The Government has also designated various locations outside the 12-mile-zone, and is currently investigating possibilities within the 12-mile-zone. The Government will clarify the situation during the course of 2014.



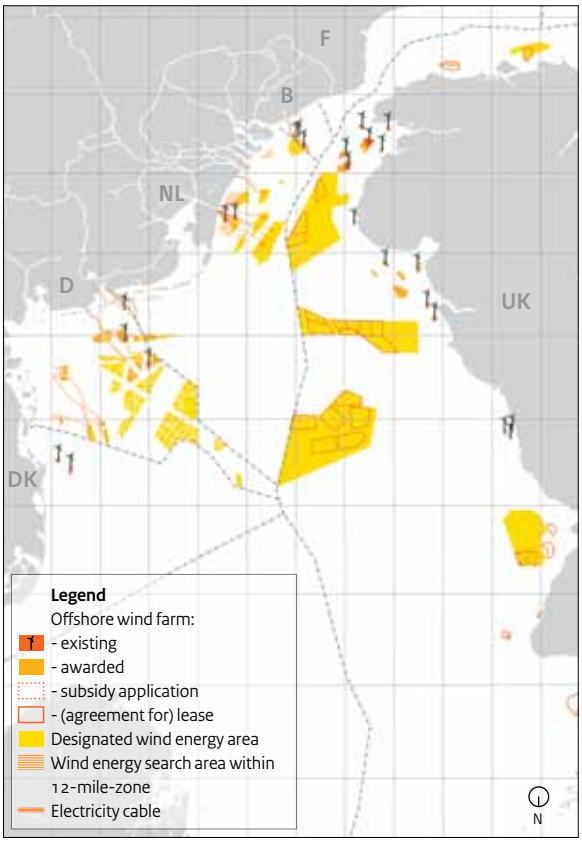
Four large areas outside the 12-mile-zone

The four large zones designated outside the territorial waters in 2015 will have a total surface area for wind energy of some 2,900 square kilometres. This is approximately 5% of the space in the Dutch EEZ. It concerns the wind energy areas Borssele in the south, the Hollandse Kust, IJmuiden Ver and the area to the north of the Wadden Islands. If the surface could be used entirely for the siting of wind turbines, with current technologies and assuming 6MW per square kilometre, there is space in this area to realise approximately 17,600 MW wind energy capacity.

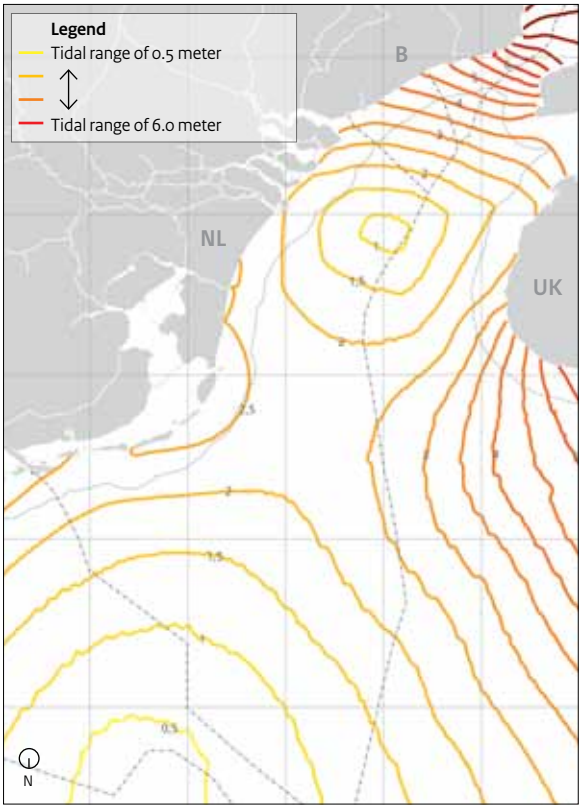
However, this theoretical potential will not be achieved in practice. The potential is limited by ecological values, practical considerations (existing cables and pipelines) and space for other parties to use in and around these areas. Oil and gas extraction can also result in limitations on the effective use of space. This happens if platforms are needed for the development of (smaller) fields. In such cases, the aim is for an obstacle free zone of 5 nautical miles around the platform to provide security for helicopter traffic and platform accessibility, enabling accessibility by helicopter under as many weather conditions as possible.

Spatial claim of offshore wind farms

Important for the use of space is the notion that the designated wind energy areas are "gross" areas. Offshore wind farms will ultimately be constructed in these areas, like those in Egmond aan Zee, Amalia and the development of the Gemini wind farms. These gross areas will be further demarcated and sites issued for wind farms, depending on the type of turbine, wind conditions, seabed suitability and the available infrastructure (cables and pipelines), as well as wrecks and other archaeological treasures on the seabed. Sites of approximately 300 to 400 MW are being considered. Legislation is currently being prepared for this development. Depending on the size and capacity of the turbines a net space may be considered of between 24 and 60 square kilometres for 1 wind farm. Around and between the locations - outside the 500-metre security zones - space will remain for other purposes, such as fishing and leisure sailing.



Existing and planned offshore wind farms (2014), source: OSPAR 2013, I&E 2014



Tidal variation, source: Ministry of I&E, 2013

The spatial agenda process showed that stakeholders want to be involved in developments regarding gross to net wind energy areas, so that they could obtain clarity regarding the use possibilities that remain for them at sea. This means that the Government can expect broad support for the initiative to cooperate with the wind energy sector, area users and stakeholders in producing a design for the layout of the Borssele energy area and the necessary network connection of offshore wind farms in that area.

Long-term energy provision

The certainty of long-term energy provision using the power of the sea and wind can be increased if the market and government focus in the coming years on energy at sea in the period 2030-2050/2070 (fossil fuels, wind, water power, deep geothermal energy, seawater heat pumps, biomass and if possible solar energy). Market parties in the offshore oil and gas industry, together with suppliers and offshore service providers are currently assuming that they will be able to extract fossil fuels from the North Sea until 2060. The associated market parties involved in offshore wind energy in the Netherlands Wind Energy Association will be invited to demonstrate how much wind energy can be generated within the designated areas if the continued development towards larger and more efficient turbines is taken into account: how will the expected net spatial claim and returns per square metre of sea develop (from 3 and 4 to 6 MW, and in the future possibly 9 or more) at the different locations? Technically, the basic infrastructure such as cables, transformer stations and connection points from the network at sea can last for longer than 25 years. This certainly applies to the envisaged network that will connect various North Sea countries (also known as the North Sea Grid).

At the start of 2014, a renewed initiative for the offshore market was launched by Van Oord for a work island at sea. The island would be used for construction and maintenance activities and will offer space for a transformer station and will have just one single cable to land. The idea is to take a longer-term view of these investments that the current turbine service life. This means wind energy areas further from the coast, including IJmuiden Ver, can be developed over a longer period of 50 years and so become cheaper. The involved parties will be invited to further elaborate on this plan in the framework of Top Consortium Knowledge and Innovation (TKI) Wind at sea.

More energy from the space at sea

In the current policy, the spatial solution for cheaper wind energy is found through mono-functional use of space at the wind farm. Is there another way in which even more energy can be delivered per square kilometre? Are their opportunities to use the power of the sea itself in these

areas as well as the power of the wind? Would the total electricity returns per sea area become higher, with reduced average costs for construction, management and maintenance of the connection to land per generated kilowatt hour?

Energy from water

Wave and tidal energy can deliver an additional contribution as can (deep) geothermal energy and the use of seawater heat pumps. In principle, wave and tidal energy fit particularly well in the wind energy areas, both in combination within an offshore wind farm with floating constructions, or linked to the turbine. Combining energy generation technologies will offer long term financial, logistical and spatial opportunities. Also the prediction of returns from the wind farm and the supply to the electricity network will improve. The sea current is a constant, and a and smart interplay between wind and waves, also offers opportunities.

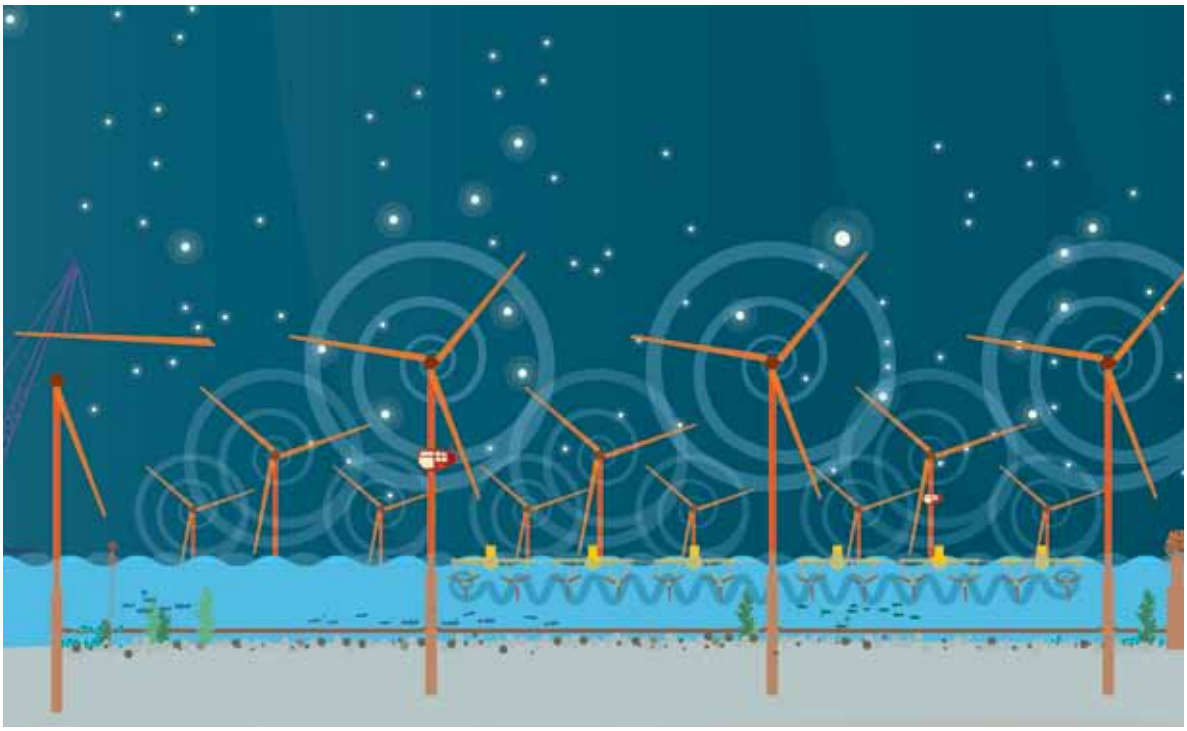
Based on the search initiated in the spatial agenda, in 2013 a Dutch company took the initiative to elaborate on the potential of tidal energy using its own latest technologies[11]. The outcome of this is a possible farm with 100 floating tidal turbines of 1 MW on 1 square kilometre. In 2014 the sea flow rate needed for this is ideally higher than 2 metres per second with a location at ideally at least 25 metres deep. Such locations are not common in Dutch waters, but various places are interesting enough for further exploration and development. Even more so because the study shows that tidal energy costs could reach the same level as the current cost price for wind energy at sea (2014: 17cent/kWh)[12]. It can be expected that market innovation will lead to additional profit as this focuses increasingly on the potential for electricity generation using low current speeds (from 1 metre per second) and can also create synergy advantages with other forms of sustainable development at sea.

The two locations with the best tidal energy potential in the short term are situated in or close to already designated wind energy areas; the Borssele area off the Zeeland coast and close to the Gemini wind farms, 55 kilometres to the north of Schiermonnikoog. The dialogue and research designed for the North Sea 2050 Spatial Agenda have delivered a third possible interesting location appropriate for further study: at Den Helder/Texel offshore. Sea trials will help to obtain the knowledge needed to generate electricity using lower current speeds.

A similar story applies to energy from waves. For this form of sustainable energy generation as well, parties are focusing on generating energy in relatively calm meteorological conditions. The 'Slow Mill'' being tested off the coast of Scheveningen is a prominent example.

[11] See the video interview about tidal energy for the North Sea 2050 Spatial Agenda on Noordzeeloket.nl

[12] The Energy Agreement and the SDE+ regulation indicate which government contribution will be provided to renewable energy at sea. The contribution will decrease over time.



Synergy advantages can be created through combining various forms of sustainable energy generation at sea

Impression of Bio-based Cluster Maasvlakte 2, source: Port of Rotterdam Authority

Perspective of energy from North Sea water 2030

From a spatial-economic perspective, electricity from seawater is thus an opportunity for the future. The potential of wave and tidal energy technologies, based on previous calculations and the opportunities envisaged by the market, is estimated at between 1,000 to 2,000 MW by 2030[13]. For further substantiation and knowledge of state of the art market technology a study is currently being carried out, contracted by the Ministries of EA and I&E. This will give more clarity regarding the perspective of the entire range of marine sustainable energy technologies for our country in the short and long term. A European Commission initiative established at the end of last year to develop an Action Plan for Ocean Energy is relevant in this connection. This is an elaboration of the Blue Growth theme ocean energy. The objective in the period 2014-2020, in collaboration between EU member states, is to help the involved sector to achieve viable applications of promising technologies.

Reducing the cost price of renewable energy from the sea

As well as cooperation to optimise the use of space and increase energy output of the current and future designated wind energy areas, innovation on tidal currents must focus on achieving a competitive energy generation cost price. According to the Energy Agreements and the agreements in the TKI Wind at sea, by 2023 offshore wind farms must be 40% cheaper than now and must achieve around 10cent/kWh. Energy from water must be seen to achieve this price in the long term in order to be competitive. This too requires innovation, which is also necessary for us to be able to face competition from providers of energy from water in other countries. Investments in additional energy generation possibilities at sea will improve the chances of achieving an optimum sustainable energy mix by 2050, without this being at the expense of using too much extra space at sea.

The marine cluster in the Netherlands has the know-how to turn this potential into reality and to develop a product for export. Numerous entrepreneurs are involved in wave and tidal energy. And there is a lot of cooperation, for example in the project 'Nourishing Deltas'. Some prefer to start with trials along the coasts, others are ready (via the Marsdiep trials[14]) to make the leap to offshore. There are several barriers; limited subsidy possibilities, no testing grounds and limited licencing space. Doubts regarding fish-friendliness of the technologies and their effects on the seabed can only be removed by open sea trials. Trials there could also contribute to continued technology development to obtain the maximum result from the relatively slow current and low wave heights. The development of a national test centre for tidal and wave energy in Zeeland deserves support, in combination with initiatives around the Afsluitdijk. Market

[13] Adjusted expectation based on market consultation and the report "Water as source of sustainable energy, inspiration atlas of possibilities" by Deltares, August 2008

[14] Tocardo, Bluewater and Schottel

parties and regional governments are working on this combination. Government cooperation gains form by offering opportunities to link this initiative with the flood defence/water control icons such as Oosterscheldekering, the Afsluitdijk, Grevelingendam and Brouwersdam.

Other energy solutions

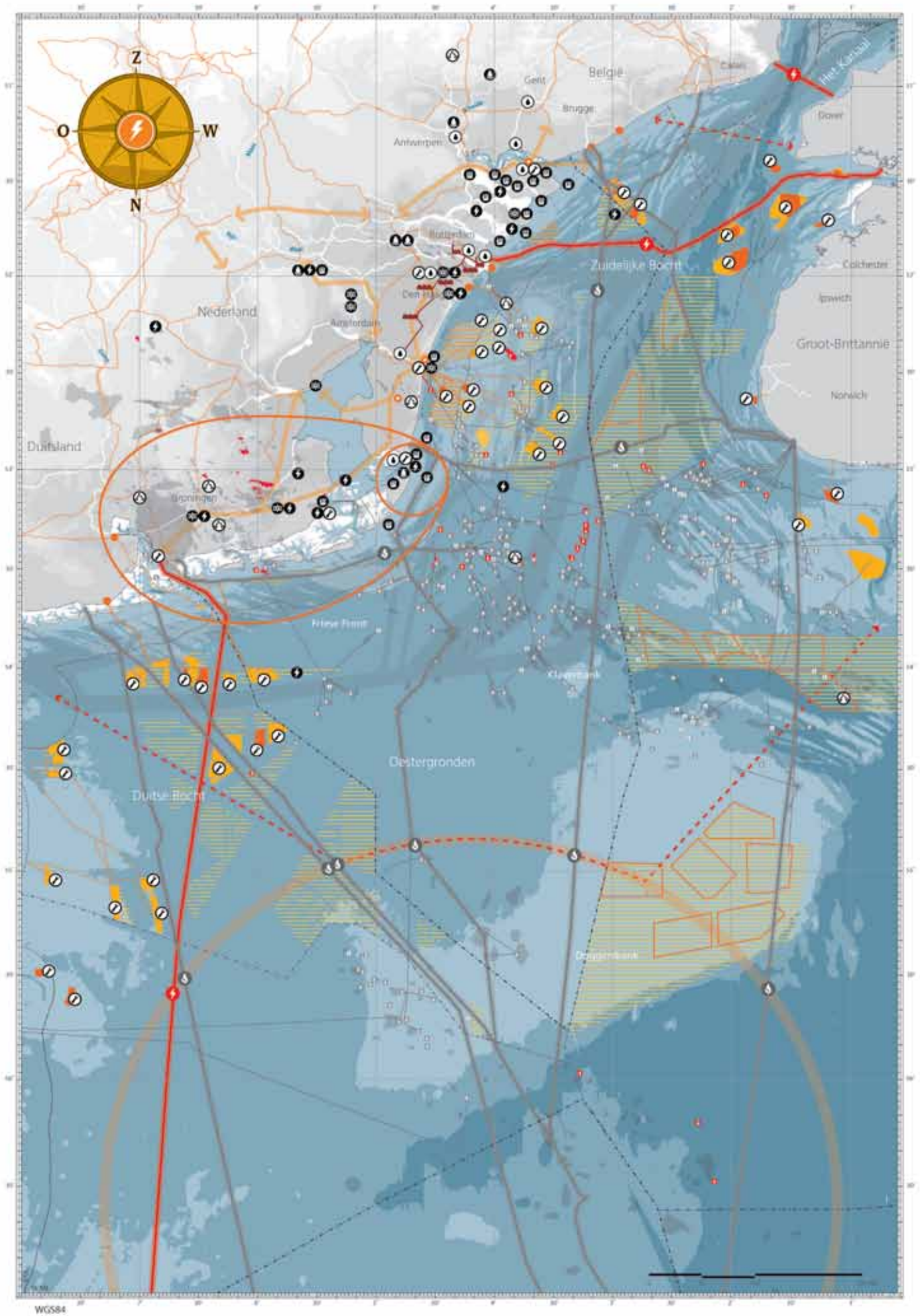
Energy from the North Sea concerns the use of the available (smaller) gas stores, re-use of empty fields and deep geothermal energy. Depleted gas fields are suitable as CO2 storage locations or as ground source heat reservoirs for geothermal electricity generation. In the latter case heat in the deep subsoil is used. Various market parties made suggestions for this during the spatial agenda process. Precise locations still need to be found, but along the coast is an attractive start, or in the neighbourhood of existing developments further out at sea. The involved market parties will be invited to come up with proposals. The Government is also supporting the focus on optimised energy storage and transport. There are various developments in this area such as 'Power2Gas'[15]. This technology is seen as a solution for the storage of temporary wind and solar power surpluses. Applying this technology on the North Sea deserves closer study.

North Sea energy transition master plan

Taking everything into consideration, the North Sea 2050 Spatial Agenda cannot conclude otherwise than that there is a significant need for a strategy for energy transition and an accompanying master plan for energy from the North Sea between 2030 and 2050/2060. Such a plan can be helpful for long-term spatial planning. The further involvement of many parties is required and many questions still need to be answered. This concerns the depletion of existing and the development of new oil and gas stores and the possible use of CO2 or other methods for enhanced oil recovery. Specifically the North Sea 2050 Spatial Agenda recommends a study into the social costs and benefits of combined energy farms at sea. Such a study should map out the advantages and disadvantages of combined energy generation technologies from wind, water and deep subsoil for the previously mentioned Borssele wind area, the location close to the Gemini wind farm and Den Helder/Texel offshore and in the neighbourhood of wind energy area "IJmuiden ver". Ideally, such a study will take place in cooperation with the business world, knowledge institutes and interest groups.

[15] Innovation project by Stedin in cooperation with Energy Valley Foundation, Gasunie and Hanze University of Applied Sciences and others

Impression of floating tidal energy farm, source: Tidalys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Themed map of Energy transition - National

Legend

Situation in 2014

Knowledge export - existing economic sectors

- Conventional energy / natural resources
- Offshore wind and services
- Carbon Capture and Storage (CCS)

Conventional resources - in use

- Gas field / oil field - producing
- Gas pipeline / oil pipeline - in operation
- Installation above water - in operation
- Installation below water - in operation

Conventional resources - decommissioned

- Gas field / Oil field - depleted
- Installation - decommissioned

Wind energy

- Offshore wind farm - existing / awarded / subsidy application
- Offshore wind farm - lease or agreement for lease
- Designated wind energy area
- Wind energy search area within 12-mile-zone
- Electricity cable with landing point

International network

- Gas pipeline
- High voltage cable, sea
- High voltage cable, land
- Landing point
- High voltage cable, land - proposed (indicative)

CO2 re-use

- OCAP network (Mainport >> Greenport)

Challenges and opportunities for 2050

Knowledge export - Blue Growth sectors

- Energy from water (Ocean Energy)
- Deep Sea Mining
- Blue Biotech
- Mariculture / Aquaculture

International network

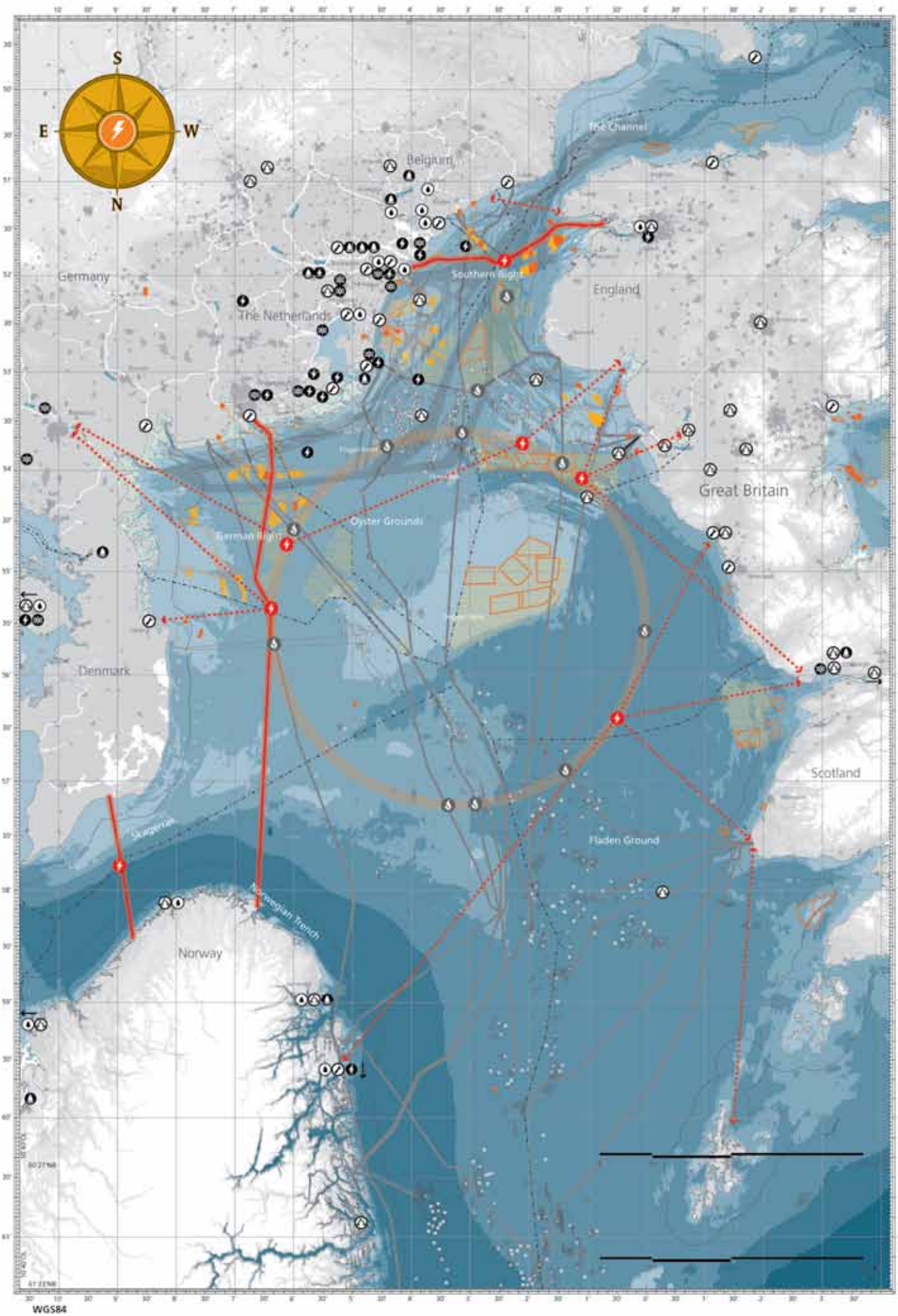
- Energy Grid
- High voltage cable - sea (indicative)

Cooperation

- Energy Valley Noord-Nederland

Wind energy

- Landing point - new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Norwegian Trench
WGS84

Themed map of Energy transition - International

Legend

Situation in 2014

Knowledge export - existing economic sectors

- Conventional energy / natural resources
- Offshore wind and services
- Carbon Capture and Storage (CCS)

Conventional - in use

- Gas field / oil field - producing
- Gas pipeline / oil pipeline - in operation
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Wind energy

- Offshore wind farm: existing / awarded / subsidy application
- Offshore wind farm: lease or agreement for lease
- Designated wind energy area
- Wind energy search area within 12-mile-zone
- Electricity cable

International network

- Gas pipeline
- High voltage cable

Challenges and opportunities for 2050

Knowledge export - Blue Growth sectors

- Ocean Energy
- Deep Sea Mining
- Blue Biotech

International network

- Energy Grid
- Ambition Energy Grid

The Eneco biologist

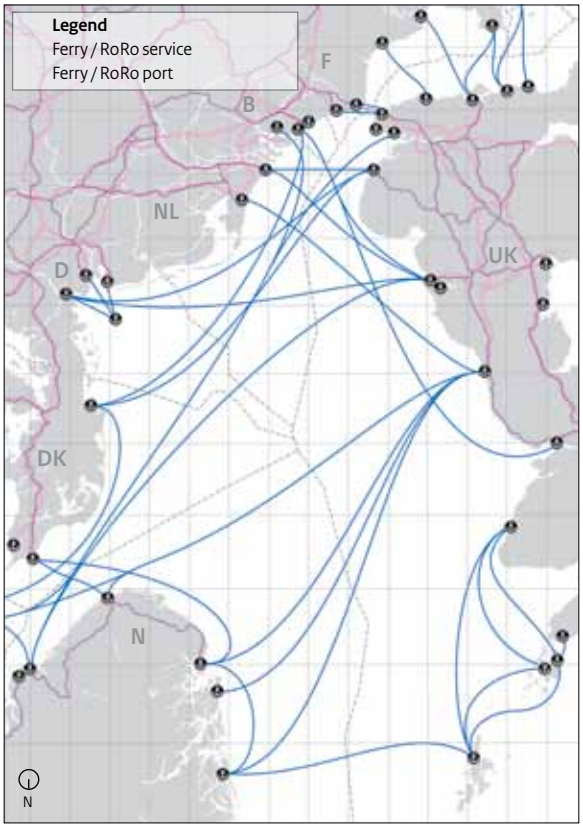
Tidal Energy

Photo: Peter Hilz, Hollandse Hoogte

2.3 Multi-functional or multiple use of space

In 2014 there is still not much integrated spatial development on the North Sea. The policy - as set out in the North Sea Policy Document 2009-2015, as part of the National Water Plan - focuses first on developing a function (particularly wind energy at sea) and then searching for co-usage opportunities (such as non-sea bed disturbing fishing, tidal and/or wave energy or aqua culture). The policy guideline being applied is, "When activities (of national interest) are stacked in the same area, the starting point is to aim for combined and space-efficient use, as long as the initiator does not experience unreasonable loss or hindrance".

In the spatial agenda it becomes clear that combined use of space is seen as a Dutch quality. On land we have succeeded in applying multi-functional use, but at sea that is not yet the case. The study with parties into co-usage of offshore wind farms is ongoing and focuses on passage of shipping and fishing. The question for the latter is whether the policy line 'non-sea bed disturbing' can be exchanged for 'limited seabed disturbance', especially considering the total available space, the fact that cables will be dug in and the switch of the fishing industry towards techniques with limited seabed disturbance. It is desirable that this study and the related consultation is concluded quickly, so that policy choices can be made. After all multiple use of space has many advantages, not just economic, or ecological, but also, for example, cultural advantages. If research is conducted into archaeological treasures at an early stage, you can incorporate wreck locations within for example offshore wind farms. This combines energy generation and the retention of cultural heritage.



Ferry and RoRo services

To achieve well-integrated multi-functional solutions it is advisable to develop various options with stakeholders from the beginning. Adding other uses within existing situations or after the realisation of a project (for example the co-use of offshore wind farms) appears to be difficult. Cooperation in the initial study and design phase offer breakthroughs here. The issue concerns the incentives that market parties need. Based upon this adaptations can be made to the current policy guidelines in the North Sea Policy Document 2015-2021.

Additional and lane-crossing traffic

New and emerging activities at sea, such as wind energy and aquaculture, will generate additional traffic to and from the locations at sea. This will lead to increased lane-crossing traffic at sea, with the associated risks for man and the environment. Natural areas, areas for renewable energy and areas for aquaculture are characterised by a vast (and large-scale) use of space in which other activities can no longer or cannot easily take place. New (single) use leads to the exclusion of other users, specifically those of the commercial and recreational shipping. In such cases, space at sea will become a scarce resource.

Opportunities for multiple use of space

The North Sea 2050 Spatial Agenda process has shown that the most long-term integrated area development opportunities are in energy farms. Multiple use of offshore wind farms for sustainable fishing with fishing methods that do not or hardly disturb the seabed and/or for recreation, as such, is a possibility. Security and search and rescue by the Coastguard and lifeboat association are and continue to be important conditions for all those involved. Research is being carried out into this and should lead to clarity in the short term.

Function combinations of wind energy with mariculture (seaweed cultivation) and aquaculture (such as mussel beds) are only promising in areas close to the coast. Sufficient nutrients can be found here, which can be used within safe ecological margins. What is more, for these activities it is not economically viable to have to sail long distances regularly for inspection and activities.

Mariculture can be combined well with other uses at sea, especially aquaculture as described in the chapter 'Building with North Sea Nature', but also with wave energy. For example the movement of installations for seaweed cultivation through the water must be subdued, so that these do not become detached under pressure from waves, tides and wind. Wave energy installations can be helpful to break the waves. By siting wave energy systems here, energy can be generated in the same area. The space beneath the seaweed farms can also be utilised. It is possible to achieve additional synergy by sharing anchoring systems, for example with tidal energy generation. In this way there will be one tried and tested concept that Rijkswaterstaat needs to assess and approve so that safe anchoring at sea is guaranteed and certified for these functions.

During their recovery period after use, sand extraction areas are extremely suitable for seaweed cultivation. This offers opportunities for more rapid re-population of the seabed.

The seaweed cultivation units need to be resurfaced every 4-5 years for major servicing and can be installed elsewhere. Parties in this field are challenged to develop a technically reliable and economically viable integration.

Integrated planning from the design phase

Multi-functional use of the North Sea wealth in 2050 is based on integrated planning in space and time through combining functions. Preserving the most important ecological areas to enable the system to recover plus preserving the space for safe and smooth shipping, fishing and recreation, requires smartly managing locations in which combined use can offer added value. Energy areas at sea with various technologies seem to offer a realistic vision of the North Sea in 2050. Temporary protection of areas for one function is needed increasingly less and will only take place if demanded by the vulnerability in or security of that area.

Photo: Tineke Dijkstra, Hollandse Hoogte

2.4 Connection between land and sea

The Netherlands has always lived with the sea. In prehistory, people lived on the current seabed, and today Dutch citizens generally live with their backs to the sea on land. The requirement to protect our investments on land against the power of the sea has resulted in a strong separation between land and sea. The downside of this is that we no longer recognise all the aspects of the North Sea as part of the Netherlands. That is why connecting sea and land, and land and sea is a theme in the North Sea 2050 Spatial Agenda. This theme focuses on recreation, tourism, culture and the connections needed to land goods and services. It also concerns logistics and other operational connections to offshore locations and the social and administrative views from land to sea.

Almost all marine activities that people undertake start on land, go to sea and end on land again. This has created infrastructural intersections. Ports, with their own culture, are gateways to the sea for transport, fishing, near and offshore logistics and specific specialisations such as refinery blast furnaces, etc. Recreation also provides a considerable contribution to gross national income and this is expected to increase considerably to a possible 1% of the Gross National Product. The technology of iconic Dutch flood defence/water control structures attracts an increasing number of visitors from near and far. The strengthening of the coast's weak points is innovative, as in Scheveningen and Katwijk. Particularly in the latter example, access to and connection with the sea has been an important element in the decision-making.

Sea and coastal tourism and recreation

The tourism sector for the Netherlands as a whole is responsible for 3% of the Gross National Product and 5% of the employment. Approximately 25% of overnight stays in the sector take place along the coast. The attraction of the Dutch coast and the Wadden is the 250 kilometre-long stretches of sandy beaches with adjacent dune areas, interspersed with resorts and small ports, often with their own individual identity. The coastal areas and the Wadden offer space for bathers, surfers, kite-surfers, hang gliders and anglers. Marinas along the coast and inland waterways offer a base for sailors and motorboat sailors. Research by Ecorys in 2013 funded by the European Commission, calculates the added value of sea and coastal tourism for the Netherlands, including cruising, yachting and marinas, at 3.7 billion euros. Developments in the sea and especially coastal tourism up to 2050 are difficult to predict. Tourism policy is decentralised, and is mostly materialised by the tourism market.

As a market in the Netherlands and the North Sea region, tourism faces various challenges. Retaining well-educated personnel, increasing the appeal outside seasonal peaks and competition with holiday destinations within and outside Europe are general points. Clean beaches and good bathing water quality continue to be important. Another important trend is the ageing population. Mobility plays an important role for the older target group. For beaches this could mean shorter walking distances from car parks to the beach, or other logistics forms, such as shuttles. Other ideas worth consideration include wheelchair-friendly paths (to the beach) and other provisions for people with a handicap. Another trend is the short holiday break, with visitors searching for multiple activities and experiences. Local and regional entrepreneurs, together with municipalities and provinces can respond to this opportunity. High-quality services at sea and in the hinterland should be taken into consideration. Year-round appeal is gaining importance. And there is already a response to this with the so-called wellness tourism.

The North Sea 2050 Spatial Agenda process has mapped out which activities take place where. Leisure yachting takes place throughout the North Sea, but mainly focuses on the Wadden Sea. Close to the coast, in the first few hundred metres from the beach, activities take place often on a daily basis, such as surfing, angling and swimming. Accessible

"Drowned land" (source: Atlas van Nederland in het het Holoceen, 2011)

ports, space at sea and safety of those on board are important points for recreation and tourism at sea (for yacht owners, sailing competitions, events and organised group travel). Cruises at sea are a growing leisure activity that is now attracting more and more young people. Ports at home and abroad are responding to this demand, although this also brings its own challenges for such things as port facilities, logistics and the environment. The appeal of cities and coastal areas are also important for cruises and ferries, as well as port facilities and accessibility by land.

The National Coast Vision sees the coast as the golden edge of the Netherlands and mentions special areas for further development. Stakeholders in the North Sea 2050 Spatial Agenda process recommend that tourism becomes a more central theme for regional area development. This can take place via the Coastal Community announced in the National Coast Vision and other regional cooperative networks and/or in the regional structure visions for the future. Also worthy of attention is cooperation with other countries around the North Sea, to promote the region as a whole.

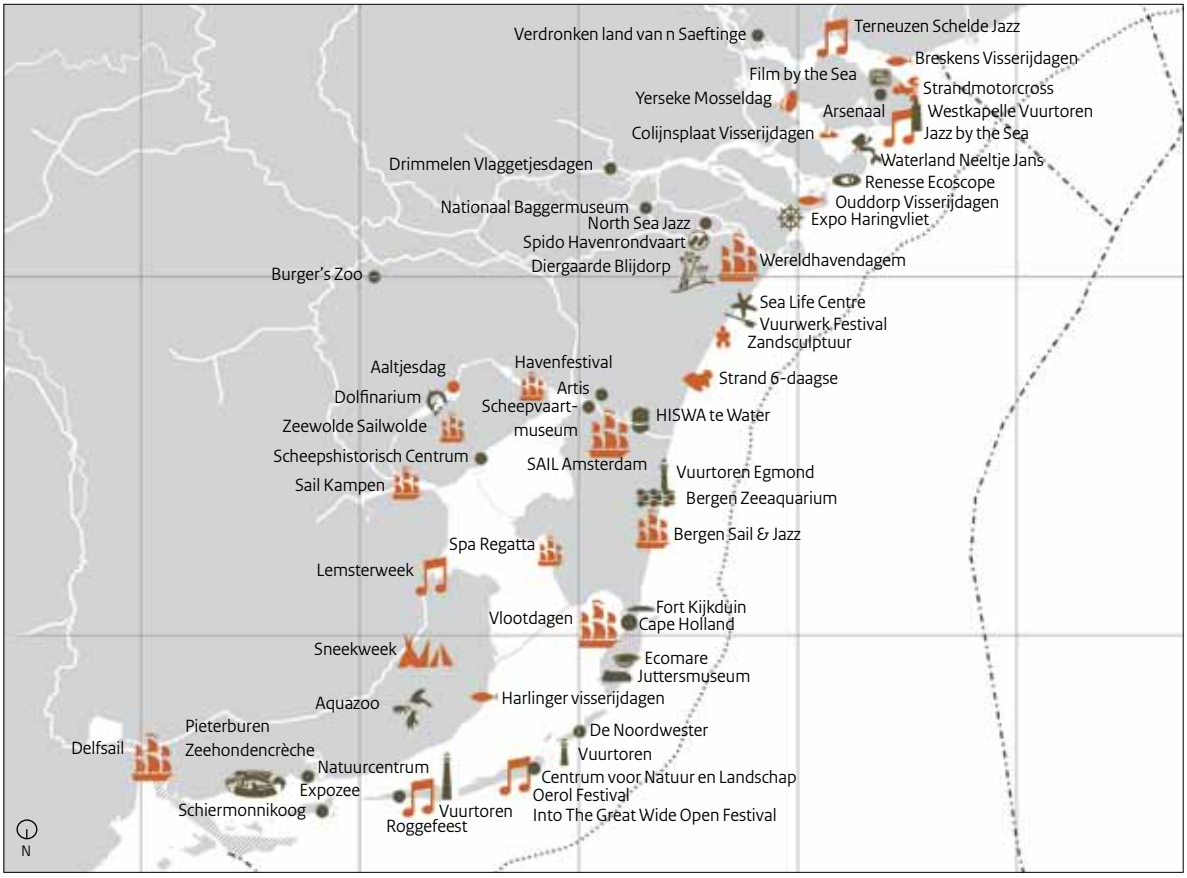
Culture

The North Sea 2050 Spatial Agenda process discussed the underwater cultural heritage and particularly the importance and the value of wrecks. These have an element of culture, nature, history, safety and experiencing the sea.

Policy-formation for cultural heritage under water gains strength with the requested ratification of the UNESCO Underwater Cultural Heritage Treaty. As well as a focus on protection of wrecks there is increasing interest in the landscape and historical value of the North Sea sea bed. Knowledge of the sea helps in this. The Ministry of Education, Culture and Science is mapping out prehistoric relics and historic wreck locations so that these can be taken into account in spatial development; ensuring that those sites of special value are not lost.

As well as researchers and very many other interested parties, the sea and coast also still attracts artists and the beach is a location for exercise and enjoyment. There are annual sailing trips for bird watchers from the Wadden islands. Recreational anglers who fish from quays do not only enjoy the fishing; it is also about social interaction.

The recovery of the value of sea and coast for cultural-social contribution connects to the vision that people form a bridge between land and sea; it is after all the people who go back and forth, like the tide. For work, recreation or just to get away. That is why the sea and the maritime heritage are experienced on land.



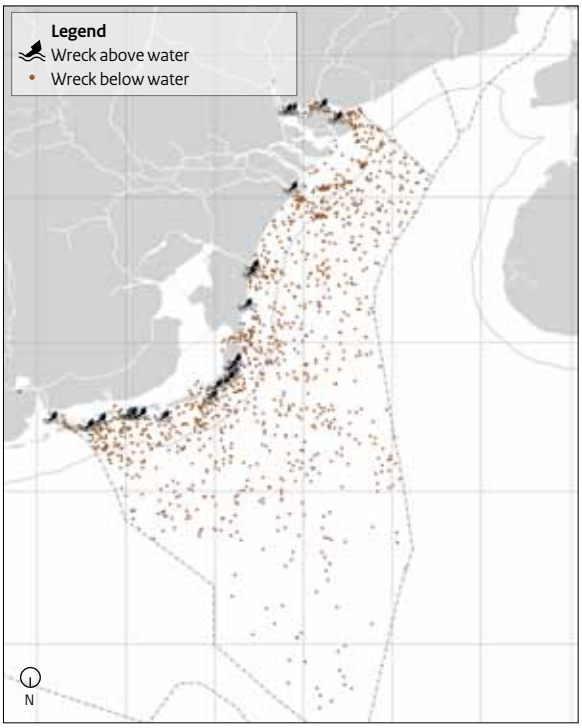
North Sea related events, festivals and tourist attractions in the Netherlands

The story of the value of wrecks in the North Sea

What wreck divers and archive research provide…

The Wreck Register comprises a spatial overview of all known wrecks on the North Sea. The locations were mapped out 60 years ago. The information then known about the type of ship, build year, function, possible cargo and destination and the reason for its demise, was drawn up at that time. The seabed on the Dutch section of the North Sea is littered with some three thousand wrecks and obstructions. An unknown number of these comprise archaeological remains, including old shipwrecks and settlements. Another part comprises lost cargo, sunken ships and ship components. Wrecks and their value are a subject of discussion in the North Sea 2050 Spatial Agenda from a multiplicity of perspectives.

Fishing nets continue to get caught in wrecks. Anglers find what they are looking for near wrecks: fish. What is the value of wrecks for the marine ecosystem? How does this work with the breeding ground function? Is it of value to protect these to create a healthy and productive sea, with a rich and varied ecosystem? What do amateur divers and others search for in and near wrecks? How do we prevent the undesired destruction of wrecks? Would ratifying the UNESCO treaty for underwater cultural heritage help? For wrecks themselves and for our knowledge of these: after all these are also an important, tangible and accessible part of our cultural heritage. In short what is the common denominator; our common interest?



Wrecks in NL

Wrecks and shipping

Most wrecks form no danger to shipping. Some are entirely covered by sand and invisible. Other wrecks have been included in the map but the available information is dated, which means that the information, including the position, becomes less precise. Hazardous wrecks are - with a view to shipping safety - marked with a wreck buoy.

Ships such as 'Baltic Ace' are salvaged, as are all modern shipwrecks actually, from large to small, also because of the danger of environmental pollution. Older wrecks located on a new sand extraction area or on a new shipping lane can be salvaged under certain conditions. There are numerous wrecks that lie beneath or between shipping lanes. For safety reasons no diving can take place at these locations.

Wrecks in 2050

From the 2050 perspective it is necessary to map out developments and relate these to the current situation. The discussion about this provided the following vision:

According to the Treaty of Malta and the UNESCO treaty, older wrecks, particularly those of wood, are of unique value to mankind and should be protected world-wide. As is the case with shipping, international global cooperation is required here. Archeologically it is desirable to leave the cultural heritage under water and to protect it in situ: at the location on which it was found. Shipwrecks are seamens' graves; seamen who never returned. Some wrecks lie safely below the sand. Many of the wrecks from the VOC period were lost around the area of Texel. The VOC ship 'The Amsterdam' has been replicated and can sail again. This history affects us.

Why would you dive in the North Sea?

A professional diver explained:

"If you dive in the North Sea, there is less to see than in the Red Sea, particularly as far as coral is concerned. But diving is more than looking at something pretty. What makes diving in the North Sea so great is that you have to prepare, make plans with charts, and you need to wear your mask differently. As far as diving techniques go, it is cool. What is more, there is always something to see, certainly on clear days. But it is indeed different than the tropics: fast currents, poor visibility. There are great places. What is really special? If you can dive in the North Sea, you become so good that, as a diver, you can dive almost anywhere in the world."

The demise of wrecks

Geomorphological processes, or how the sea, seabed and coast move, play and important role. Wrecks and obstructions thus do not lie still on the seabed. Tidal currents cause turbulence that draw grinding channels in the sea bed around a wreck. A wreck can slip away in these and over the years become completely buried in the sandy bed. The wrecks that stand about above the sand are affected to a large extent by the natural movements of the sea and by corrosion. These natural processes can cause a wreck to disintegrate entirely over 20 to 30 years. Wrecks often break up over time, making identification more complex. If such a wreck disintegrates, this creates a more or less stable situation. Not all wrecks decay; some are still reasonably intact after 100 years. This is less attractive as a diving object but for archaeologists such a wreck still often offers a lot of information. So there are many sides to this story. For archaeologists such a wreck is still of great value, while divers and/or nature gain much less benefit and enjoyment from it.

The dynamic of the North Sea bed is considerable

Wrecks on and in the seabed face this North Sea dynamic. Wrecks can end up lying under sand and in some cases can just reappear. It is a process that is mostly invisible. There are many examples that beach-visitors and coastal tourists can observe. Natural processes cause sandbanks and the Wadden islands to shift. The Zandmotor, as an example of building with nature, and the construction of Maasvlakte 2, as an example of a land in sea structure constructed by human hands, are closely monitored for their influences on the movement of sand. The sand starvation in the Oosterschelde and in the Wadden and Eemsmond are witness to the huge changes on the seabed. The Hydrographic Service and Rijkswaterstaat monitor the influence and power of water currents closely.

How further?

For various reasons the involved parties consider that it would be a great pity for wrecks to decay unseen for a second time, without accounting for the knowledge and the story behind the wreck. This would mean that we would actually lose a part of our marine and maritime history. Although the location of many of the wrecks in the North Sea is more or less known, by no means all stories are accounted for, researched and verified. However, a group of active divers is looking into this, at sea and in archives. They would like to share the knowledge gained with society and with the government. It goes without saying that cooperation with universities such as Groningen and Leiden can add much value. This would mean that the research would be accounted for scientifically and can be used in education. This offers a unique opportunity to utilise the power of society.

Wrecks and nature

The value that various wrecks still lying above the sand have or can have for nature and biodiversity at sea, should be determined per wreck. After all, not all wrecks house an equal treasure of natural values. Here too, cooperation between governments, social partners and fishing is needed.

Wrecks and wind turbines at sea

Archaeological research must first take place in planning offshore wind farms and the construction of wind turbines. Such research needs the best possible pilot studies. The spatial agenda process suggested searching for cooperation with experienced divers who would like to share their knowledge.

Involve people on land with the sea

The theme of connecting land and sea gives an opportunity to involve society even more broadly in the future and the enjoyment of the sea. It starts with preserving old cultural treasures. This keeps the maritime nation alive. With its annual fishing day, a tourist experience, Katwijk keeps alive the memory of boats that, until 1913, used to land fish on the beach. But of course this is also about the wider economy of now and in the future. Coastal areas and islands form an important breeding ground and incubator for future offshore activities. It is not without reason that the Northern provinces are developing an Energy Valley; this represents a linked integrated development of sea and land.

Dutch ingenuity

There are test locations for energy from water, seaweed cultivation and salt cultivation in the salty Oosterschelde, the waters around Texel and Eemsmond, as well as the dikes and constructions along the coast. The latter two are now being linked together under the motto ‘use the wealth of the sea for the poverty of the land’, in which seaweed will be

used as a natural fertilizer. Fertilizing a polder on Texel using seawater for the cultivation of cockles is probably the ultimate example of connecting sea and land in a new and innovative way. The spatial agenda sees these two cases as being excellent illustrations of the interconnectivity of sea-land issues, the story of food and nature and with this the eco-shaping of Dutch ingenuity.

Further exploration of development along the coast

Everywhere along the coast parties are involved with elements of integrated maritime policy. Within the chosen approach of discussions, the dialogue for all regions still has not moved further than an exploration of the main themes. Various interviews, including with the Zeeland Provincial Executive, Urk fishermen and regarding seaweed cultivation give an initial indication of how vital working with the sea and coast is. The theme still has a lot more to offer, and it is worthwhile focusing on the detail of this, for example in realising the spatial agenda or in the process around the North Sea Policy Document for 2015-2021. Developments such as in Den Helder regarding civil/military cooperation, in the Eemsmond area, along the coast of Groningen and Friesland, and the rest of the North and South Holland can then be mapped. Attention for the land and sea theme in the MIRT agendas could also be useful. Investments in infrastructure do not serve a particular sector nor can they be provided by one sector. Coastal tourism - because of its high seasonal connection - is an excellent example of this. There is a considerable number of efforts to reduce this seasonal dependency so that the coast increasingly becomes a year-round place to stay.

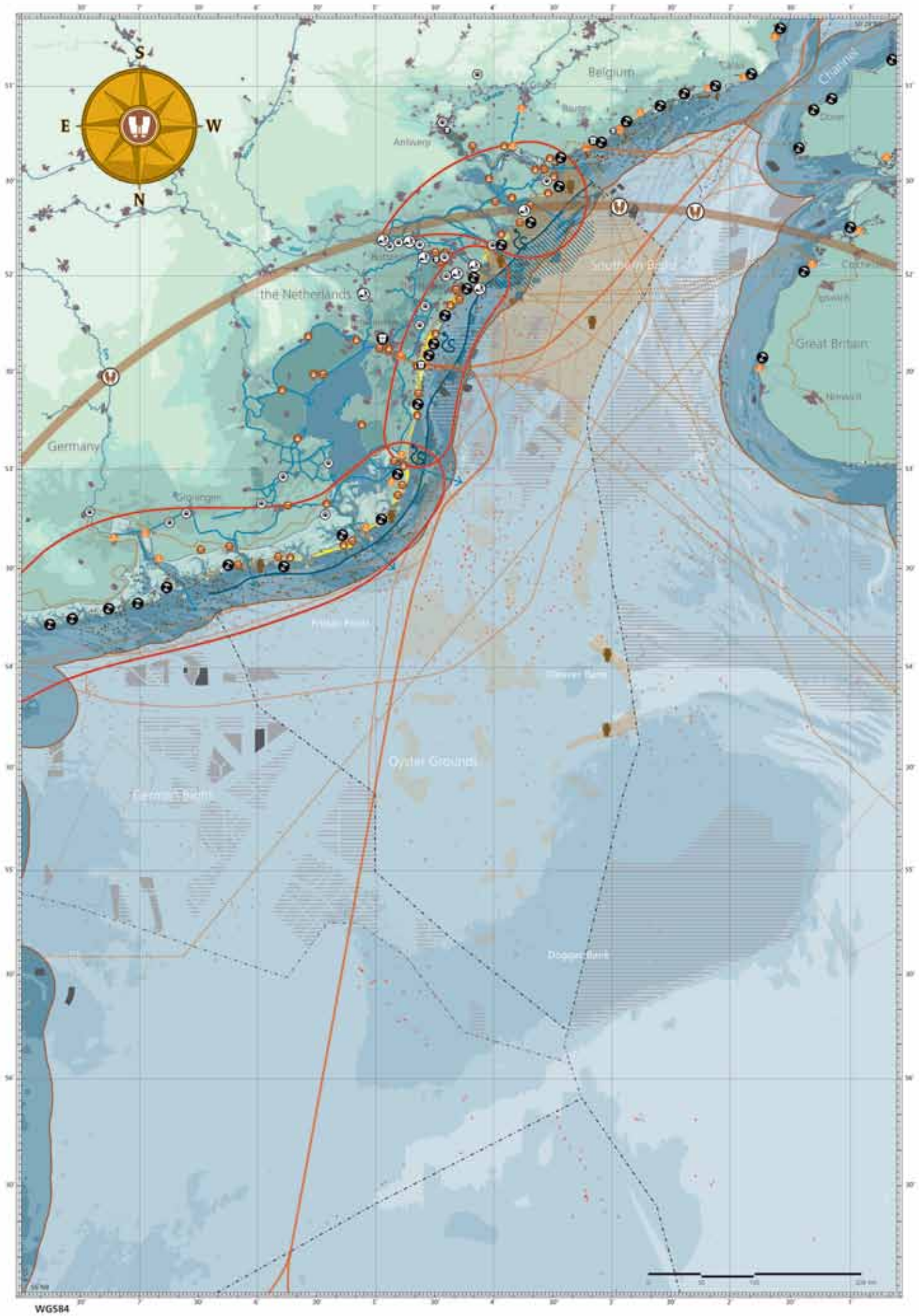
Sustainable wreck-diving

The Ministry of ECS and the Agency of Cultural Heritage have made a plea for sustainable wreck-diving. This means for the future that the Government will follow a more restrictive route, aimed at prevention and sanctioning of treasure hunts. This does not mean the end of wreck-diving or conducting archaeological research. Diving, filming and taking photos are possible, but removing items without permission is not. The Government wants more information exchange between the government, fishing industry and recreational divers. Because everyone wants great wrecks to remain available for diving and remain interesting for researchers.

Clusters: Dutch cooperation at its best

The maritime clusters and training courses are mainly found along the western edge of the Netherlands and around the IJsselmeer. In the coastal provinces, but even in Wageningen and Limburg, there are people who depend for their daily existence on the sea and thus also on the connection between land and sea. In the areas further from sea, such as in Utrecht and Wageningen, there are universities in which future generations receive education about the seas and oceans.

The maritime and offshore sectors and their suppliers can be important employment forces for the future; connecting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WGS84

Themed map Land & Sea - National

Legend

Situation in 2014

Knowledge export - existing economic sectors

Flood defences / water control / building with nature

Shipbuilding

Leisure / Tourism

Museum (regarding North Sea)

Event (regarding North Sea)

Cruise terminal

Cruise ship routes (indicative)

Marina

North Sea cycle route

Leisure craft shipping channels

Ferries

Activity, Angling and Leisure yachting (12-mile-zone)

Living and working at sea

Oil platform

Offshore wind farm: existing/awarded/subsidy application

Designated wind energy area/lease or agreement for lease

Wind energy search area within 12-mile-zone

Cultural history

Wrecks above water

Wrecks below water

Indicative archaeological value:

- high

- medium-height

- peat layer

Military

Military areas

Coastal defence

Dunes

Coastal foundation - 20 NAP line

Sand extraction location (active/concept)

Underground

Urbanisation

Relief:

>300m 0 12-mile-mark -100m

Challenges and opportunities for 2050

Knowledge export - Blue Growth sectors

Tourism

Leisure/tourism

Strengthening coastal landscapes

Cultural history

International cooperation tourism and cultural history

Coastal defence

Development of dynamic coast (building with nature)

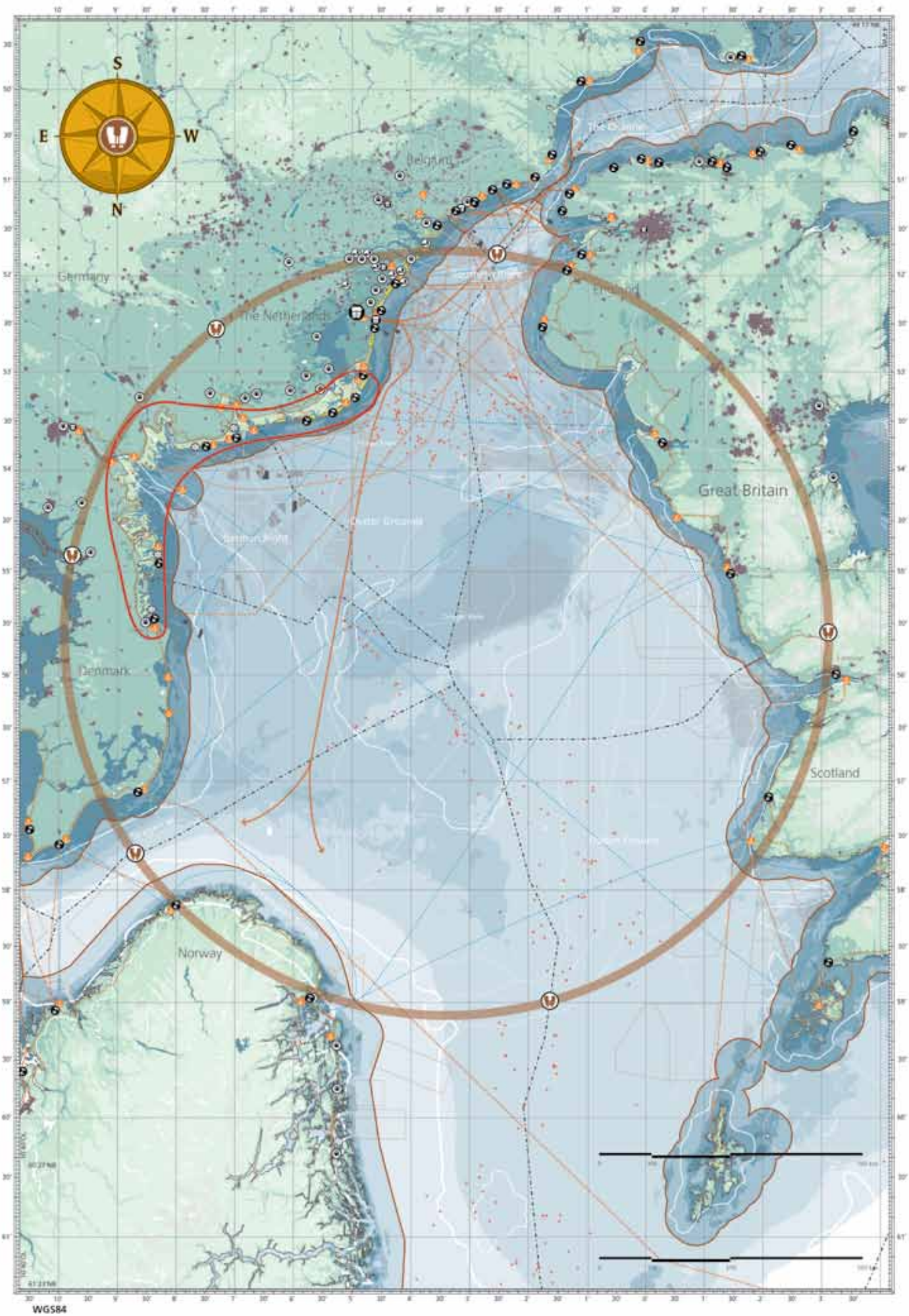
Human Capital Agenda

In the context of Topsector Water, a Human Capital Agenda has been formulated that also applies to the North Sea: "In order to keep the Dutch Delta safe and liveable and to realise international growth opportunities, the top sector needs skilled professionals. This demands intake, retention and development of personnel and the strengthening of a good hydrology education infrastructure. To keep the sector at the top internationally, employers realise that for a declining employment market real innovation in a human capital approach is needed.

education to developments at sea is desirable. Together, the business world and educational sector are addressing this well, via the trio: 'technical innovative, ecologically responsible and economically viable'. In higher education, administrative and practical challenges regarding use of space and ecological knowledge are moving toward each other.

The Dutch water sector has a strong international orientation. There are many companies in the sector with offices abroad. But conversely, there are countless international companies that give their Dutch branch the opportunity to become involved in hydro technology. It is, of course, in the interests of employers that employees are well-trained. Dutch businesses also do a lot of business with foreign trading partners. Good knowledge among these trading partners is in the interests of our trade relations. Places are reserved for foreign employees within the structure of the human capital network. This offers opportunities for the internationally-operating water sector. The Netherlands is the place to to be educated in matters concerning water. The spatial agenda adds to this: "In 2050 too!"

The North Sea 2050 Spatial Agenda demonstrates where land/sea challenges and connections lie, particularly in the area of experience, leisure and tourism. Where possible this will relate to area challenges and opportunities on land. The spatial agenda process has actually not yet analysed all coastal areas and regions in detail. And participants have also not yet been able to complete the cycle route around the entire North Sea.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Themed map Land & Sea - International

Legend

Situation in 2014

Knowledge export - existing economic sectors

Flood defences / water control / building with nature

Shipbuilding

Leisure / Tourism

Cruise terminal

Cruise ship routes (indicative)

Marina (selection)

Leisure yachting (indicative)

North Sea cycle route

Ferries

Activity, Angling and Leisure yachting (12-mile-zone)

Living and working at sea

Oil platform

Offshore wind farm: existing / awarded / subsidy application

Designated wind energy area / lease or agreement for lease

Wind energy search area within 12-mile-zone

Cultural history

Coastline 8000 BC

Coastline 10,500 BC

Prehistoric river courses

Military

Military areas

Underground

Urbanisation

Dunes

Relief

>300m 0 12-mile-mark -100m

Challenges and opportunities for 2050

Leisure/tourism

Seaside town

Also as winter destination

International cooperation, Wadden coast

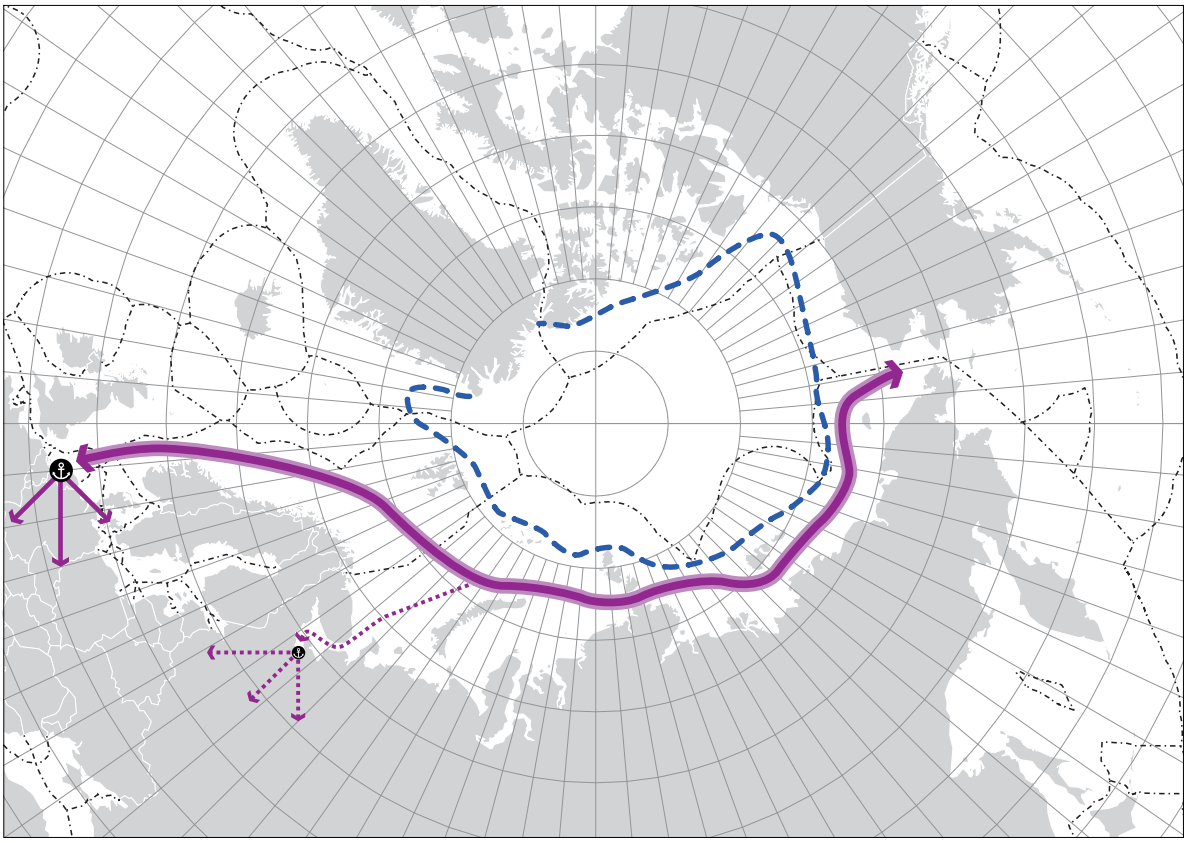
Culture history

International cooperation tourism and cultural history

Wreck diver

Zeeland & the North Sea


STENA PROVENCE
StenaBulk



The route along the North Pole (in talks regarding the spatial agenda indicated as the Willem Barentszroute)

2.5 Accessibility and shipping

Improvements in safety, retention of accessibility of ports and the region, the prevention of accidents at sea and ecologically-responsible use are the three pillars beneath the shipping ambition that will remain now and in the future. This will require further attention, especially considering expected developments at sea that will lead to a reduction in manoeuvrability and available sailing area. Whether this involves the world's largest 400-metre-long vessels, fishing vessels, sailing yachts or specialist off-shore vessels, all are subject to international regulations within the International Maritime Organisation and the UN Convention on the Law of the Sea (UNCLOS).

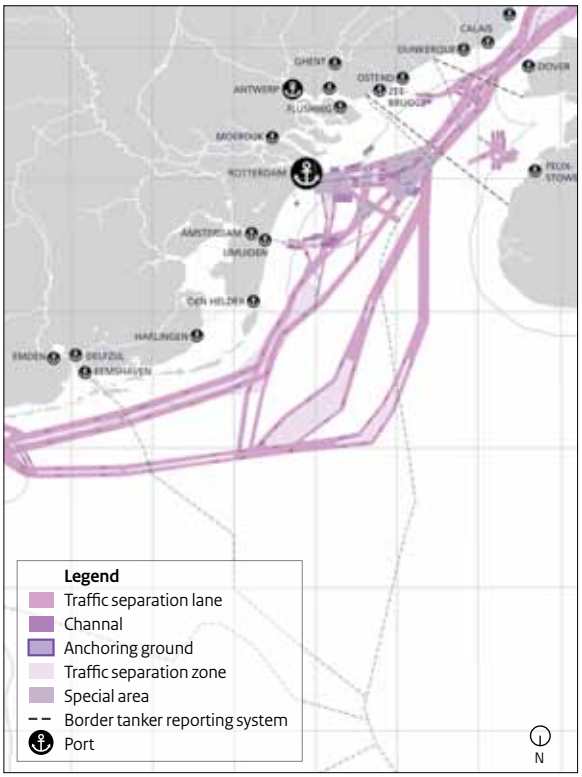
Ports and their access roads

For now no big changes are expected in goods flows or products that are transported to and from the sea ports in North West Europe. There is no need for expansion of port areas (such as a 3rd Maasvlakte) in the Netherlands until 2030. The supply of raw oil, iron ore and coal continues at its current level in spite of the transition to more sustainable energy generation. In the container market, changes will take place connected to developments in the world economy. The use of space, however, will bring significant changes to shipping traffic at sea.

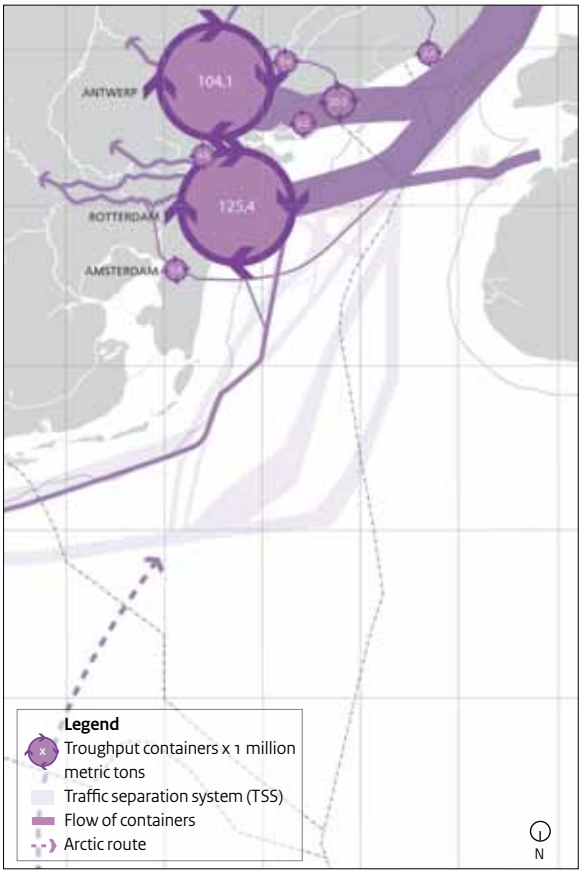
To be more economical and cost-efficient, for deep sea traffic the market will deploy extra large vessels. This will probably lead to less movement of larger vessels, but is also expected to lead to increased movement of smaller vessels that supply specific routes and markets. From Zeebrugge or Rotterdam to Gothenburg and back for example. Just like the deep sea shipping, such services are dependent on a time slot in the port. In general, an increase in 'Short Sea Shipping' (which is also European maritime policy) is expected. A timetable applies to ferries too, such as the (double decker) ferry from Hoek van Holland to Harwich and the ferry between IJmuiden and Newcastle.

Sea ports

The increase in capacity of the sea lock in IJmuiden will bring huge changes to the ports in Amsterdam and will be good for cruise tourism. It is the ambition of the Port of Amsterdam NV to expand its transhipment to 125 million tonnes. An increase in shipping movements needs to be taken into account here. This also applies to shipping traffic on the Westerschelde. The Port of Antwerp is considering the construction of the Saeftinghe dock, the port area accessibility on the left Scheldeoever will be significantly improved with an additional lock (Deurganck lock) and construction is being prepared for a new large lock in Terneuzen especially for the Port of Gent. Although preparations for the construction of a Westerschelde



Traffic separation scheme (TSS), source: I&E 2013, RWS 2013



Container transport NL/B , source: www.portofrotterdam.nl, 2012; www.havenschapmoerdijk.nl, 2012

Container Terminal in Vlissingen have been put on hold, it should not be ruled out that this will need to be resumed in the long term. The German sea ports - Hamburg, Bremerhaven, Wilhelmshaven/JadeWeserPort - and the ports on the Baltic Sea also have growth ambitions, particularly in the container sector, which will impact shipping on the Dutch section of the North Sea.

No area specific research has been undertaken in the spatial agenda process into the development perspectives of all port cities and coastal municipalities, or into the need for new or adapted positioning of anchorages for vessels. This is recommended for connecting land and sea and from the point of view of accessibility/shipping. This applies to large ports as well as smaller ones, such as Lauwersoog.

New routes

It is also clear that shipping will no longer only move via the Channel: the newest cranes for Maasvlakte II for unloading the 'triple E' arrived via the North Pole route last year. The 'Polar Code' is currently being formulated at international level to enable shipping traffic in the polar area to take place in the most environmentally-friendly way possible. The route along the North Pole (in talks regarding the spatial agenda indicated as the Willem Barentszroute) will be opened up more and more for traffic between China/Asia and Europe. Joint studies with governments, ship owners and ports in North West Europe should reveal how this could precisely develop in the long term and the consequences this will have for the ports themselves and use of space in the north western and southern parts of the North Sea.

International cooperation for shipping

Being a flag state, coastal state and port state, the Ministry of Infrastructure and Environment contributes to an important extent to the International Maritime Organisation (IMO) and other international organisations such as IALA (International Association of Lighthouse Authorities) on the development of e-navigation (enhanced navigation), for which coordinated support is given at national level by the sea ports, the Coast Guard, the Royal Association of Dutch Ship owners (KVNR) and other stakeholder organisations. It is expected that the complexity, the introduction of new or improved services and the application of new technologies, will have consequences for the implementation of e-navigation both organisationally (legislation, responsibilities) as well as financially (design of services, systems).

Shipping traffic image changes as consequence of offshore wind

The traffic image at sea will definitely change as a consequence of more intensive coastal shipping and shipping movements to and from offshore activities. Therefore, the coming decades in the North Sea should focus on the effect that the construction of offshore wind farms will have on shipping traffic. Not only in Dutch waters, but also in Germany, Denmark and England[16]. France, Norway and Sweden also have ideas that are ready to start or are being developed. Germany has made a reasonably sleek separation in its section of the North Sea as far as wind energy (20,000 MW) and shipping functions are concerned. Belgium has no concrete plans for the coming period to expand wind energy at sea in addition to the 2,000 MW currently in development, due to a lack of available space. For years there has been consultation with England, which is to site some 21,000 MW in wind turbines in a North Sea area, regarding safe distances to shipping. The separation of shipping traffic and offshore wind farms is, however, not standardised internationally. As well as Dutch efforts at North Sea level to reach a form of harmonisation, in 2013 the 'World Ocean Council' together with 'The Nautical Institute' developed a 'best practice' advice regarding shipping in relation to maritime spatial planning. More specifically this advice concerns safe distances between shipping and offshore wind farms[17].

Lane-crossing traffic

Future generations of offshore wind farms are for now appearing in locations with relatively shallow waters and close to the coast, which may result in drawbacks for shipping traffic. Not only because of the use of space itself, which could be a reason to revise fixed shipping routes. The construction and particularly the maintenance of offshore wind farms will result in significant shipping movements and an increase in lane-crossing traffic will need to be taken into account. From the safety perspective, the possible safety risks, the marine environment and space need to be well-detailed and where necessary lead to additional action. In the first instance this involves gaining better understanding of the actual number of shipping movements, specifically in lane-crossing traffic hotspots. The offshore market and the energy companies/farm developers develop concepts and vessels that aim to keep personnel at sea for longer periods of time. In other words, through so-called floatels (hotels at sea), a working island, or through specially-equipped maintenance vessels. This development

[16] A total image of a possible future is implemented in the Windspeed project: www.windspeed.eu. An outcome of this is an image of 90 to 125 GigaWatt in produced wind capacity by 2030, depending on the spatial priority that is awarded and the technologies for deep water construction.

[17] http://www.nautinst.org/en/forums/msp/index.cfm

Photo: Rob Niemantsverdriet, image bank I&M

can lead to a different insight into shipping movements and risks. Models that can generate a reliable prediction of this are in development[18].

Displacing shipping, a spatial effect of offshore activities

As well as lane-crossing traffic, displacement effects need to be taken into account regarding offshore wind farms. Declaring areas inaccessible at sea means that shipping traffic needs to take place elsewhere, which means that other areas will become busier. This can thus threaten the safety of shipping and accessibility of sea ports in these areas.

An important issue is whether offshore wind farms will affect shipping and joint use by short sea shipping, leisure craft and in particular fisheries, as well as the conditions under which this can happen. For example, can ships sail in and out of an offshore wind farm? This is an important attention point, partly in relation to through traffic towards the ports, the deep water routes and lane-crossing involving scheduled services. After all, the above-mentioned shipping also needs to take other functions at sea into account, such as military exercises and platforms. Safe and efficient navigation for shipping is important for all, also for the protection of the marine environment.

Shipping traffic management

The traffic management theme was also discussed in the consultations regarding the North Sea in 2050. One reason for this was the 'Baltic Ace' collision. The increase of shipping traffic, the scaling up - larger and faster vessels - and the entitlement to use the sea for such things as energy generation (including safety zones) and the designation of, for example, protected nature areas (Natura 2000) will lead to a reduction in manoeuvrable sailing area for shipping. This is particularly the case on the North Sea and in the Dutch section of the Continental Shelf, one of the busiest waterways and most used seas in the world with 260,000 annual shipping movements. It is evident that it will not be long before maritime safety and accessibility of sea ports will come under pressure.

Intensification of management and monitoring of shipping traffic from land is needed, with focused services providing the essential timely and reliable information to shipping. Services from land can include traffic management (if necessary also outside territorial waters), route advice and management, provision of Maritime Safety Information, and dynamic prediction models for port approaches. But improvements in reporting and registration processes and the introduction of functional and operational planning and risk models are also being considered. As starting point it continues to apply that seafarers must ultimately be able to continue to take responsibility for decision-making regarding their own navigation process.

The measures, in combination with regional coordinated and harmonised maritime spatial planning, are not only for safe navigation and thus protection of the marine environment, but also for the efficiency of shipping itself and logistics development in the ports. Improved and focused management via support, planning and supervision will contribute to a reduction in waiting times at sea and in ports, a reduction in energy consumption of vessels resulting in lower CO_2 emissions, and a reduction in costs for ship owners. Improved information exchange between parties on land will lead to the timely availability of facilitates that form part of the logistics process in ports and the connection to other modes of transport (synchro-modal approach).

[18] IALA, RWS and MARIN have agreed to produce an integration of the IWRAP and SAMSOM model by 2016.

Sustainable vessels

The theme of 'sustainable vessels' is one of the pillars of the Topsector Water. Although this concerns a development within a specific sector, it is relevant for the North Sea 2050 Spatial Agenda, both regarding the use of space as well as an opportunity for Dutch innovation and export. Smaller niche markets will again be served by wooden sailing ships, purely to show that sustainability is possible. There is also global attention for methods using sails, kites and solar energy for propulsion for the largest sea vessels. For the North Sea we have the 'MariTIM' project. Dutch and German partners are developing a multipurpose vessel for use in our sea area: the 'Wind Hybrid Coaster'. How these kinds of vessels will make use of the sea in the future and whether there are spatial challenges regarding speed, manoeuvrability and ports is a subject to be monitored.

ACCSEAS

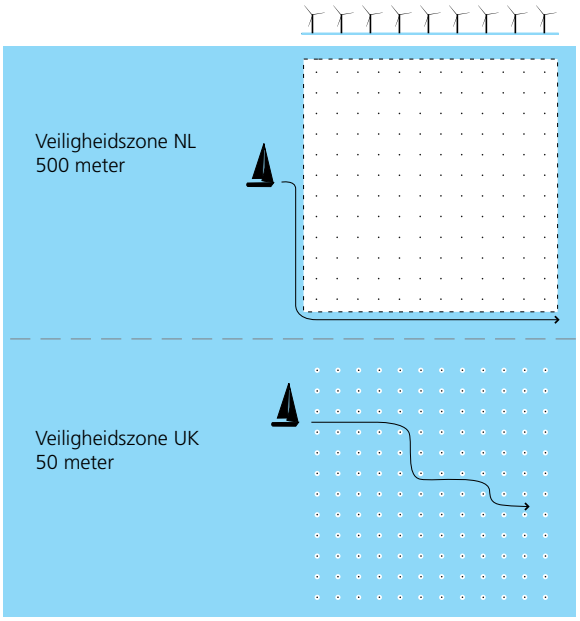
In the North Sea 2050 Spatial Agenda process no area specific research has been undertaken into the development perspectives of all port cities and coastal municipalities, or into the need for new or adapted positioning of anchorages for vessels. This is being worked on in a baseline study for the 'ACCSEAS' Interreg[1] project for the North Sea region. The Ministry of Infrastructure and Environment will include the results of this in formulating port and shipping policy that is expected to be presented at the end of 2014.

[1] http://www.accseas.eu/about-accseas

International development: enhanced navigation

The concept of e-navigation is being developed under the flag of the International Maritime Organisation (IMO), with the integration of navigation, communication and information systems on board and on land being central. The objective is to optimise interaction between parties on land and shipping through harmonised services based on improved, reliable and timely data and information exchange. This will use numerous modern technological developments and systems. It is expected that the Strategic Implementation Plan for e-navigation will be approved in the IMO in 2015, after which a gradual implementation of the concept will take place.

The coherence and qualities of e-navigation mean that this concept supplements and supports other developments across the world (the concept of the IMO for Sustainable Maritime Transportation System that explores the re-design of the total shipping system) and regionally ('EU e-Maritime programme', Short Sea Shipping in the framework of the TEN-T programme). There is a direct supplementary or complementary relationship between e-navigation to developments such as 'SafeSeaNet' (a system for all vessels that access European ports, which also includes dangerous cargo, security reports and other reports in connection with services in the ports). 'SafeSeaNet' will be linked to the 'Maritime Single Window', which needs to be operational by 1 June 2015.

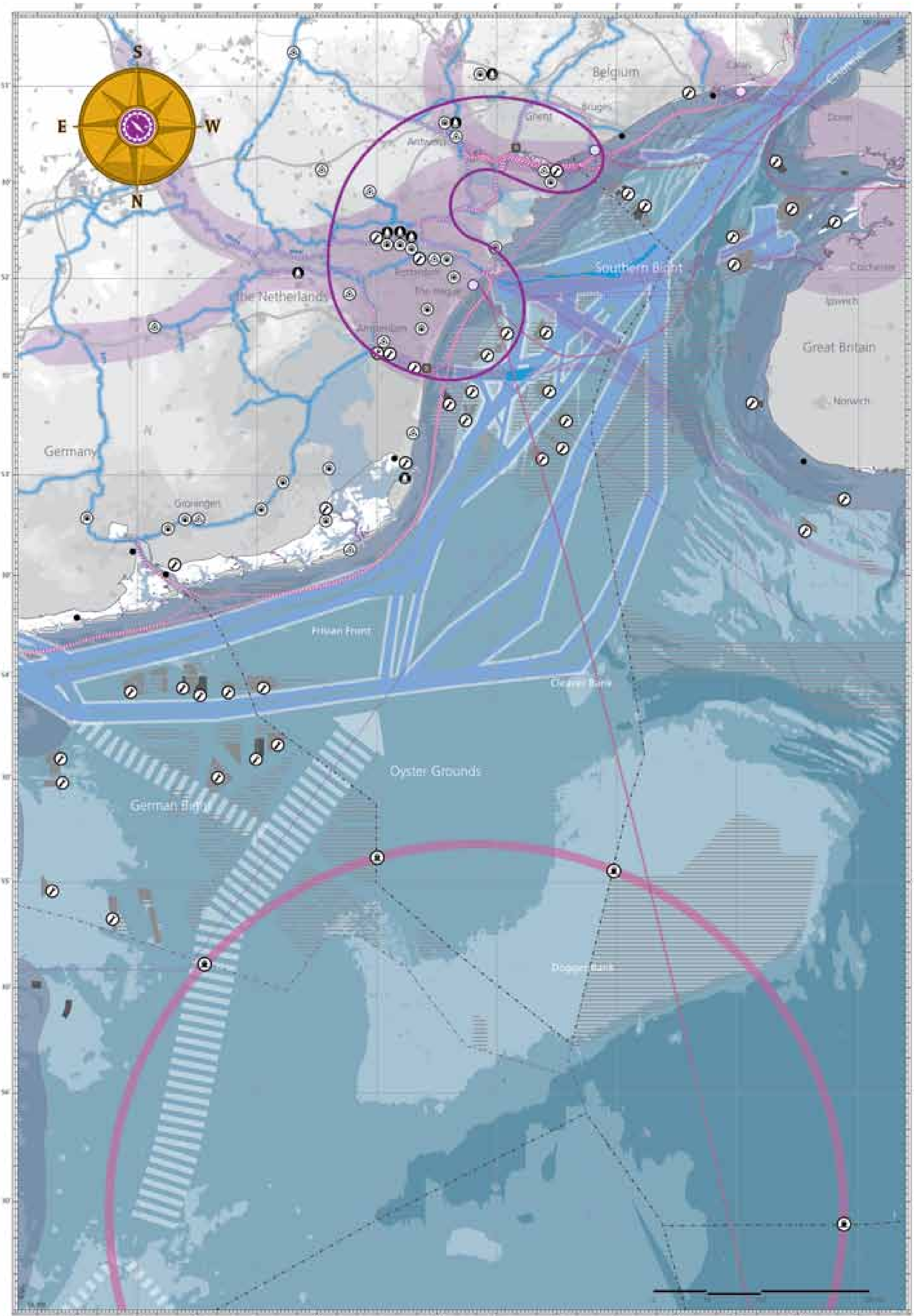


Passing a wind farm, difference between NL and UK

Recommendations for continuation

Possibilities for improving shipping safety and any risks as a consequence of changed use need to be managed in time because although the risk of ship-to-ship collision at sea is currently very small, spatial changes could lead to accidents and incidents at sea that could have huge economic, social and ecological consequences. Discussions regarding the North Sea 2050 Spatial Agenda led to the recommendation to continue to work closely at both national and international levels with North Sea countries on an integrated approach to use of space by the various functions that reduce space for shipping at sea.

Impression of service island for maintenance/construction of offshore wind farms, also restricts the number of lane-crossing movements, source: Van Oord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Oyster Grounds
German Bight
Dogger Bank

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Themed map Accessibility & Shipping - National

Legend

Situation in 2014

Knowledge export - existing economic sectors

- Shipbuilding
- Logistics
- Offshore wind and services

Network & hubs

- Traffic separation scheme (TSS) restriction area
- Channel
- Approach area
- Mainport Rotterdam & Port of Amsterdam
- Seaport (NL)
- Multi-modal hub (logistics)
- TENT-t network inland waterway
- TEN-t network railway (freight)
- TEN-t network motorway
- Sea lock expansion
- Hinterland connection

Connections

- Ferries
- RoRo corridor
- Sea/river vessels/coastal vessels

Non-route connected use

- Activity zone angling (fishing) and leisure yachting (12 mile-zone)

Obstacles

- Offshore wind farm: existing / awarded / subsidy application
- Designated wind energy area / lease or agreement for lease
- Wind energy search area within 12-mile-zone
- Production platforms

LNG network

- Import Terminal
- Import Terminal planned / under construction
- LNG tanker route
- Pipeline landing point

Challenges and opportunities for 2050

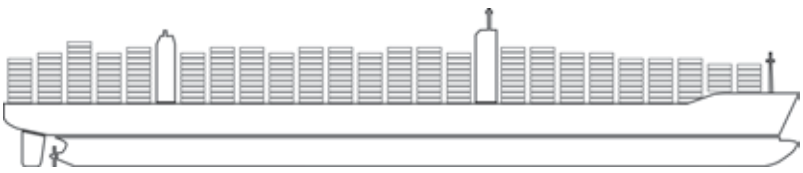
Knowledge export - Blue Growth sectors

- Deep Sea Mining

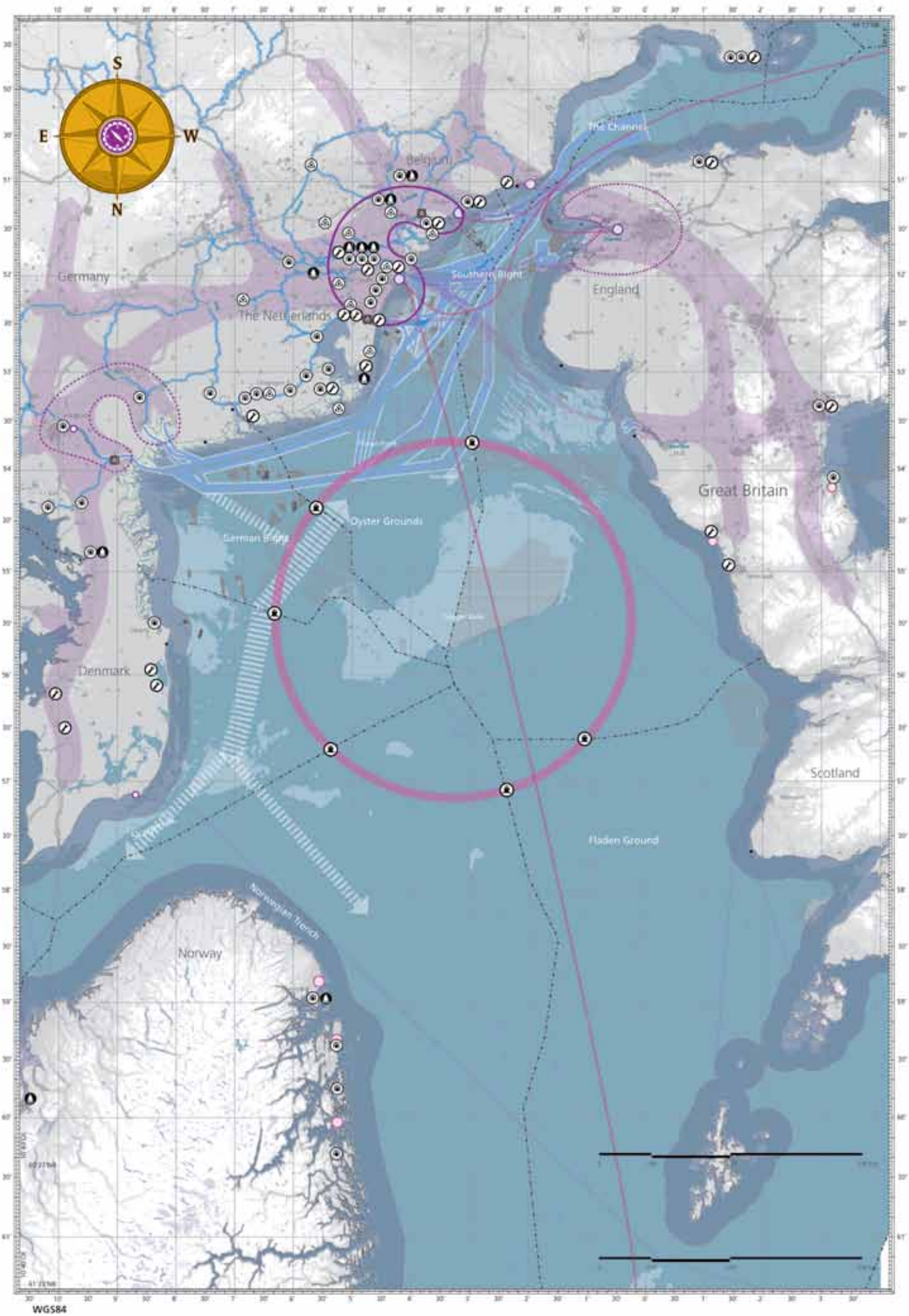
Network & hubs

- Reservation space TSS
- Reservation route Arctic Ocean
- Development Mainport Rotterdam

Clipper "brown" fleet



Maersk McKinney Moller/Triple E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WGS84

Themed map Accessibility & Shipping - International

Legend

Situation in 2014

Knowledge export - existing economic sectors

- Shipbuilding
- Logistics
- Offshore wind and services

Network & hubs

- Traffic separation scheme (TSS) restriction
- Channel
- Approach area
- Mainport Rotterdam & Port of Amsterdam
- Port & industrial complex abroad
- TENT-t network inland waterway
- TEN-t network railway (freight)
- TEN-t network motorway
- Sea lock expansion
- Hinterland connection

Connections

- Ferries
- RoRo corridor

Non-route connected use

- Activity zone angling (fishing) and leisure yachting (12-mile-zone)

Obstacles

- Production platforms
- Offshore wind farm: existing / awarded / subsidy application
- Designated wind energy area / lease or agreement for lease
- Wind energy search area within 12-mile-zone

LNG network

- Import Terminal
- Import Terminal planned/under construction
- Import Terminal planned small
- Location research Import Terminal
- LNG general
- LNG tanker route
- Pipeline landing point

Challenges and opportunities for 2050

Knowledge export - Blue Growth sectors

- Deep Sea Mining

Network & hubs

- Reservation space TSS
- Reservation route Arctic Ocean
- Clean shipping

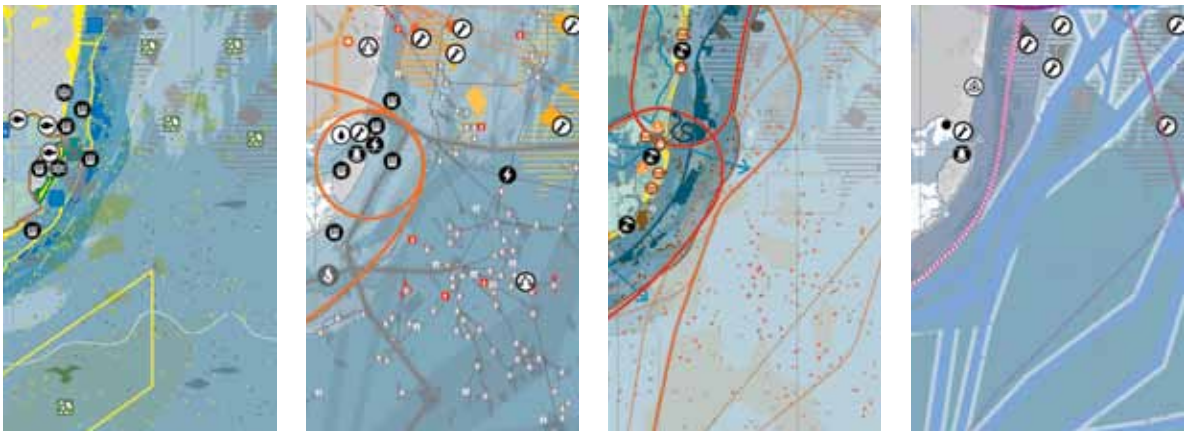
From Zeebrugge to Gothenburg

Photo: Peter Hilz, Hollandse Hoogte

3 Mapping all developments

The compiled map of North Sea developments and opportunities illustrates the cohesion between the natural conditions at sea and possible use and the relationships between what occurs at sea and on land. The various dimensions of the seabed, water depth, water column, water surface and the air above the sea influence possible use as well as opportunities and challenges.

The relatively shallow and sandy seabed is a challenge to one type of use, an opportunity to another. The deep water shipping lanes and the route connections towards Great Britain affect all developments. Ecologically valuable areas further limit the potential use of space. For energy production at sea, both fossil fuel as well as renewable, and regarding production and landing, the planning horizon lies between 25 and 50 years. The challenge that arises from the map is to bring cohesion between the functions with a permanent or structured use of space, and the use and functions that use the entire sea, such as the natural ecosystem, fishing industry and leisure users. The opportunity articulated by the map is the smart and sustainable use of natural conditions: unlock and utilise the potential. There is a huge challenge in retaining manageable swift and efficient shipping on the busy edges of the sea with restricted depths and a huge need for specific use, such as sand extraction for coastal defences, and in using areas in deeper water in an environmentally responsible, technically achievable and economically viable way. That is why cooperation between users of the sea and the North Sea countries is and remains necessary.



Spatial developments & opportunities 2014 -2050

Legend

Cohesion & Cooperation

North Sea as system:
- Ecosystem in balance
- Energy grid
- Clean shipping
- Sustainable fishing

Three coastal landscapes:
- Wadden area
- Hollandse Boog
- Southwestern Delta

Mainport Rotterdam / Logistical Delta

Energy Valley

12-mile-zone

Knowledge export

Existing economic sectors:
- Carbon Capture & Storage
- Conventional Energy
- Logistics
- Offshore wind & services
- Shipbuilding
- Fishing
- Flood defences

Blue Growth Sectors:
- Blue Biotech
- Deep Sea Mining
- Energy from water
- Mariculture
- Recreation and tourism

Blue Growth Sectors testing ground (indicative)

Energy

North Sea Energy Grid:
- existing international high voltage cable
- new international high voltage cable (indicative)
- existing international gas pipeline

Reuse of 'local' oil and gas infrastructure

Exploration of multi-functional offshore wind farms:
- existing/awarded/subsidy application
- wind farm: lease or agreement for lease

Multi-functional wind farms from construction:
- in designated wind energy area
- in search area within 12-mile-zone

Transport & Mobiliteit

Motorways of the Sea

Robust traffic separation scheme (TSS)

Ro-Ro corridors (indicative)

Reservation Willem Barentszroute

Expansion of LNG facilities:
- existing/planned import terminal

Nature & Food

Ecoshape (indicative)

Marine Natura 2000 areas & ecologically valuable areas

Target group species:
- sea mammals (SCI)
- birds (SPI)
- fish (SCI)
- benthos (SCI)

Flyway

Fish migration to rivers

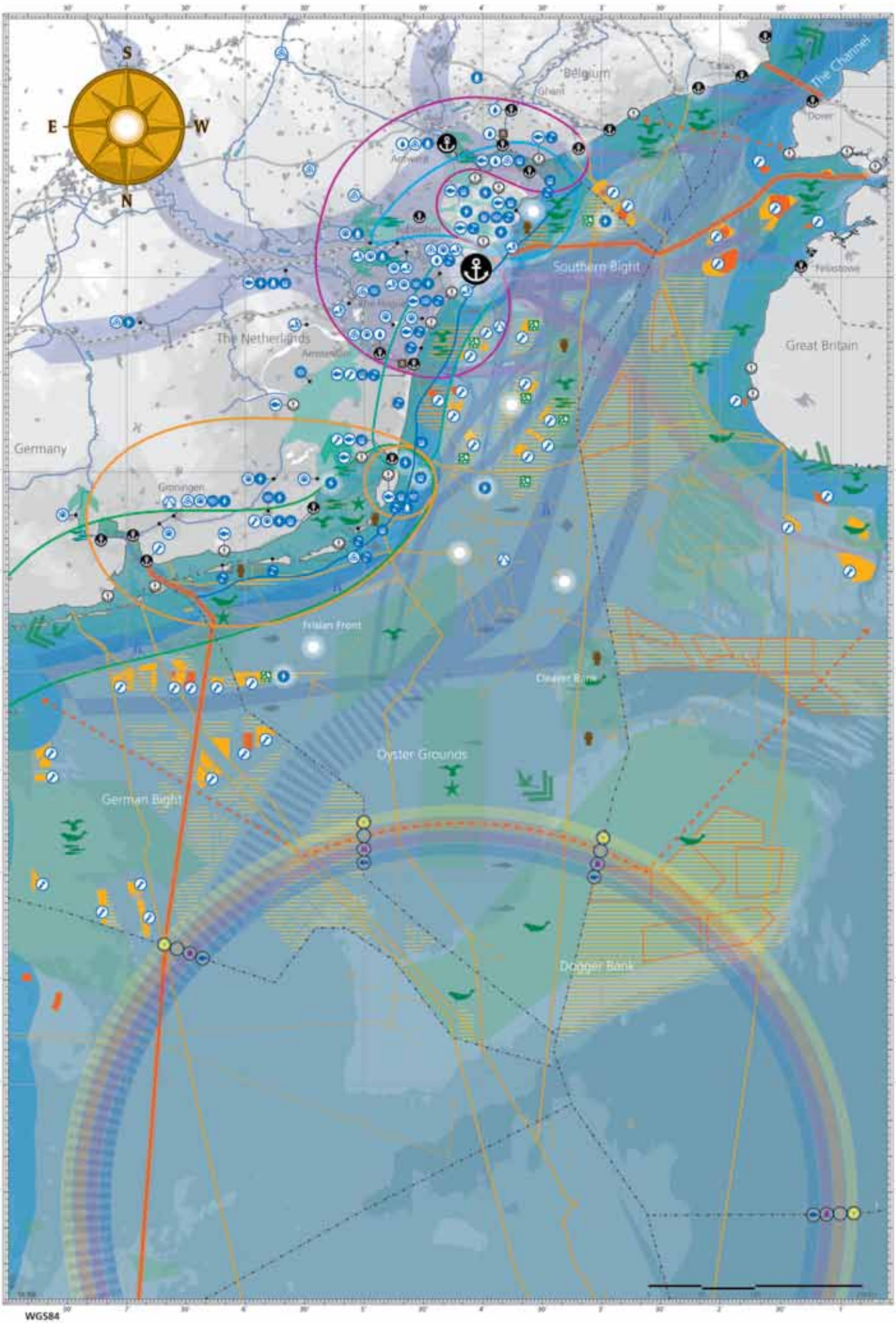
Balanced fish stocks (indicative)

Land & Sea

Integrated vision 12-mile-zone

Archaeologically valuable areas

Protection of coastal foundation (-20m NAP line)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Frisian Front
Oyster Grounds
German Bight
Dogger Bank
WGS84

4 A broad Agenda for the North Sea

4.1 Utilising export opportunities

'Working together with the top sectors and clusters in the Netherlands'

The Netherlands does business with the sea

Traditionally many Dutch companies and people have earned their money from global maritime activities and hydraulic engineering projects. The knowledge of the North Sea and experiences with the broad sectors of hydraulic engineering, maritime and offshore, building with nature and fishing/aquaculture offer all kinds of opportunities to strengthen the export position of the Netherlands. That is why the North Sea 2050 Spatial Agenda process explores the export potential of the North Sea and the related coast. This connects with the Dutch opinion on the European Blue Growth strategy for sustainable growth of prosperity in maritime and coastal economies. The Netherlands also wants to look towards opportunities outside Europe. Global opportunities in offshore and delta economy for example. The question for the spatial agenda was therefore: "Can the North Sea, or the Dutch part thereof, serve as testing ground for technology, knowledge and market concepts that can be sold across the world, and on which points is it desirable that the Dutch policy insights become common on the North Sea or elsewhere?"

Show it in the Netherlands

The discussions and experiences have shown that the strong export position is partly due to what the Netherlands can demonstrate in its own country. Flood defence/water control icons are the most eye-catching positive examples of this. Dutch offshore and hydraulic engineering companies are expanding towards sustainable construction and ecosystem services. The Oosterschelde was already a perfect showcase but, like Brouwersdam, is now even more so with the addition of water power turbines. In the energy from water market a lot is expected of export opportunities. Dutch parties see the struggle in other countries to get these technologies to reach maturity and see opportunities to sell this maritime and hydraulic engineering expertise. If the Netherlands is successful in assuming a market position at an early stage, supported by examples in Dutch waters and in dikes and defences, then global export is possible.

Concept store

'Many participants are of the opinion that the term concept store is actually better than "North Sea forum; the Netherlands is a strong brand". 'We are particularly strong in offering smart combinations. This could be the port of the future with its many functions arranged close together, or the innovation of existing use functions of the sea, or continued construction on the Dutch flood defence/water control icons'. 'We must really understand that big icons have a long shelf-life. French tourists and Chinese businessmen still arrive in huge numbers to visit the Oosterscheldekering, but we can do more with that. 'We keep such things as our offshore, deep mining and hydraulic engineering knowledge and skills hidden under our hats, while, across the world there is a lot of money to be earned.'

Quote about export during the workshop at the North Sea congress 13 March 2014

From inside to outside

In the course of the spatial agenda process it appeared that foreign market parties and governments look towards the Netherlands as far as hydraulic engineering innovation is concerned. This applies to wave and tidal energy, but also to extracting fossil fuels sustainably, challenges regarding smart networks for renewable energy, for the cultivation of sea products and building with nature. The interest in the Dutch development of sustainable fishing methods deserves to be mentioned. In the Adriatic sea, for example, there is a lot of interest in the pulse fishing development that was applied in the Netherlands under strict supervision.

Top sectors and the North Sea

The process of the North Sea 2050 Spatial Agenda shows that there are opportunities in all themes of the nine Top Sectors [for economic development], from hydraulic engineering and maritime, energy and logistics to biotechnology and agro. The development of the potential of the sea and the coastal transitions would benefit from cooperation between sectors and within clusters. Sometimes this involves small, but actual applications such as the anchoring of floating systems at sea for tidal and wave energy, seaweed cultivation and mussel seed capture installations. The Netherlands has two large world players in-house that see anchoring of floating installations as an important core business. Bringing together questions and solutions between Dutch players is an opportunity that should be addressed to harvest the potential of the Dutch section of the North Sea. This starts with the direct added value for the Netherlands, but if successful, should be followed by export of these kinds of applications. The 'Dutch Maritime Land' foundation acknowledges that it can play a broker's role in linking companies from outside the traditional maritime cluster.

Shipbuilding – mega yachts

The Netherlands is a sizeable world player in the super-yacht building industry. Dutch craftsmanship, quality and innovation ensure that the Netherlands is market leader, as is shown in the super-yacht index. In 2012 the Dutch shipbuilders delivered some twenty super-yachts. The parties in the sector see partnerships and cooperation on these extremely high-quality vessels as an absolute must. Most of the shipbuilders are not based in a port connected to open sea. So it is quite a task to get these yachts of 100 metres and more to the sea and back again for maintenance and refitting. This link between sea and land is identified as an important attention point in the North Sea 2050 Spatial Agenda.

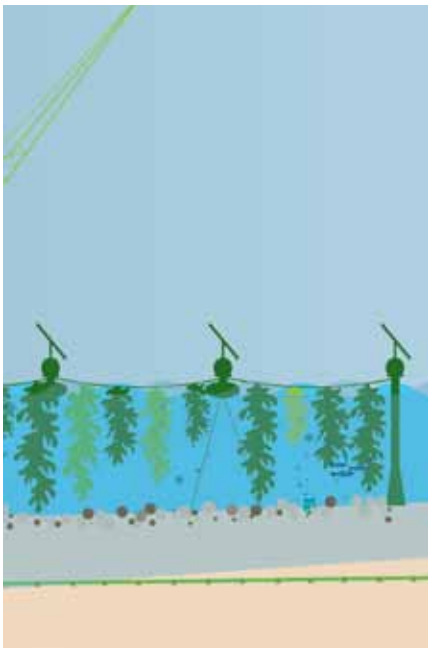
Export of knowledge and skills

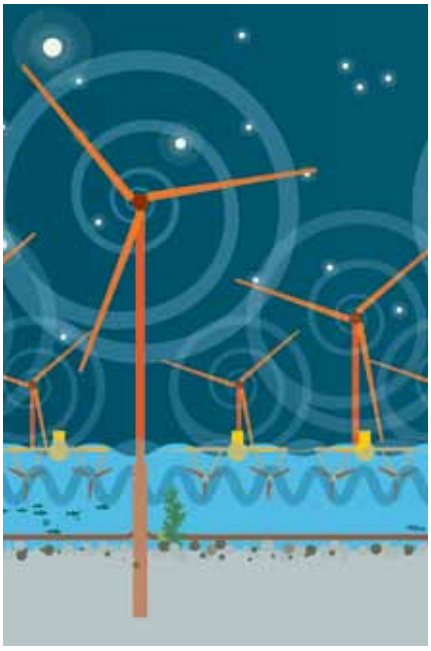
Participants in the spatial agenda indicate that 'the heat of the market will be felt' in the Netherlands. As competition is huge, the country and environmental space is small, and at the same time the customers and suppliers and other partners are close together, it is difficult to achieve and retain a competitive advantage. This also means, however, that in the Netherlands there is a quick identification of where innovation is needed, and where opportunities lie: financial, ecological or in managing the entire chain. An example is offering maintenance and services as part of the total business case. Thinking in terms of life-cycle costs and applying this to new opportunities offered by the sea, is in itself an attractive (export) product. Then there is the issue of the so-called 'first mover advantage'. A similar reasoning applies to the multiple use of space. The Netherlands has always been known for this. Integrated area development at sea connects well to this well-known profile and increases the opportunities to win contracts abroad.

Cross-sectoral cooperation

Current and future developments at sea thus demand knowledge, expertise, cross-sectoral solutions and cooperation. The market demands financial support and sufficient policy space to help prepare innovations and solutions for the market, and to demonstrate these. Continued specific and focused trade missions and promotion in international fora is also desirable. Parties also see cooperation with governments and scientific organisations as an opportunity to set international standards for upcoming and innovative ideas. In the coming years, those involved recommend further expanding the idea of the North Sea forum, or the 'Holland concept store for marine and maritime solutions' and, with the nine Top Sectors [for economic development], to begin to grasp North Sea and coast-related opportunities and challenges and to demonstrate these across the world.

Cyprus & Trade & the North Sea





Seabirds *of the* North Sea

Red-throated diver
This species was associated with bad weather in the Scottish islands, where its local name is 'Rain Goose'. It nests on small lakes near the coast but feeds entirely at sea.

Diet: predominantly fish, but also crustaceans.

Threats: highly vulnerable to coastal oil spills, highly sensitive to disturbance from coastal wind farms, entanglement and drowning in inshore fishing nets.

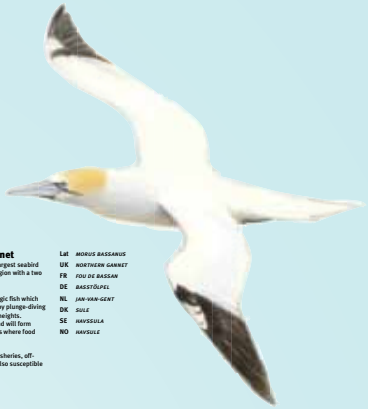
Lat	*GAVIA STELLATA*
UK	*RED-THROATED DIVER*
FR	*PLONGEON CATMARIN*
DE	*STERNTAUCHER*
NL	*ROODKEELDUIKER*
DK	*RØDSTRUBET LOM*
SE	*SMÅLOM*
NO	*SMÅLOM*

Northern Fulmar
Fulmars protect themselves from predators (including humans) by spitting foul-smelling, sticky stomach oil. Potential attackers such as Great Skuas leave fulmars alone and steal food from other seabirds.

Diet: variable quantities of fish, squid and zooplankton (especially amphipods), fish offal and carrion (whale blubber).

Threats: over 90% of fulmars have microscopic plastic particles in their stomachs.

Lat	*FULMARUS GLACIALIS*
UK	*NORTHERN FULMAR*
FR	*FULMAR BORÉAL*
DE	*EISSTURMVOGEL*
NL	*NOORDSE STORMVOGEL*
DK	*RØDSTRUBET LOM*
SE	*MALLEMUK*
NO	*STORMFÅGEL*

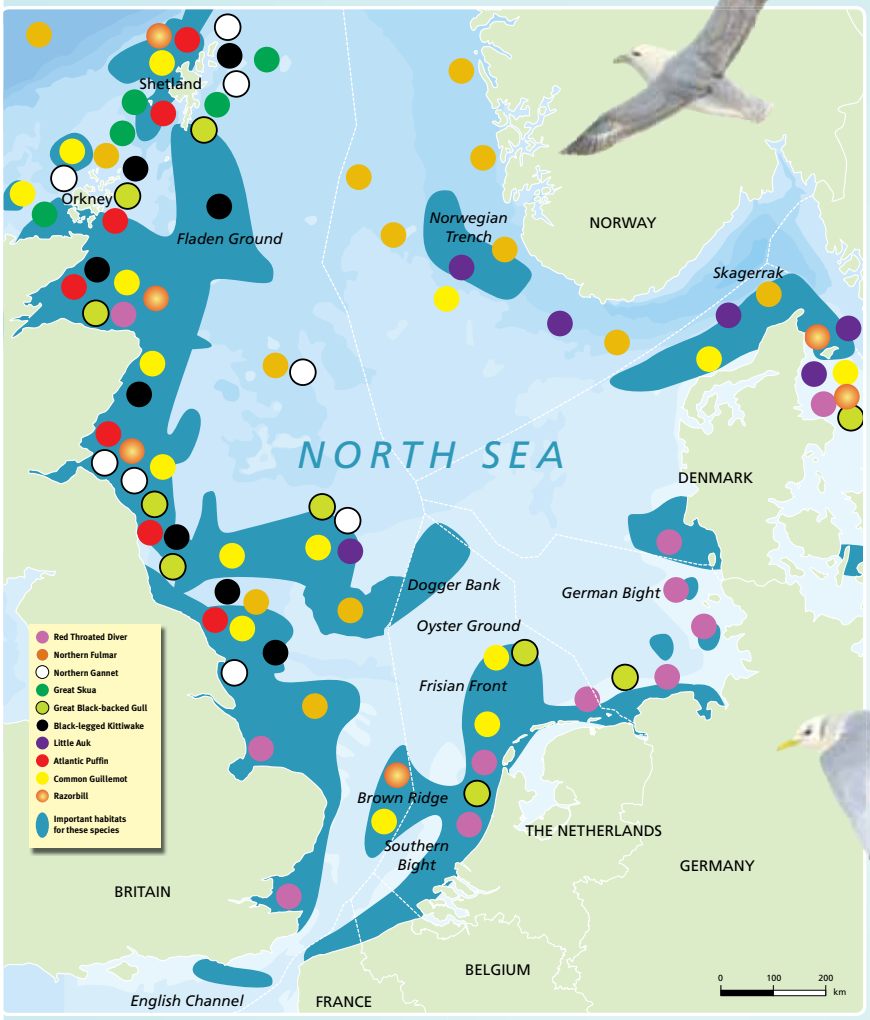


Northern Gannet
The gannet is the largest seabird in the North Sea region with a two meter wingspan.

Diet: shoaling pelagic fish which are mostly caught by plunge-diving from considerable heights. Attends trawlers and will form large congregations where food is plentiful.

Threats: longline fisheries, offshore windfarms; also susceptible to marine litter.

Lat	*MORUS BASSANUS*
UK	*NORTHERN GANNET*
FR	*FOU DE BASSAN*
DE	*BASSTÖLPEL*
NL	*JAN-VAN-GENT*
DK	*SULE*
SE	*HAVSSULA*
NO	*HAVSULE*



Great Skua
Great Skuas behave like pirates, often stealing food from other seabirds by pestering and harrying them until they let go of their prey or disgorge it out of fear.

Diet: a hugely varied diet and highly opportunistic feeder. Individuals show individual specialisations in diet and feeding with some colony-specific learning.

Threats: climate change, discard reduction.

Lat	*STERCORARIUS SKUA*
UK	*GREAT SKUA*
FR	*GRAND LABBE*
DE	*SKUA*
NL	*GROTE JAGER*
DK	*STORKJOVE*
SE	*STORLABB*
NO	*STORJO*

Great Black-backed Gull
This is the largest gull species in the world.

Diet: The species is omnivorous and opportunistic, its diet consisting of fish (discards), adult and young birds, birds eggs, mammals (rabbits, lemmings, rats and mice), insects, marine invertebrates (crustaceans, molluscs) and carrion. Winterdispersion is strongly determined by the presence of fishing fleet.

Threats: The species is hunted for sport in Denmark.

Lat	*LARUS MARINUS*
UK	*GREAT BLACK-BACKED GULL*
FR	*GOÉLAND MARIN*
DE	*MANTELMÖWE*
NL	*GROTE MANTELMEEUW*
DK	*SVARTBAG*
SE	*HAVSTRUT*
NO	*SVARTBAK*

Black-legged Kittiwake
Kittiwakes are the most pelagic of gulls, rarely venturing inland.

Diet: predominantly marine invertebrates (squid and shrimps) and fish (sandeel). At sea during the winter also planktonic invertebrates. Often exploits sewage outfalls and fishing vessels.

Threats: depletion of food resources (through over-fishing and climate change), marine oil spills and oil pollution.

Lat	*RISSA TRIDACTYLA*
UK	*BLACK-LEGGED KITTIWAKE*
FR	*MOUETTE TRIDACTYLE*
DE	*DREIZEHENMÖWE*
NL	*DRIETEENMEEUW*
DK	*RIDE*
SE	*TRETÅIG MÅS*
NO	*KRYKKJE*

Common Guillemot
Guillemots nest at high density on narrow cliff ledges.

Diet: fish, including sandeels and small species in the cod and herring families. Mainly forages during daylight, diving to maximum depths of about 180 m.

Threats: because guillemots spend most of their lives at sea and dive for their food, they are very sensitive to oil pollution. Climate change.

Lat	*URIA AALGE*
UK	*COMMON GUILLEMOT*
FR	*GUILLEMOT MARMETTE*
DE	*TROTTELLUMME*
NL	*ZEEKOET*
DK	*LOMVIE*
SE	*SILLGRISSLA*
NO	*LOMVI*

Razorbill
Razorbills often nest among boulders at the bottom of cliffs. Pursuit divers like razorbills, guillemots and puffins use their wings to 'fly' under water. Spend most of their lives at sea, only coming ashore for nesting.

Diet: feed on fish and crustaceans, amongst other prey, diving as deep as 120 m.

Threats: depletion of food resources (climate change).

Lat	*ALCA TORDA*
UK	*RAZORBILL*
FR	*PETIT PINGOUIN*
DE	*TORDALK*
NL	*ALK*
DK	*ALK*
SE	*TORDMULE*
NO	*ALKE*

Atlantic Puffin
Puffins breed in burrows which they excavate with their sharp claws, often in grassy areas at the top of cliffs.

Diet: catch most of their prey within 30 m of the water surface. They feed entirely on fish, such as herring and sandeel, and occasionally crustaceans.

Threats: Puffins are hunted for food in Iceland. Climate change.

Lat	*FRATERCULA ARCTICA*
UK	*ATLANTIC PUFFIN*
FR	*MACAREUX MOINE*
DE	*PAPAGEITAUCHER*
NL	*PAPEGAAIDUIKER*
DK	*LUNDE*
SE	*LUNDFÅGEL*
NO	*LUNDE*

Little Auk
Little Auks breed in vast colonies in the far north, dispersing far out to sea after breeding. After western storms the birds may occasionally be found around the coasts of western Europe.

Diet: Feed on small invertebrates such as amphipods and shrimps and on fish larvae.

Threats: climate change and severe weather.

Lat	*ALLE ALLE*
UK	*LITTLE AUK*
FR	*MERGULE NAIN*
DE	*KRABBENTAUCHER*
NL	*KLEINE ALK*
DK	*SØKONGE*
SE	*ALKEKUNG*
NO	*ALKEKONGE*

Ten typical North Sea birds

This poster highlights ten typical North Sea seabird species out of 31. Some ten million seabirds can be found in and around the North Sea at given times during the year. Many of these seabirds breed in colonies on islands and headlands off the coasts of the United Kingdom, Iceland and Scandinavia. After breeding, they disperse throughout the North Sea and beyond, into the Atlantic Ocean. Outside the breeding season the birds lose their colourful appearance; in winter their plumage is much paler. On this poster the birds are displayed in winter plumage.

Threats

Seabirds suffer from most of the impacts that marine ecosystems are facing. Threats include:

- Climate change, causing breeding failure and changing communities of plankton and fish;
- Overfishing, causing decreasing fish stocks and declining food resources for birds;
- By-catch: Many species are caught accidentally in fishing nets, where they drown;
- Pollution: for example, between the years 2000 and 2010 more than half the Common Guillemots that washed ashore were polluted with oil;
- Habitat destruction and degradation, disturbance by human activities;
- Offshore wind farms;
- Plastics: Plastic items remain in the environment for many years and may be eaten in mistake for food by seabirds. Birds also become entangled in discarded plastic nets, ropes and packing materials.

Legal protection

All seabirds in the North Sea are protected by law through a number of international legal instruments and national legislation in the coastal States.

Key international instruments are:

- The EU Birds Directive that protects all species of seabirds naturally occurring in marine areas falling within the jurisdiction of the coastal States that are EU members.
- The EU Habitats Directive that establishes the ecological network of protected areas known as Natura 2000, which includes all sites designated for seabirds under the Birds Directive. Some Important Bird Areas in the North Sea have been designated as protected areas, but many have yet to be designated.
- The EU Marine Strategy Framework Directive that requires the adoption of dedicated measures for the conservation of seabirds. It also requires mitigation of threats posed to seabirds as part of the broader programme of measures to achieve improvements in the environmental status of the marine environment.
- The EU Common Fisheries Policy that plays a crucial role in the reduction of negative impacts of fishing activities on seabirds, including seabird bycatch. An Action Plan has been developed to reduce incidental catches of seabirds in fishing gear and minimize seabird bycatch to levels which are as low as practically possible.

http://ec.europa.eu/environment/nature
www.birdlife.org/worldwide/programmes/seabirds-and-marine
www.birdlife.org/datazone/species

Rijkswaterstaat
Ministerie van Infrastructuur en Milieu
Vogelbescherming Nederland
BirdLife International

Coördination: Nardja Jansma & Jenny van Uden (VBN)
Under guidance of: Maarten Platteeuw (RWS) & Kees Camphuysen (NIOZ)
Translation: Simon Delany
Illustrations: Edwin van der Kolk
Design & production: Johan Bos (www.ito.nl)

4.2 International cooperation agenda

There is a significant need for an integrated approach to the total North Sea. This call is a common theme in the discussions around the North Sea 2050 Spatial Agenda. After all, measures in one country could have consequences for the ecology and economic perspectives in another country on the North Sea, and possibly beyond this.

National orientation on nature areas and energy from sea

Natura 2000 policy and the renewable energy objectives have an explicit national orientation. Cross-boundary cooperation on these two subjects is therefore not simple and also does not lead to an obvious optimum use of space at sea. MSFD is offering an ecological perspective and framework for collaboration that is included in the North Sea region's OSPAR[19] connection. For marine protection areas under Natura 2000 there is agreement that this should lead to a coherent network of marine protection areas, but there is discussion between member states and nature organisations regarding this. For spatial planning/spatial development at sea and land-sea interactions, the member states are expecting an EU directive in the short term that ought to lead to better harmonisation. Such a directive would not solve anything in itself; cooperation will be essential. The EU directive for cooperation on spatial challenges and opportunities at sea does not arrange an internal market for renewable energy, nor does it arrange that the areas at sea that are most suitable for specific use, are really utilised to this end. Such a directive in itself does not solve anything, cooperation is essential. These challenges will need to be addressed via sectoral policy lines.

Themes for cooperation

Talks with officials from the countries around the North Sea in March 2014 have taught us that various opportunities lie within the five themes of the spatial agenda, and that these can best be addressed on a North Sea-wide scale. Other North Sea countries' focus points concur with the North Sea 2050 Spatial Agenda themes. This is helpful when working on a North Sea-wide strategy. The other countries were indeed surprised by the focus of the Netherlands on the longer term but are also of the opinion that this is an interesting approach.

- Many animal species use the entire North Sea and areas around to complete their life cycle. Measures and activities in one country can thus have consequences for ecosystem quality in another section of the North Sea. The accumulation of effects of particularly wind energy development on the ecosystem appears to be a significant challenge. This is the case on various locations at sea. For example between Belgium and The Netherlands and with England. One of the areas in which international cooperation remains urgent is the Doggersbank, which is spread across the continental shelf of England, Germany, Denmark and the Netherlands.

- Although existing ambitions for renewable energy from the sea to 2020/2023 are realisable within the individual boundaries of the North Sea countries, for the period following this there is a significant need for an integrated approach to the North Sea. The detail of the wind energy challenge at sea concerns designating locations of wind farms, the accumulation of effects of human use and making a 'North Sea Grid'. For shipping it concerns the risks of collision through lane-crossing traffic to offshore areas for such things as wind energy generation. It also includes the effect of the route along the North Pole, short sea shipping (coastal such as roll-on/roll-off), handling decommissioning (dismantling and clearance) of platforms, and ports for servicing the entire offshore market.

- Connections between land and sea in a spatial ecological and economic respect will also become a requirement under the expected European directive for spatial planning at sea. The spatial agenda is anticipating this requirement, because this is in the advantage of the Netherlands.

Dutch practical help is valued

Themes in cooperation between regions should sometimes be addressed together, such as the 'Trilateral Wadden', and sometimes in the framework of a specific port or city approach. In other cases cooperation is best via various international administrative fora such as OSPAR or the North Sea RACs[20]. What may in any case be concluded is that the clear Dutch agenda for cooperation that connects to themes that are important in surrounding countries, contributes toward the further forming of a strategy for the North Sea. Relationships with Belgium, England and Germany are further secured through the efforts of various departments. Cooperation with France, Denmark, Sweden, Norway and Scotland on spatial challenges is still in an exploratory phase.

Develop a common language

The Dutch practical approach and proposal for joint insight and a common language is valued. A good example is the poster of characteristic ***North Sea birds*** produced by

[19] OSPAR is the Treaty regarding the protection of the marine environment in the north eastern part of the Atlantic Ocean. The goal is to protect the maritime environment in the north eastern Atlantic Ocean (including the North Sea) through international cooperation.

[20] RACs Regional Advisory Committee for management of fish stocks on the North Sea

Vogelbescherming (Dutch society for the protection of birds) at the request of the government in 2013, including their names in all North Sea languages. This was extremely helpful in the March discussion on the North Sea in 2050. At the request of the North Sea countries, the congress newspaper will be translated into English and the films will have subtitles.

The European Commission is more than prepared to offer support in the process towards more intensive cooperation and a macro-regional strategy for the North Sea. By helping other member states without obligation and reflecting with them on their own approach to the sea, the Netherlands has enabled positive, irreversible steps to be taken to reach a sustainable future perspective for the entire North Sea. The chairmanship of the Dutch European Union in 2016 could be a fantastic cumulative moment. Market initiatives arising in the spatial agenda could then be brought forward and demonstrated at European level.

Cooperation with coastal regions on international strategy

Proposals for cooperation have been put forward for some time by the 'North Sea Commission' (NSC) and the 'The Conference of Peripheral Maritime Regions' (CPMR). A 'North Sea stakeholder forum' has also been suggested. This deserves further study. International consultation is organised simply via existing agreements on international consultation regarding changes to sectoral or spatial plans and in formulation of the successor to the National Water Plan. All coastal provinces are members of the 'North Sea Commission' that in 2012 presented an integrated vision on pragmatic cooperation within the North Sea region. The coastal provinces have a huge interest in cooperating inthe North Sea on sustainable prosperity issues, for example in the tourist industry, connection between ports, energy (infrastructure), and climate. Working in the Netherlands towards a North Sea-wide approach, together with the coastal provinces and the NSC is recommended.

4.3 Management and governance

'How can parties together give form to the future of the North Sea?'

The dynamic of the 'traditional' administrative arrangement of the Government, provinces, municipalities and water boards is missing in the North Sea policy. The Government is the only authorised authority past the first kilometre from the coast. The Minister of Infrastructure and Environment is the coordinating Minister. The departments involved at sea work in the 'Interdepartmental Directors Consultation North Sea' to harmonise the spatial challenges for the sea. Other governments are involved or are consulted, as are other stakeholders. s

The administrative interaction between land and sea takes place principally via themes of coastal defence, ports and shipping, fishing and nature challenges. For now and in the future there is an additional challenge regarding handling offshore wind farms, outside and possibly within the 12-mile-zone. These are national themes with a significant local impact. As the saying goes, "you're responsible or you're not", this cooperation between government departments is logical. Depending on the interests represented by regional government, close cooperation at the front is also easy to imagine.

As shown in the connecting land and sea chapter, new possibilities at sea are developed and tested in the coastal areas, before the "spring to offshore" takes place. The process recommends searching for a cooperation form with coastal regions and coastal municipalities that acknowledges administrative relationships and interests in the regions. This applies to both national policy as well as international cooperation.

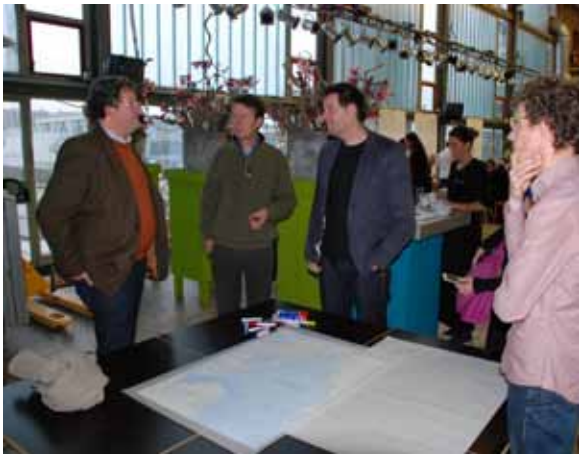
Invitation planning

The North Sea 2050 Spatial Agenda has followed the philosophy of development and invitation planning. In this, market parties, stakeholders and knowledge institutions are invited to think together about opportunities that the sea offers in the long term. This also involves discussion about the parties' roles and tasks; jointly and separately. Where regulations are missing, there is space for the market to formulate proposals.

Cooperation forms

In the North Sea 2050 Spatial Agenda no recommendation is made about other administrative relationships, or other relationships between market and government. The spatial agenda process and the advice from the Council of Children have taught participants that cooperation arises through a common vision of tasks, challenges and opportunities and through conducting dialogue. By seeking each other out and talking. Continue this approach; that is the lesson that the children would like to give to those involved. That is why those involved advise the Government to give form and content to the future, together with stakeholders, and make agreements with them about the next steps.

North Sea 2050 Spatial Agenda Congress, March 2013



Workshop with stakeholders at Scheveningen Fish Auction, November 2013 (photos: MUST stedebouw)

4.4 Recommendations for an adaptive North Sea agenda

The first spatial agenda for the North Sea has led to the following set of recommendations for further exploration, specific research and the start of cooperative partnerships. This spatial agenda process also delivers a proposal for a new development-focused vision on the North Sea in the perspective of the transition towards 2050. The agenda does not answer the question as to how the perspective should precisely be achieved. The possible developments are too uncertain for this: we will need to work towards opportunities.

The path towards 2050 also depends strongly on the question as to whether the estimated potential of the sea can be developed within the available space offered by the sea. Innovation and the space to work on this will almost always be an obvious trump card. That is why the North Sea 2050 Spatial agenda process advises continued discussions regarding the future of the North Sea theme, so that the North Sea can be developed adaptively. This is desirable because an agenda for the future can never be finished. That certainly also applies to the position of the marine environment towards 2050. This demands an adaptive process over a longer period than can be realised in the period 2015-2021 (the period prior up to the next NWP). Without changing existing agreements and obligations regarding the Common Fisheries Policy, the further implementation of the Birds and Habitats Directive and the MSFD (which will lead to a Good Environment Status in 2020, or by no later than 2027), the status of the sea demands a continued and close monitoring of and cooperation between the Government, nature organisations and fishing industry, fed by monitoring data from the Marine Strategy, new knowledge and scientific insights, in cooperation with the developments in the fishing industry.

It is desirable that three general elements are examined in more detail in the coming year (until the end of 2015):

1) The' international North Sea strategy of the Netherlands
2) The further exploration of developments in the coastal regions and coastal areas;
3) The issue of financing possibilities and role distribution between governments, the business world and knowledge institutes.

Overview of recommendations and tasks in the North Sea 2050 Spatial Agenda

Recommendation/Action	Type of recommendation	To	In cooperation with	When
General				
Strong commitment to integrated area development at sea and along the coast, stating opportunities for multiple use in advance and stimulating parties to develop the joint use of the development space.	Policy/regulations	Minister Infrastructure and Environment (I&E) as coordinating minister North Sea, Minister Economic Affairs (EA), Rijkswaterstaat (RWS)	Businesses	From today
Building with North Sea nature, food and marine ecosystem				
Stimulating functions at sea in the future that are inherently compatible with nature and biodiversity ambitions. Roll-out strategy for building with North Sea nature.	Policy/regulations	Ministries I&E and EA, RWS, market parties	Knowledge institutes and NGOs	From today
Use the sea in ways in which it becomes cleaner and more healthy (for example by cultivating seaweed), or springs back more rapidly after use (for example the way in which sand extraction areas are left).	Example of building with North Sea nature.			
Further research into the possibilities for (natural) hard substrate, such as the recovery of oyster beds.	Research	State Secretary, Economic Affairs		
Map out the contribution of such things as offshore wind farms to biodiversity recovery.	Research, partly utilising monitoring through permit holders	State Secretary, Economic Affairs	Knowledge institutes and market parties	Ongoing
Linking long-term North Sea agenda with EU and National climate adaptation programmes.				

Recommendation/Action	Type of recommendation	To	In cooperation with	When
Energy transition at sea				
Via a study, the social advantages and disadvantages of integrated energy farms at sea (wind, wave and tidal energy).	Research (SCBA)	EA, I&E	Market, knowledge institutes and NGOs	
The challenge is to be economical with space and utilise opportunities to increase energy generation per square nautical mile.	Energy farm/trials (also see next recommendation)			
Give parties involved in tidal and wave energy the opportunity to test at open sea.	Invitation policy	EA, I&E		2015 and beyond
Investigate potential of various new technologies for generating electricity from the sea for the Netherlands and export opportunities.	Research	EA, I&E	InnovationQuarter Province of South Holland, market parties included in the EWA	Started, concludes in 2014
Stimulate the market for tidal and wave energy dedicated to generating energy from low current speeds, and limited wave heights and tidal range.	Initiate development	EA, I&E	EWA	2015
Participate actively in Dutch test centre for tidal energy, monitoring permit-granting conditions and following developments in this market.	Cooperation	EA, I&E		2015
Invite NWEA and members to indicate the potential of the designated wind energy areas with the expected developments of larger and more efficient turbines and translate this into net use of space.	Research	NWEA	I&E, RWS and EA	2016
Energy master plan for the North Sea for the period 2030-2050/2060 and the spatial translation of this. Including developments such as a working island for wind energy, opportunities for deep geothermal energy, the international electricity network at sea (North sea grid), the expected development of oil and gas fields, including decommissioning, enhanced oil recovery and CO_2 storage.	Research/ programme	EA	I&E, market parties, research organisations, coastal regions and North Sea countries	2015/2016
Use of space and multiple use of space at sea				
At the start of projects at sea, give form to integrated area development through smart approaches to location use in which combined functions can offer added value. Assign space to safe and smooth shipping, fishing and leisure with a view to giving the ecosystem space for recovery in the most important ecological areas.	Policy challenge	EA, I&E	IDON	for NWPII
Complete assessment framework for enabling passage of vessels, fishing and leisure in wind farms.	Research passage and joint use	EA, I&E-RWS	Stakeholders	August 2014 For NWPII
According to the spatial agenda's vision, in the future areas will only be demarcated for one function (temporarily or permanently) if the vulnerability or the safety of the area demands this.	Policy challenge	EA, I&E	RWS	2014/2015
Connecting land-sea, culture, tourism & recreation				
The Ministry of Education, Culture and Science is mapping out prehistoric relics and historic wreck locations so that these can be taken into account in spatial development; ensuring that those sites of special value are not lost.		ECS		2014
Wreck-diving amateur archaeologists share knowledge with the National Cultural Heritage Agency (NCHA).	Intensify cooperation	NCHA	Wreck-divers	From today
Complete research process to protect valuable wrecks from the viewpoint of nature.	Research	EA, I&E	ECS and stakeholders, including NCHA	2014
Complete research into the possible ratification of the UNESCO underwater heritage treaty.	Research with recommendations	ECS		Mid-2014

Recommendation/Action	Type of recommendation	To	In cooperation with	When
This treaty gives the Netherlands an instrument to take protective measures *with other treaty partners* for wrecks outside territorial waters.	Cooperation with other treaty parties	ECS, RWS		
Participation from provinces, municipalities and water boards in policy development at sea is desirable because of their significant interests.	Involve the provinces			2014
The connection between land and sea exists; this should be more prominent in the policy, for example in the North Sea 2015-2021 policy document.	Policy challenge	I&E	Coastal provinces and municipalities, departments in IDON	2014/2015
The North Sea 2050 Spatial Agenda shows where land-sea connections lie that, where possible, relate to the area challenges and opportunities on land.				
Shipping/accessibility				
Joint studies with governments, ship owners and ports in North West Europe should reveal how the route along the North Pole (Willem Barentszroute) could precisely develop in the long term and the consequences this will have for use of space in the north western section of the North Sea.	Research	I&E (DGB)	RWS and agencies in North Sea countries, MARIN	Longer term, possibly start in 2016
Closely monitor the effects of the changing traffic image at sea (as a consequence of more intensive coastal shipping and shipping movements to and from offshore activities) from the perspective of safety, ecology and space.	Monitoring	I&E (DGRW + DGB), RWS, ILT	Coastguard	Ongoing
Discuss a realistic offer and image with offshore developers that can be expected through the construction and maintenance of energy farms and other area developments at sea. Translate this information into an expansion of the models that are used to safeguard safety and precautionary measures for the environment.	Exploration of figures, developments and research	I&E (DGRW + DGB), RWS and EA	NWEA, offshore service provider, IRO	2014/2015
Work together for the future				
In view of the soon to be expected European directive for maritime spatial planning, give institutional form to closer international cooperation in planning and managing land-sea interactions.	International cooperation	I&E	Governments and government agencies in North Sea countries (if necessary OSPAR)	2014/2015
Use the successor to the National Water Plan and North Sea policy document changes for more intensive international consultation between North Sea countries.	International cooperation	I&E	Departments in IDON	2014
Cooperate with the Dutch coastal provinces on an international North Sea strategy and land-sea interactions such as a North Sea grid.	Cooperation	I&E	Coastal provinces and municipalities	2014/2015
Consultation with the top sectors regarding North Sea innovations, cross-sectoral cooperation and utilising export opportunities.	Start dialogue	EA, I&E, Top sectors	Market parties and knowledge institutes	2014/2015
Further specify the North Sea 2050 Spatial agenda on three points: 1) the international North Sea strategy, (2) the further exploration of developments in all coastal regions and coastal towns, and (3) the question of financing possibilities and division of roles between governments, the business world and knowledge institutes.	Developing the North Sea 2050 Spatial agenda	EA, I&E	Stakeholders	2014
Make agreements with involved parties and stakeholders regarding implementing the North Sea 2050 Spatial agenda. This year with the start of the implementation of various themes and focus points.	Implement actions	EA, I&E	Stakeholders	2014
Include the elements that are at play currently for the 2015 to 2021 period in the NWPII North Sea policy document.	Policy translation/ anchoring North Sea 2050 Spatial agenda	I&E	Other departments in IDON	2014
Include the spatial agenda' vision and long-term recommendations as dot on the horizon in the design of the new North Sea policy document.	Policy translation/ embedding North Sea 2050 Spatial agenda	I&E	Other departments in IDON	2014

5 Conclusions and a new vision on the North Sea

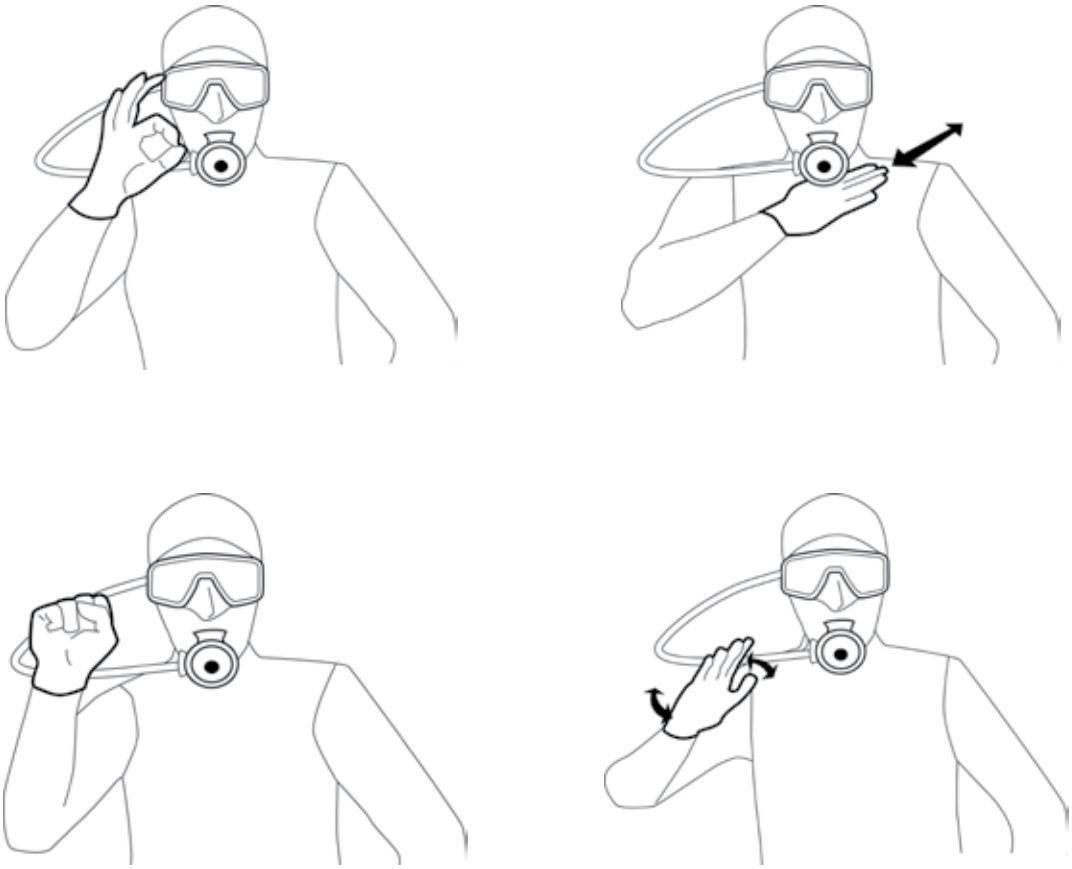
It is in the interests of the Netherlands to have a safe, clean, healthy and ecologically diverse North Sea that contributes to economic and social needs, now and in the future. Prosperity, welfare, food and employment opportunities are themes that will still be important in 2050. It is desirable to retain the contribution of the sea to society at the same level or increase this further. This is a shared opinion about the blue growth strategy to strengthen maritime and coastal economies. The sea has an important social-cultural and historical meaning for the Netherlands and is a source of knowledge. This knowledge can be marketed. The sea can, however, only contribute in optimum form if the natural strength of the sea is further restored and expanded, while the appeal of the sea is retained for everyone.

Traditional use of the sea is in transition. The core of the policy that is recommended in the process of the North Sea 2050 Spatial agenda is joint management of desired use in space and time. This can happen through the further development of the natural potential of sea and coast; starting from the strength of the natural system and with respect for the North Sea's natural inhabitants.

In the future, the North Sea can also contribute more to the national need for energy, food, nature, recreation and experience of heritage. There is still unused potential, certainly in combination with the current use and management of the sea. But this potential cannot yet be directly utilised or harvested in all cases. For example, offshore and coastal test locations will need to give more clarity regarding the ultimate significance and contribution of tidal and wave energy.

It has become clearer where opportunities lie in Dutch waters regarding food from alternative sources, such as seaweed cultivation. More is possible with nature than protecting and shielding use. Cooperation between government layers, market parties, knowledge institutes and ngo's and other interest organisations (the golden square) can help to fully utilise the potential.of the sea. Cooperation with other countries around the North Sea will also help to achieve this objective. The North Sea 2050 Spatial agenda leads to the insight that integrated spatial agendas at sea and along the coast must be strongly supported. Working from the starting point of a clean, safe and healthy sea offers additional opportunities to work on sustainable perspectives. It is also worth considering sectoral developments in the light of developments in other sectors and reviewing these from an integrated spatial perspective together with other interested parties.

Combining uses at sea as much as is possible means that sufficient space remains for traditional activities that depend on the access to ports, enabling Dutch ports to retain the opportunity to fulfil their function as international, economic hub in a competitive way. By keeping



sufficient sand extraction areas free from construction, safety on and behind the coast will be safeguarded. Cooperation between various forms of energy generation enables a transition to sustainable energy provision and, at the same time, the North Sea will function as a testing ground for these technologies.

According to insights gained in the North Sea 2050 Spatial agenda process, sustainable development of the North Sea also offers a springboard for the offshore maritime and marine knowledge that makes the Netherlands a world player. Knowledge of and experience with the sea is one of the strengths of the Netherlands. Cooperation and puzzling over the spatial challenges of social needs in a busy, small county, is also a strong point. Using this knowledge and experience for the challenges of the sea for food, nature, energy, transport and culture helps us make the necessary transition towards the future. Finally, the process has taught us that the integrated development of land and sea gives profile to coastal regions.

For the coming years it is desirable to approach developments regarding use of space at sea in the most integrated way possible. Uncertainties regarding how established and new sectors use the space must be reduced as much as possible. In the future, use functions at sea must be inherently compatible with nature and biodiversity ambitions. Where necessary it is important that vulnerable areas are allowed to rest. These areas then need to have such a place in the functioning of a diverse ecosystem that they contribute to the North Sea as a whole. Integrated long-term area development of the sea in all its potential will limit as far as possible the tensions regarding available space. Since functions can be combined as far as space and time are concerned, it is counter-productive to produce a (restrictive) spatial zoning plan for the sea, or reserve and award space for a single function if there is future potential for multiple use.

Wreck-diver

Challenge for involved parties

The switch to development-focused management of activities at sea demands a change in the role from those involved. In the first instance it is for the users of the sea to work together towards an efficient and sustainable use of space. The government will need to take an active role concerning issues in which the market itself does not take up opportunities and challenges or is hindered in doing so. Examples include nature and supporting sustainable market sectors through coherent, customised regulations that make innovation possible, including stimulating multi-functional use via a regulatory framework or market incentives. For market parties this means coalition-forming, making use of maritime cluster strengths and formulating proposals where policy is lacking. Knowledge institutes can create stronger links with market parties.

Photo: Olaf Kraak Photography / Hollandse Hoogte

Appendix

Overview of parties consulted during the process of the North Sea 2050 Spatial Agenda:

Adessium Foundation
Advice agency for fisheries and aquaculture
AkzoNobel
Aletha Steijns Communicatie (Aletha Steijns Communication)
Antea Group
Archeologische Vereniging Nederland (AWN) Dutch Archaeological Society
AT Osborne
Bewonersplatform Leefbare Kust (Residents' Platform: Liveable Coast)
Bloem Doze Nienhuis BV
Blue Motion Energy B.V.
Boskalis bv
Bureau Landwijzer
Bureau Waardenburg
Waterzaken Communication Professionals
The press agency
Decisio
Delagua Consultancy
Delta Programme Coast
Deltares
Hydrographic Service
Duikteam de Zeester (Sea star Diving Team)
Dutch Expansion Capital/Tidalys
Duurzame Energie Koepel (Renewable Energy Organisation)
EEE Team
Ekofish Group
Eneco Wind
Energy Valley
EON
Essent
EUCC
GDF SUEZ EP Nederland bv.
Zeeland Provincial Executive
Municipality of Ameland
Municipality of Den Helder
Municipality of Noordwijk
Municipality of Schagen
Municipality of Urk
Municipality of Wassenaar
Municipality of Westland
Municipality of Zandvoort
Giants of the Sea
Greenpeace Nederland
Port of Amsterdam Authority
Port of Rotterdam Authority
HKV Lijn in Water
Inholland University of Applied Science
VHL University of Applied Science
Hortimare BV
IDTV Docs
IHC Tidal Energy
Imares
IMSA Amsterdam
Informatiehuis Marien

InnovatieNetwerk (Innovation Network)
INZee Communicatie & Trends
Jan De Nul Group
Jan de Nul nv
Kenniscentrum Kusttoerisme (Knowledge Centre, Coastal Tourism)
KIMO The Netherlands and Belgium
Kirkman Company
KNMI (Royal Dutch Meteorological Institute)
Royal Dutch Navy
Royal Dutch Navy Hydrographic Service
Dutch Coastguard
LEI
Rotterdam-Rijnmond Pilots
Maikan
Marine Science & Communication
Marsh Nederland
Meewind
Ministry of Defence
Ministry of Economic Affairs
Ministry of Infrastructure and Environment
Ministry of Education, Culture and Sciences
Ministerie van Verhalen
Missing Chapter Foundation
Marine Steward Council
MUST stedebouw
NAM
National UNESCO Committee
NBTC Holland Marketing
Nederlandse Vereniging De Toerzeilers (Netherlands Association of Cruising Yachtsmen)
Nedederlandse Federatie van Brandingwatersportverenigingen (Dutch Federation of Surf Sport Associations)
Nederlandse Elasmobranchen Vereniging (Dutch Elasmobranchii Association)
NEW HORIZONS
NHTV international higher education Breda
Nieuw Script BV
NIOZ
NUON/Vattenfall
Nederlandse Vereniging van Kustzeilers (Dutch Association for Coastal Sailors)
NWEA
Otar
OutSmart
Periplus Archeomare
Pondera Consult
Province of Groningen
Province of Zeeland
Province of Zuid-Holland
Quality Coast
Ramboll
RebelGroup
RECRON
Renewable Factory
National Cultural Heritage Agency (NCHA)
Rijkswaterstaat
Royal HaskoningDHV
Royal Press Europe
Rivers To Success
RVOB
RWE Innogy
SAN
Sas Consultancy
Satellietgroep
SCHOTTEL B.V.
SET Analysis
Slowmill
SMS Projects
Sportvisserij Nederland (Dutch Recreational Angling)
Stichting De Noordzee (North Sea Foundation)
Stichting Duik de Noordzee schoon (Dive the North Sea Clean Foundation)
Stichting Energy Valley
Stichting LaMer
Stichting Nederland Martitiem Land
Stichting Water & Media
TeamWork
TenneT
The Power Factory
Tidalys DEC
TKI wind op zee
TNO
Tocardo International B.V.
TUD Maritime Spatial Planning Challenge
Umantec
Van Oord
Van Seters seafish company
Vereniging Kust & Zee (Coast and Sea Association)
Energy from Water Association (EWA)
VIA Drupsteen
VisNed
Flemish government, Flanders Spatial Department
Dutch Protection of Birds Association
VolkerWessels
WageningenUR|Imares
WaterPlanetEarth
Watersportverbond (Watersports Bond)
World Wildlife Fund
Wetterskip Fryslân
Wing
WUR
YFM Academic
Youth Food Movement Academy
Zeeland Seaports

Appendix 3:

TOGETHER IT WILL WORK

TIPS FROM CHILDREN FOR THE NORTH SEA IN 2050

18th of June 2014

R.K. BASISSCHOOL De Paradijsvogel

missing chapter foundation

Ministerie van Infrastructuur en Milieu

Kids Kracht

The Hague, 18th of June 2014

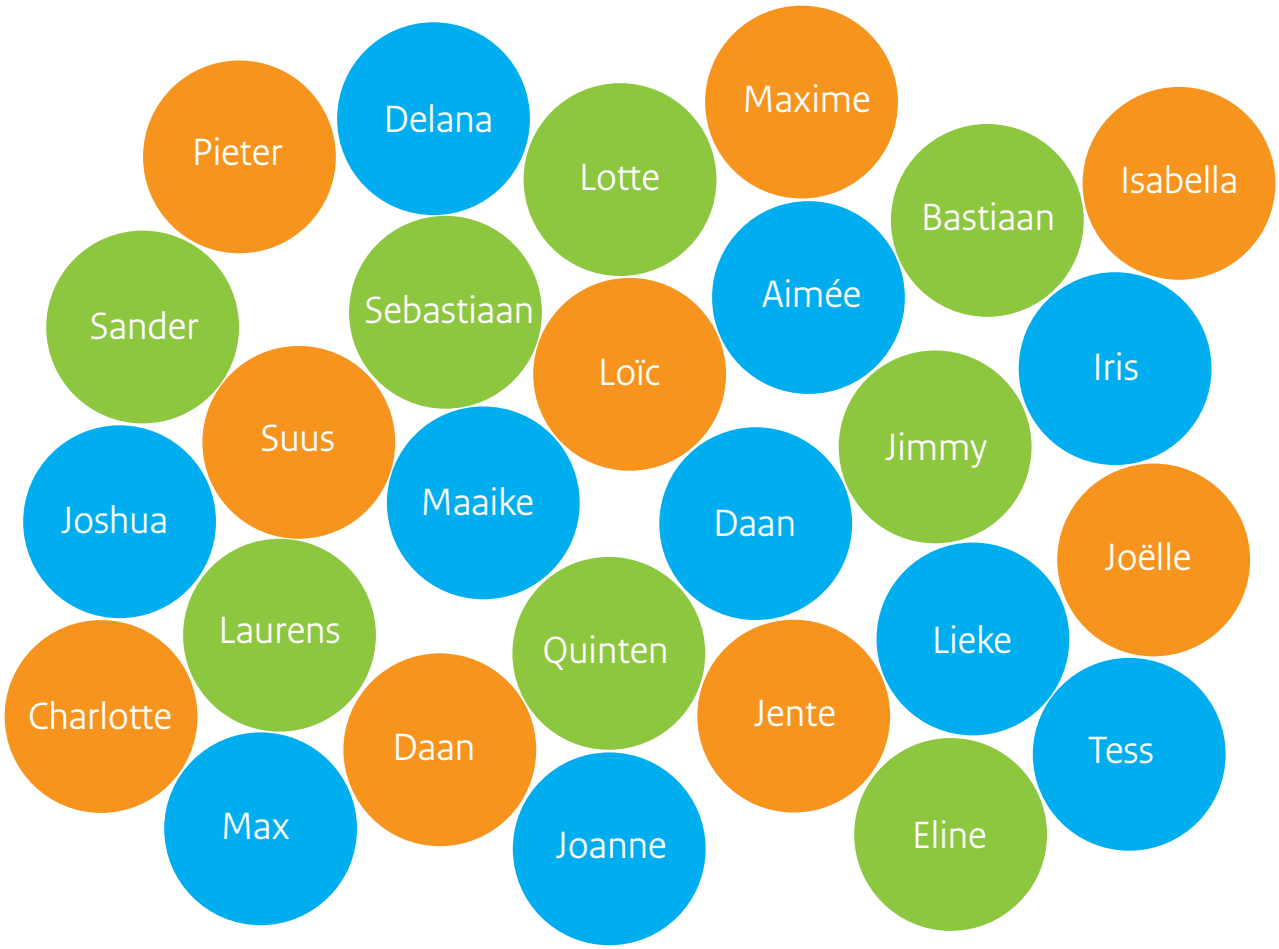
Dear Minister,

We are children from group 8D from R.K. de Paradijsvogel primary school in The Hague. Together with the Missing Chapter Foundation we have been thinking about the future of the North Sea, for the Ministry of I&M. Although we are still young, we do have many ideas.

Our tips are given in this report, written by the Missing Chapter Foundation.

It is really special for us to be able to meet you. Thank you for listening to us.

We are of course extremely curious to hear what you will do with our ideas.
We hope you will do a lot with them. Please do let us know.

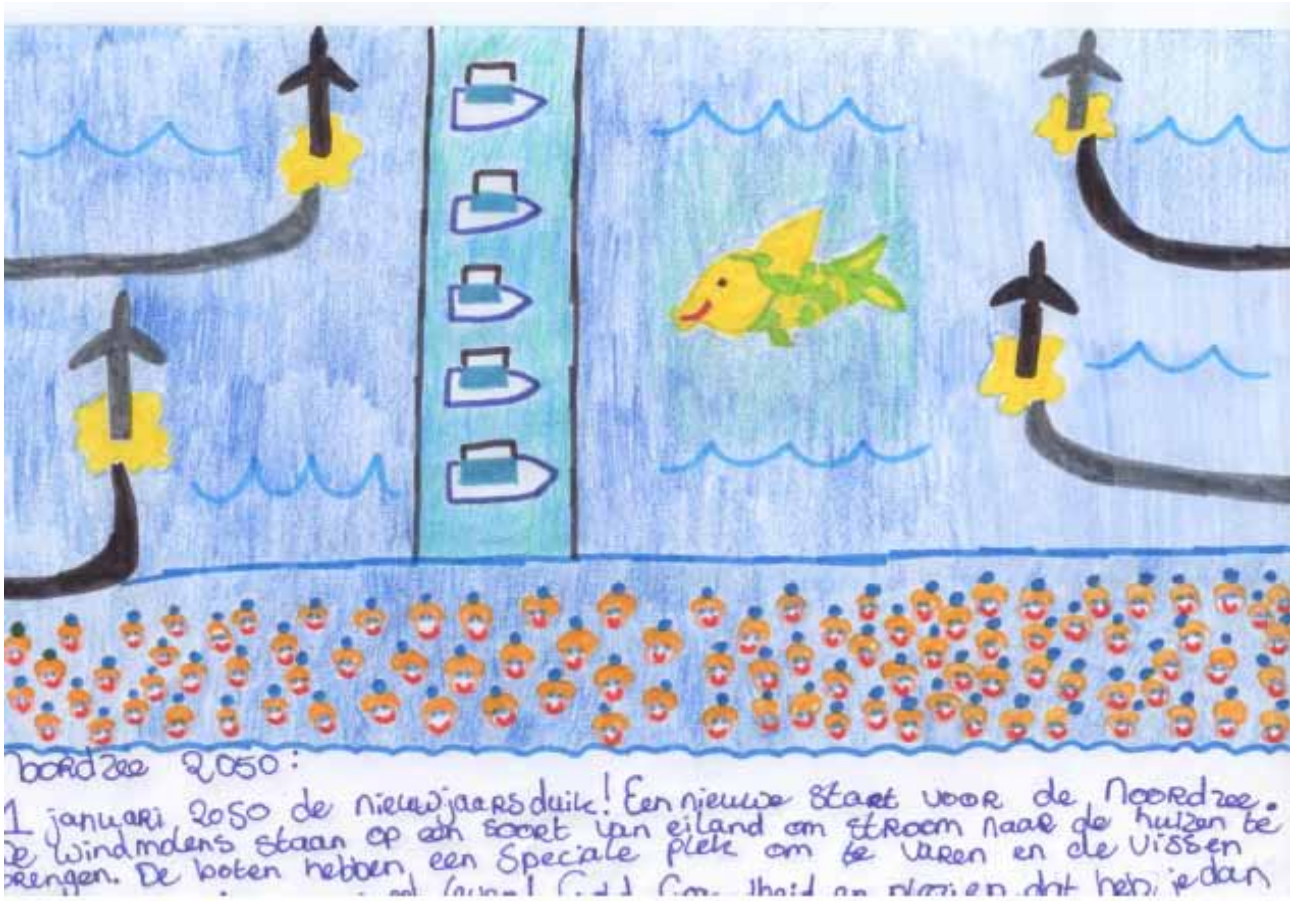


CONTENTS

How we arrived at our tips

Our 5 tips:

1. Cooperate more
2. Make choices
3. Make clear agreements
4. Reward good actions
5. Tell the story



"1 January 2050 the New Year Dive! A new start for the North Sea. The offshore wind farms are on a kind of island to supply electricity to homes. Boats have a special area to sail and fish also have a good life again! Money, health and enjoyment – that's how you have it in the North Sea!!! Isabella."

HOW WE ARRIVED AT OUR TIPS

The research into the North Sea in 2050 was a real voyage of discovery. We conducted research into the question: **'What is needed to ensure that the North Sea stays healthy and people also enjoy it and can earn money with it?'**

What did we do between January and June 2014:

1. **Meeting in the class**
   We talked about the North Sea to explore what happens there, who works with and on the sea, and the challenges for the sea now and in the future.

2. **Research at sea**
   We took a boat trip through the Port of Rotterdam during which we could pose questions to 'North Sea key figures': a fisherman, harbour master, a diver and policy officers from the Ministry of I&E.

3. **Further discussion in the class**
   We shared and explained our discoveries in the class after the boat trip.

4. **Action in an image: North Sea of the future**
   We made a drawing of how we see the North Sea of the future.

5. **In discussion**
   We presented our ideas and tips to the important people who deal with the North Sea:
   - Peter Heij, Ministry of I&E
   - Anne-Marie van Seters, Zeevisbedrijf van Seters
   - Chris van Assen, Worldwide Fund for Nature
   - Leo van der Klip, Province of Zeeland/Pro-tide
   - Wouter Gotje, Imares
   - Johan Dekkers, Eneco

The dialogue session took place during the North Sea Congress at the Provinciehuis,
under leadership of Princess Laurentien of Orange.

Tip 1: Cooperate more

"You can always suggest improvements to each other's plans, but you shouldn't just ignore plans. That isn't fair."
Bastiaan, 12 years

The North Sea is like a busy market place, with very many different market stalls that all look different and sell different things. At sea there are many people and organisations: one is large and the other small; one has been active a long time and the other has only just started. And they all do different things: swimming, fishing and sailing but also producing energy, using energy and extracting oil.

If you do completely different things than your neighbour, you maybe think that you do not have anything in common with each other. It then seems logical that you mainly do things separately. But if you never talk to each other, you will never discover whether you could possibly learn something new.

Even if you think very differently or are good in different things, you can still understand someone really well. It is actually very simple: you should ask lots of questions and listen well to what the other person is saying. And also to what he is not saying. But there are also things, really important things, that you need to agree on together to really achieve or change something

- How honest and open you are going to be to each other.
- That you want the best results for everyone, otherwise you will be constantly wondering why someone does something.

This means that you will only make progress through cooperation. That is logical. But cooperation does not just happen, you have to really want it and you need to really work at it. Tips for cooperation:

- Do not only focus on your own plan, if we all just stick to our own plans we will not get anywhere.
- Be curious about what others have to offer.
- Listen to how others do it.
- Really listen to someone else's story. Do not respond negatively immediately, listen first.
- Trust that you want the best for each other so that you can improve together.

Cooperation does not just happen, you need to organise it. For example, by building much better relationships with each other. For this you need to get to know each other, so you will need to meet. Once a year actually is not enough. You can also build a market place for the sea on the internet so that everyone involved with the sea can meet each other and start to work together. You could call the market place zeeplaats.nl.

If adults don't succeed in working together, children can help you. For us, cooperation is very logical and what is more, adults listen to their own children.

Children brought the wind and tidal energy industry (Erwin Croughs, Slow Mill and Johan Dekkers, Eneco) together during the North Sea Congress, 14 March 2014

In discussion with Pim Visser, VisNed, during the boat trip through the Port of Rotterdam, 4 March 2014

Tip 2: Make choices

"You need to think about the future, sometimes you will need to pay more now, but you will profit from it later"
Daan, 12 years

If everyone builds something in the North Sea, it will feel really busy. If things have been constructed everywhere, it will be a disturbing view. If oil platforms and wind turbines are far apart from each other, it will look as though these do not have any connection with each other. That is why people maybe complain that the sea is too full and is becoming less and less beautiful. We cannot just continue with this, because the sea will then really become too full. So full even that you can hardly see the sea anymore. And there would be absolutely no more room left for the fish.

But you can also of course decorate ugly things (for example make a palm tree of a wind turbine) or make a placard with a drawing of the air and sea so that you do not see these ugly things anymore.

And is not it an idea for oil platform and wind turbine manufacturers for example to start cooperating more and placing platforms and wind turbines closer together? Then you only need to construct something in one place. And it is also much smarter, because perhaps technicians who work on the oil platform could also check the wind turbines. This will save money, which an organisation can then use for good things for the sea, such as fish and the water itself.

You cannot do many different things in one place and some things will not go together. It is important that we do not get in each other's way. We need to talk to each other to decide what can go well together. It helps to listen well to each other, even if we may think that we already know each other well. If you really listen well, you discover new things and you get to know each other better.

Tip 3: Make clear agreements

"What you consider to be important is not a fact, it is only an opinion" Lieke, 11 years

Good agreements are needed to be able to cooperate. Otherwise you don't know who the boss is, who is able to make decisions, who needs to do what and where someone is allowed to go. Without agreements you will maybe start on your own again because you do not understand how your activities fit with those of the other. For example: the technician who works on the oil platform and for the wind turbine. It only works if agreements have been made about who pays him, when he should work in one place and when he should work in the other and who is responsible if something happens to him.

Sometimes making agreements takes much too long and you actually forget why you even make agreements. There needs to be someone who monitors timekeeping. And there needs to be someone who monitors the agreements. This is a kind of referee who everyone trusts.

When making agreements do not just think about now, but particularly about the future. Sometimes you have to pay more now. For example to lay cables deeper further out to sea. Some things seem more costly but bring higher returns later.

Above left: "Fun, beautiful wind turbines. Solar panels on the turbines" Text by green building: "Floating hotel" Text in water right: "Water filters prevent grit and dirt" Text bottom left: "Maybe nets for fish and waste. Special places for swimming, fishing and sailing"

'The Sea Flows On', reflection on the dialogue session during a round table discussion at the North Sea Congress, 13 March 2014

17 juni
Het gesprek met de minister!

Ministerie van Verhalen

Tip 4: Reward good actions

"For cooperation, trust is needed, because if you don't cooperate you don't progress" Sander, 12 years

Adults talk more about learning than children. We need to learn how important the North Sea is. We need to learn how we can care for it. Actually we are learning throughout the day. Learning is discovering and then doing. It is not just that you learn, but how you learn. Learning can be fun or stupid. Learning is fun if you are actively involved and are enjoying it.

Make learning fun and make a competition of it. It can only become real fun if there is a competition or if you are rewarded. Rewards make you happy. They keep you motivated to persevere. And if you are happy, you can also make others happy and convince them to join in. Ideas:

- Ask fishermen to fish for waste too. Reward them if they do this. Maybe with money, but also with higher quotas or additional equipment.
- Ask people to help clear waste on their day out at the beach. And reward them. Maybe with a free sun lounger or parasol.

Ensure that everyone who is involved with the North Sea feels equally important. This is certainly the case with fishermen. We need to help them feel more important. We should thank the fishermen because without their work we would have no fish. So you need to reward them. But not everyone knows how important fishermen are.

From left to right:

17th of June
Talk with the Minister!

Welcome - Waiting - We have different ideas (compared to old people)
Thanks to you they were at Eneco - Children of the Paradijsvogel school - The minister will send an agenda soon
Placing tidal energy between wind turbines - Combining platforms with wind turbines - You can all work for me soon
Place it on a North Sea 'eBay' website - Devolop a nice North Sea game? - Fishermen collect waste from the sea as a side job

Tip 5: Tell the Story

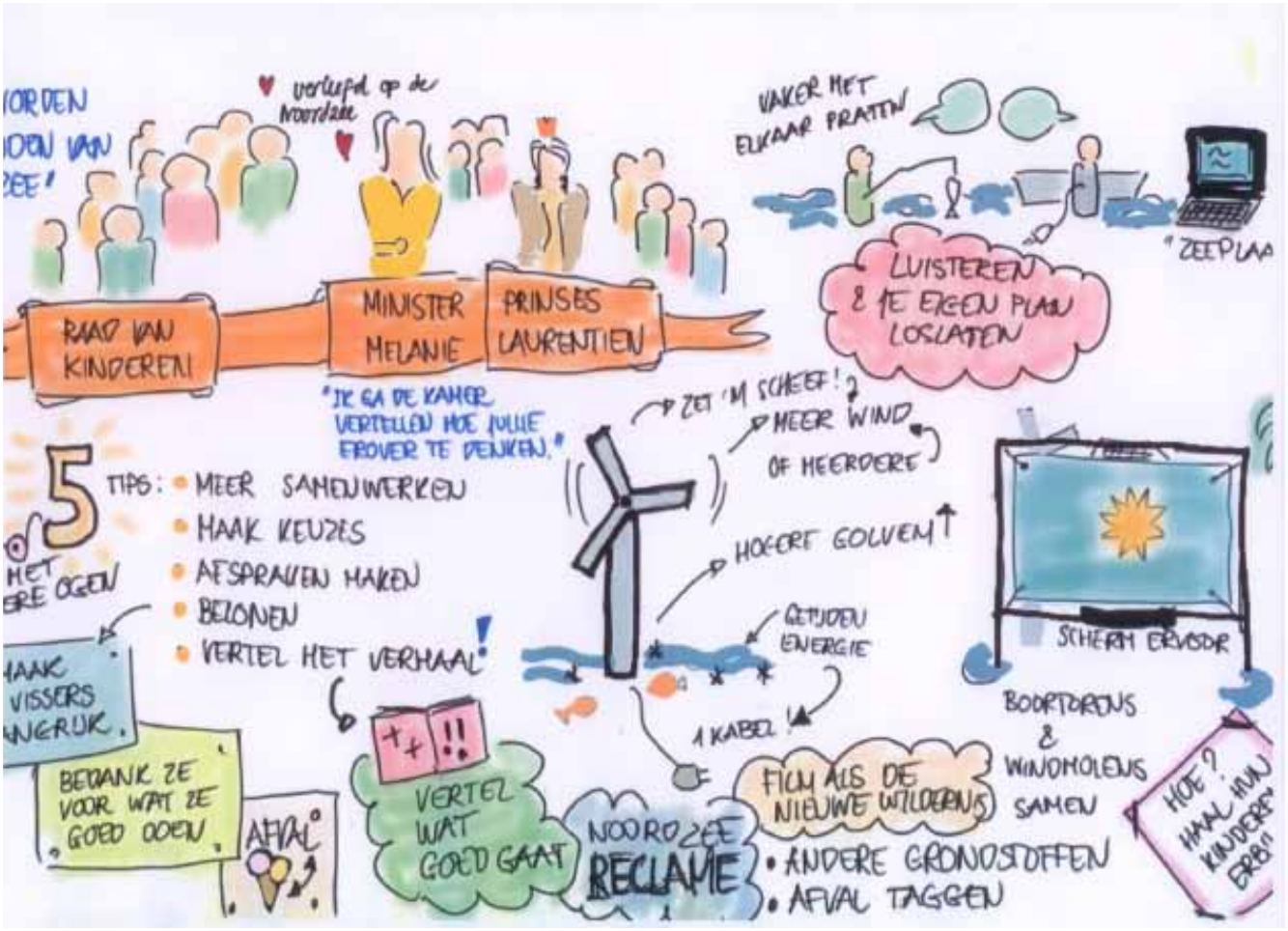
"You need someone who calms things down when things get hectic. Turmoil is a feeling, not a fact." Jente, 12 years

You can achieve much more if you do it together. Cooperating can only happen if everyone knows what needs to happen and considers this important. And it works really well if you are happy and positive and explain what you want to achieve, so that it becomes fun to help each other.

For example, with the North Sea it is already going quite well. Together we can make it EVEN better. Ports are cleaner than previously, there are more fish and more people live from energy from the North Sea. And with all the new plans we can obtain much more from the North Sea. It would be good if we could explain more about this. Do people know for example that an offshore wind farm is an ideal breeding ground for fish?

And if you want to tell a story so that other people help you, you need to really know what you want to achieve. And you need to be a good storyteller. If you need to change something because it could or should be better or different, not everyone will always like this. Then you need to give a good explanation and tell what is changing and why. Because if you want to go left one time and the other time right, while that is not entirely logical, people become confused and maybe even uncertain or afraid. And this is no good for anyone. The storyteller needs to be calm. Because new plans always stir things up. It helps if the storyteller then remains calm.

Tell a story about the people of the North Sea because this will affect people and everyone will feel that it is important to care well for the North Sea. Not only individual stories but the story of everyone together will turn this into 1 strong story. It is also important how you tell the story because knowledge alone is not enough. And have a good think about who can tell the story about the North Sea. Maybe the children of those adults who are involved with the North Sea could tell the story.



We will be friends of the sea
In love with the North Sea
Talk to each other more
Council of Children
Minister Melanie
Princess Laurentien
"Sea place"
"Listening & not sticking to your own plan"
"I'm going to tell the House of Representatives what you think about this"
Tilt it
More wind or more
5 tips:
Cooperate more
Make choices
Make agreements
Reward
Tell the story
Higher waves
Mask it
Tidal energy
1 cable
Oil platforms & wind turbines together
Film as 'the new wilderness'
Make fishermen feel important
Thank them for what they do well
Tell about what is going well
North Sea Advertisement
• Other raw materials
• Tag waste
How? Get their children involved!
Waste

For more information about this initiative :

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@MissingChapterF

Colophon

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July 2014

Photo: Rob Poelenjee, Ministerie van IenM

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