



Nostra Project – Baseline study

Fehmarn Belt



Source: Nostra website



Source: Fehmarnbelt-Büro



March 2014

Disclaimer:

The views expressed in this report are purely those of the authors and may not necessarily reflect the views or policies of the partners of the NOSTRA network. The methodological approach that was applied during the baseline study is presented in the final report of the study. The analysis that is provided in this report is based on the data collected and reported by the Nostra partners, a complementary literature review conducted by the consultants, and the results provided by the methodological toolkit developed in the framework of the baseline study.

Acknowledgement:

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Limitations of the analysis:

The consultants faced a limited amount of data. In general, on both sides of the strait, involved partners are facing difficulties in collecting socio-economic and biodiversity related data.

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1 General presentation of the strait



1.1 Geographical area

The Fehmarn Belt is a strait connecting the Bay of Kiel and the Bay of Mecklenburg in the Western part of the Baltic Sea between the German island of Fehmarn and the Danish island of Lolland. The strait features a 18-kilometre (10 nautical miles) wide area with depths of 20–30 metres¹. In the hinterland, major cities of the strait include Hamburg on the German side, as well as Copenhagen on the Danish side.

The Fehmarn Belt strait is a vital access point for transport of passengers and goods between Scandinavia and Northern Europe. It is also one of the most important shipping routes between the Baltic Sea through the Great Belt and into the Atlantic, where large container carriers and oil tankers with considerable depths need to pass. The geographical available data for the Fehmarn Belt strait is summarised in the table below:

Table 1: Key geographical data²

Key geographical data	Unit	Germany, County of Ostholstein	Denmark, Region Zealand
Landscape area	ha	139,200	177,670
Seascape area	ha	65,200	
Length of coastline	km	185	208
Maximal depth of the strait	m	35	
Width of the strait	km	18 (Puttgarden-Rodby)	
Urbanized areas	km ²	n/a	n/a

Scope of the study : In the scope of this study, only two small islands south of Zealand from the Danish side, namely Lolland and Falster are considered. On the other side, the entire territory of Ostholstein county of Germany is included in the study.

¹ NOSTRA website: <http://www.nostraproject.eu/Partnership/Fehmarn-Belt>

² Questionnaires – County of Ostholstein and Region Zealand

1.2 Level of urbanisation

1.2.1 Cities

Connections with large hinterland cities are very important for the social and economic development of the areas close to the Fehmarn Belt. For this reason, this section includes the discussion on the major cities, e.g. Copenhagen and Hamburg and Lübeck, in addition to the cities located on the two sides of the strait (Figure 1).

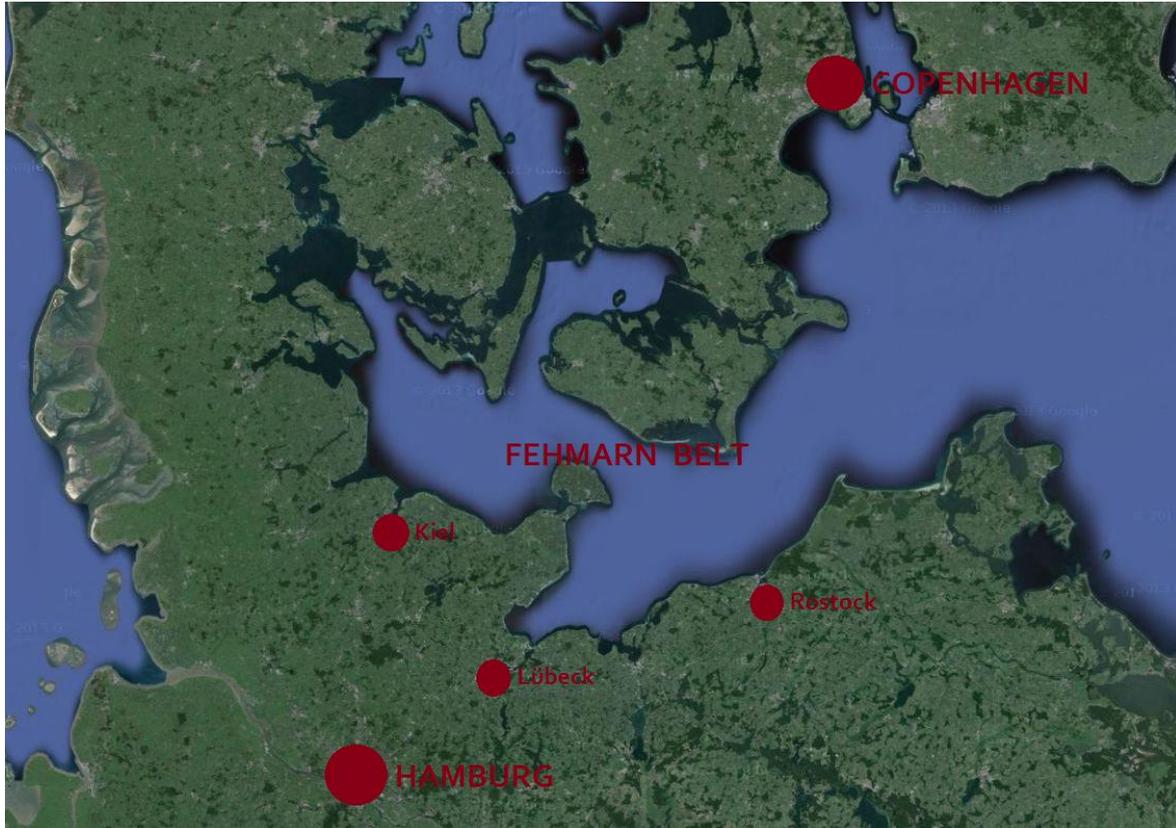


Figure 1: Main cities around the Fehmarn Belt

Major large cities have important economic influence over the Fehmarn Belt:

- **Copenhagen, Denmark**

Copenhagen is approximately 160 km and one hour forty far from Rodbyhavn (Danish end of the Fehmarn Belt). Copenhagen is the capital and most populous city of Denmark, with a metropolitan population of 1,714,486 (as of 1st January 2012)³.

- **Hamburg, Germany**

Hamburg is approximately 150 km and one hour thirty far from Puttgarden (German end of the Fehmarn Belt). The city of Hamburg, also a German State on its own, is the second largest city in Germany. It is home to over 1.8 million people. The city of Hamburg is an affluent and dynamic city, which will further benefit from the fixed link (see section 1.1.2.2 Infrastructure).

- **Lübeck, Germany**

³ Wikipedia, *Regions of Denmark*: http://en.wikipedia.org/wiki/Regions_of_Denmark

Lübeck is located on the river Trave, one hour far from Fehmarn and the closest city in hinterland. In terms of population, it is the second largest city of the Schleswig-Holstein after Kiel. Lübeck is interesting from a cultural point of view, since it was for several centuries the “capital” of the Hanseatic League – and because of its Brick Gothic architectural heritage, it is listed by the UNESCO as a World Heritage Site⁴. Also the birth city of Thomas Mann, Lübeck is therefore one main touristic attraction of the German coast⁵.

Cities that are directly located next to the Fehmarn Belt:

- **On the German side:** Bad Schwartau (19,500 inhabitants), Eutin (17,000), Neustadt (15,000), Fehmarn (12,000);
- **On the Danish side:** Nykøbing Falster (16,000 inhabitants), Maribo (6,000)

1.2.2 Infrastructures

Besides ports and windmills, the most significant infrastructure of the Fehmarn Belt is (by far) the terrestrial transport infrastructure: thanks to the dedicated fixed link, which is to open in 2021, the Fehmarn Belt will strengthen its position of prominent crossing point between Europe and Scandinavia.

1.2.2.1 Ports

Although the biggest port of the region (and one of the biggest of Europe) is Hamburg, it does not seem relevant to include it here in a close-up study of the Fehmarn Belt. On the contrary, both ferry ports of Puttgarden and Rødbyhavn can be included in the scope. Statistical data on vehicles that are handled at these ports can be found on the figure below:

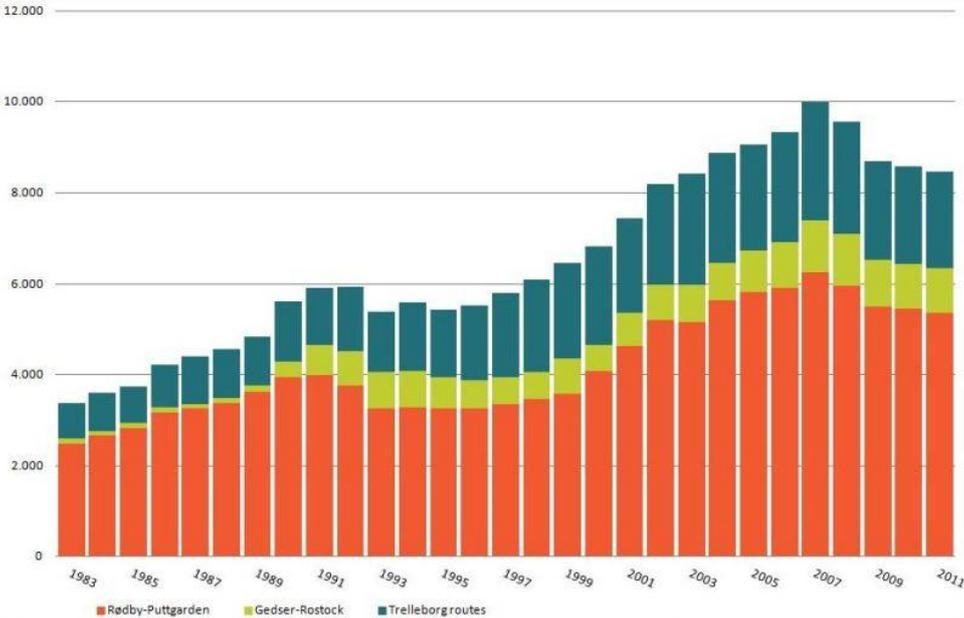


Figure 2: Vehicles per day on ferries between Germany, Denmark and Sweden⁶

⁴ UNESCO, *Hanseatic City of Lübeck* : <http://whc.unesco.org/en/list/272>

⁵ A dedicated website to tourism in Lübeck can be found here: <http://www.travemuende-tourism.de/>

⁶ Femern A/S, *Traffic volumes over the Fehmarnbelt*

As far as the Rodby-Puttgarden link is concerned, the 2011 breakdown per vehicle type is approximately 80% of passenger cars, 18% of lorries and 2% of buses. An average of 16,500 passengers also sailed between Rødby and Puttgarden each day in 2011 (i.e. slightly more than 6 million passengers in the year).

1.2.2.2 Wind power

Onshore windmills are scattered along the coastline of Ostholstein, and contribute essentially to the local renewable energy development. There are in total 332 windmills with a joint capacity of generating power of 300 megawatts of electricity, which is enough to support approximately 10 Fehmarn islands⁷. On the Danish side, Nysted (Rødsand I) and Rødsand II⁸ are two important offshore wind turbine farms close to the Fehmarn Belt, with capacities of 207 and 166 megawatts of electricity, respectively.

1.2.2.3 Transportation

The so-called “Vogelfluglinie” (literally, “bird flight line”) is a transport corridor connecting Hamburg and Copenhagen (E47). As far as the Fehmarn Belt is concerned, four major engineering works should be mentioned:

- The Fehmarn Sound Bridge. The German island of Fehmarn is linked to the continent thanks to the Fehmarn Sound Bridge, which is 963 meters long and was opened in 1963;
- The Guldborg strait tunnel. This tunnel is an important part of the E47 between Copenhagen and the south-eastern part of Denmark with ferry connections further on to Germany.
- The upcoming Fehmarn Belt Fixed Link. An immersed tunnel is to link the Danish and German sides in 2021, including both rail and road connections (Figure 3).



Figure 3: Geographic overview of Fehmarn Belt's transportation infrastructure

⁷ County of Ostholstein, *Facts*

⁸ http://en.wikipedia.org/wiki/List_of_offshore_wind_farms_in_Denmark

The fixed link will replace today's ferry link and speed up the transportation. Today, the only possibility to cross the strait is by a 45-minute ferry trip. All ferryboats are run by Scandlines company, who has the monopoly power to determine the fees paid by cars and passengers. The fees per car range between 120 euro to 160 euro (depending on the season and the size of the car), whereas the price for passengers is set at 6 euro per person, which can be negligible as few individual passengers are crossing the strait directly by ferry. Many passengers cross the strait with ICEs trains, specially designed to be carried by the ferryboat, so the costs of crossing the strait for these passengers have already been included in the costs of the train ticket. They are paid to the Scandlines company by the railway companies.

Beginning as early as 2000, German and Danish transportation planners pushed for a "fixed link" – either a bridge or a tunnel – across the Fehmarn Strait. The construction plan for a tunnel rather than a bridge was finally selected in December 2010, as this would present fewer construction risks than a bridge, although the financial cost would be broadly similar⁹.

The costs for constructing the tunnel will amount to approximately 5.5 billion euros (by 2011), which includes 1.5 billion euros for other improvements such as electrifying and improving 160 km of railway from single-track to double-track on the Danish side. The project has also attracted an expected European subsidy of 0.6–1.2 billion euros. The new tunnel is expected to open in 2021. According to the treaty of 3rd September 2008, Denmark is entitled to the ownership of the fixed link and collect the revenues that finance it; provide guarantees for the financing of the project; and determine the ticket prices. Germany, on the other hand, will finance the extension of the German landworks¹⁰.

This tunnel will be the world's longest immersed tunnel. It will have three separate drives, two containing two motorway lanes each, and one with a double-track railway line¹¹.

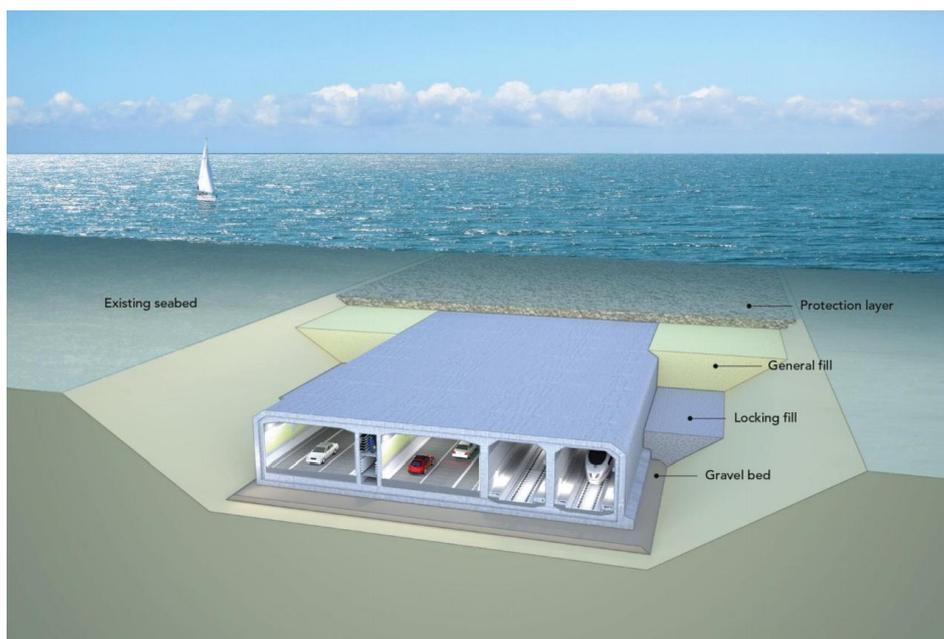


Figure 4 : Preview of the Fehmarn Belt immersed tunnel

⁹ Wikipedia, *Fehmarn Belt Fixed Link*: http://en.wikipedia.org/wiki/Fehmarn_Belt_Fixed_Link

¹⁰ Femern A/S (2013), *Fehmarn Belt Fixed Link – Project Presentation*

¹¹ NOSTRA website: <http://www.nostraproject.eu/Partnership/Fehmarn-Belt>

1.3 Socio-economic background

1.3.1.1 Cross-border economic activities

▪ Maritime traffic

Today's ferry service is operated by Scandlines, twenty-four hours a day and all days in the year. A departure takes place every 30 minutes; the crossing time (back and forth) is a bit less than two hours. Scandlines is a Danish-German company with about 1,800 employees and a turnover of 608 million euros.¹²

In the long run, after the tunnel will be constructed (expected in 2021), the monopoly service by Scandlines will be abolished, as cars will be able to cross the strait through the tunnel cheaper and faster. The company may try to look for compensation measures, as was the case for the ferry companies across the Dover channel¹³.

▪ Fixed link-related economic activities

As stated above, a fixed link will be built between the German coast (Puttgarden) and the Danish coast (Rodby) across the Fehmarn Belt. There will be short-term economic effects of the fixed link, during construction phase, as well as long-term economic effects, once the fixed link is in operation.

The main short-term economic effect is increased employment during the construction of the tunnel. The direct and closely related indirect employment from 2009 to 2021 is estimated to be between 25,000 and 30,000 men per year¹⁴. Moreover, the construction of the fixed link can have far-reaching long-term economic effects on the sectors, such as¹⁵:

- *Transport and logistics.* There are planned shuttle-trains running through the tunnel to transport goods and passengers between Denmark and Germany. This will largely reduce both financial costs and opportunity costs (e.g. due to shorter travel time) associated with goods and passengers transportation;
- *Trade, export and competition.* With the fixed link across the Fehmarn Belt, the export market will have an increased influence on the economies in the vicinity of the Fehmarn Belt;
- *Tourism and environment.* At the time being, hotel costs in region Zealand are much higher than in Ostholstein. This should result in shifting tourism flows to the German side for overnight stays. However, this may trigger the development of tourism sectors in the Danish side and lower the prices and stimulate a more competitive markets in tourism industry on both sides of the straits: the fixed link will also increase competition in the tourism industry;
- *Commuting and migration.* The fixed link increases the potential for metropolitan areas like Copenhagen-Malmö and Hamburg. In the case of Dover Strait, "the large urban areas further from the tunnel has benefited most – especially East London and Lille"¹⁶;
- *Increased integration of the Fehmarn regions.* The general idea is that the fixed link will increase the competitiveness of both region

¹² Scandlines (2013), *Scandlines – A vision of green shipping*

¹³ Belt Trade (2013), *Economic effects of large-scale infrastructure projects*

¹⁴ Femern A/S (2013), *Fehmarn Belt Fixed Link – Project Presentation*

¹⁵ Copenhagen Economics (2006), *Regional Effects of a fixed Fehmarn Belt link*

¹⁶ Belt Trade (2013), *Economic effects of large-scale infrastructure projects*

Zealand and the county of Ostholstein through successful economic integration.

Traffic estimates across the fixed link include an average of 8,000 vehicles per day when the link opens (i.e. in the first year). Five years after the opening, the number is expected to be in the region of 10,800 vehicles per day. In the forecasts, it was assumed that traffic will grow with 1.7 per cent annually for the first 25 years after the opening of the link and then remain on level that has been reached by then¹⁷.

1.3.1.2 County of Ostholstein, Germany

Approximately 54,000 employees work in Ostholstein, thereof a vast majority in services sector (85% in value).

- **Agriculture and onshore windmills**

Farming makes a significant contribution to the economy in Ostholstein: 1,257 farms use about 67% of the district's surface for agricultural purposes. The primary cultivated crops are barley, wheat and rape¹⁸.

As the windmills are usually built upon the farmlands, farmers can receive very high profits from the windmills for the occupation of their lands. Furthermore, the presence of windmills does not affect the normal agricultural practice, and therefore contributes directly to the local farmers' income.

- **Tourism**

The main estimated indicators for tourism in 2010 are summarised in the table below:

Table 2: Estimated indicators of tourism in 2010¹⁹

Ostholstein is one of the German regions that is most visited by tourists and, thanks to public funds

Indicators (per year)	German side	Danish side
Considered area, km ²	2,400	7,200
Number of overnight stays, million	29	12
Number of daily visitors, million	68	3
Tourism turnover, billion euro	3.3	1.1
Tourism-related full time jobs	73,000	11,500
Top 3 origins of tourists	Germany (92%)	Denmark (60%)
	Denmark (2%)	Germany (21%)
	Sweden (2%)	Sweden (10%)

from the federal state, the touristic infrastructure and especially boardwalks in seaside resorts were

¹⁷ Femern A/S, *Finance, traffic and financing*

¹⁸ Kreis Ostholstein, *Wirtschaft und Tourismus*

¹⁹ Ostsee-Holstein-Tourismus, INTERREG IVA-Projekt „Destination Fehmarnbelt“. Figures are based on: Fachhochschule Westküste (2010), *Quantitative Analyse der Destination „Fehmarnbelt“*. German side includes the city of Lübeck and both counties of Ostholstein and Plön; Danish side is region Zealand.

thoroughly modernised in recent years. There are now 22 marinas in Ostholstein, with about 10,000 berths; there are also 86 camping sites, with a total of 25,000 pitches²⁰.

1.3.1.3 Region Zealand, Denmark

In view of its proximity to Germany, one of the most popular areas of Denmark for visitors is the South of Sealand and the neighbouring islands. Møn, with its magnificent chalk cliffs, Liselund Park and its sandy beaches is one of the main destinations. Falster has a number of sandy beaches including those at Marielyst. The area also has several tourist attractions including Knuthenborg Safari Park and Middelaldercentret both on Lolland, BonBon-Land near Næstved and the GeoCenter at Møns Klint²¹.

The socio-economic information for the strait Fehmarn Belt is summarised in the table below:

Table 3: Key socio-economic data²²

Key population data	Unit	Germany, County of Ostholstein	Denmark, Region Zealand
Number of inhabitants in the landscape area	(x 1000)	197	817.9
GDP per capita in the region	€/capita/year	N/A	N/A
Employed	%	66.2	41.4
Unemployment rate in the region	%	6.3	7.5
Unemployment rate in the country	%	6.7	6.5

²⁰ Kreis Ostholstein, *Tourism is the main pillar of economy in Ostholstein*

²¹ Wikipedia, *Tourism in Denmark*

²² Questionnaires – County of Ostholstein and Region Zealand

2 Significance and sensitivity of biodiversity and natural environment in the strait

2.1 Remarkable landscapes

2.1.1 County of Ostholstein, Germany

According to some promotional brochure of the region, “the district of Ostholstein is one of the largest German districts at the sea. Its typical countryside is terminated by the hilly terminal moraine landscape with numerous hedgerows – free growing hedges –, lakes, game-rich forests and of course by the Baltic coast. In May, when the rape is in full blossom, Ostholstein seems to be a masterpiece in yellow.”²³ And indeed, tourism is much developed in the region because of its beautiful landscapes.

As for the island of Fehmarn itself (185 km² and approximately 12,000 inhabitants), it is said to be the “German Hawaii”. This is due to the impressive beaches of the island (78 kilometres in total) and to the great amount of sun the island receives each year (with 2,200 hours of sun each year, the island of Fehmarn is one of the sunniest regions of Germany).



Figure 5: Baltic Sea in Ostholstein (Source: Ottmar Heinze, Ostholstein und Fehmarn)



Figure 6: Mon's Cliff (VisitDenmark, Mon's Cliff. Møn's Cliff is 7 km long and up to 128 m. high. It stretches from Møn's lighthouse in the South to Liselund Castle Park in the North.)

²³ Kreis Ostholstein (2012), *Informationen aus Verwaltung, Politik, Wirtschaft, Tourismus und Kultur*

2.1.2 Region Zealand, Denmark

South Zealand offers the highest cliffs in the country, Møn's Cliff (Møns Klint) and Stevn's Cliff (Stevns Klint). These dramatic, white fortresses border the Baltic Sea and are a great place to hike. The rest of the area is characterised by open, green landscapes, beautiful beaches and bridges connecting South Zealand with the rustic islands of Falster, Lolland and Møn²⁴.

2.2 Biodiversity and natural environment in the strait

There is a variety of land covers present in the strait as presented in the table below.

Table 4: Land cover in the strait²⁵

Land cover (CORINE Land cover Nomenclature)		Germany, County of Ostholstein	Denmark, Region Zealand
Artificial surfaces	Urban fabric	√	√
	Industrial, commercial and transport units	√	√
	Mine, dump and construction sites	√	-
	Artificial non-agricultural vegetated areas	√	-
Agricultural areas	Arable land	√	√
	Permanent crops	√	√
	Pastures	√	√
	Heterogeneous agricultural areas	√	√
Forest and semi-natural areas	Forests	√	√
	Shrub and/ or herbaceous vegetation association	-	-
	Open spaces with little or no vegetation	-	-
Wetlands	Inland wetlands	√	√
	Coastal wetlands	√	√

2.2.1 Remarkable ecosystem or habitat types

Marine habitat is especially vulnerable in the Fehmarn Belt. This is a strait with depths of up to 35 metres, through which about 70 percent of the water exchange between the North Sea and Baltic Sea takes place, making it of key importance for the movement and interchange of marine species²⁶. The

²⁴ VisitDenmark, [South Zealand](#)

²⁵ Questionnaires – County of Ostholstein and Region Zealand

²⁶ Federal Agency for Nature Conservation, [Fehmarn Belt SAC](#)

water of the belt is stratified, as are the majority of inner waters, with brackish water from the Baltic in the upper layers and saltier water originating from the North Sea in the bottom layers. The salty water in the bottom layers flows into the Baltic Sea where these large influxes of water are determining factors for the environmental conditions. Water quality is determined by both influx from neighbouring waters and local conditions. Oxygen depletion is occasionally observed, but primarily occurs in areas adjacent to the belt²⁷.

In the marine part of the investigation area, four different habitat types (in agreement with national authorities) are distinguishable²⁸:

- 1110: Sandbanks, slightly covered by sea water all the time;
- 1140: Mudflats and sandflats not covered by seawater at low tide;
- 1160: Large shallow inlets and bays;
- 1170: Reefs.

2.2.2 Protected areas

There are many national nature conservation areas in the Fehmarn Belt most of which are part of the European Natura 2000 network (Figure 6).

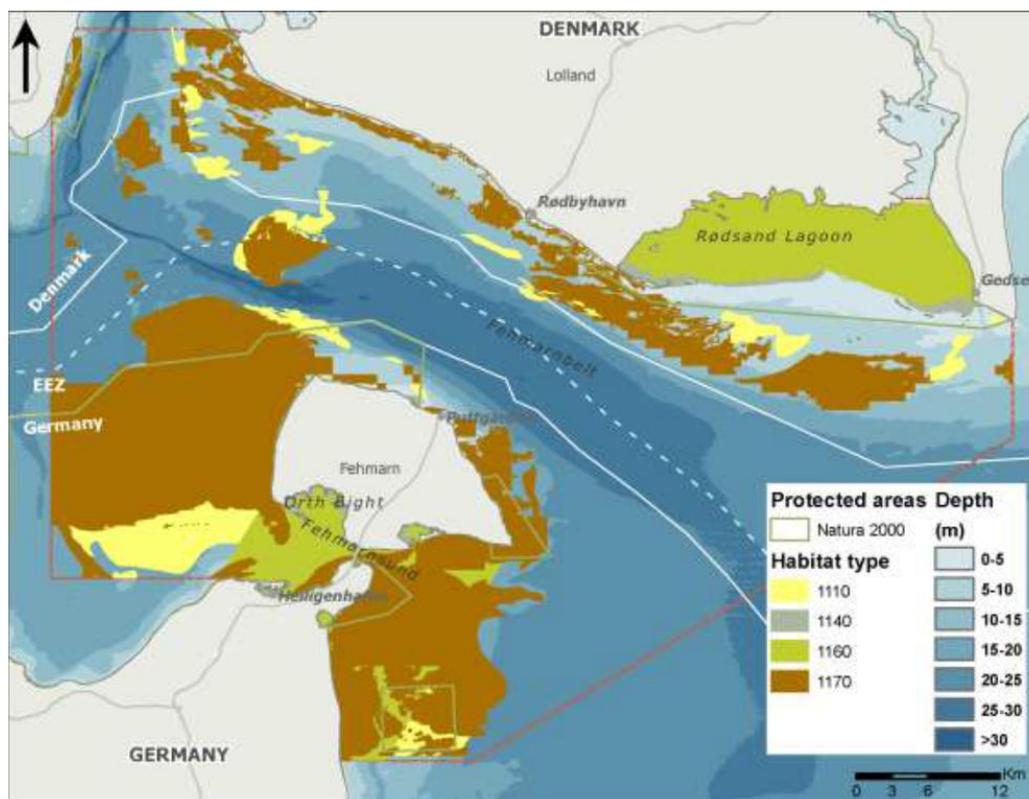


Figure 6: Distribution of EU-Habitat types

2.2.2.1 County of Ostholstein, Germany

Most protected areas on the German side include marine habitats, with no less than 10 Natura 2000 protected sites (including Östliche Kieler Bucht; Ostsee östlich Wagrien; Fehmarnbelt; Sundwiesen

²⁷ Femern A/S, Water: <http://www.femernenvironment.com/frontpage/water>

²⁸ Fehmarn Belt Fixed Link Marine Biology Services (2013), *Marine Fauna and Flora – Baseline. Benthic Habitat Mapping of the Fehmarnbelt Area*

Fehmarn; Küstenstreifen West- und Nordfehmarn; Staberhuk; Meeresgebiet der östlichen Kieler Bucht; Küstenlandschaft Nordseite der Wagrischen Halbinsel; Küstenlandschaft vor Großenbrode und vorgelagerte Meeresbereiche; Sagas Bank).

2.2.2.2 Region Zealand, Denmark

In the Region Zealand, both maritime and terrestrial areas are protected on the Danish side, overwhelmingly under Natura 2000 regulation. Maritime areas include:

- Smålandsfarvandet, Guldborgsund, Bøtø, Hyllekrog, Rødsand;
- Nakskov Fjord og Indrefjord;
- Femern Bælt (syd for Vindeholme).

As for terrestrial areas, they include:

- Naturpark Maribosøerne;
- Maltrup Skov;
- Horreby Lyng og Listrup Lyng;
- Krenkerup Haveskov;
- Haltsted Kloster og Dyrehave, Vesterborg Sø;
- Ravnsby Bakke;
- Pederstrup Gods.

The Natura 2000 areas in or near Fehmarn belt include SCIs (Sites of Community Interest, under Council Directive 92/43/EEC, Habitats Directive) and SPAs (Special Protected Areas, under Council Directive 79/409/EEC, Birds Directive).

The maps below present the locations and coverage of the SCI and SPA on the two sides of the Fehmarn belt.

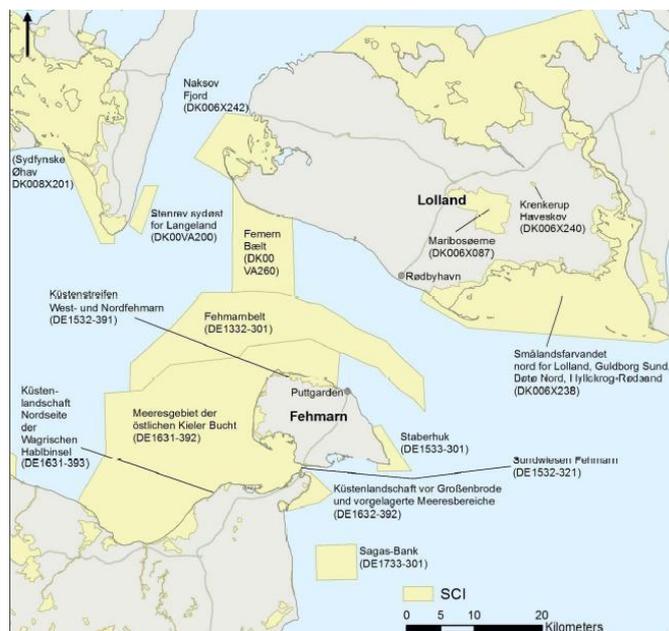


Figure 7: German and Danish Sites of Community Interest (SCI) in the region around the planned Fehmarn belt Fixed Link29

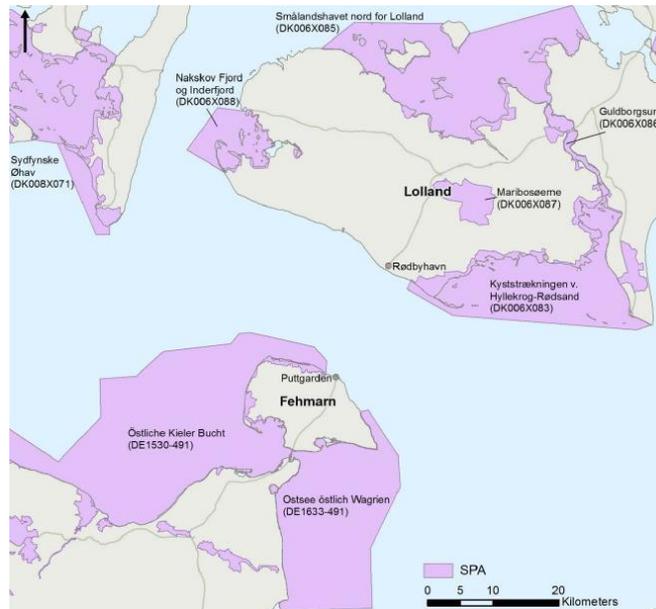


Figure 8: German and Danish Special Protected Areas (SPA) in the region around the planned Fehmarnbelt Fixed Link30

2.2.2.3 Migratory routes

The Baltic Sea as a whole is a major migratory route especially for waterfowl, geese and waders nesting in the arctic tundra. In particular, the Fehmarn Belt is one of the most important area in the world for many protected and vulnerable land and water birds and bats. Wintering birds such as eiders and other diving ducks can be counted in their thousands in the winter months, and many migrating birds pass the Fehmarn belt. The figure below shows common migration routes for birds during autumn, with land birds routes in red and water/wading birds routes in blue.

²⁹ Fehmarn Belt Environment Consortium (2013), *Fish and fisheries – Baseline Reports regarding Fehmarn Belt*

³⁰ Fehmarn Belt Environment Consortium (2013), *Fish and fisheries – Baseline Reports regarding Fehmarn Belt*



Figure 9: Migratory routes for birds during autumn³¹

³¹ Femern A/S, *Birds – Migration route for many bird species*

2.2.2.4 Rare and threatened species

In the Baltic Sea there are no unique species. Baltic Sea is a young sea in geological terms, thus there was not enough time for species differentiation. Still, a few species could be identified as rare and threatened species

- On the German side³²:
 - The following lower plants are considered to be endangered: *Gentianella campestris baltica* and *Consolida regalis*;
 - The following fishes are considered to be vulnerable: *Pleuronectes platessa* and *Platichthys flesus*.
- On the Danish side
 - There are many rare species, such as marse (guinea pig) and seals³³.

Many more species were identified on the Danish side: almost 50 species could be named, especially:

- For flora, e.g. *Angiospermae* species;
- For fauna, mainly arthropods, amphibians and birds (including seabirds).

Four species were considered as critically endangered, including *Lycopodium clavatum* (flora, *Pteridophyta*); *Graphoderus bilineatus*, *Leucorrhinia pectoralis* and *Didea alneti* (fauna, arthropods); *Pelobatus Fuscus* (fauna, amphibians)³⁴

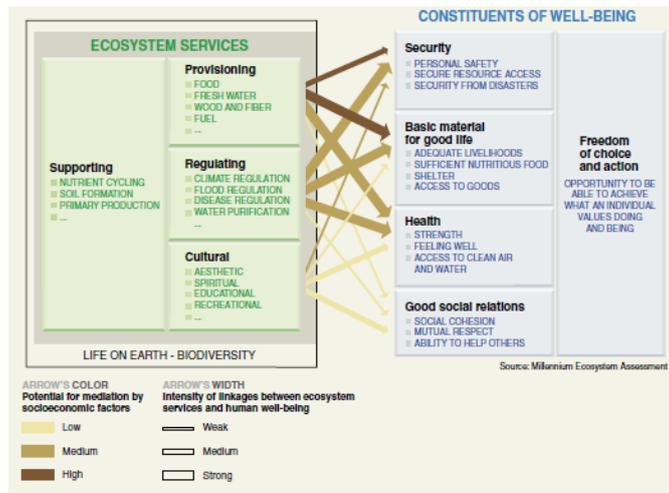
³² Questionnaire – County of Ostholstein

³³ www.sambah.org

³⁴ Questionnaire – Region Zealand

2.3 Significance of ecosystem services to the local livelihood

An ecosystem is a dynamic complex of plant, animal, and microorganism communities and the nonliving environment interacting as a functional unit. Ecosystem services are the benefits people obtain from ecosystems. These include *provisioning services* such as food, water, timber, and fiber; *regulating services* that affect climate, floods, disease, wastes, and water quality; *cultural services* that provide recreational, aesthetic, and spiritual benefits; and *supporting services* such as soil formation, photosynthesis, and nutrient cycling³⁵. The figure is taken from the MEA synthesis report, which depicts the strength of linkages between categories of ecosystem services and components of human well-being that are commonly encountered, and includes indications of the extent to which it is possible for socioeconomic factors to mediate the linkage (for example, if it is possible to purchase a substitute for a degraded ecosystem service, then there is a high potential for mediation). The strength of the linkages and the potential for mediation differ in different ecosystems and regions. In addition to the influence of ecosystem services on human well-being depicted here, other factors—including other environmental factors as well as economic, social, technological, and cultural factors—influence human well-being, and ecosystems are in turn affected by changes in human well-being.



Linkages between Ecosystem Services and Human Well-being Source: MEA, 2005: pp vi

In the context of NOSTRA project, the contribution of ecosystem services to local livelihoods is assessed through the toolkit, which is based on an in-depth expert interview by asking the regional NOSTRA partners to answer some pre-defined the questions, and on a complementary literature review.

2.3.1 Significance to the local economy

The Fehmarn Belt hosts significant economic activities including fishery, aquaculture and agriculture. Several fish species and fish communities in the Fehmarn belt area are of ecological and economic importance. Commercial fisheries of cod, herring, sprat, European eel and various flatfish species are important for local economies³⁶.

As far as agriculture is concerned, the agricultural land in Germany's "garden," Schleswig-Holstein, and its neighbouring "grain store", Mecklenburg–Western Pomerania, is a treasure trove of ingredients for culinary delights. On the Danish side, due to the weather and soil conditions the region Zealand has a strong position in Denmark regarding fruit and vegetable production, both in big scale production but also in smaller niche productions. Several of the producers in the region are delivering high quality products to Restaurant "Noma", awarded as the world's best restaurant for 3 years running³⁷.

³⁵ MEA, 2005

³⁶ Fehmarn Belt Environment Consortium (2013), *Fish and fisheries – Baseline Reports regarding Fehmarn Belt*

³⁷ Belt Food (2012), *Food Industry in the Fehmarnbelt-Region – Place Brand Strategy*

2.3.2 Social significance

Various ecosystem services provided by the Fehmarn Belt have important contribution to the social welfare on both sides of the strait. For instance, ecosystem services provided by the strait support the local livelihood through the provision of fisheries and agricultural products and related jobs. The ecosystem regulating services, in terms of water regulation and purification, storm control, as well as regulation of physical and mental human health provide important shelters safeguarding the local well-being. Finally, the ecosystem also provides important cultural services that contribute to local population's livelihoods in terms of enhancing their spiritual and inspirational well-being, providing recreational opportunities for tourism and recreational activities, aesthetic beauty, educational opportunities.

2.3.3 Cultural significance

The main cultural service provided by the Fehmarn Belt refers mainly to tourism, including recreational activities like diving, sailing, and biking. The strait welcomes many tourists each year, accounting for a significant turnover (4.4 billion euros in total, see

Table 2: Estimated indicators of tourism in 2010). Also aesthetic beauty, meaning appreciation of natural features, is a true asset of the Fehmarn Belt (see paragraph 2.1).

In the case of Fehmarn Belt Strait, **Erreur ! Source du renvoi introuvable.** shows a comparison between the German side and Danish side of the strait in terms of the main components of ecosystem services contributing to local livelihood.

2.4 Main biodiversity pressures and related impacts

2.4.1 Drivers of pressures on biodiversity in the strait

As noted above, 70 percent of the water exchange between the North Sea and the Baltic Sea takes place through the Fehmarn Belt. It is also the most important bird migration hotspot. There are many protected areas on land and on sea³⁸. Yet human activities tend to put always more pressure on the Fehmarn Belt – especially in the next coming years, when the immersed tunnel is being constructed.

2.4.1.1 Human activities

- Industry

Human activities such as domestic sewage, farming, industry, traffic, and energy production add to the load of the Baltic Sea, although it is among the most polluted seas in the world³⁹. The main reasons why this sea is very vulnerable are due to its shallowness, small volume of water and poor exchange of water. Only occasionally, depending on the weather, salty water flows into the Baltic Sea through the Danish Straits in the form of salt pulses. Several rivers bring fresh water into the Baltic Sea. Many nutrients, such as nitrogen and phosphorus are contained in the river water.

Major threats for the marine biotopes off the German coast are eutrophication and other forms of pollution (especially oil pollution). Sand and gravel extraction and dumping of dredged material may also impair marine life in the areas concerned. The impact of fisheries is mainly the killing of sea ducks and marine mammals as unwanted by-catch, especially of set-net fishery. Since bottom trawl fishery is prohibited by law in the coastal waters up to three nautical miles from the base line, the most sensitive benthic communities can be considered as protected from this kind of disturbance⁴⁰.

³⁸ NOSTRA website: <http://www.europeanstraits.eu/Partners/Strait-of-Fehmarn-Belt>

³⁹ The Baltic Sea Portal website: http://www.itameriportaali.fi/en_GB/

⁴⁰ Baltic Sea Environment Proceedings – No. 75 (1998), *Red list of marine and coastal biotopes and biotope complexes of the Baltic Sea, Belt Sea and Kattegat*: <http://helcom.fi/Lists/Publications/BSEP75.pdf>

▪ Maritime traffic

Today's traffic through the Fehmarn Belt strait is between 35,000 and 40,000 ships a year. Yet this number is expected to increase by 47 % by 2030⁴¹, or even more according to other studies (between 80,000 and 100,000 ships a year expected by 2030)⁴². This increase in traffic is all the more significant since the ferry's link between Fehmarn and Lolland is to be phased out by 2021.

Maritime traffic across the Fehmarn Belt is the source of different pollution types, including⁴³:

- Exhaust gases;
- Sewage and garbage;
- Bilgewater;
- Anti-fouling paint;
- Hazmat;
- Ballast water;
- Criminal degassing and accidental oil spill.

▪ Construction of the fixed link

The “fixed link” across the Fehmarn Belt was long thought to be a bridge – only late in 2010 was the project of a tunnel given approval due to environmental and safety arguments favoured an immersed tunnel⁴⁴. From an environmental point of view, unanimous consensus of experts praises the immersed tunnel to be much better. For instance, the Danish Society for Nature Conservation claimed, and continuously considers the tunnel solution as the best solution. As a matter of fact, bridges often function as barriers, which negatively affect natural movements. For instance, bridge pillars can change local marine currents and affect the mix between surface and deep water.

Bridges also cause birds to choose other migration routes and keep them away from feeding and staging areas close to the bridge. In poor visibility, birds run the risk of flying into the bridge pylons and cables. Light from a bridge can also confuse birds. Finally, birds can be indirectly affected if their food, e.g. mussels, is affected negatively by the fixed link⁴⁵.

The German environmental NGO NABU (*Naturschutzbund*, or “Nature and Biodiversity Conservation Union”) considers the immersed tunnel to be a “partial victory” (*Teilerfolg*), as compared to a bridge. NABU underlines that the tunnel is still questionable from both economic and ecologic points of view, but bears less risks than a suspended bridge⁴⁶.

And indeed, even a tunnel is not flawless. The major identified environmental impacts of the fixed link are⁴⁷:

⁴¹ Danish Maritime Authority (2013), *Estimating the number of collisions and groundings in a given waterway using the software IWRAP*

⁴² NOSTRA (2013), *Maritime Safety and Green Traffic – Introduction*

⁴³ NOSTRA (2013), *Safe Green Ships as good practice from early design and building stage*

⁴⁴ Femern A/S, *Environmental and safety arguments favour an immersed tunnel*

⁴⁵ Femern A/S, *Land – Migration route for many bird species*. A tunnel can also affect access to food for birds, but the barrier effect will generally be less, as only the ramps will be visible to them.

⁴⁶ NABU, *Fehmarnbeltquerung: Tunnellösung als Teilerfolg*

⁴⁷ Femern Sund-Bælt (2013), *Transboundary Environmental Impact Assessment*

- *Hydrography.* The investigations and assessment show that construction and operation of an immersed tunnel have an insignificant impact on the hydrography (water level, salinity/temperature and stratification) in the Baltic Sea and all transboundary territorial waters;
- *Sediment and seabed forms.* Investigations show that there will be no transboundary impacts outside German and Danish territories, except on Swedish waters, where there is expected to be insignificant transboundary impacts from sediment spill as a result of deposition of sediment from the dredging works of the construction of an immersed tunnel (see Figure 10);
- *Fish ecology.* Investigations show that there are insignificant transboundary impacts outside German and Danish territories on some fish species (cod, herring, whiting) as a result of the construction and operation of an immersed tunnel. Project pressures on fish ecology on the Danish side will only cause insignificant impacts on fish ecology on the German side, and vice versa;
- *Commercial Fishery.* Investigations show that the construction and operation of an immersed tunnel will have temporary impacts on commercial fishery in the construction phase, which do not reach beyond German and Danish territories;
- *Air pollution.* Working with construction machines and transport of materials by truck will cause air pollution during the construction phase. Sources of pollution will primarily include disturbed dust from the moving of earth and gravel and exhaust gases from trucks, construction machines and various construction vessels on the water. Dust can be reduced by watering the roads during dry periods and by covering stocks of dust-producing materials⁴⁸;
- *Birds.* Concerning transboundary impacts between Germany and Denmark, there are insignificant impacts on Common Eider. For other nonbreeding water birds, there are also insignificant impacts across the border between Germany and Denmark.

⁴⁸ Femern A/S, [The fixed link and global climate](#)

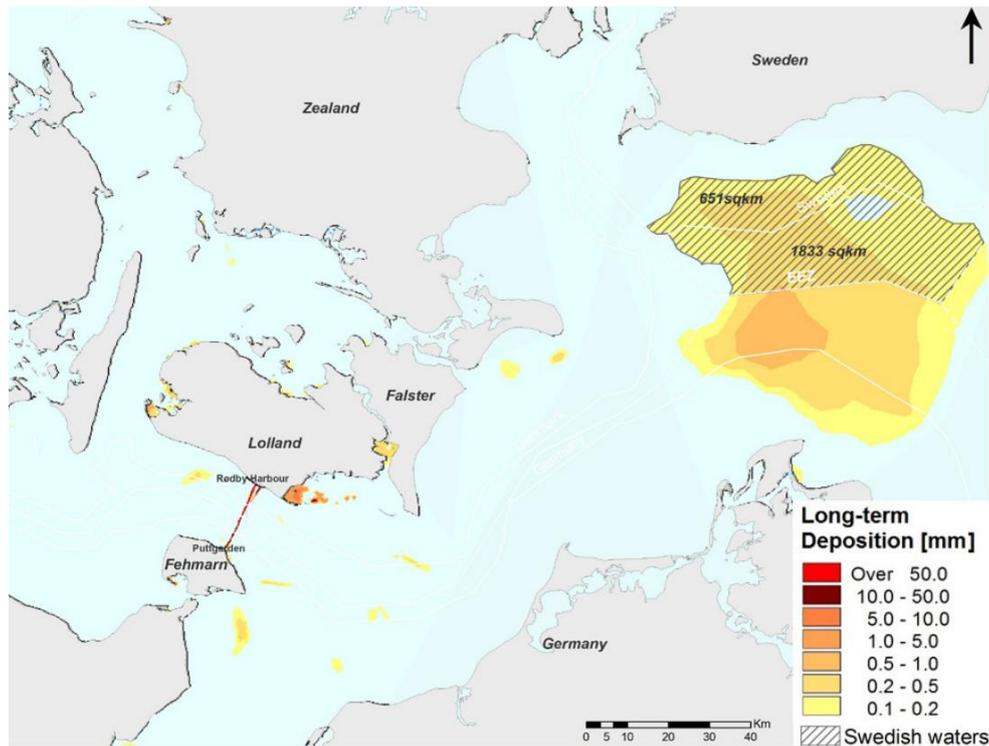


Figure 10: Deposition of sediment spill from construction activities after the end of the construction

As an indicative figure, it can be noted that comprehensive environmental investigations in the framework of the new fixed-link (2008-2013) were made, for a total amount of 270 million euros⁴⁹.

2.4.1.2 Natural pressures

The winter conditions bring additional difficulties for shipping, thus increasing risks for the safety of the maritime traffic. Approximately, from December to April the Gulf of Finland is partly ice-covered. In the Russian side of the gulf, the ice-cover is the heaviest⁵⁰.

Furthermore, **invasive species are a major threat to local ecosystems and biodiversity in general**. In the Fehmarn belt, a found invasive species is the West Atlantic comb jelly with a very effective predator on fish larvae and other zooplankton. The first observations of this species in Danish waters were reported in Skagerrak and the South-Western Baltic Sea⁵¹.

2.4.2 Main impacts and changes in the state of environment

Eutrophication is regarded as the most severe threat to the Baltic Sea. This affects the structure and functioning of the marine ecosystem resulting in: algal blooms, in turn reduced water transparency and oxygen depletion. Shipping contributes significantly to the eutrophication through nitrogen air emissions, sewage and waste pollution.

Another serious threat to the local biodiversity is the decrease in the number of Baltic birds. This issue is caused by suitable biotopes decreasing (especially coastal meadows) due to human activity, increased disturbance due to boating and other recreation, decrease in the extent of macroscopic shallow-water vegetation due to eutrophication and increased predation by fox (*Vulpes vulpes*), mink (*Mustela vison*), raccoon dog (*Nyctereutes procyonoides*), great black-backed gull and herring gull. Baltic birds' reproduction and survival was also affected by the concentrations of several toxic

⁴⁹ Femern A/S (2013), *Fehmarn Belt Fixed Link – Project Presentation*

⁵⁰ Kuronen et al. (2008)

⁵¹ Femern A/S, *Planktonic predators in the spotlight*

compounds. Transportation of large volumes of crude oil poses another important threat to Baltic birdlife.

On the German side, our toolkit analysis shows that the most important threats to biodiversity in the strait is the excessive use of resources (e.g. overexploitation of fishes), which is followed by other threats such as land use changes, water and air pollution, the production of noise and vibrations, as well as the release of hazard substances due to maritime transport. Whereas on the Danish side, the most significant threats are caused by the release of hazard substances as well as other emissions (water, air and soil). They are followed by other threats, such as the release of non-hazardous substances (mainly due to maritime transport, agricultural activities and urbanisation), the changes in land uses, the release of waste, the excessive use resources, and production of noise. Moreover, physical damages to the seabed caused by some fishing techniques can also cause threats to both marine and terrestrial biodiversity in the region.

3 Responses to pressures and impacts

3.1 Policies

Policies and action plans have been developed at both EU and national levels to react to pressures and impacts caused by various anthropogenic activities and protect biodiversity and natural habitats.

- **EU policies**

As presented previously, the EU Habitats and Birds directives are widely implemented in the strait, which are also reflected in the compliance of creating Natura 2000 protected areas. In addition, in the Baltic Sea area, the most important policy initiative is the signature of the **Convention on the Protection of the Marine Environment of the Baltic Sea Area** in 1992 (Helsinki Convention), which is an international convention encompassing various measures for the prevention and elimination of pollution of the Baltic Sea. The Convention sets up a Baltic Marine Environment Protection Commission (HELCOM), whose responsibilities are to implement the Convention, make recommendations to the Parties, define pollution control criteria and objectives and promote additional measures in co-operation with respective governmental bodies of the Parties. The Parties also undertake to implement measures to maintain adequate ability and to respond to pollution incidents in order to eliminate or minimize the consequences of these incidents and regularly report to the HELCOM commission on and inform the general public of the measures taken in accordance with the Convention.

- **National policies**

Regarding national policies, **the Danish Action Plan for the Aquatic Environment (APAE)** addresses pollution of Denmark's rivers, lakes, groundwater, and marine waters. Several action plans focus on specific links between urban, industrial, and agricultural sectors and the aquatic environment.

3.2 Initiatives and actions

3.2.1 Cross-border initiatives

3.2.1.1 Sustainable transport

- **STRING-corridor⁵²**

Region Zealand and East Holstein are part of the STRING-corridor from Hamburg to the Oresound area. The Green STRING Corridor project was launched in December 2011, scheduled to run for three years. It is financed by the Interreg IVA Öresund Programme and brings together 12 partners from the Öresund region. The Green STRING Corridor is a result of political cooperation among a number of regional authorities from both Danish and German, including Skåne Regional Council, the Capital Region of Denmark, City of Copenhagen, Region Zealand, Schleswig-Holstein state and City

⁵² <http://www.stringnetwork.org/>

of Hamburg. The project will identify the conditions and challenges that a green transport corridor, based on more efficient and environmentally friendly transport solutions sets for:

- Companies' distribution and logistics strategies;
- Cross-border planning among public authorities at a local, regional and national levels in the STRING corridor⁵³.

3.2.1.2 Sustainable tourism

▪ Destination Fehmarn Belt

“Destination Fehmarn Belt” is an Interreg IVA project, which took place between May 2009 and June 2012, in partnership between Østdansk Turisme and Ostsee-Holstein Tourismus e.V. (OHT). It is now replaced by a follow up project “Tourism Innovation Management Fehmarnbelt”⁵⁴. The general aim of the project was to develop a conceptual framework for individual, private marketing projects. Studies and analysis were carried out to assess the market's potential and strengths, as well as the global identity of the region. Thanks to the “Destination Fehmarnbelt” project, new communication channels have been developed and concrete marketing initiatives have been fulfilled, which all aimed to bring the region forward in the collective mindset⁵⁵.

3.2.1.3 Building an integrated development of the Fehmarn Belt

▪ Fehmarnbelt Days

Fehmarnbelt Days 2012 held in Hamburg and Lübeck from the 26th of September to the 28th of September 2012. More than 600 people participated in 19 different events during the three days. Their common objective was to help shape the new Fehmarn belt Region within the context of the future tunnel between Denmark and Germany. Workshops, conferences and podium debates generated countless ideas that point the way towards a dynamic and integrated Fehmarn belt region⁵⁶. Following the enormous success of Fehmarnbelt Days 2012, the city Copenhagen will host the Fehmarnbelt Days 2014 between 30 September- 2 October at the Tivoli Congress Centre.

In addition, it is worth mentioning that other Interreg 4A Fehmarnbelt projects, such as BeltTrade, BeltFOOD and BeltLogistics, have been developed with the concern of developing a cohesive Fehmarn Belt region in relation to the special possibilities the future fixed link provides.

▪ Implementation of a Vessel Tracking Service System

The Fehmarn belt is one of the most frequented shipping routes in Europe. During the construction phase, a **Vessel Tracking Service System (VTS)** will be introduced in the Fehmarn Belt for the very first time. This means that the movement of all ships passing through the Fehmarn belt will be monitored, thereby significantly reducing the risk of collisions. Moreover, construction work sites in the marine area will always be limited to relatively small areas at a time and clearly marked. This means that the collision risk for ships in the area will at least be the same level as today – if not lower⁵⁷.

3.2.1.4 Integrating biodiversity and natural environment in the development of the Fehmarn Belt

▪ Building animal passages during the fixed link's construction phase

⁵³ STRING Corridor, [What is Green STRING Corridor](#)

⁵⁴ <http://www.ostsee-schleswig-holstein.de/de/tim-fehmarnbelt>

⁵⁵ Destination Fehmarnbelt, [Projekt – Ziele](#)

⁵⁶ STRING Secretariat, [175 ideas on the future of the Fehmarnbelt Region](#)

⁵⁷ Femern A/S, *Environment*: <http://www.femern.com/service-menu/faq/environment>

As far as animals crossing roads and railways are concerned, some animal passages are planned in the installation. These passages can either be built over or under the installation, and they can have different dimensions. If animal passages are to work, the animals need to be able to find them easily. The chances improve when a passage is laid along existing landmark lines like watercourses, forest fringes and hedgerows along which animals often move⁵⁸.

3.2.1.5 Preserving biodiversity and natural environment

- **Baltic Green Belt (member of the European Green Belt Network)**

The European Green Belt (EuGB) is an ecological backbone of Europe, running through much of the continent from the Barents Sea to the Black Sea and following the route the former Iron Curtain. The Green Belt initiative started as a grassroots movement when the former military blocks collapsed. The Baltic Green Belt project aims at closing the longest “missing link” in European Green Belt network: the Southern and Eastern Baltic coast. Here, regional Green Belt activities are still relatively scarce, if at all existent. This “Baltic Green Belt” is unique in that it marks a long seaside stretch in the otherwise predominantly continental Green Belt. The Baltic Green Belt project lasted from October 2008 to January 2012 and contributed to the implementation of major political programmes such as the HELCOM Baltic Sea action plan for the protection of the Baltic⁵⁹.



Figure 11: Baltic Green Belt in European Green Belt Network⁶⁰

- **Baltic Flyway**

Baltic Flyway is an Interreg IV A project from the Fehmarn Belt programme 2010 – 2013, in which seven nature-oriented organisations cooperate to create better environmental conditions for migratory birds⁶¹. Baltic Flyway focused on three areas:

⁵⁸ Fermen A/S, *Land – Fauna and flora must be able to spread*

⁵⁹ Baltic Sea Region, *Baltic Green Belt*

⁶⁰ Baltic Green Belt, *Das grüne Band am Ostseestrand*

⁶¹ NOSTRA (2013), *Baltic Flyway – An example of good practice for cross-strait cooperation from Fehmarn Belt*

- Cross-border cooperation between the stations and bird sanctuaries;
- Conservation initiatives to promote biological peculiarities here under special conditions of the migratory birds;
- Promotion of adventure opportunities with a focus on migratory birds.

Figure 12 shows the locations of bird refuges areas in Fehmarn Belt area covered by the Baltic Flyway, together with some observation stations for observing birds.



Figure 12: Bird refuges amongst Baltic Flyway

3.2.1.6 Developing cross-border cooperation

▪ German-Danish Regional Management

Various studies and projects were carried out as soon as 2003 and 2004 to assess regional development and cooperation possibilities between Denmark and Germany. As a follow-up on this, the German-Danish Regional Management was launched in the beginning of 2007 through the economic programming of Schleswig-Holstein's regional government. Cross-border economic development is yet managed by the Flensburg Chamber of Commerce, which is responsible for the set up of the regional business strategy between Germany and Denmark⁶².

3.2.2 At one side level

3.2.2.1 Supporting regional development

- German Regional Management (REK)

The concept of regional development as a consequence of the Fehmarn Belt fixed link has paved the way to the economic development of Germany's transborder region. It has set directions and started up many projects to gather all stakeholders of the region towards more dynamism. The main fields of the German Regional Management are tourism, economy and economic competition, transports and cooperation. Partners to the project are the county of Ostholstein, Ostholstein's society for economic development (*Entwicklungsgesellschaft Ostholstein mbH*), the Lübeck Chamber of Commerce and the city of Fehmarn⁶³.

⁶² Deutsch-Dänisches Regionalmanagement, *Kurzbeschreibung des Projektes*

⁶³ IHK Schleswig-Holstein, *Regionalmanagement*

3.2.3 Environmental initiatives from private - public companies

3.2.3.1 Sustainable transport through greener ferryboats

- Some actions have been taken by Scandlines to upgrade maritime traffic with greener ferryboats –a retrofit of all four ferries has been planned, including two sets of measures⁶⁴:
 - Energy reduction measures: some hybrid system, as well as optimized propellers will be installed, resulting in a 20%-drop in fuel consumption and CO2 emissions;
 - New scrubbers will be set up, resulting in major decreases of sulphur oxide (99%) and particulate matter emissions (88%).

Hence the company is aiming towards zero emission ferries, as illustrated in the figure below.

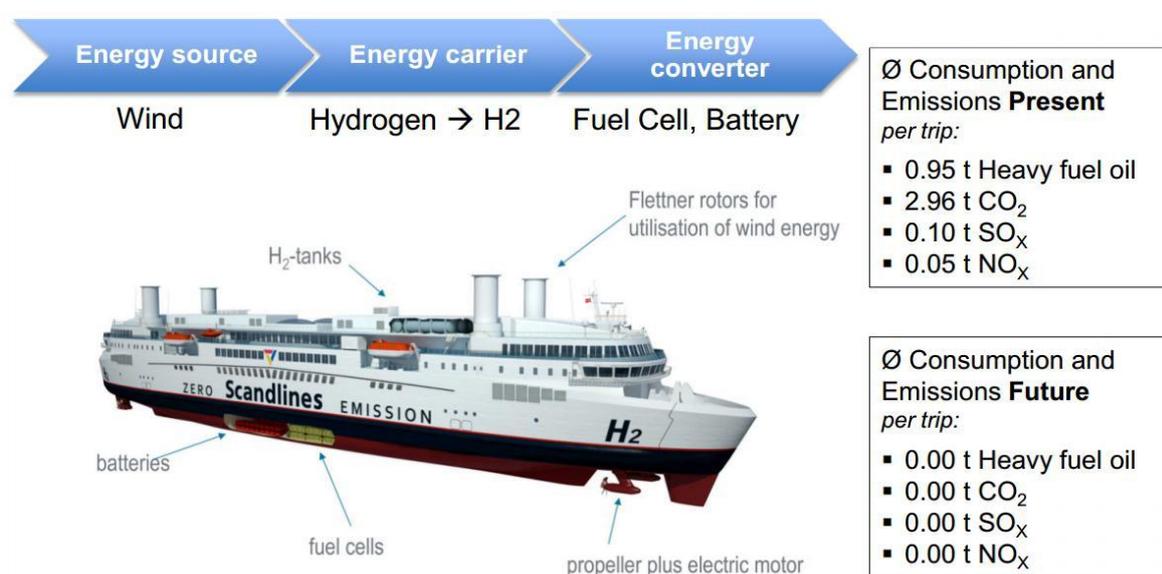


Figure 13: Towards zero emission ferries

3.2.3.2 Promoting nature and sustainable tourism

- Project Undine

The common goal of this German-Danish project is to make the Fehmarn Belt region's stunning underwater world more accessible and visible for both locals and visitors. UNDINE aims to contribute to "UNDERwater Discovery and Nature Experience" and to promote the Fehmarn Belt region from a touristic perspective. Simultaneously, it strives to raise awareness for the much-needed protection of Baltic ecosystems.

Together with experienced German and Danish partners working in the fields of environmental education, nature conservation, tourism and media design, the BUND SH (Friend of the Earth Germany) as the lead partner will be creating various awareness-raising materials, conducting events and strengthening collaborations between 2012 and 2015⁶⁵.

⁶⁴ Scandlines (2013), *Scandlines – A vision of green shipping*

⁶⁵ Project UNDINE: <http://www.undine-baltic.eu/en/project-undine.html>

4 Governance involved in biodiversity and natural environment management

The two major actors involved in governing the strait of Fehmarn Belt are the county of Ostholstein in Germany and the region Zealand in Denmark. To a lesser extent, the Femern A/S state-owned company, which has been appointed to carry out all preparatory works for the fixed link, can be included in the list.

- **County of Ostholstein, Germany**

The county of Ostholstein was officially constituted in 1970 from the two former counties of Oldenburg and Eutin. It stretches from the Fehmarn island in the North to the doors of Lübeck in the South (not including the city of Lübeck). The county of Ostholstein is one of the eleven districts of the Schleswig-Holstein region.

- **Region Zealand, Denmark**

Region Zealand is the Southernmost administrative region of Denmark, established on January 1, 2007. Region Zealand consists of the former counties of Roskilde, Storstrøm, and Vestsjælland. The region is named after the island of Zealand, which it shares with the neighbouring Danish Capital Region. Region Zealand also includes the adjacent islands of Lolland, Falster, and Møn.

- **Lolland municipality**

Lolland municipality (on the island of Lolland) is a municipality (Danish, kommune) in Region Sjælland in Denmark. It covers an area of 892 km² and a total population of 48,219 (2008).

- **Guldborgsund municipality**

Guldborgsund is a municipality (Danish, kommune) in Region Sjælland in Denmark, spanning the Guldborgsund strait. It covers an area of 907 km² and a total population of 63,496 (2008).

- **Femern A/S, Denmark**

Femern A/S is tasked with designing and planning of a fixed link between Denmark and Germany across the Fehmarn Belt. Femern A/S is subsidiary of the Danish state-owned Sund & Bælt holding A/S, which has experience from the construction of the fixed links across the Great Belt and Øresund⁶⁶.

⁶⁶ Baltic Development Forum, *Members*: <http://www.bdforum.org/network/members/>

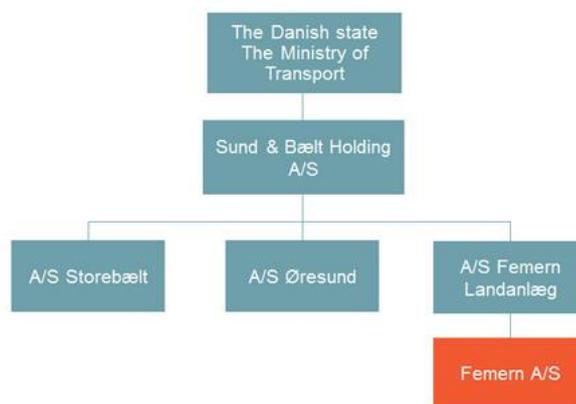


Figure 14: Holding structure of Femern A/S

4.1 Governmental actors

The German federal Ministry for the Environment, Nature Conservation and Nuclear Safety (*Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit- BUM*), as well as the Ministry of the Environment of Denmark (*Miljøministeriet*), are both in charge of nature protection in their respective country – including the Fehmarn Belt region. The BMU in particular is responsible for making fundamental national environmental policy and managing the protection, maintenance and sustainable utilisation of biodiversity.

Regarding the planned fixed link, governmental actors include the German federal Ministry of Transport, Building and Urban Affairs on the one hand (*Bundesministerium für Verkehr, Bau und Stadtentwicklung*), and the Ministry of Transport of Denmark on the other hand (*Transportministeriet*). The former is responsible for the construction of the hinterland infrastructure of the Fehmarnbelt Fixed Link in Germany agreed upon in the treaty with Denmark.

4.2 Conservation NGOs

NABU is one of the largest, most well-known, nature conservation groups in Germany and has worked for over 100 years for man and nature. NABU carries out specific conservation projects, maintains a research institute, runs environmental training and informs the media and public about important topics connected with the environment and nature conservation. The society is formally recognised by the German state as an environmental and conservation society, a body responsible for public issues (*Träger öffentlicher Belange*), and must therefore be consulted over issues affecting the ecology⁶⁷.

To be mentioned on the German side is also *Bund für Umwelt und Naturschutz Deutschland* (BUND). It is a large German NGO dedicated to preserving nature and protecting the environment (about 480,000 active members and supporters). There are 2,200 BUND local groups and, like Germany itself, the BUND is divided into 16 state organisations⁶⁸.

On the Danish side, the Danish Society for Nature Conservation (DN) is also a member of the Fehmarn Belt Committee, acts similarly as NABU. However, DN with its 140,000 members is measured by inhabitants, far larger than NABU. DN has the right to consultation in all nature conservation matters and is the only private organization in the world with the right to raise a conservation case. DN has raised more than 90% of all conservation cases in Denmark. In addition, other organizations can be mentioned include Denmark's Ornithological Society (DOF).

⁶⁷ Wikipedia, [Naturschutzbund Deutschland](#)

⁶⁸ Wikipedia, [Bund für Umwelt und Naturschutz Deutschland](#)

4.3 Cross-border governance

Political cooperation across Fehramn Belt can take place thanks to different existing structures, above all the Fehmarn Belt Committee. Other business-oriented structures also promote cooperation between the two sides of the Fehmarn Belt.

- **Fehmarn Belt Committee**

Denmark and Germany have a long tradition for cooperation in the cross border areas both on local and national levels. In the Fehmarn Belt area, Region Zealand and the County of East Holstein have established a Fehmarn Belt Committee together with the local municipalities in January 2009. **The Committee has a clear ambition in promoting a sustainable regional development with a green profile** – thus creating jobs, economic growth and good living conditions for the population on both sides⁶⁹.

The Fehmarn Belt Committee includes twenty-four members (twelve from Germany and twelve from Denmark). Besides regional and local elected officials, there are also representatives from organisations and federations of the main social and economic fields of the Fehmarn Belt region⁷⁰.

- **Fehmarn Belt Business Council (FBBC)**

As a tri-national business organisation (Germany, Denmark, Sweden), the FBBC plays a coordinating role and serves as a platform for business communities interested in the Fehmarnbelt Fixed Link. Representing about 400,000 companies through its members, the FBBC is truly “the voice of business“ and is the natural contact point for government and administration in cross border issues on the Hamburg-Lübeck-Copenhagen-Malmö axis. The Fehmarn Belt Business Council works to influence political decision making by challenging the existing framework conditions for growth and development⁷¹.

- **Fermen Belt Development**

The Fermen Belt Development association is a Danish foundation, but it is more closely related to the construction of the immersed tunnel between Denmark and Germany. It pushes forward economic, social, cultural and human developments in the region, in order to serve its inhabitants and workers. In cooperation with other dedicated actors of the Fehmarn Belt, the association carries out a set of activities to foster all possibilities rising from the building of the tunnel⁷².

- **Baltic Development Forum**

To a lesser extent, **this Baltic Development Forum can be a place to discuss cross-border issues among the Fehmarn Belt**. Region Zealand, Scandlines and Femern A/S are all members of the forum – as well as the city of Hamburg and the Chamber of commerce of Hamburg. The vision of the Baltic Development Forum is “to make the Baltic Sea Region the most dynamic, innovative and economic growth center in the World”⁷³.

⁶⁹ NOSTRA website: <http://www.nostraproject.eu/Partnership/Fehmarn-Belt>

⁷⁰ Fehmarnbelt Komitee, *Das Fehmarnbelt Komitee*

⁷¹ Fehmarn Belt Business Council (2012), *FBBC Information Flyer*

⁷² Femern Belt Development, *Über Femern Belt Development*

⁷³ Baltic Development Forum, *Vision & Mission*

5 Conclusions of the analysis

5.1 Analysis of the situation at the strait level

Social-economic background of the Strait

Both sides of the Fehmarn Belt strait are rather rural regions. In Germany, about 67% of total land covers are dedicated to agricultural purpose, and some of which have multi-functions including windmill and agro-tourism. In addition, the Fehmarn Belt strait is a vital access point for transport of passengers and goods between Scandinavia and Northern Europe, connecting two large cities located in the hinterland: Hamburg on the German side and Copenhagen on the Danish side. It is also one of the most important shipping routes between the Baltic Sea through the Great Belt and into the Atlantic, where large container carriers and oil tankers with considerable depths need to pass. At the moment, the on-going project of constructing a tunnel to connect both sides instead of the present ferry link between Puttgarden and Rødbyhavn will speed up the transport between Copenhagen and Hamburg. This change will have dramatic impacts on the regional development on both sides of the strait in the long-run.

Significance of biodiversity and natural environment in the Strait

Fehmarn Belt is a strait with depths of up to 35 metres, through which about 70 percent of the water exchange between the North Sea and Baltic Sea, making it of key importance for the movement and interchange of marine species. The presence of reefs provides essential ecological values to the local marine environment. The Baltic Sea as a whole is a major migratory route especially for waterfowl, geese and waders nesting in the arctic tundra. In particular, the Fehmarn Belt is an important area for many protected and vulnerable land and water birds. Wintering birds such as eiders and other diving ducks can be counted in their thousands in the winter months, and many migrating birds pass the Fehmarn belt. For this region, there are many areas included as Natura 2000 sites and regulated under the EU Bird and Habitat Directives. There also exist some natural reserves on both sides of the strait.

Human and natural pressures exerted on biodiversity and natural environment

Human activities such as domestic sewage, farming, industry, traffic, and energy production also impose pressures on biodiversity and ecosystems in the strait. Major threats to the marine biotopes of the German coast are eutrophication and other forms of pollution (especially oil pollution). These are mainly caused by the intensive maritime traffic in the strait, which is estimated between 35,000 and 40,000 ships per year. Yet this number is expected to increase by 47 % by 2030, or even more according to other studies (between 80,000 and 100,000 ships a year expected by 2030). Maritime transport also generates exhaust gases, sewage and garbage, bilgewater, anti-fouling paint, hazmat, ballast water, criminal degassing and accidental oil spill.

Moreover sand and gravel extraction and dumping of dredged material may also impair marine life in the areas concerned. The impact of fisheries is mainly the killing of sea ducks and marine mammals as unwanted by-catch, especially of set-net fishery. Since bottom trawl fishery is prohibited by law in the coastal waters up to three nautical miles from the base line, the most sensitive benthic communities can be considered as protected from this kind of disturbance.

Policies, actions and initiatives contributing to an integrated management of biodiversity

Germany and Denmark have a long-standing tradition of political cooperation. Especially Northern Germany and Denmark have been close enough in history to leave a tangible mark on Fehmarn

Belt. One outcome of this proximity is the remarkable language skills of Danish and German people: national statistics show that 58% Danish people speak German⁷⁴.

There are many existing structures for cross-border cooperation in the Fehmarn Belt region; Fehmarn Belt benefited from EU Interreg support (Strand A: cross-border cooperation). This helped in developing many different programmes like “Destination Fehmarnbelt” or the STRING-corridor.

5.2 How responses have addressed key pressures on biodiversity and natural environment

The responses that have been implemented in the Strait are mapped on the following tables.

⁷⁴ Special Eurobarometer n°243 (2006), [Europeans and their languages – Three most widely known languages](#)

Table 5: Responses to address risks and pressures exerted on biodiversity and natural environment – Fehmarn Belt (1/2)

Activities taking place in the Strait	Adding value to the local livelihood			Exerting pressures and impacting biodiversity and natural environment	Existing responses to address risks and pressures exerted on biodiversity and natural environment		
	Creating jobs	Creating revenues	Supporting Identity and culture		German side	Danish side	Cross-border
Maritime transportation	✓	✓		Boat collision and risk of release of hazardous substances transported by boats	• Legislation compliant with the International Regulations for Preventing Collision at Sea	• Legislation compliant with the International Regulations for Preventing Collision at Sea	• Implementation of a Vessel Tracking Service System
				Invasive species			
				Air pollution/water pollution			PRIVATE: • greener ferryboats: towards zero emission ferries
				<i>All pressures/transversal</i>			• the Danish Action Plan for the Aquatic Environment (APAE) • STRING-corridor • Building animal passages during the fixed link's construction phase
Terrestrial transportation	✓	✓		<i>All pressures/transversal</i>			• STRING-corridor
Energy production (windmills)	✓	✓		<i>All pressures/transversal</i>			
Fisheries	✓	✓	✓	Fish stock depletion			• the Danish Action Plan for the Aquatic Environment (APAE)
Agriculture	✓	✓	✓	Reducing biodiversity			
Terrestrial/ Coastal tourism	✓	✓	✓	Urban development, artificialisation of land, disturbance of natural balance, destruction of ground vegetation			
Maritime tourism	✓	✓		Disturbance of natural balance			• the Danish Action Plan for the Aquatic Environment (APAE) • Destination Fehmarn Belt PRIVATE: • Project Undine

Table 6: Responses to address risks and pressures exerted on biodiversity and natural environment – Fehmarn Belt (1/2)

Activities taking place in the Strait	Exerting risks and pressures, and impacting biodiversity and natural environment	Existing responses to address risks and pressures exerted on biodiversity and natural environment		
		German side	Danish side	Cross-border
Urban planning / territorial planning	Artificialisation of land Coastal development, coastal erosion, impact on marine ecosystems	<ul style="list-style-type: none"> • German Regional Management (REK) 		<ul style="list-style-type: none"> • EU Natura 2000 network • Fehmarn Belt Days • Baltic Green Belt • Baltic Flyway
Marine planning				<ul style="list-style-type: none"> • EU Natura 2000 network • Convention on the Protection of the Marine Environment of the Baltic Sea Area • Fehmarn Belt Days
Improving governance between actors and joint strategies		<ul style="list-style-type: none"> • German Regional Management (REK) 		<ul style="list-style-type: none"> • STRING-corridor • Baltic Flyway • German-Danish Regional Management

6 Recommendations

GOVERNANCE

- Incorporate the European Grouping of Territorial Cooperation (EGTC) in the region of Fehmarn Belt. EGTC is a cooperation instrument at Community level, which was introduced in 2007 as part of the reform of regional policy for the period 2007-2013.
- Rationalise the number of various cooperation structures. There exist too many structures for cross-border cooperation in the Fehmarn Belt region, leading to an unwelcomed competition among these structures.

KNOWLEDGE

- There is a need of increasing knowledge-sharing based cooperation between both sides of the strait. In particular, the information related to regional biodiversity is poor, and the research capacity on both sides is very limited, reflecting by the number of biologists/ecologists participating in the work of regional development.
- More efforts would be need to systematically study various stressors impacting the biodiversity and ecosystems in the region. At the moment, only one complete study in this regard exists/has been completed and is the environmental impact assessments used to evaluate the impacts of the two construction plans of the fixed-link.

ACTION

- The concern of long-term sustainability in terms of the sustainable use of biodiversity resources should be integrated into the regional development plans on both sides of the strait, as many local economic activities rely on healthy ecosystems.
- There is a need of strengthening the biodiversity and natural conservation measures in both regions, which may also contribute to the creation of green-jobs and enhance the local livelihoods (through the regulating and cultural services provided by the ecosystem).

6.1 Towards the implementation of good practices developed by other NOSTRA partners

During the workshop that took place in Reggio Calabria in February 2014, the NOSTRA partners were asked to identify the best practices developed by other partners of the Network they would like to implement in order to achieve their ideal Strait. However, the partners of the Fehmarn Belt did not submit the best practices they may have chosen.

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