European MSP Platform

Conflict fiche 1: Maritime tourism (incl. local communities) and offshore wind

Maritime and coastal tourism is an important economic sector for many countries, creating millions of jobs around Europe and making an important contribution to the local economy of coastal areas. Tourists are attracted to particular coasts on account of their image and the experiences they offer - in terms of landscape, informal activities or sports. The same applies to coastal residents who also appreciate particular coastal landscapes, experiences or activities. These activities and landscape experiences can come into conflict with offshore wind farms which are being developed in many countries and rapidly increasing in size.

What are the key spatial elements of the conflict between tourism and offshore wind and what can Maritime Spatial Planners to prevent or resolve these conflicts?

1. Description of the two sectors

1.1. Maritime tourism and recreation

The coastal and maritime tourism sector is one of the five focus areas of the EU's Blue Growth Strategy. Coastal tourism accounted for 40 % of the gross value added, 61 % of the jobs and 42 % of the profits of the total EU blue economy in 2016. Around 2.127 million persons were directly employed in the sector in 2016, with about a quarter of these in Spain and 12 and 10 per cent in Greece and the UK, respectively[1].

Maritime tourism is a hugely diverse sector, ranging from nature-based tourism and low impact recreational activities on the coast to mass tourism. In some regions of Europe, the direct and indirect employment and income generated from tourism is significant – in hotels, restaurants and a wide range of other service industries. Maritime and coastal tourism are also highly competitive sectors, and there is sometimes strong pressure on coastal areas and resorts to remain attractive[2].

Whether this is informal recreation or more organised and formal activities and sports, all forms of coastal and marine tourism rely on particular experiences a site can offer. Sometimes the scenery is more important than the activity itself, and especially in the case of low-impact tourism, the main attraction may be a natural landscape or a cultural landscape, such as coastal villages, traditional harbours and fishing boats[3]. Recreational and landscape-related experiences are also important to

[1] European Union (2018)
[2] European MSP Platform (2018)
[3] Honey & Krantz (2007)

local residents, and especially second home owners often choose a location because of its attractive landscape.

Recreational activities can either take place on land or in the water. Typical coastal activities might be walking or cycling on the coast, rock climbing, or "coasteering" for example. It may also simply be to lie on a beach, or quietly sit by the water. Water-based tourism takes place close to the shore, but also further out at sea in the case of sailing. Key examples are swimming, canoeing, surfing, wind surfing, rowing, sport fishing, diving, snorkelling, whale watching, seabird watching, boating, and yachting[4]. Many innovative and new activities have recently grown up, including for instance kite surfing or hang gliding from cliffs.

Some recreational activities such as surfing or diving can only take place in specific areas. They need certain water depths, environmental conditions or infrastructure, such as good waves or easy and safe access to ports or marinas. In areas where nature-based tourism takes place, one of the key requirements is interesting species such as whales or birds. Environmental quality is also important at a more general level, as tourists in particular expect clean, clear water and limited pollution.

Offshore wind farming is mostly a problem for coastal tourism on account of its aesthetic landscape impacts, while it can be both a problem (e.g. for the safety of sailing) and an attraction (e.g. as a visitor attraction).

Because of the great diversity of the tourism and recreation sector, many different stakeholders must be considered in the planning process[5]. On a regional and local level there is usually sufficient interest and capacity to engage in the planning processes, not least because of the high economic stakes in the sector.

1.2. Offshore Wind

Offshore renewable energy is the fastest growing sector of the blue economy in Europe, with considerable potential to deliver technological development and job opportunities. Direct employment in the EU more than doubled between 2014 and 2016, rising to about 160 000 and now exceeding total employment in the EU fishing fleet.[6] Strong policy drivers, as well as the continued development of the industry are expected to push offshore wind farming into further growth. The EU Renewable Energy Directive requires the EU to meet at least 20% of its total energy needs from renewables by 2020, to be achieved by attaining individual national targets. Prices for projects to be completed in the next 5 years are lower than previously as a result of the maturing of the industry, improved technology, growing investor confidence, and the introduction and deployment of a new generation of turbines, with enormous swept area and tremendous output[7] (see Figure 1) Offshore

[4] European Commission (2014)
[5] Papageorgiou (2016)
[6] EU Commission (2018a)
[7] Wind Energy (2017)

wind still costs about 40 percent more than onshore wind and 20 percent more than solar PV on a levelized cost of electricity (LCOE) basis, but prices are expected to fall fast. Some offshore wind projects in the Netherlands and Germany are now at wholesale prices, meaning no subsidies are required[8]. Developments are particularly strong in the Eastern Atlantic, North and Baltic Sea, but are also beginning in other sea areas. The UK currently has the largest amount of installed offshore wind capacity in Europe, with 40.8% of all installations[9].

Offshore wind farm-related decisions have consequences in the long term as wind farms have a life span of 25-30 years. It is also a contentious sector as positive and negative externalities can be high. There are conflicts with many other sectors (such as impacts on the safety of navigation), but also potential synergies, such as artificial reef formation or possibilities for co-location (e.g. mariculture). Opportunities may also exist for tourism development, e.g. by offering tours to visit offshore wind farms.

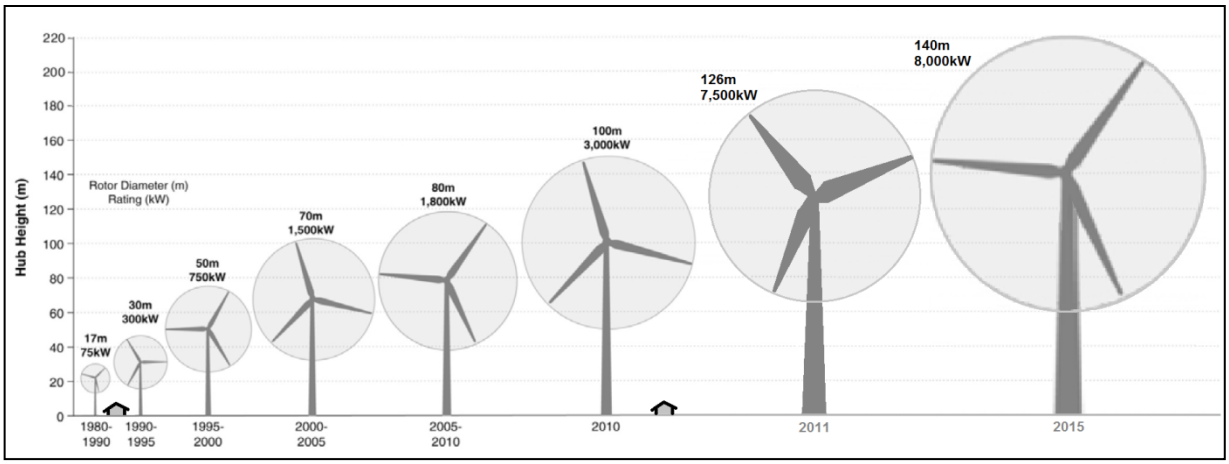

Figure 1: Growth of turbine size and swept area over time[10]

When developing offshore wind farms, planners and developers look for ways of reducing costs. Sea depth and distance from the shore are important factors in the costs of offshore turbines. Foundations are particularly expensive at sea. For a conventional onshore turbine, the foundations' share of the total cost is normally around 5-9 per cent, while the average for offshore turbines might be close to 21 per cent[11]. Low depth zones are often closer to the shore and thereby more affordable for developing OWF, although shallow banks further offshore are also increasingly attractive.

[8] Green Tech Media (2017)
[9] Wind Europe (2017)
[10] Wikimedia (2015)
[11] Wind Energy The Facts.org (2008)

Another important cost factor is the distance to a grid connection point on land[12] [13]. Cables are made of expensive material, so the longer the route, the higher the costs. Longer cables also have a greater chance of being damaged, for example by vessels. Thirdly, while offshore wind farms transmit the power they generate through high-voltage alternating current, much energy is lost when wind turbines are located far from the mainland, although this is changing as a result of new ways of converting AC into cheaper DC[14]. Fourthly, maintenance vessels are also more expensive if they have to travel a long distance from port. The offshore wind turbines in the German Exclusive Economic Zone are situated at the greatest average water depth at 28 metres, while turbines in Finland (6 m) and Sweden (9 m) are sited in the shallowest water.[15] The offshore wind farm currently furthest from shore is Global Tech 1, at a distance of 112 kilometres from the German coast.[16]

Location decisions for offshore wind farms are made differently in European countries. In the UK, developers have more freedom to find the right spots in a 'search zone', while in The Netherlands, Germany, Poland and Belgium the government determines the exact locations and launches a tender for bids from offshore wind farm developers[17]. In the case of the UK and Poland, the developers also contribute financially to the grid, which is another incentive for reducing costs. In some other countries the grid is financed by the government. This means there is no private incentive to reduce the distance of the wind farm to the shore.

2. Conflict description

2.1. Conflicting elements

Conflicts arise over the attachment people have to a particular landscape (fears of the visual impacts of wind turbines) and access to certain sea areas.

- Stakeholders related to beach and coastal tourism are concerned that the visibility of offshore wind farms from the coast reduces the attractiveness of the place. This can negatively influence the number of visitors and could have effects on the local economy[18]. Research in Scotland[19] has shown that offshore wind farms only have very

[12] Rocco (2018)
[13] Offshore Wind Programme Board (2016)
[14] https://www.maritime-executive.com/article/new-system-optimizes-transmission-from-offshore-wind-farms, accessed 7 January 2019
[15] Wind Europe (2018b)
[16] Wind Europe (2018b)
[17] More information on the sector can be found in the EU MSP Platform Offshore Wind Energy sector fiche https://www.msp-platform.eu/sector-information/offshore-wind-energy
[18] Broekel & Alfken (2015)
[19] Scottish Government (2008)

limited impact on the number of tourists, but such impact depends on many factors and can vary by country and place.

- Not only tourists, but also local property owners (residents and second home owners) are concerned that offshore wind farms could decrease the attractiveness and therefore the value of their house[20]. In most of the cases researched, however, no property price decrease has been shown on account of offshore wind farms[21].
- Stakeholders related to sea-based tourism, such as recreational boating, have more difficulties accessing the open sea. Offshore wind farms can block potential sailing routes, or restrict the available space for other recreational activities, such as windsurfing or diving[22].

The visual impact of offshore wind farms – whether real or expected – can give rise to emotional discussions. People can be very attached to a particular place and may strongly resent the visual intrusion caused by an offshore wind farm. Although the conflict over a wind farm may appear small, it can quickly escalate if these concerns are not taken seriously. In Germany, a draft maritime spatial plan had to be revised in response to local resistance to offshore wind. In Poland, offshore wind farms were banned in internal and territorial waters on the initiative of coastal municipalities.

2.2. Spatial context

Conflicts between OWF and tourism occur in smaller and/or busy sea spaces (e.g. Belgium and The Netherlands) as well as larger, less busy areas with more open space (e.g. Estonia and Sweden). In the great majority of cases, the conflict is related to the visual impact of offshore wind farms on the coast.

Story 1: Protests against offshore wind farms and responses in the Netherlands

In 2014 the Dutch cabinet agreed to stop the licensing process of some smaller offshore wind farms 60 km offshore, in favour of developing large-scale offshore wind farms close to the Dutch coast. The main reasoning was to reduce the costs for cables and maintenance. As part of the overall planning process, a feasibility study was conducted on developing five offshore wind farms 5.5 kilometres from the coast. Early resistance of local and regional governments changed this into two wind farms at a distance of about 18.5 km from the coast. Still, this was a lot closer than the 60 km originally proposed. The coastal zones close the new sites are known as major tourist areas, including the Netherlands' most popular beach resorts Zandvoort and Scheveningen as well as some small traditional fishing harbours. At the same time the total cost reduction of the new area designations amounted to 1.2 billion euros.

[20] Dent & Sims (2007); Gibbons (2017)
[21] Jensen *et al*. (2018)
[22] Royal Yachting Association (2015)

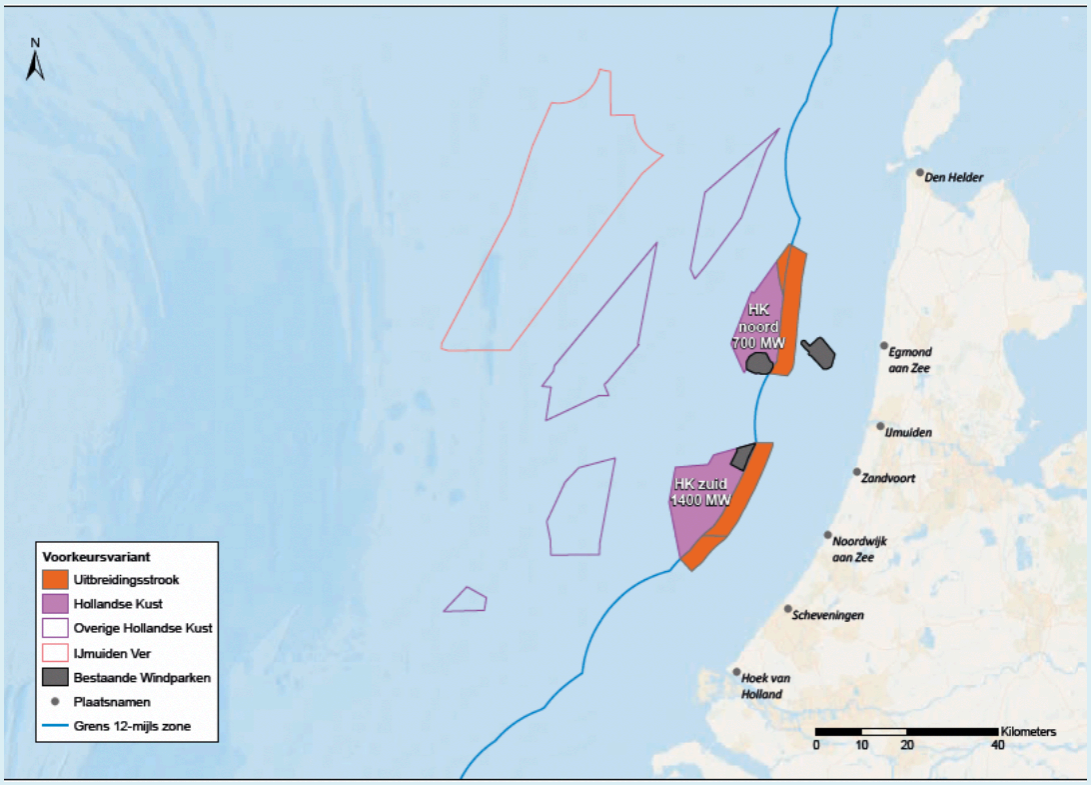

Figure 2: Preferred locations for new offshore wind parks in the Netherlands[23]

Some coastal municipalities still objected to the new planned offshore wind farms. Municipalities with a harbour and those with existing offshore winds farm in front of their coasts were less concerned. But the other municipalities conducted their own research and concluded that due to the plans they would lose about 200 million euros of income because of decreasing tourism, which in turn would mean a loss of 6,000 local jobs[24].The coastal municipalities therefore united in the platform Maritime Offshore Wind Farms with the aim of lobbying against the potential wind farms. To this end they financed a campaign called 'action group free horizon'. The two provinces, North- and South Holland, also joined the initiative. The idea was to develop an alternative plan for offshore wind farms further offshore - but therefore also more expensive[25].

[23] Dutch Ministry of Infrastructure and the Environment (2016)
[24] Groene Courant (2014)
[25] Windenergie Courant (2016)

Figure 3: Poster for the campaign against the offshore wind farms[26]

The Dutch government had intended to host an information event to explain their plans for the new offshore wind farms to the coastal municipalities. The plan was to show a visualisation, so that the municipalities could see what the new turbines would look like from the mainland. At the last minute, the government cancelled the event. By that point, however, the visualisations had already been seen by some municipal civil servants who reacted with considerable concern. Some local municipalities then questioned the cancellation of the event. They filed an official request for transparency and demanded that the visualisation was made public to all citizens. After a few weeks, the Dutch national government provided the municipalities and the public with the images, but they were different from the originals. The ministry confirmed that the images had been adapted to a weather type more common for the coast.

This started a wave of criticism, not only from those already active but also the national opposition parties. One of these, the nationalist PVV party, started to question the responsible minister. The minister stated that an independent company had been responsible for the images and had used a very bright sunny day. However, such days were rare on the Dutch coast. Seen over the entire year, the offshore wind farms would be completely visible only 8% of the time. It would be partly visible 27% of the time and not be visible at all 65% of the time. The ministry confirmed that by using only one tool, several different planning options could be compared more objectively.

Nonetheless, by the summer of 2015 more than 500 objections had been filed against the planned offshore wind farms on the coast. The ministry therefore published all the files that had been used

[26] Noordwijk Nieuws (2015)

for determining the new location of the offshore wind farms. Also, new research was conducted, for example on German tourists and their opinions on offshore wind farms. By September 2015, 40,000 signatures had been collected to demand a debate in the government, including a possible referendum. Demonstrations were taking place on the beach, for example by installing "sitting platforms".

Figure 4: Sitting platform on the beach as part of the demonstrations[27]

To have a solid base for the final plan, in January 2016, the national government provided new independent research showing that the offshore wind farms would generate jobs from construction and maintenance[28]. The opposition party PVV requested even more research. However, the cabinet decided to officially approve the plan, arguing that the available reports and information provided sufficient information for a decision. Also, the Strategic Environmental Assessment (SEA) showed no significant negative effects on the environment.

The final version of the updated MSP refers to the potential effects on tourism[29]. It acknowledges direct negative effects for sailing and recreational fisheries on the short term, but states that these will disappear once the wind farms are opened for passage in 2018. On the visual effects of the offshore wind farms, the plan mentions that research has been done on the experiences of tourists, the regional economic impact to the municipalities and the impact on tourism. The results of this research were only positive and gave no reason to object to the development. To clarify, the current plan also includes a map, which shows the potential visual impact of the offshore wind farms OWFs from the coast.

[27] Alles over Katwijk (2016)
[28] Trommelen (2016)
[29] Dutch ministry of Infrastructure and the Environment (2016)

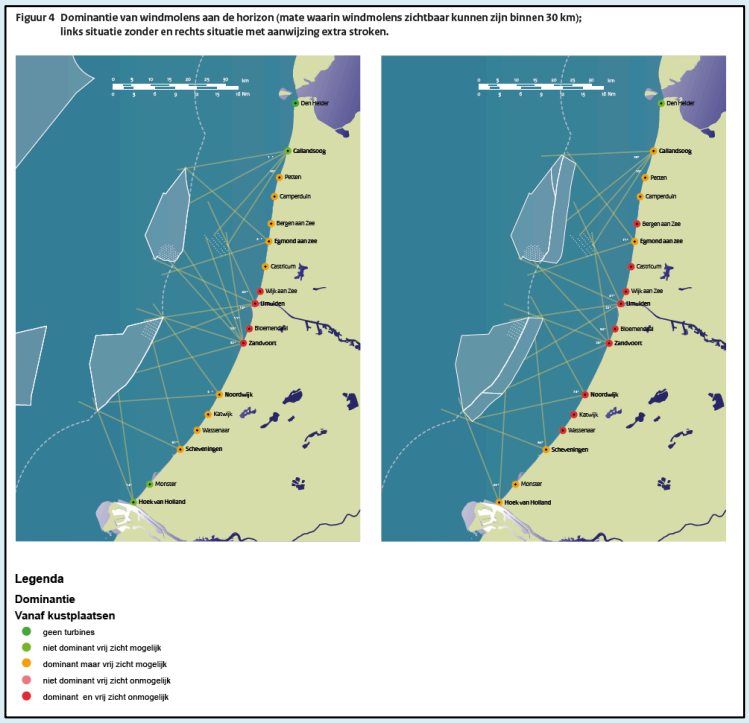

Figure 5: Explanation of visibility of offshore wind in the updated Dutch MSP[30]

The Dutch national government clearly became aware of the importance of visual aspects of the offshore wind farms as part of the MSP process. It realised that making available several visualisations from different tools leads to more concerns and resistance among the stakeholders. Therefore, it is important to think about how and when to use which type of visualisation during several phases of the planning process. After the draft plan was put forward for consultation, the government launched an online viewer tool to explain to citizens what the real view would be in different weather types.

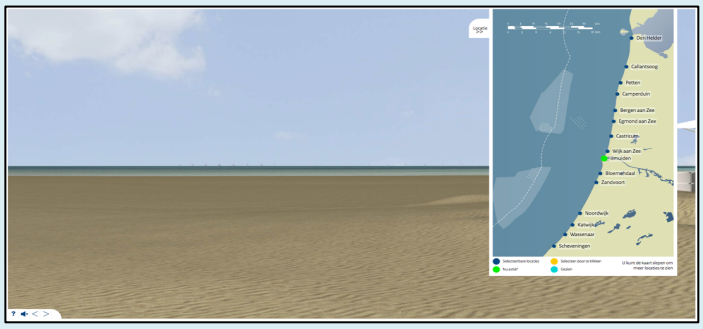

Figure 6: Example of visualisation[31]

[30] Dutch ministry of Infrastructure and the Environment (2016)
[31] Rahandusministeerium (2015).

Story 2: How a conflict escalated to a court case in Estonia

On 11 October 2012, the Government of Estonia initiated maritime spatial planning in the marine area around Hiiu island in Estonia. The draft plan included the development of areas for offshore wind farms, and the area north of Hiiuma was deemed most preferable. Several island residents were not satisfied with these designations. After the MSP was adopted on 20 June 2016, opponents of the plan filed an appeal at the administrative court because of the visual impact of the turbines and the potential impact they could have on nature around the island. The governor, however, endorsed the maritime spatial plan, determining the areas selected as suitable for offshore wind farming. The plan contains several images of what the offshore wind farms would look like from different vantage points on the island.

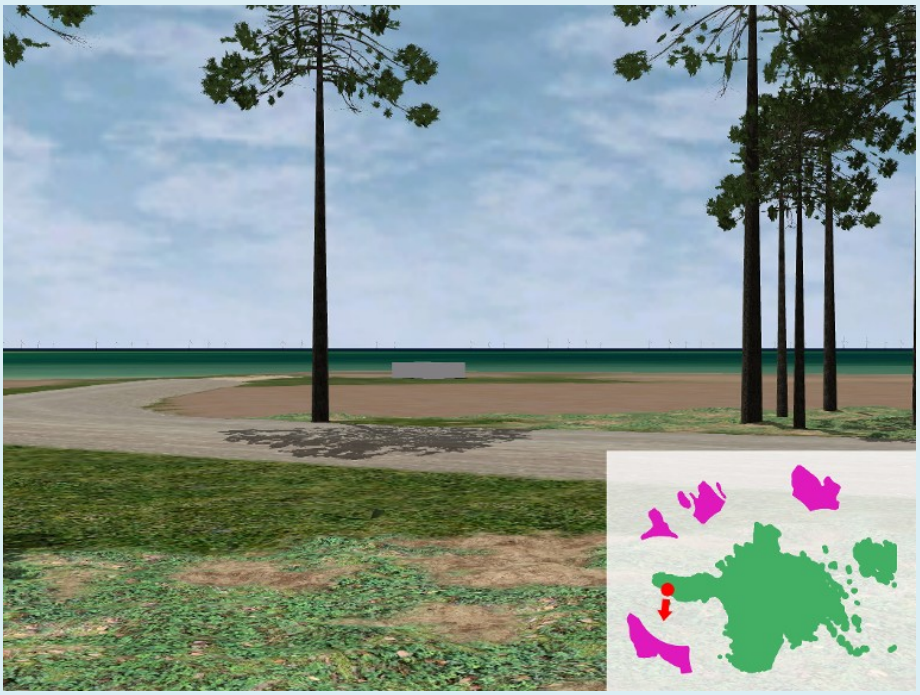

Figure 7: One visualisation of the potential view on the offshore wind farms from the Hiiu island[32]

Once the plan was endorsed, Hiiu municipal council began to implement it. In 2017 it approved a cooperation agreement with Nelja Energia and Hiiumaa Offshore Tuulepark to build a wind farm of 100 to 160 wind turbines with an aggregate capacity of 700 to 1,100 megawatts. The company, financed by investors from other EU countries, committed itself to contributing to the development of the island, its economy and energy security. The most important aspect was that the wind farm would only have a minimal visual footprint and that no turbines would be put up closer than 12 kilometres from the island and on Neupokoyev Bank. The visual footprint would additionally be kept

[32] Rahandus Ministeerium (2016)

under control by using only submerged and underground cables. Regardless of whether the wind farm was connected to the grid via Hiiumaa or by a link to mainland Estonia, the developer was committed to establishing a loop connection with Hiiumaa.

However, a group of protesters did not stop after the first ruling of the administrative court and after the plan of the developers was put forward. The opponents filed a complaint at the appellate court in Tallinn. The case came before the court on 30 October 2017, providing the opponents with an opportunity for presenting their arguments. At that time the court ruled that the offshore wind farm development could not be blocked. In addition, the appellate court decided that some of the opponents did not have the right to challenge the spatial plan in court[33].

Figure 8: Protest in Tallinn against the new offshore wind turbines[34]

Nevertheless, the protest of the local inhabitants had its effect on the agreement between the offshore wind farm developers and the government. The new agreement foresaw that a maintenance operation centre of the wind farm should be set up on Hiiumaa and that the training of technicians would take place in Hiiumaa. The service centre was expected to create 30 new jobs directly as well as 20 indirect jobs. Also, the developer and the municipality were to set up a non-profit association aimed at promoting the economic and social wellbeing of the municipality, spreading the positive effects generated by the wind farm through supporting local not-for-profit initiatives. The wind farm would donate to the non-profit at least 0.2 percent of its revenue from the sale of electricity, but not less than 0.32 euros per each megawatt-hour of electricity produced. In addition, it would be possible

[33] Offshorewind (2017)
[34] Ärileht (2017)

for the residents of Hiiu municipality to invest in the wind farm by buying preference shares or bonds bearing a fixed annual interest of 15 percent.

However, even this new agreement was not supported by all stakeholders. A group of protesters filed a complaint to the Estonian (highest) National Court. Eventually, on 8 August 2018, the National Court determined that the offshore wind farm designations should be removed from the Hiiu MSP.

This means that the MSP is still valid, however without the offshore wind farm designations. Therefore, it is currently unclear whether the proposed offshore wind farms will ever be built around the island.

Story 3: Adding visibility requirements to the MSP in Mecklenburg Vorpommern (Germany)

Marine spatial planning in Mecklenburg-Vorpommern (MV) arose in the late 1990s out of concerns that investment in offshore wind farming was too slow. At the time, projects individually applied for a license in what amounted to a hit and miss approach, with consent often refused because of environmental or shipping concerns. Planners in MV thus suggested a systematic approach, specifically looking for areas that were reasonably conflict-free and could be made available to offshore wind. To alleviate the concerns of the tourism industry and local residents, "suitable areas" for offshore wind farming were designated in the 2005 plan, all of which were well away from a reservation area for tourism which ran along the entire coastline.

A new, revised plan replaced the 2005 plan in 2016. The first draft of the new plan, put forward in 2014, foresaw a considerable expansion of priority areas for offshore wind compared to 2005. This was driven by a state energy strategy that emphasised renewable energies, in particular offshore wind because of its ability to cover base load demand. In order to identify new areas that could be considered for offshore wind, the planning authority decided to take a step by step approach. It firstly commissioned an expertise on which areas would be deemed suitable from a nature conservation perspective. Other sectoral demands were then added. The idea was to identify taboo areas where offshore wind could definitely not be located, as well as areas that would have no restrictions and could be used. The problem was that no areas emerged that had no restrictions at all. To come to a solution, it was decided to at least consider areas that had one or two restrictions. When these areas were put on a map, it caused an outcry of coastal communities, municipalities and tourism communities. There was concern that wind turbines would be visible from almost the entire coastline; citizen's initiatives formed with names such as "Free Baltic". Posters were put up in hotels. Arguments against offshore wind often referred to nature conservation, but most of the concern was related to the supposed visibility of turbines and the impacts this could have on tourism - an important part of the local economy. Nature conservation additionally worried about bird migration, and fishers worried about losing convenient access to fishing grounds.

Figure 9: Banners on the coast of Mecklenburg Vorpommern against the plans for new offshore wind[35]

As a result of these responses, the proposal was considerably softened. The second draft and the final plan contain fewer priority areas for offshore wind than originally suggested, amounting to only one third of the original 580km^2 proposed. Changes were also made to the tourism reservation area along the coast. The principle is still to enable a high-quality landscape experience, but now there is no longer a uniform reservation area along the coast. The reservation area is now determined based on estimating the distance from the shore at which offshore wind turbines will no longer be considered visually disruptive. Priority areas for offshore wind have been allocated beyond that line.

Aspect / Story	Story 1: The Netherlands	Story 2: Estonia	Story 3: Mecklenburg-Vorpommern, Germany (2016)
Main causes of conflict	Strong objection of the local and regional governments; lack of strategy how to deal with the visualisation of an OWF.	Plans to develop wind farms were actively pushed. Concerns also extended to nature conservation and fisheries on top of visibility concerns.	Strong political push for more offshore wind farms; fears of negative landscape impact with knock-on effects on tourism and local communities.
Role of stakeholders	Local governments and stakeholders opposed to several versions of the plan. Last version adopted.	Local communities opposed the plan and tried to object to the proposal via the courts.	Local communities and other groups strongly opposed the draft plan; the plan was changed as a result.

[35] Welt (2015)

Escalating factors	Cancellation of an information event. Lack of clarity on what information was provided. Opposition - nationalist party (PVV) interfering in debate.	Ruling of the administrative court and support of by government, not adapting the plan.	Scale of planned OWF development; plans to build closer to the shore
Solution(s) found	Additional research conducted. Arguments were strong enough to approve the plan.	Measures to reduce visual elements (underground cables). Socio-economic support and direct benefits for the community.	Zoning; negotiation of visibility criteria from the shore
Solution accepted by stakeholders	Unclear, but protests have stopped.	Not adopted. National Court finally ruled against offshore wind farm.	Yes

Table 1: Short analysis of the three conflict stories on offshore wind and maritime tourism

3. Drivers of conflict

The key drivers for the expansion of offshore wind farming are the renewable energy objectives set by Member States and the attractiveness of the industry in terms of technological development and jobs. The location of offshore wind farms is mostly driven by cost, meaning that a location with low sea depths, short cables and high winds is usually preferred. Still, location decisions also depend on natural conditions; sand banks further offshore for example may also be suitable locations as wind speeds are higher further offshore, offsetting potential extra construction and maintenance costs. Technological advances and cost reductions achieved by improved logistics and operations and maintenance[36] also act as drivers of conflict as they enable wind farms to operate at profit, with larger turbines constructed over larger areas. Turbines are also increasingly constructed in deeper water further offshore, which may be helpful for addressing conflicts related to the visibility of turbines.

[36] Green Tech Media (2017)

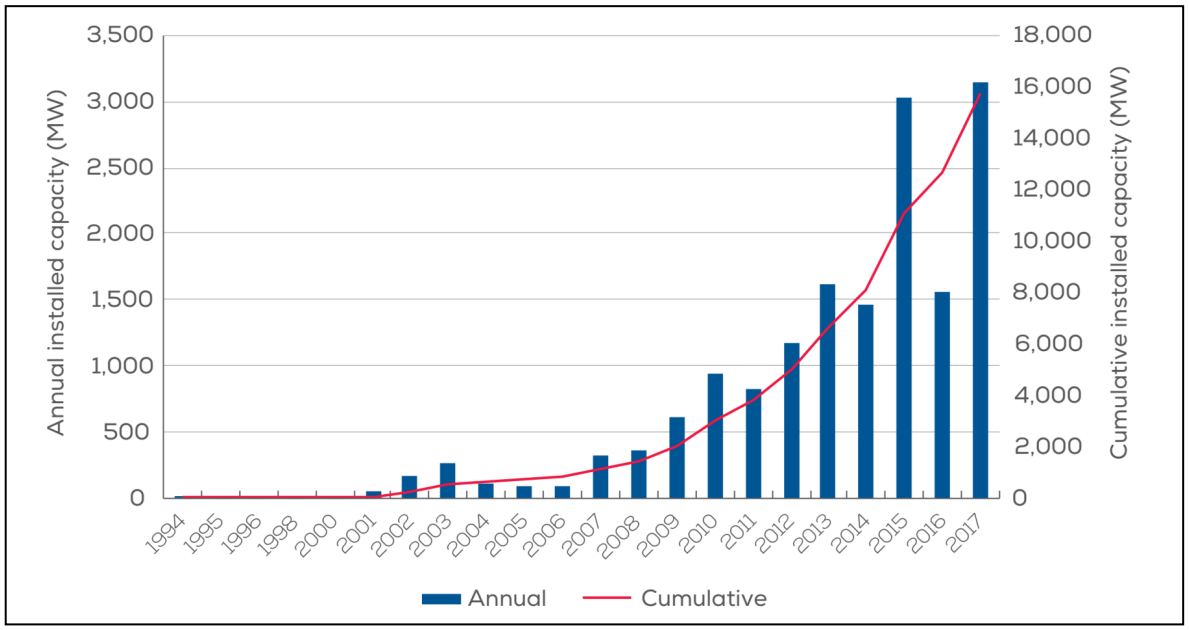

Figure 10: Annual and cumulative offshore wind installation in Europe[37]

As part of EU's Blue Growth strategy, the coastal and maritime tourism sector has been identified as an area with special potential to foster a smart, sustainable and inclusive Europe. It is the biggest maritime sector in terms of gross value added and employment and is expected to grow by 2-3% by 2020[38],[39]. The EU Commission adopted a Communication on "A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism" on 20 February 2014, presenting a new strategy to enhance coastal and maritime tourism in Europe.[40]

The challenge for MSP authorities is how to balance wider benefits for the national economy as a whole with advantages and disadvantages for local coastal communities (e.g. gains in terms of new jobs versus losses of jobs in tourism). Coastal tourism is a very important economic sector and in some EU countries also of vital importance for the national economy, so achieving the right balance can be a difficult task.

[37] Wind Europe (2017)
[38] Ecorys (2013)
[39] European Commission (2018)
[40] European Commission (2014)

4. MSP solutions

This section presents solutions that have been developed by EU countries for this particular conflict. Preventative solutions are designed to stop the conflict from becoming acute in the first place. Mitigation is designed to alleviate the impacts of offshore wind farming once the decision has been taken to build a wind farm - by offering some form of compromise or developing some "give and take" for the conflicting parties. Both spatial and more technical solutions are included; as well as options related to offshore wind farm licensing and general compensation.

4.1. Preventative solutions

Solution 1: Zoning to minimise the visual impact of offshore wind farms

In countries that use zoning, an obvious solution is to locate priority areas for offshore wind well away from the coast. Another way is to designate a tourism or recreational zone along the coast to prevent offshore wind farms from being built there. This can either have a fixed boundary, or be linked to a policy related to visual impacts. In its first plan in Mecklenburg-Vorpommern, Germany designated a reservation area for tourism that encompassed all coastal waters up to 12 km. Offshore wind farms were restricted to specially designated "suitable areas" outside this zone. In the revised 2016 MSP plan, the principle was softened by introducing a qualification related to the visibility of "vertical structures" which could disturb the visual landscape experience. In Poland, offshore wind farms are only permitted in the EEZ, a regulation that coincides with suitable areas; the legislation, however, came first.

Solution 2: Sensitive siting of offshore wind farms to minimise socio-cultural impacts

Not all areas around the coast have the same economic, social or environmental significance. Areas with certain types of tourism or valued for particular recreational purposes may be more susceptible to the impacts of offshore wind farming than others, for example. During the planning phase of MSP, social dimensions can be considered by using the concept of culturally significant areas (CSA)[41]. This method was developed to identify places of cultural importance on the coast and in the sea. It establishes what is valued by people, where these values are located, when in time they are relevant and to whom, and which places, features or areas are particularly significant compared to others. For economic concerns, it is possible to make an economic cost benefit analysis for the area to be able to weigh the expected economic costs against the benefits it may bring.

[41] BaltSpace (2018)

Solution 3: Collect data on the coastal tourism and recreation sector

Data on recreation and tourism activities in coastal waters are often lacking when the MSP process begins. Due to their limited size, recreational vessels are not obliged to carry AIS transponders which means the exact routes these vessels take are largely unknown. A solution is to create a bottom-up database of important recreation areas. The Danish project Havfrilufsliv[42] was an open source database where anyone could add recreational sites or routes, such as areas where they go to kayak, to surf or watch nature. The insights provided by the database were used in the follow-up project "Vandfuglefriluftsliv" (http://www.vandfuglefriluftsliv.dk/), designed to assist the Danish MSP process on the topic of tourism. In areas with high levels of tourist activity, MSP authorities could take measures to decrease the impact of offshore wind farms, such as changing their location or design.

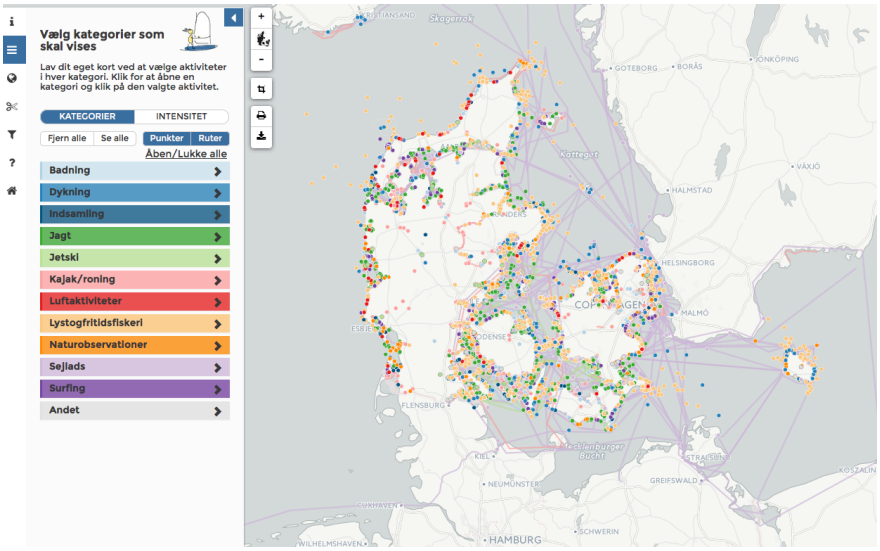

Figure 11: Screen shot of bottom up interactive database for maritime recreation in Denmark[43]

Solution 4: Develop a Tourist Impact Statement and possibly include it as standard part of the SEA or EIA.

Tourist Impact Statements are statements by developers on the likely impacts of the development on the local tourist industry. They also set out the methods that can be used to minimise any costs on local tourism and maximise any benefits (e.g. access arrangements). In the Scottish regional planning processes Tourist Impact Statements are already a recognised (although informal) part of the planning process. Tourists Impact Statement could be integrated in environmental impact analysis wherever tourism plays a major role. The statements include information such as the number of tourists travelling, views from tourist accommodation, the scale of tourism impact and the outdoor activity in the area of development[44].

[42] MSP Platform (2017)
[43] MSP Platform (2017)
[44] Scottish Government (2008)

4.2. Mitigation

Solution 5: Allow access to offshore wind farms to recreational vessels

In the United Kingdom, Denmark and the draft Polish plan, wind farms are open for transit and both commercial and recreational use. No special requirements regarding vessel equipment or limit on the vessel size are imposed[45]. In Poland, the limit on vessel size is 50 meters and there is a safety zone of 100 m around pillars. Other countries, such as Belgium and Germany do not allow recreational vessels to pass through offshore wind farms because of potential damage to the turbines and insurance-related issues. In 2018, the Netherlands has opened some of its offshore wind farms for recreational vessels, but there are additional rules that need to be complied with:

- Recreational vessels need to have an AIS (satellite) responder;
- Access is only possible during day time;
- Vessels can have a maximum length of 24 meters;
- Vessels must keep a distance of 50 meters from a turbine and 500 meters from a high voltage station;
- Vessels are not allowed to anchor in the wind farm;
- It is prohibited to go diving, kite surfing, or to dispose any garbage.

The Dutch decision creates the opportunity for the recreational sector to have new destinations, for example a trip to the offshore wind farm itself or to the United Kingdom (Scorby Sand)[46]. However, there might also be extra costs. These include costs for enforcement of the rules; potential costs when a collision happens between a vessel and a turbine (estimate: one collision per 80 years per farm) and costs to ensure accessibility by helicopter in emergency situations. During the discussion on the pass-through, ideas were proposed to remove the AIS duty and replace it with a simple notification, as well as to place buoys for recreational vessels to have a break. However, security concerns were seen as more important. The current policy will be reviewed in 2020 and possibly extended or improved.

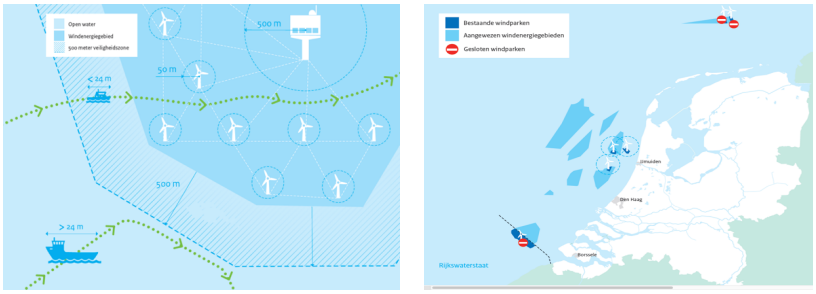

Figure 12: Infographics to explain the pass-through rules in Dutch offshore wind farms[47]

[45] Groenendijk (2018)
[46] Dutch Ministry of Infrastructure and the Environment (2015)
[47] Rijkswaterstaat (2018)

Solution 6: Design a multi-use offshore wind farm

Instead of designing an offshore wind for optimum wind energy generation only (one use), it could be an option to think of multi-use combinations with tourism in the early phases of the process. In case a government is tendering an offshore wind farm, it could for example include requirements for a new offshore wind farm to establish facilities for recreational boating. In this way easy pass-through routes could be developed for recreating boating within the wind farm. Visiting an offshore wind farm can provide an added value to existing boat tours and make them more attractive. It also gives tour operators an opportunity to offer additional promotional products, such as the possibility for angling. Other tourism activities could be facilities for divers, with offshore wind farms functioning as an artificial reef, and offshore restaurants in the vicinity of a wind farm. Offshore wind visitor centres may serve as additional tourist attractions, serving an educational purpose related to knowledge and the image of the green energy sector as well as promoting the sector to young persons and thus potential future employees. Examples of offshore wind – tourism multi-use include wind farms in England; the Scroby Sands OW Farm in Great Yarmouth, for example, attracts over 35,000 visitors every year. In the case of the Gwynt y Mor OW Farm, a £690,000 fund was designated by the OW developer to support tourist activities during OW construction[48].

Story 4: Local ownership, early involvement of local communities and co-design in Denmark[49]

In Denmark, local cooperatives have played an important role in the acceptance of onshore wind developments, where the possibility of resistance is otherwise high due to visual or noise impacts. Cooperative ownership enables earlier and more effective involvement of local communities, and therefore facilitates easier agreement about the suitable design of the wind farm and establishment of associated tourism and recreational activities. It also ensures that profit from the establishment of a wind farm stays locally.

Middelgrunden offshore wind farm, established on a natural reef at 3 to 8 metres water depth and located 3.5km outside Copenhagen harbour, is owned 50% by the local utility company and 50% by a cooperative. This project was subject of a long and intensive involvement of a large number of local groups and committees, and several thousand shareholders. The original project dating back to 1997 consisted of 27 turbines placed in three rows (Figure 14). After the public hearing in 1997, where this layout was criticised, the farm layout was changed into a slightly curved line, chosen to reflect the historic Copenhagen defence system around the City. The number of turbines also had to be decreased to 20, but this could be fully compensated by using larger turbines. The design changes could therefore be implemented without decreasing the installed power of the wind farm[50].

[48] More about MUSES project available at: https://muses-project.eu
[49] Larsen *et al*. (2005)
[50] State of Green (2003)

At the same time, given that the wind farm is located close to a popular recreational area near Copenhagen – a beach - local communities were worried about potential noise impacts. However, after a demonstration tour to a modern onshore wind turbine, locals were convinced that there would be no noise impact from the Middelgrunden turbines. During and after construction there was surprisingly little resistance to the project, especially considering the visual impact from the large turbines. The reason for this lack of protest is believed to be the strong public involvement, both financially and during the planning phase. A lot of time and resources were invested in securing local acceptance at an early stage of the project. Different interest groups were contacted and involved in the discussions about the project even before the various preparatory work and detailed planning started. Dialogues with many kinds of interest groups, as well as the Middelgrunden Wind Turbine Cooperative with its 8,553 members, generated widespread acceptance for the wind farm's location and layout. Early agreement also helped to keep the project on track once construction began as no deviations had to be accounted for during work at sea. Locally based commitment and cooperation between the cooperative, the local utility company and the municipality of Copenhagen was a significant precondition for the development of the project. Open public dialogue from the very beginning has therefore proven crucial for achieving social acceptance in this case.

Figure 13: Two options considered for the design of the Middelgrunden offshore wind farm[51]

Solution 7: Use the MSP process to ensure offshore wind farm development benefits local communities

Regional and municipal authorities often resist offshore wind farms close to the coast because of the possible negative effects on tourism, recreation and the local economy. In the MSP process it is therefore important to involve them adequately and to clarify and acknowledge their concerns. A

[51] Soerensen (2013)

strategy to increase the acceptance of offshore wind by those stakeholders is to ensure that the offshore wind farm project actively contributes to the local/regional economy, or to use cooperative models such as the Danish example. Although its outcome remains uncertain, the Estonian case also provides a good example, with an agreement achieved on jobs for maintenance and training, a compensation scheme for natural sites/ NGOs, the use of renewable energy for the region, and wind farm design that reduces visibility of the turbines to a minimum.

Solution 8: Use the MSP process for clear and transparent communication on the visibility of the OWF

Offshore wind turbines are tall structures and can be seen from a long distance. It falls to the MSP authorities to seriously consider any concerns regarding their visibility, both in the MSP process and final plan. One way is to use interactive viewer tools similar to the Dutch example, or to include pictures from several viewpoints from the coast to the different offshore wind farms in the MSP area. The text of the plan should also mention visibility and outline possible mitigation measures. Communication on the impact of offshore wind farms should be transparent and clear and not contain any mixed messages or conflicting statements from different authorities. It is helpful to work on a coherent strategy beforehand.

Solution 9: Stimulate and facilitate innovation in the OWF sector to decrease potential conflicts with tourism

The major cause of conflict is the need for offshore wind farming to be as cost-effective as possible. Future trends, such as floating wind turbines, energy islands with Power-to-Gas possibilities, as well as sea basin grids could decrease costs and would provide opportunities for building offshore wind farms further offshore. An MSP authority can act as a passive organisation, facilitating different uses, but can also become a more pro-active organisation, stimulating innovation in the sector and providing room in the MSPs for innovation. The current MSP development processes in Belgium and the Netherlands have a stronger focus on incorporating innovation. In the Netherlands, funding for innovation comes from the 'top sector' policy, specifically the fields 'water' and 'energy'. With these top sectors, in the Dutch MSP process, the North Sea Energy Lab has been developed[52]. This initiative provides input for the Dutch MSP process and can speed up the development of new technologies by using a social network approach.

[52] More about the North Sea Energy Lab is available at: http://www.mvi-labs.nl/northseaenergy

5. Outlook: Future trends and developments in the sectors (with a view to the likelihood of conflicts arising in the future)

5.1. Future trends in the offshore wind sector

There is considerable innovation in the offshore wind sector which could make offshore wind farm locations further offshore less costly and therefore more attractive. This could eventually lead to wind farms that are no longer visible from the coast. Floating wind farms, for example, are less dependent on water depth and could be built in many more locations. Transmission cable systems may improve in line with offshore grid developments around sea basins. This will make it easier to connect offshore wind farms to the grid. The development of energy islands, where electricity can be transferred through Power-To-Gas installations, could also decrease the need for offshore cables to land, as gas can be transferred with vessels instead.

Another trend that could influence the potential for conflict between offshore wind and tourism is accessibility of offshore wind farms to smaller boats and other recreation activities. Offshore wind farm operators used to object because of possible damage to turbines and high insurance costs. However, more and more countries are now opening up their offshore wind farms to smaller vessels up to 24 meters long. In May 2018, the Netherlands opened two offshore wind farms close to the shore. Another trend is to design offshore wind farms to enable sailing vessels to travel through.

5.2. Future trends in the maritime tourism sector

The coastal tourism sector is expected to continue to grow during the coming years, as will the number of holiday homes on the coast and therefore property owners. There is an increasing demand for domestic and short stay tourism along the coast. Another trend is towards more nature-based and sustainable coastal and marine tourism, which favours more isolated areas and areas visually less affected by human interference. At the same time, innovation may lead to entirely new tourism proposals, such as underwater hotels with views of artificial reefs or multi-purpose islands such as the Tropos platform funded by the EU[53].

[53] Tropos Platform (2012)

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