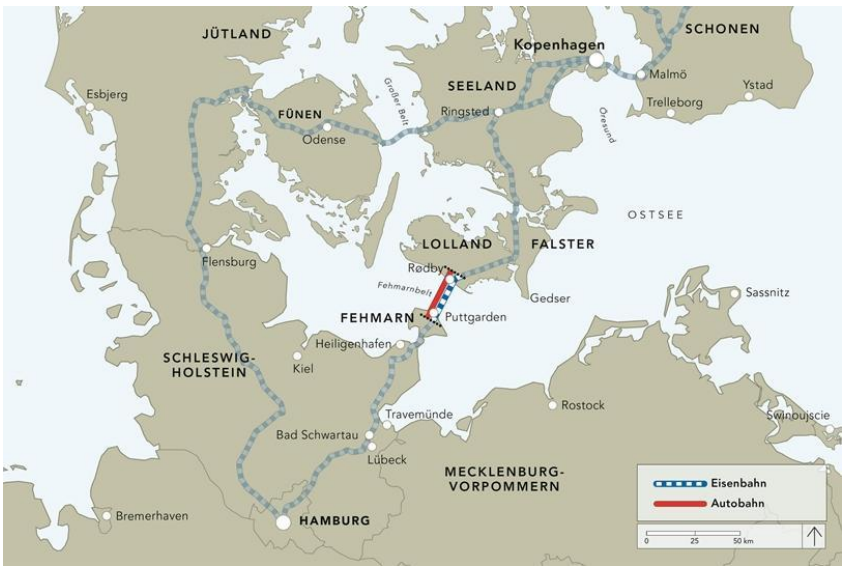
Dialogue with Baltic Ports and Logistics Stakeholders

TENTacle, WP2, GoA 2.1, sub-activity 2.1.9

Version: final, 2018.07.31



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Abbreviations

BSR	Baltic Sea Region
BSRP	Baltic Sea Region Programme 2014-2020
CC	Chamber of Commerce
CCI	Chamber of Commerce and Industry
CNC	Core network corridor
ERDF	European Regional Development Fund
FB	Fehmarnbelt
FBBC	Fehmarnbelt Business Council
FBD	Femern Belt Development
FBFL	Fehmarnbelt Fixed Link
HHLA	Hamburger Hafen und Logistik AG
HPA	Hamburg Port Authority
LIMV	Logistic initiative Mecklenburg-Vorpommern
LPA	Lübeck Port Authority
Scan-Med	Scandinavian-Mediterranean

1. Background

The Interreg project TENTacle aims to improve the stakeholders' capacity to reap benefits of the TEN-T core network corridors (CNCs) implementation for the prosperity, growth and cohesion in the Baltic Sea Region (BSR). The CNC is an instrument of the EU transport policy, aimed to improve mobility, intermodality and interoperability on major transport axes across Europe by identifying and then removing the most acute physical, technical, operational and administrative bottlenecks along these corridors by the year 2030.

The project partnership, with formal partners and associated organizations from all eleven BSR countries, organizes a joint response to identified capacity challenges and assists public and market players around the BSR with solutions enhancing their ability to capitalize on the CNCs, irrespective of the geographical location.

Seven currently active TENTacle pilot showcases in different areas are working to demonstrate how to strengthen positive CNC spill-overs in different geographies and development contexts. The cases were launched in the sites representing

(1) the corridor node and transit areas (located along a CNC),

(2) the corridor catchment areas (located in a close distance to one or a few CNCs) and

(3) the corridor void areas (located farther away from the three CNCs).

In each of the sites the project addresses the key growth challenge that may be resolved through a better physical and/or functional connection to the core network corridors.

The BSR is crossed by three CNCs: The North Sea-Baltic, the Baltic-Adriatic and the Scandinavian-Mediterranean (Scan-Med) Corridor. Especially the last one represents a crucial north-south axis for the European economy. One of the most significant projects on this corridor is the Fehmarnbelt Fixed Link (FBFL), including its access routes.[1] The tunnel is going to run east of the ferry ports Puttgarden and Rödbyhavn and will therefor connect the Danish island of Lolland with the German island of Fehmarn.[2] Its catchment area comprises the Zealand archipelago, Bornholm, Schleswig-Holstein, Hamburg and Skane. Parts of Mecklenburg-Vorpommern and, when discussing major cities, Rostock are at relevant occasions also included in the Fehmarnbelt region.

[1] The other one is the Brenner-Basel Tunnel, a railway tunnel connecting Austria and Italy.

[2] Restrup-Sørensen, Jonny: Der Fehmarnbelttunnel. Ein grenzüberschreitendes Schienen- und Straßenprojekt. In*: ETR - Eisenbahntechnische Rundschau*, vol. 07+08 (2014), p. 52.

Figure 1: Femern portal on Lolland

Source: Femern A/S

With a length of 18 kilometers, it is one of the biggest infrastructure projects in the world. The Federal Government of Germany, in close cooperation with the state of Schleswig-Holstein, has concluded a State Treaty with the Kingdom of Denmark on the delivery of the belt link, which was signed on 3 September 2008. For the implementation of the Treaty, national approval procedures had to be carried out in Germany and Denmark. The latter is responsible for construction, operation and financing of the structure. The link is to be funded by user charges. For this purpose, the Kingdom of Denmark may impose tolls for road use and charges for use of the railway lines.[3]

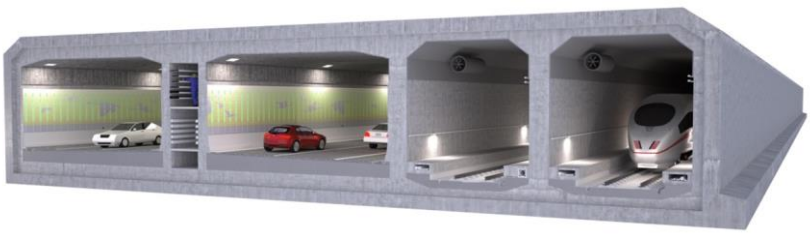

Figure 2: Cross section of a standard element

Source: Femern A/S

The underwater tunnel is going to consist in a double-track railway line and a four-lane motorway and thus be the world largest immersed tunnel for combined road and rail traffic. As far as the railway operation is concerned, there are particular challenges to be faced as regards interoperability and safety.[4] The immersed tunnel solution comprises 89 tunnel elements in total, made of waterproof concrete. The elements each weighing around 75,000 tons will be manufactured on land in covered

[3] Federal Ministry of Transport and Digital Infrastructure: Fehmarnbelt Fixed Link. URL: https://www.bmvi.de/SharedDocs/EN/Articles/G/fehmarnbelt-fixed-link.html, accessed 6 June 2018.

[4] Restrup-Sørensen 2014, p. 55.

factories and then transported by tugs to the alignment and sunk into the dredged trench and connected to the preceding element[5]

The Fehmarnbelt Pilot Case as part of the of the TENTacle project looks at the effects of this new infrastructure investment on the Scan-Med Corridor for the routing of freight flows and - consequently - for the business models of the transport and logistics industries (incl. ports) in the impact area of the fixed link. New transport options and shorter transportations times are likely to influence the existing patterns how companies position their logistics facilities in northern Germany and Scandinavia, with an opportunity for more efficient transport and logistics solutions. Aim of the whole pilot case is to mobilize the affected public and private stakeholders to be prepared for the upcoming changes and to develop positioning strategies as soon as possible, even though the tunnel will not be open till 2028.

Several studies have analyzed the effect of the FBFL on transport flows and modal split. They often do not take into account the actual behavior of companies and their logistic strategies. Meetings and interviews with stakeholders in the FBFL catchment area were organized to gather insight of logistics and transport stakeholders' perception and regional viewpoints about the expected impacts of and preparations for the fixed link. In addition, a survey (*Perception of the Fehmarnbelt fixed link*) was conducted and sent to relevant companies and institutions – public and private – to learn even more on anticipated challenges and/or possibilities caused by the change in infrastructure. Target groups of the survey were (cargo) transport and logistics service providers/operators incl. ports, local/regional administrations/authorities, and business support organizations located in the future FBFL catchment area of Northern Germany, Eastern Denmark and Southern Sweden. The online survey included multiple choice as well as open questions. 271 entities were contacted from the three countries and feedback was received by 28. The results are mostly aggregated in this report, so no personal information can be associated with the survey result.

This paper summarizes this stakeholder interaction process and the expected possible effects of the FBFL, comparing their perception to the impact scenarios envisioned in recent research.

2. Introduction of main stakeholder groups active in logistics

Today, the regions are connected by bridges in Denmark (e.g. Great Belt, Öresund) and sea ports with cargo operators specializing in ro-ro transport. The existence of a new direct connection will change cargo flows and redirect traffic from the current land route via Funen and Jutland as well as the ferries. Cargo transport and logistics service providers that are located in the BSR and will likely be affected by the construction of the FBFL are shortly introduced in this chapter.

[5] Lundhus, Wichmann 2011, p.6.

Figure 3: Location of relevant stakeholders

Source: Port of Hamburg Marketing

2.1 Main ports with their specifications

The **Port of Gothenburg** is the largest port in Scandinavia. 20 shipping companies operate regular routes to and from the port. Every week the Port of Gothenburg has about 70 ro-ro departures and around 20 container vessel departures. Almost 30% of Sweden's total foreign trade passes through here. Imports consist primarily of consumables such as clothes, furniture, food and electronics. Exports consist largely of steel, vehicles and forestry products such as paper, paper pulp and wood-based goods. Passenger traffic in the Port of Gothenburg is dominated by Stena Line.

Gothenburg Port Authority is part of the City of Gothenburg. Göteborgs Stadshus AB is the parent company and the official owner of Gothenburg Port Authority.

Table 1: Port of Gothenburg

Specifications	
Port type	Multipurpose
Volume of goods	40.8 Mio. tons (2016)
Ferry destinations	Stena Line: Frederikshavn, Kiel
Cargo groups	Container, dry bulk, new cars, liquid bulk, ro-ro, forestry products
Facilities	Four port locations, 23 berths in total

The **Port of Trelleborg** (Swedish: Trelleborg Hamm) is the largest ro-ro port in Scandinavia. Approximately 8% of Swedish imports and exports pass its quays and it ranks second in Sweden in terms of cargo volumes in ton. Trelleborgs Hamn AB is owner of all port facilities and therefore responsible for operation, investments, maintenance of all land and assets. In 2015, a new port development plan was formulated to upgrade the port facilities and make operation more efficient. It also includes investments in better hinterland connections (access via a new ring-road, cooperation with other Skane ports) and customer integration into ITS, but no reference to the FBFL.

Table 2: Port of Trelleborg

Specifications	
Port type	Ro-ro
Volume of goods	approx. 11 Mio. tons in 2016
Ferry destinations	Stena Line: Sassnitz, Rostock TT Line: Rostock, Travemünde, Swinoujscie Unity Line: Swinoujscie
Cargo groups (besides ferry)	Grain, fertilizer, oil
Facilities	700,000 m² in total, 2000 m quay length, eight berths for regular traffic including seven with double ro-ro ramps and three with direct rail-links, two intermodal terminals, two storage facilities of 30,000 m²

Copenhagen Malmö Port (CMP) is a full service port, but the main activities cover oil and dry bulk, ro-ro and containers. It is the largest port in Scandinavia and the Baltic Region for import and handling of new cars. Copenhagen Malmö Port AB operates both locations in Copenhagen and Malmö. The company was formed through a merger of Copenhagen Port and Malmö Port. The merger took place in 2001, when the 16 kilometer long Öresund Bridge between Copenhagen and Malmö was completed and the task of integrating the Öresund Region got underway. In 2011, new bulk areas were completed in the Copenhagen part, in total 650 m of quays and 18 hectares for bulk, while Norra Hamnen in Malmö got new ro-ro facilities, new container terminal and a combi-terminal. Most container and ro-ro terminals will be moved to Nordhavn in 2020, doubling the capacity. The new 450,000 square meter area was created through landfill.

Table 3: Copenhagen/Malmö Port

Specifications	
Port type	Multipurpose
Volume of goods	15.7 Mio tons (2016)

Ferry destinations	DFDS: Oslo, Copenhagen-Klaipeda Nordö-Link: Malmö-Travemünde Finnlines: Malmö-Helsinki, Travemünde
Cargo groups	Container, dry bulk, new cars, liquid bulk, ro-ro
Facilities	5 Mio. m² in total, 16.5 km quay length, 36 km of railway tracks, 16 berths, storage facilities of 200,000 m²

The **Port of Hamburg** is the third largest container port in Europe and the largest seaport in Germany generating added value of 21.8 billion euros nationwide. The most important destinations for container traffic (sea and hinterland traffic) are China (largest trading partner in seaborne cargo and container throughput in 2016), Bavaria, Lower Saxony, Czech Republic, North Rhine-Westphalia, Russia, Singapore, Baden-Wuerttemberg, Poland and the US.

Hamburg Port Authority (HPA) is an institution of public legislation and owner and landlord of most real estates in the Hamburg harbor area, while **Hamburger Hafen und Logistik AG** (HHLA) is the operator of three out of four container terminals.

Table 4: Port of Hamburg

Specifications	
Port type	Multipurpose
Volume of goods	136.5 Mio tons (2017)
Ferry destinations	No ferry services, but liner services to around 120 destinations worldwide, around 1,000 seaports are served directly from Hamburg
Cargo groups	Container, dry bulk, new cars, liquid bulk, ro-ro
Facilities	7 h in total, 43 km quay length, 288 km of railway tracks, 300 berths, four container terminals

The **Port of Kiel** Is the third largest hub port in Northern Europe. It is one of the most versatile and cost-effective Baltic Sea ports. Its favorable geographical position, with sufficient water depth for seagoing ships in all areas, and with direct links to rail and road networks, makes it possible for large container and cruise ships to call at the Port of Kiel. It is also located at the entrance to the Kiel-Canal.

Port of Kiel GmbH & Co. KG (Port of Kiel) is owner and landlord of the public areas and facilities and responsible for port development, expansion plans and maintenance. The company also operates the Kiel airport and the public port railway infrastructure.

Table 5: Port of Kiel

Specifications	
Port type	Multipurpose
Volume of goods	6.48 Mio tons (2016)
Ferry destinations	Stena Line: Gothenburg DFDS: Klaipeda, St. Petersburg Color Line: Oslo
Cargo groups	Public facilities: vehicles, grains, animal feed, stone chippings, general goods, forest products, oilseeds and fertilizer Private facilities: petroleum, scrap and coal
Facilities	City Port - Norwegenkai: 9 m draft, 45,000 m² City Port – Schwedenkai: 9 m draft, 720 m length of quay, two RoRo berths, 64.000 m² City Port – Ostseekai: Cruise ship terminal, 9.5 m draft, wto berths, 285 m & 355 m length of quay Ostuferhafen: Cruise ships, six berths ro-ro, lo-lo facilities, intermodal terminal, 11.5 m draft, 1,700 m length of quay, 500,000 m² area, 26.500 m² warehouses, 120.000 m² silos Canal Port (Kanalhafen) – Scheerhafen: 10.5 m draft, 375 m length of quay, 8,000 m² open storage Canal Port (Kanalhafen) – Nordhafen: 9.5 m draft, 913 m length of quay, 16,000 m² open storage, 77,000 m² silos

Port of Lübeck is the most south-westerly transshipment center on the Baltic and performs the function of a hub for the transport corridors between Southern, Western and Central Europe and the Baltic economic area. It is a core port within TEN-T and integrated in corridor # 5 (Helsinki – Valetta).

Lübeck Port Authority (LPA) is the landlord of all port facilities and responsible for operation, investments and maintenance of all assets**. Lübecker Hafen-Gesellschaft GmbH** (LHG) runs the public-sector ports docks in the Hanseatic City of Lübeck and is Germany's largest port operator on the Baltic. Hans Lehmann KG operates four terminals located on the northern banks of the Trave River (Lehmannkai 1-3, Lehmannkai CTL) and specializes in ro-ro cargo, general cargo, bulk cargo, project and heavy cargo, forest products, paper, cellulose and vehicles of any kind.

Table 6: Port of Lübeck

Specifications	
Port type	Ro-ro
Volume of goods	21.8 Mio tons (2016)
Ferry destinations	TT-Line: Trelleborg, Gothenburg, Helsingborg Finnlines: Malmö, Wallhamm, Helsinki, Turku, Kotka, Raume, St. Petersburg Metsa Boardl Logistics: Holmsund, Husum, Iggesund, Tunadal Transfennica: Hanko, Kotka, Palsiski (Talinn), St. Petersburg Transatlantic: Kemi, Oulu Stena Line: Liepaja, Ventspils
Cargo groups	Paper and forest products, palletized cargo, cellulose bales and paper and newsprint reels with unit weights of up to 7 tons, width of up to 4.3 m and diameters of up to 2 m (Nordlandkai & Schlutup)
Facilities	700,000 m², 2000 m quay length, four cargo terminals (Skandinavienkai, Nordlandkai, Schlutup, Seelandkai) operated by LHG, warehousing area ca. 156 h, two container gantry cranes (Seelandkai)

As a typical multi-purpose port the **Seaport Wismar** moves by conveyor belt weather-sensitive dry and other bulk cargo, such as agricultural products, building materials, salt, chemicals and fertilizer. The second construction stage of the planned port extension with a new 332 m quay wall for up to two vessels which will be finished by the end of 2018 (size 4.5 ha). The **Seehafen Wismar GmbH** owned 90% by the city of Wismar and 10% by Mecklenburg-Vorpommern state operates the port. The shipyard in Wismar was bought in 2017 by the Malayan Gentin company (together with shipyards in Stralsund and Rostock) to build high class river cruise ships.

Table 7: Seaport Wismar

Specifications	
Port type	Multipurpose
Volume of goods	3.4 Mio tons (2016)
Ferry destinations	-

Cargo groups	Container, agricultural products, building materials, stone, earths, chemicals, salt, fertilizer, disposal and recycling, wood and forest products, plant and machinery, metals
Facilities	66 h in total, 2.5 km quay length, 23.4 km of railway tracks, 15 berths, storage facilities of 54,000 m² (roofed) and 115,000 m² (open)

The **Rostock Port** is located at the mouth of the Warnow River on the Baltic Sea. Around 8,000 ferries, ro-ro vessels, cargo vessels and cruise ships are cleared here each year. The German Federal State of Mecklenburg-Western Pomerania and the Hanseatic City of Rostock are the owners of the Rostock Port. Their interests are protected by the company ROSTOCK PORT GmbH. It is also the single operator of the ferry and cruise ship port. Additionally, it is co-owner of the operating company of the terminal for combined freight transport.

Table 8: Rostock Port

Specifications	
Port type	Multipurpose
Volume of goods	28.8 Mio tons (2017)
Ferry destinations	Scandlines: Gedser Stena Line: Trelleborg TT-Line: Trelleborg
Cargo groups	Combined cargo, ro-ro, bulk cargo, fertilizer, grain, break bulk, liquids
Facilities	750 h in total, 11 km quay length, 47 berths, 600,000 m² open storage as well as 120,000 m² covered storage

The **Port of Stralsund** is a small sea port located in the Hanseatic Town of Stralsund in Mecklenburg-Vorpommern. The Stralsund Crossing with its two bridges and several ferry services connects Stralsund with the island of Rügen. SWS Seehafen Stralsund GmbH is the owner and operator of the Stralsund harbor.

Table 9: Port of Stralsund

Specifications	
Port type	Bulk Cargo
Volume of goods	-

Ferry destinations	Shipping company Hiddensee: Hiddensee
Cargo groups	Dry bulk, general cargo, metals
Facilities	Four port locations, 25 berths

2.2 (Cargo) transport and logistics service providers/ operators

Scandlines is a ferry operator owned until recently by the private equity investor 3i Group. It was sold in March 2018 to First State Investment (50%) and Hermes Investment Management (14.9%). The remaining shares were repurchased by 3i Group. Scandlines operates three lines for passenger and freight in and between Denmark, Sweden and Germany (Rødby–Puttgarden and Gedser–Rostock). With more than 90,000 departures on 13 ferries, Scandlines transported 15 million passengers, 3.1 million cars, 1.1 million freight units and 56,000 busses on the routes Puttgarden-Rødby, Rostock-Gedser and Helsingør-Helsingborg in 2017. With a total of six hybrid ferries (four operating on Rødby–Puttgarden and two on Gedser–Rostock), it is the owner of the world's largest hybrid ferry fleet. The parent company is Scandferries Holding ApS, with headquarter in Copenhagen, Denmark, with a German subsidiary named Scandlines Deutschland GmbH situated in Hamburg, Germany, and a Danish subsidiary named Scandlines Denmark ApS, situated in Copenhagen, Denmark.

Stena Line is another large ferry operator in the BSR, services serving Denmark, Germany, Ireland, Latvia, the Netherlands, Norway, Poland, Sweden and the United Kingdom on 21 ferry routes. Stena Line transported about 7.4 million passengers, 2.1 million freight units and 1.7 million cars in 2017. It is owned by Stena AB, a company in the Stena Sphere. The Stena Sphere includes, among other things, activities within shipping, offshore drilling, property, and waste management and recycling. The fleet consists of RoPax, combi ferries and cargo vessels and there are around 38 ships in traffic in their network.

TT Line is a ferry company based in Lübeck, Germany. With up to 23 departures a day on six ships, TT-Line links the German Baltic ports, Travemünde and Rostock, and the Polish Świnoujście with the southern Swedish transport hub of Trelleborg. It also offers a weekly service during summer from Swinoujscie to Bornholm (DK) only for freight cargo since 2017. TT-Line carries nearly 900,000 guests, 180,000 cars and more than 400.000 freight units per year and is thus the market leader in direct transport between Germany/Poland and Sweden.

2.3 Local/regional administrations/authorities

Transport ministries located in the FBFL catchment area are due to their mission involved in the planning and construction of the tunnel as a transnational infrastructure investment. The involved ministries are:

- Danish Ministry of Transport
- Swedish Transport Agency
- Federal Ministry of Transport and Digital Infrastructure (BMVI) in Germany

- Ministry of Economic Affairs, Transport, Labor, Technology and Tourism of the German federal state Schleswig-Holstein
- Ministry of Energy, Infrastructure and Digitalization of the German federal state Mecklenburg-Vorpommern

The federal state of Schleswig-Holstein consists of 11 districts, among them **Ostholstein**, which is one of the largest German districts at the sea. It covers an area of 1.392 square kilometers with six cities. The most important industries in the area are tourism, health and farming. Its administrative seat is in the town of Eutin.

Guldborgsund is a municipality in the Sjælland region in Denmark. It was created on 1 January 2007 from six former municipalities on the two islands Lolland in the west and Falster in the east. It covers an area of 903.15 km² (2013) and has a total population of 61,219 (2018). Its administrative seat is in the town of Nykøbing Falster.

2.4 Platform institutions/cluster institutions

The **Fehmarn Belt Business Council** (FBBC) was established in 2007 as an international business union. The council involves chambers of commerce and business associations from Germany, Denmark and Sweden and represents 400,000 companies. It aims to be a contact point for business associations and businesses on the axis Hamburg - Lübeck - Copenhagen – Malmö. The FBBC is establishing an economic growth region, promoting regional business opportunities through integration into construction activities and beyond, winning qualified work force for the region, promoting the chances of the fixed link for the entire region, promoting the establishment of a connected modern infrastructure, bringing the benefits of this new infrastructure directly to the region and its businesses.

STRING Network (Southwestern Baltic Sea TransRegional Area – Inventing New Geography) is a political cross-border partnership founded in 1999 as an INTERREG A program. German partners are the federal states of Hamburg and Schleswig-Holstein, in Denmark the partners are located in the Capital Region, Region Sjælland, and the City of Copenhagen as well as the Region Skåne in Sweden. Key themes are infrastructure, tourism and culture, science and development, green growth and cross-border obstacles. STRING establishes cooperation with business, universities, labor organizations, cultural institutions and NGO´s to support their visions.

Fehmarnbelt Development (FBD) is a development company that disseminates knowledge and information related to the future FBL. Their goal is to coordinate regional efforts directed towards the realization of the potential for development, in particular business, education and manpower in Region Zealand and Fehmarn Region.

Femern A/S is a company of the Danish traffic ministry which has the task to design and plan the construction of the fixed FBL (bridge or tunnel decided in 2012). The company is part of the Danish government company Sund&Bælt Holding A/S.

KielRegion comprises the administrative districts Plön and Rendsburg-Eckernförde, as well as the city of Kiel, capital of the federal state Schleswig-Holstein. It is a cluster organization funded by the European Regional Development Fund (ERDF). It focuses on regional development and the topics living, mobility, business and science. They support and connect regional players and work together on projects.

Several logistics initiatives are very active in lobbying for their region or city. The most important one in the Fehmarnbelt catchment area are: **Logistik-Initiative Hamburg**, **Logistik-Initiative Schleswig-Holstein** and **Logistik-Initiative Mecklenburg-Vorpommern**. They were founded on behalf of the federal state as public private partnerships. Their overall objective is to strengthen their areas logistic profile and location.

2.5 Chambers of Commerce

Chambers of Commerce (CC) or **Chambers of Commerce and Industry (CCI)** are associations or networks of businesspeople designed to promote and protect the interests of its members, their region or city.

3. Overview on opinions/statements in the market

The survey shows that although each stakeholder is unique in its logistic strategies and that infrastructure measures are part of a large set of parameters that influences logistic choices, some similarities arise, especially within the clusters. The survey also indicates that the involved entities from the private sector in general do not consider new transport possibilities until the link is in operation or soon before. Apart from uncertainties about transport costs by the fixed link, also other variables that effect companies' decisions might have changed when the fixed link is opened. Those variables can for example be changes in the market demand, competition and business models as well as in political decisions about taxes and regulations.

Table 10: Opinion in general regarding the infrastructure investments in FBFL

CLUSTER	OPINION IN GENERAL REGARDING THE INFRASTRUCTURE INVESTMENTS OF THE FBFL		
	Negative	Neutral	Positive
Business Support Organization (Cluster, Chamber of Commerce, etc.)	2	1	5
Ferry Operator	1		
Freight Forwarder/Rail Operator		2	1
Local/Regional Authority/Administration		1	5
Port Authority	1	1	1
Port Authority/Terminal Operator (Port)		1	
Terminal Operator (Port)	1	2	1
Other			2
Total	**5**	**8**	**15**

The results will be summarized according to the stakeholders' general opinion regarding the infrastructure investment of the FBFL.

3.1 Expectations and Chances/Challenges

3.1.1 Positive

Stakeholders from the **cluster "Local-, Regional Authority or Administration**" mostly have a positive perception of the FBFL. Valid input was received by the Hamburg Ministry for Economy, Transport and Innovation (Regional Policy Department), the Ministry of Economic Affairs, Transport, Employment, Technology and Tourism Schleswig Holstein, Guldborgsund Municipality, the county of Ostholstein and the STRING Secretariat. This comes as no surprise since they are also the most active in lobbying for the FBFL and all located in its catchment area. They either expect positive or strong positive effects for their region after the opening of the tunnel in 2028. The Hamburg Ministry stresses the importance of two strong metropolitan regions (Hamburg and Copenhagen) joining forces in terms of international competitiveness. According to them, a region of ten million inhabitants would have more global visibility and be more attractive to investors and to companies wishing to engage than any smaller European region. The vicinity and the fast train connection would allow a quick and easy exchange between actors within the region and contribute to a higher rate of innovation and new value chains. Guldborgsund Municipality also expects new investments in their region due to the FBFL: in facilities that are serving cargo and passenger transport (public and private), in industries depended on easy transport opportunities and in the private sector in general due to easier access and shorter travel time between Copenhagen and Hamburg.

The majority of the **business support organizations** in the FBFL catchment area (e.g. CCs, Merchant's League Lübeck) also support the construction of the tunnel due to the same reasons. A new link means more flexibility and convenience for people traveling and goods being transported from and to Continental Europe and the Baltic Region. Therefore, existing and new markets can be more easily served with innovations, creative solutions, product ideas and production concepts. Another common expectation is a model shift of cargo moving from truck/ferry to truck/train or train directly. According to the Chamber of Commerce Hamburg, it remains to be seen whether or not the overall cargo volume will grow due to the fixed link in their region.

Even if the stakeholder is not directly part of the Scan-Med Corridor and its infrastructure investments, certain positive impacts are still anticipated. The Kiel region is located east of the FBFL, but the federal highway B202/203 runs straight through the region from east to west. It is the first route connecting the Baltic Sea with the North Sea coming from the FBFL. That is why they anticipate more transport and more tourists passing through the region. If new businesses settle along the highway, more trained professionals would also settle in the region and currently underdeveloped areas could be re-discovered and promoted. Another hinterland connection possibility is the federal controlled-access highway A20. If drivers choose this street instead of the B202/203, then only Hamburg would benefit from the fixed link in the opinion of KielRegion. That is why they are actively lobbying for their area.

Stakeholders from the Lübeck area in general expect positive impacts of an operating FBFL. They expect the region to "*profit a lot from its new defined position in the area between Scandinavia and Northern Germany*" and that "*Lübeck will have an outstanding central position in this new market place*." At the same time the CIC and the Merchant League of Lübeck are aware of the challenges that lie ahead to fully reap the benefits. The hinterland connections on the German side still need to

be upgraded. People living in the region are also going to be affected by additional traffic. Negative perceptions of the FBFL arise due to "*fear and lack of information*".

Although the STRING Secretariat promotes the tunnel and expects the same positive effects on regional development and the economic sector in the FBFL catchment area stated above, it also points out that having a new infrastructure investment does not necessarily lead to a positive outcome: "Smart entrepreneurs will take the opportunities and create added value. However, there is no automatic logic by which a new infrastructure automatically creates positive effects." This opinion is also shared by **private railway operators**. A representative of Green Cargo, stated at the Fehmarnbelt Days 2018 that the tunnel will cut lead times for freight trains by two to three hours giving railway companies the opportunity to save costs and enter new business fields. But this is only possible if the hinterland connections in Denmark and Germany are sufficiently established and all bottlenecks are abolished. The following were mentioned in the survey answers:

- A two-track, electrified railway line for the full length, and a continuous 4-lane motorway from Lübeck to Copenhagen, including the Fehmarn Sound Bridge and the Storstrøm Bridge
- Consideration of the train capacities in and around Hamburg, Lübeck and Copenhagen
- Removing of bottleneck situations in the rail infrastructure that would worsen after the FBFL opens
- Upgrade of major road connection to Schleswig-Holstein
- Connections to important transport nodes, such as ports, airports etc.

All stakeholders who delivered input to the survey are well aware of these issues and point especially to the underdeveloped rail and road connections. Increased traffic and more cargo volumes can only lead to positive effects if the given infrastructure is able to handle them.

The STRING Secretariat additionally suggests that a bigger economic zone stretching from Copenhagen to Hamburg could lead to the increase of non-sustainable business activities, because it is cheaper or more attractive to use resources and products form other regions rather than producing and buying locally. Certain areas on the FBFL route or close to it could be reduced to mere transit areas without spill-out effects. This fear is also shared by the Ministry of Economic Affairs, Transport, Employment, Technology and Tourism Schleswig Holstein. Since this federal state is also highly depended on tourism, it is also facing the challenge to avert a decrease in visitors due to noise and pollution caused by an increase in traffic.

All stakeholders who perceive the FBFL in an overall positive light share more or less the same expectations for their respective region and business. The new accessibility enlarges the geography and market for services and local products and increases the attractiveness of rural areas to life and therefore commuting. Goods can be transported for less costs and less impact on the environment which leads to more cargo volumes and revenue. A modal shift from ferries to rail is envisioned.

3.1.2 Neutral

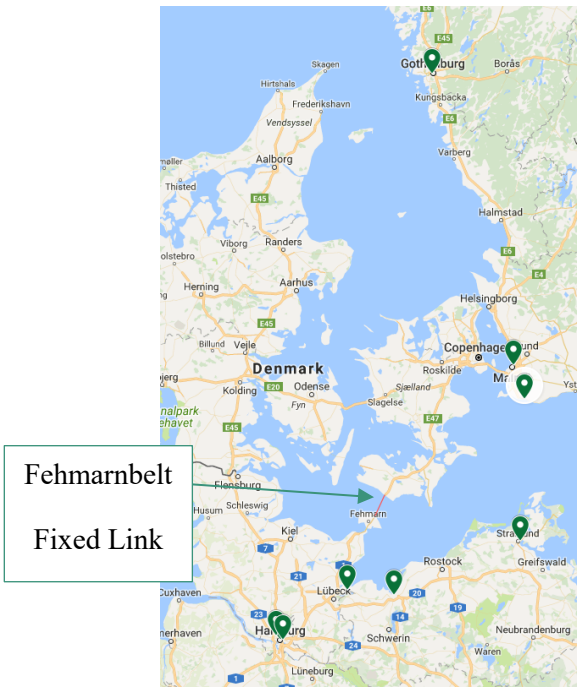

Figure 4: Stakeholders with a neutral position in general towards the FBFL

Source: Google Maps

Questioned stakeholders from **the ports** of Stralsund, Wismar, Copenhagen Malmö, Gothenburg, Trelleborg and Lübeck all share a neutral general opinion towards the infrastructure investments of the FBFL, although some of them expect negative impacts for their business activities.[6] The same is the case for two anonymous inputs from the cluster "**Freight Forwarder/Rail Operator**". No regional authority chose "neutral" and only one business support organization.

The Logistics Initiative Hamburg on the one hand expects positive effects for their region due to better connectivity from Scandinavia to Hamburg and having a direct route for rail services which is 160 km less than today's only direct rail link via Jutland. They also anticipate a general growth in the Hamburg labor market and more job opportunities induced by the construction of the FBFL and the accompanying upgrade of Hamburg's hinterland connections. The volumes in the port could increase, too. On the other hand, their answers in the survey also include possible unwanted effects of a new direct road link. It could increase a modal back-shift from ship/rail to road. Port operators (especially in Lübeck, Kiel, Rostock, Stralsund and Puttgarden as well as the corresponding Scandinavian ports) and ferry operators would then have to face negative effects.

Stakeholders from the Port of Lübeck conclude that generally speaking the fixed link will widen their catchment area up to Denmark. This could open new business opportunities for the port, but particularly for the region. However, changes in major cargo volumes and flows via the fixed link might occur, if the tunnel receives subsidiaries and/or the pricing is politically motivated. The fear of unfair competition is also mentioned by stakeholders from the Port of Trelleborg. Subsidiaries as for

[6] The recipients of the survey represent in most cases both port authority and terminal operator.

example on the Öresund Bridge would lead to a disadvantage for ferry and feeder cargo traffic and the connected ports. The Swedish port assumes that passenger volumes will increase, but those of cargo not significantly, at the most to and from Sweden which could further lead to capacity challenges and bottlenecks. This challenge is also anticipated by other ports, especially in Scandinavian countries. Some conclude this to influence mostly short transport chains and not the long haul trucking industry:

> "*Drivers need to rest and can do this on the present ferries. With a fixed link they need to rest somewhere else. Where are the benefits then...?*"

The Sea Port Wismar expects a much greater impact on their business after finalizing construction of the Autobahn A14 (estimated in 2022).

3.1.3 Negative

One deciding factor mentioned by all stakeholders who are in general against the FBFL is also an unfair advantage for the tunnel due to state subsidies. Private actors affect south-western Baltic Sea Region transport cost by deciding on ferry cost. Additionally, fixed link fees are set to finance the investment. There is a risk of sub-optimization unless prices are coordinated. Answers in the survey conclude that the cost for passing the FBFL, in relation to cost for using other routes, is crucial.

The question if ferry operators will continue to be in operation and compete with the fixed link is frequently raised. All expect losses in cargo and passenger volumes. In the survey Scandlines states that they welcome competition, but "*it needs to be fair*". The ferry operator does not intent to close down the ferry service between Rødby and Puttgarden, although they will need to adjust their business model in order to be able to compete against the state-owned link. In their opinion, the FBFL will not induce new traffic, but will shift traffic from existing services/corridors. Scandlines fears the abuse of state advantages and dumping prices due to overoptimistic traffic forecasts including competitive assumptions.

Rostock Port assumes that the fixed FBL will result in detours of transport volumes (freight, passenger, cars and busses) from well-working and long-established ferry links as well as port to port connections between Continental Europe and Scandinavia. Port infrastructures, which have been adapted during the last years according to volume growth and customer demand might be unused due to reduced transport volumes on sea routes. There is no level-playing field between a completely state-financed and secured infrastructure on the hand and a privately operated and financed business. The LIMV shares this position and expects more negative impacts for the maritime businesses in Mecklenburg-Vorpommern. Longer transport distances if existing ferry-links will be discontinued or reduced, massive impact in added services in the ports and escalating costs for tunnel-passage after exodus of ro-ro- and ferry links are just a few of the named concerns. They state that the expected boom along the Fehmarnbelt route, e.g. by logistic centers, will not be as great as expected because long-distance trains will not stop-over and that the Copenhagen-Malmö-effect is overrated, considering the distance between Hamburg an Copenhagen.

3.2 Plans and Measures

When asked if they actively plan any strategies for transforming the region or re-organize their business to prepare for the FBFL, the majority of the stakeholders, who see the tunnel in a positive or negative light, checked the "Yes"-box. Most of the stakeholders holding a neutral opinion, did not

disclose any plans and measures. This is most likely due to the nature of the cluster and/or lack of immediate relevance appointed to the FBFL. Six stakeholders did not answer this question.

The most common measures mentioned in the survey are:

- Studies
- Inclusion of possible impacts in regional development plans/business plans
- Working groups and involving stakeholders (e.g. establishing a task force)

Especially local/regional authorities and business support organizations are actively incorporating the FBFL into their regional development plans. Most of them do not conduct their own studies, but use the resources already available or contract consulting agencies and research facilities. The regions Hamburg, Schleswig-Holstein and Kiel represented by their respective ministries for transport and tourism, CICs and other business support organizations all cooperate with each other and with their Danish counterparts in some way or another (e.g. in the areas of marketing, tourism, business development).

The general assembly of the CIC Lübeck for example already decided on a special regional strategy for the FBFL as a foundation for future regional planning. This involves cooperation with business organizations in Denmark and Sweden and constant updates on the FBFL's progress and business opportunities for the chamber's member companies. The CIC Lübeck is active in regional, national and international committees as well as initiatives to support the project, but also to realize the chances for the region. The county of Ostholstein also has its own unit dedicated to prepare the region for the FBFL.[7] They are working on a FBFL master plan and conducted a study on how to reap benefits from future Scandinavian travelers. The CC Hamburg conducted a study on the "Economic area A1 - Regional growth axis Hamburg-Fehmarnbelt"[8] and started a project on the profitability of business parks along the Hamburg-Copenhagen. KielRegion is involved in several regional projects to increase the attractiveness of the B202/203 for freight operators and travelers.[9] On the Danish side feedback was only received by the Guldborgsund Municipality. In addition to the already mentioned measures as promoting cooperation and preparing the labor market for the change, they started developing a business park with new transport facilities (e.g. safe par) to prepare for changing traffic flows due to the Fehmarnbelt infrastructure investment.

All the above mentioned regional authorities in Germany are founding members of the FBC, which was established to strengthen the axis of growth between the metropolitan areas of Copenhagen/Malmö and Hamburg/Lübeck. In order to achieve this goal, the FBC:

- Organizes conferences on the topics Fehmarnbelt Region and Fehmarnbelt Fixed Link
- Develops positions

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[7] Kreis Ostholstein: Fehmarnbelt-Querung/ -Büro. URL: https://www.kreis-oh.de/Wirtschaft-Tourismus/Fehmarnbelt-Querung-B%C3%BCro, last accessed 18.06.2018.

[8] Chamber of Commerce Hamburg; Chamber of Industry and Comerce Lübeck: Wirtschaftsraum A1 - Regionale Wachstumsachse Hamburg-Fehmarnbel. Link: https://www.hk24.de/blob/hhihk24/produktmarken/interessenvertretung/downloads/1145332/e632d53d2a45b2b9c978ef352549c94b/Positionspapier_Wirtschaftsraum_A1-data.pdf, last accessed 18.06.2018.

[9] The FBFL is mentioned in the following regional planning dossiers: "Regionales Entwicklungskonzept", "Masterplan Mobilität"; in "Potenzialanalyse zur Hauptverbindungsachse B 202/203" also small analysis concerning the impacts of the FBFL.

- Maintains the FBBC secretariat as a contact point to the FBBC.

The political-cross border cooperation STRING publishes a biennial report on regional development in the corridor to verify its success and "*to keep a certain positive dynamic in the process of development for societies, economy and ecology*". It also hosts the website of The Friends of the Fehmarnbelt and co-ordinates its activities.

Out of all the stakeholders looking positively onto the FBFL, only one (anonymous freight forwarder/rail operator) does not participate in regular meetings and information events regarding the new infrastructure investment. The majority is actively involved in those organized by STRING and the FBC. The Fehmarnbelt Days which are held every two years are also mentioned quite frequently. The Transport Ministry Schleswig-Holstein is bound by the state treaty to be part of the consultation body and the joint committee overseeing the planning and construction of the tunnel. The Regional Policy Department of the Transport Ministry meets with the Greater Copenhagen region and Skane committee at least once a week and also looks for further partners in Scandinavia, for example in Gothenburg. KielRegion plans a cooperation with the administrative districts Plön and Rendsburg-Eckernförde and the city of Kiel. Furthermore, they want to work more closely with regional municipalities, the federal state of Schleswig-Holstein, regional tourism organizations, regional natural parks, regional transport organizations, regional businesses and regional academic institutions. Guldborgsund Municipality regularly meets with several business support organizations (Friends of the Fehmarnbelt, FBD) and Femern A/S. The LIMV supports the ports in the region and works on strengthening the whole maritime transport chain to be able to compete against the fixed link in the future.

To ensure that the Port of Lübeck will be able to remain as a leading transshipment and logistical hub during the coming years, the port authority is currently implementing its harbor development plan (in German: Hafenentwicklungsplan (HEP)) with a projected timescale leading to 2030. The FBFL is one of the major infrastructure projects influencing this plan. The HEP is based on traffic/trade prognoses and describes the type, quantity and size of incoming vessels, existing and future harbor equipment for loading/unloading as well as the resulting requirements for the harbor/port infrastructure (technic equipment, piers and needed area space). The overall goal is to create acceptable concepts together with every stakeholders for a time horizon of 10 to 20 years. One way identified to profit from the tunnel is setting up new logistics centers, possible for rail traffic to/from Sweden and the expansion of Nordlandkai which is already on its way.[10]

The ferry operator Scandlines, TT Line and Stena line jointly took action against the FBFL in 2015. They filed a several-hundred-page objection to the project requesting a fair competition between private and public stakeholder (no subsidies) and maintenance of hinterland connection to the ferry ports. Furthermore, they are actively marketing the advances of choosing the ferry as a mode of transport and invest largely in upgrading the current fleet.

[10] Universal Transport Consulting GmbH (UNICONSULT) im Auftrag der Hansestadt Lübeck und Lübeck Port Authority: Potenzialanalyse für ein Logistikzentrum Lübeck. Hafenentwicklungsplan 2030. Lübeck Febraur 2016, URL: http://www.luebeck.de/stadt_politik/buergerinfo/bi/___tmp/tmp/45-181-136624344990/624344990/01061805/05-Anlagen/01/Anlage_KurzfassungGutachten7.pdf, last accessed 16.07.18.

3.3 Wanted Support

Interviewed stakeholders expressed severe criticism regarding uncoordinated decisions about taxes and regulations that have impact on transport costs. Important information and data are not available in order to be able to evaluate the implications from the FBFL (e.g. toll concept for trucks, track access charges for rail). The question of harmonizing taxes, fees, road pricing measures and cost driving regulations needs to be addressed. Regional authorities as well as businesses expect support from their respective governments, especially from high-ranking politicians in Germany.

> "*We need more real support from German politics, from all parties and representatives. The new government in Berlin should emphasize on the mainly positive impacts of the Fixed Link. They must not be allowed to place unnecessary obstacles in the way of the market partners and enterprises moving the project forward*." (Business support organization)

Financial support through federal and regional funding programs and infrastructure investment to abolish existing or avoid possible bottlenecks in the FBFL catchment area are needed, especially for stakeholders in regions to be negatively affected. One terminal operator wrote:

> "*We expect a level playing field for all market partners, i.e. no unfair and uneven subsidiaries to anyone. We demand and insist on infrastructure adjustments rail in order make sure that volume flows via rail in and out our business area will not be disturbed or negatively affected in any way.*" (Terminal operator port)

Furthermore, according to suggestions stated in the survey, more independent studies are needed to specify regional economic effects. One answer called for a more critical approach and review of the tunnel investment and the possibilities of a greater Metropolitan region. The scope should be widened and bordering areas should be included in analyses. Investigations should be based on scientific practices and not on "*political slogans and wishful thinking*".

STRING claims that more incentives should be provided for businesses and organizations to invest in responsible innovation in preparation for the FBFL. Additionally, inhabitants of the tunnel's immediate catchment area need to be made aware about their contributions to the development of the whole region. Other stakeholders also call for more awareness-raising measures to get more people to support the project. This is not only achieved by "*technocratic planning*", but by giving more opportunities for "*curiosity and courage to prove new things also in unexpected joint ventures*". A regional authority based in Hamburg reminds critics that "*as a rule, cooperation among regions takes a lot of time (easily 10 years) and commitment, before there are lasting positive effects. In order to be successful and to "create new traffic" along the Fehmarnbelt corridor the public and private actors in northern Germany, Denmark and Sweden will have to cooperate and engage over a long-term period*."

4. Summary of studies highlighting the regional effects of the Fehmarnbelt fixed link

Several studies have analyzed the expected consequences of new fixed links in the BSR, e.g. Fehmarn Belt and Öresund. A lot of these have a macro level approach in forecasting expected volumes, modal split and route choice. During the desk research, 57 studies, reports and publications published between 2004 and 2016 were collected. The most important findings are summarized in this chapter and a selection of research cited.[11] The list includes final reports of EU projects, analyses by consulting agencies and universities (commissioned by stakeholders like transport ministries or ferry operators) newspaper articles and regional or port development plans.

Older studies still assume the opening of the tunnel in 2021. It now has been delayed to 2028. Their tone and position varies in accordance to the contracting authority or company and their opinion towards the infrastructure investments of the FBFL. Some publications draw conclusions based on quantitative analysis, which is calculations and forecasts. These often focus on need for investments and obstacles to develop the infrastructure in line with the concept of green corridors or (sustainable) regional development. The findings and conclusions are similar in most cases and just differ in the region or business model.

The Incentive Consulting Group carried out a cost-benefit analysis on behalf of the Danish Ministry of Transport, Building and Housing in 2015. According to their findings, the tunnel will not only reduce travelling time between eastern Denmark and the rest of Europe to the south, but will also provide benefits for travelers not crossing the border due to the corresponding upgrades of the railway system. The link will reduce the environmental and climate impacts of transport. Taking into account all benefits and costs for Denmark alone, the link and the associated onshore facilities in Denmark will generate a net social benefit of BDKK 28 over 50 years. This equates to an economic return of 5.4 per cent. In overall terms, the analyses indicate that the tunnel represents a sound investment for Europe and Danish society.[12]

The final report of the German-Danish cooperation project BeltLogistics (INTERREG IV A) gives an overview of the various types of logistical infrastructure (road, rail, air and sea) that can be found in the Fehmarnbelt region along with industrial areas to discover potential areas for development of both types of infrastructure. It concludes that the area in and around Lübeck is seemingly more established with several quays and multimodal facilities, giving Lübeck a competitive advantage over the Danish part as logistics infrastructure is more scattered there. However, this is also due to the fact that the Region of Zealand is much bigger than Fehmarnbelt region on the German side. The

[11] A full overview is attached at the end of this report.

[12] Incentive Consulting Group: Cost-benefit analysis of the Fehmarn Belt Fixed Link. Contracted by the Danish Ministry of Transport, Building and Housing 2015. URL: https://www.trm.dk/en/publications/2015/cost-benefit-analysis-of-the-fehmarn-belt-fixed-link, last accessed 18.07.2018.

major opportunity for Region Zealand is without doubt the construction site with its various needs for supplies of everything from food to concrete to disposal of waste. This could facilitate an opportunity for Business Park Falster to expand their services which they already have in their strategy.[13]

Rafeal Aigner published a report as a Discussion Paper on the competition between ferry and tunnel on the website of the German Institute for Economic Research (DIW Berlin). A previous version of this was prepared as a supplement to a report by DIW Econ (2015) commissioned by Scandlines ApS. If tunnel and ferry set prices simultaneously, results vary substantially with assumptions on demand elasticity. The scenario with higher elasticity implies quite strong demand reaction, which is why the inelastic case seems more realistic. But there is no specific empirical evidence to support this assessment. The report models an asymmetric duopoly. The two competitors offer essentially the same service (passage over the Great Belt) but differ in type and quality (average crossing time) of their specific service as well as their cost structure. The tunnel varies its price, maximizes revenue and offers a fixed quality (crossing time). The ferry can change both its price and its schedule, resulting in varying quality levels (average crossing time). The author concludes that in the long run, the ferry can also exit the market.[14]

In 2010, Roskilde University (as partner in the INTERREG IV B Baltic Sea Region project SCANDRIA) published a report on logistical infrastructure in the Fehmarnbelt region on behalf of Öresund Logistics, NordLog project and the Femern Belt Logistic Platform. It gives an overview of the planned improvements of the German hinterland infrastructure connected to the FBFL, as well as the views of the key German stakeholders towards the FBL at the time. It still assumes the opening of the link in 2018. The study includes:

- Issues mentioned in the treaty about the German hinterland connection
- Enumeration of the institutions that are involved in the Fehmarnbelt discussion in Germany
- Analyses and perceptions for upgrading the Hinterland connection in Germany
- Current (2010) discussions in Germany bottlenecks/infrastructure problems after 2018
- Stakeholder positions at the time

All interviewees were clustered in "Promoters", "Wait and See" and "Skeptic/Doubters". The interview and reference based analysis shows that various capacity problems for the traffic flows in Germany are expected if the assumed traffic growth of 1.7% per year takes place after the opening of FBFL (traffic growth from Femern A/S from 2008). These bottlenecks will affect the traffic flow to and from the FBFL. Identified bottlenecks are:

- B207 Lübeck-Puttgarden (today: Heiligenhafen-Puttgarden): A1 via Hamburg already congested
- Two-track hinterland railway from Lübeck to Puttgarden during waiting period/construction for further development.

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[13] Jakobsen, Marianne; Wewstädt, Lars: InterregBeltLogistics. Logistical infrastructure and industrial areas. INTERREG IV A Project "BeltLogistics" 2015. URL: http://www.logregio.de/file/logisticalinfrastructureandindustrialareas_stand01062015_finalversion.pdf, last accessed 18.07.2018.

[14] Aigner, Rafael: The Fehmarn Belt Duopoly. Can the Ferry Compete with a Tunnel? In: DIW Discussion Papers, No. 1539 (2016). URL: https://www.diw.de/documents/publikationen/73/diw_01.c.523733.de/dp1539.pdf, last accessed 18.07.2018, p. 12.

- Rail connection to Hamburg (to Ahrensburg and Maschen)
- Fehmarnsund bridge: Two-lane road and one-track rail[15]

Another report titled *The Green STRING Corridor- from speed and transit to accessibility and regional development* shows opportunities for establishing a green transport corridor through the Öresund Region to Hamburg for international freight transport. To achieve this goal, the following investments are needed:

- Double track high speed railway systems
- Infrastructure for fossil free fuels
- Strengthening competitiveness of train in comparison to other modes, so that future transport is mainly via rail
- Better coordination of the STRING region transport ministers and transport clusters

The authors recommend to develop an overall strategy for the commercial and publicly financed train traffic along the corridor. The FBFL will require electric trains, and the railway operators themselves estimate that it will take four to five years to purchase new trains and have them certified. [16]

Most publications conclude that there is a need for cooperation among regions, countries and institutions as well as there is a need for increased focus on environmentally issues. That is that the conclusions address the issue of creating platforms for infrastructure development. However, there are few conclusions how this cooperation should be implemented to promote investments and other actions.

Certain regions and business stakeholders are expected to profit extensively from the FBFL, such as Copenhagen, Malmö, Lolland-Falster, Zealand, Skane, Schleswig-Holstein, Hamburg, Railway operators and companies using mainly railway transport. In contrast, other areas are assumed to face more challenges than opportunities. Forecasts for ferry operators, ferry ports (e.g. Rostock, Wismar) and the federal state Mecklenburg-Vorpommern or the region of Ostholstein tend to be more negative, if they are not carried out by local stakeholders. The expected impacts vary according to the vicinity to the FBFL and availability of hinterland connections.

The main expectations on effects of the FBFL can be summarized as:

- Possibilities reducing transport time and transport cost by rail
- Overall increase in cargo volumes and a change in transport chains
- Modal shift from trucks/ferries to trains, opening investment opportunities for these modes of transport

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[15] Lohse, Sandrina; Homann, Per: The perception of the Fehmarnbelt connection among German stakeholders. Roskilde University, Department of Environmental, Social and Spatial Change (ENSPAC) July 2010. URL: http://rudar.ruc.dk/bitstream/1800/6654/1/Femern_Rapport.pdf, last accessed 04.06.2018, p 17ff.

[16] Green STRING Corridor: The Green STRING Corridor- from speed and transit to accessibility and regional development. September 2014. URL: http://stringcorridor.org/media/102050/greenstring_final_web.pdf, last accessed 16.07.2018.
The Green STRING Corridor project, undertaken by Region Zealand, Region Skåne and The Capital Region of Denmark working together with other partners in the Øresund Region, represents a unique investigation of the potentials and challenges found in the STRING region. The project has also involved participants from SchleswigHolstein and Hamburg. Since this analysis was conducted in 014, it assumed under the assumption that the tunnel would open in 2021.

- Increase in capacity problems on remaining railway bottlenecks after the fixed link is in operation
- Limited effects on route choice for road transport[17]
- Increased importance of Southwest BSR as logistic area by connecting logistic facilities in the Öresund and Hamburg areas

5. Comparison of statements, opinions and study results

A survey and personal interviews with stakeholders representing a broad range of businesses and regions in the FBFL catchment have been carried out for this report. Most answers confirm the expectations and positions described in the studies. New transport options and shorter transportations times are likely to influence the existing patterns how companies position their logistics facilities in northern Germany and Scandinavia, with an opportunity for more efficient transport and logistics solutions. Expected positive impacts are generally validated, while negative consequences are relativized or put in certain perspective by affected stakeholders.

One example are bottlenecks in the railway system which would prevent the potential benefits for railway transport. Upgrading the railway between Fehmarn and Lübeck, as well as increased capacity for rail freight transport between Denmark and Sweden are considered necessary measures to exploit the benefits of the FBFL. These bottlenecks mentioned in analyses carried out 10 years ago are still claimed by the FBBC today.[18] Intermodal transport, with railway as backbone, should be planned as a corridor concept. Capacity bottlenecks must be removed in the entire corridor and railway corridors should be planned to offer redundancy and reliability. Harmonizing regulations, taxes and fees between countries for a competitive railway system was also still a crucial topic at the Fehmarnbelt Days 2018.

One other trend that can be found in the reports as well as the answers to the survey is looking beyond the FBFL as a mere tunnel, but as an investment in connecting people across European borders. One business support organization proclaims in the section "Any other business": "*It* [the FBFL] *has to be more than only the increase of the shipping of transport units between different destinations in EU!*" Stakeholders of the Fehmarnbelt region should cooperate now to create a new region with a more strongly integrated economy, labor market, tourism, culture and politics. It will possibly provide new business and cooperation opportunities not only for the transport sector, but also for clusters of similar structure and focus:

1. Life sciences and health are important business sectors in most parts
2. Food business sector

[17] A major change in the infrastructure might affect where truck drivers need to rest. Relevant authorities need to plan for truck stop services along actual route. In this particular case the demand for truck stop service might increase in southern area of Copenhagen. In the stakeholders'answers for the survey road transport is hardly mentioned at all.

[18] Fehmarnbelt Business Council: FBBC Northern Science Hub – Map of Competence. URL: http://www.fbbc.eu/positions.html, last accessed 04.06.2018.

3. Information technology
4. Sustainable energy/green technology
5. Research and education
6. Tourism

After comparing theoretical research and logistics and transport stakeholders' perception and regional viewpoints about the expected impacts of and preparations for the fixed link, it comes as no surprise that they are quite similar. Stakeholders who have a very clear perception – either positive or negative - are strongly involved in or responsible for several of the publications. It is difficult to find truly neural analyses. Regionals authorities and business support organizations tend to be the most active, while private stakeholders (i.e. terminal operators, freight forwarder, rail operators), who do not have a strong opinion on the tunnel, are less likely to actively prepare for it by conducting or publishing studies. That is also a reason why it is not easy to generalize conclusions concerning their logistic decisions as a consequence of building the FBFL. The transport industry seem to plan max. 5 years ahead. The development and adaptation of the business segments may take longer due to changing conditions. Current business plans will rather be modified once the tunnel is actually open and transport cost and other variables are calculable. In this respect, the tunnel would have negative effects on the business activities of companies outside the regions expected to profit from the FBFL.

The relatively low level of replies from the surveys and personal exchange with stakeholders suggests that more stakeholder involvement and dissemination is required until the actual opening of the FBFL. In particular small- and medium-sized companies have to be included in the activities of for example cluster and business support organizations. Actual implementation of recommendations has to be initiated by the stakeholders themselves, though. Support measures (e.g. EU regional funding programs) are available if needed.

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Lohse, Sandrina; Homann, Per: The perception of the Fehmarnbelt connection among German stakeholders. Roskilde University, Department of Environmental, Social and Spatial Change (ENSPAC) July 2010. URL: http://rudar.ruc.dk/bitstream/1800/6654/1/Femern_Rapport.pdf, last accessed 04.06.2018, p 17ff.

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TENTAcle Fehmarnbelt Pilot Case, Activity 2.1.2

Overview of Key Studies and Publications on the Fehmarnbelt Fixed Link - Focus on transport and logistics impacts on the regional development

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
1	Fehmarn Belt Forecast 2002, Final Report	N/A - FTC	FTC for Trafikministeriet Köbenhavn and Bundesministerium für Verkehr, Bau- und Wohnungswesen, Berlin	April 2003	Copenhagen, Denmark and Berlin, Germany	This report summarises the results of the traffic demand forecasts for the Fehmarnbelt fixed link that were performed in 2002. The forecasts are an update of the traffic forecasts that were documented by the FTC in a report to the national transport ministries in Germany and Denmark in 1999.	http://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/2003/fehmarn-belt-forecast-2002-final-report-april-2003.pdf?__blob=publicationFile	27.04.2017	Basis FTC study for Intraplan/BVU Update Study from 2014
2	Verkehrsprognose für eine Feste Fehmarnbeltquerung 2014 - Aktualisierung der FTC-Studie von 2002	Intraplan/BVU	Intraplan/BVU for Femern A/S	2016	München and Freiburg, Germany	Update on the traffic forecast for the Fehmarnbelt of the FTC prognosis of 2002. Due to substantial changes in the transport and economic data, the transport policy and further basic conditions and due to the delay in the Fehmarnbelt project it is reasonable to update the prognosis.	http://pfv.femern.de/media/1255/anlage_26_03_00_a_deckblatt_b.pdf	27.04.2017	German version of the Intraplan/BVU traffic forecast of 2014.
3	Verkehrsprognose für eine Feste Fehmarnbeltquerung 2014 - Aktualisierung der FTC-Studie von 2002 - Anhang	Intraplan/BVU	Intraplan/BVU for Femern A/S	2016	München and Freiburg, Germany	Appendices of the Intraplan/BVU traffic forecast study from 2014.	https://planfeststellung.bob-sh.de/file/42d99a9f-41e4-11e6-8503-0050568a354d	27.04.2017	
4	Stellungnahme zur aktuellen Verkehrsprognose für eine feste Querung über den Fehmarnbelt	DIW Econ GmbH	DIW Econ GmbH for Scandlines A/S	January 2015	Berlin, Germany	Statement on the different results of the traffic forecast 2014 from Intraplan/BVU. Providing internal traffic statistics of Scandlines A/S.	https://diw-econ.de/wp-content/uploads/2015/01/DIW-Econ_Kurz-Expertise_Fehmarnbelt_v.2.03.pdf	22.06.2016	Available only in German.
5	Addendum to the "Fehmarnbelt Forecast 2014 - update of the FTS-Study of 2002", referring to additional data and statements provided by Scandlines in January 2015	Intraplan/BVU	Intraplan/BVU	February 2015	N/A	This addendum to the Intraplan/BVU traffic forecast from 2014 takes into account the critic and new data provided by Scandlines in its statement and give feedback on them.	http://femern.com/en/Documentation	22.06.2016	The referred study is listed at femern.com as "Traffic forecast for the Fehmarnbelt Fixed Link", No. 8
6	Traffic forecast for the Fehmarnbelt Fixed Link	Femern A/S	Femern A/S	November 2014	Copenhagen, Denmark	The report summarises the various forecasts and analyses of traffic trends prepared by consultants in connection with the Fehmarnbelt Fixed Link.	http://femern.com/en/Documentation	22.06.2016	Translation from the original Danish study. For information use only.
7	Gutachterliche Stellungnahme zu den aktuellen Verkehrsprognosen und Kostenkalkulationen der geplanten Festen Fehmarnbelt-Querung - Aktualisierte Fassung	Vieregg-Rössler GmbH	Vieregg-Rössler GmbH for NABU Naturschutz Deutschland e.V.	March 2009	Berlin, Germany	Expertise of the total costs for constructing the fixed link considering differenct price levels All analysis based on a construction of a fixed link as a bridge to be opened in 2018.	https://www.nabu.de/imperia/md/content/nabude/verkehr/ffbq_bericht120309.pdf	20.12.2016	Expertise available only in German

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
8	Results of the TENConnect2 projects - Traffic forecast for the Fehmarnbelt corridor	N/A	Tetraplan A/S	November 2012	Copenhagen, Denmark	The memorandum describes the traffic calculations that have been performed in the TENConnect2 project with a focus on road transport in the Fehmarnbelt corridor. Starting point of the project was the TEN-T network, analysing existing traffic flows, establishing traffic forecasts through to the year 2030 and dsignating major transnational corridors. The TRANS-TOOLS model was further developed and used (developed as part of the EU's 6th Framework Programme). This memorandum describes the TRANS-TOOL model and its strenghts and weaknesses and reviews the results.	http://femern.com/en/Documentation	22.06.2016	Translation from the original Danish study. For information use only.
9	Finanzanalyse, Verkehrsprognose und Analyse der Nutzungsgebühren der Bahn - Kurzbericht	Dänisches Verkehrsministerium und Deutsches Bundesministerium für Verkehr, Bau- und Wohnungswesen	Dänisches Verkehrsministerium und Deutsches Bundesministerium für Verkehr, Bau- und Wohnungswesen	March 2003	Copenhagen, Denmark and Berlin, Germany	The conducted enquiry of commercial interest (see No. 36) detected that the fixed link could only be realised with public support like subsidies or government guarantee due to financial risks. The transport ministers hence agreed on conducting a new study to survey some of the main questions like commercial risks, transport volume and income of the rail and road traffic. This report presents the results of this study. Included are - results of the financial analysis on the basis of updated assumptions of transport volume, user charge and payments of the railway companies by using the fixed link; - results of the updated transport prognosis 2002 - current discussions about the needed rail transport capacity between Germany and Denmark - results of a study conducting the possible user costs for railway companies for using the corridor Hamburg-Öresund.	https://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/2003/kurzbericht-feste-fehmarnbeltquerung.pdf?__blob=publicationFile	28.03.2017	
10	Kritische Wertung der Kosten-Nutzen-Berechnungen zur festen Fehmarnbelt-Querung	Karl-Heinz Breitzmann, Jürgen Lüsch	in: Beiträge und Informationen aus dem Ostseeinstitut, Heft 20, 2007; Ostseeinstitut für Marketing, Verkehr und Tourismus an der Universität Rostock	2007	Rostock, Germany	Differentiated analysis of costs and benefits of the Fehmarnbelt fixed link of 1999; main thesis: Benefits rated too high in the former analysis, which leads to a cost-benefit-factor of less than 1	http://www.fehmarnbelt-dialogforum.de/sites/default/files/media/workshop%2018.06.13_Pr%C3%A4sentation-Prof.Breitzmann.pdf	04.08.2016	A presentation with the main thesis of the study can be found under the given link, the whole publication is not available free of charges
11	Cost-benefit analysis of the Fehmarn Belt Fixed Link	Thomas Odgaard, Kristian Kolstrup	The Danish Ministry of Transport	January 2015	Holte, Denmark	The tunnel under the Fehmarn Belt will reduce travelling time between eastern Denmark and the rest of Europe to the south. Major upgrades of the railways will also provide benefits for travellers who are not crossing the border. The link will reduce the environmental and climate impacts of transport. Over 50 years, taking into account all costs and benefits in all affected countries, the Fehmarn Belt Fixed Link will return a user-funded net benefit of BDKK 26. Taking into account all benefits and costs for Denmark alone, the link and the associated onshore facilities in Denmark will generate a net social benefit of BDKK 28 over 50 years.	http://www.trm.dk/en/publications/2015/cost-benefit-analysis-of-the-fehmarn-belt-fixed-link	15.04.2016	
12	Financial analysis of the Fehmarnbelt Fixed Link including Danish landworks	Femern A/S	Femern A/S	February 2016	Copenhagen, Denmark	Updated financial analysis after the prolonged building planning time of 8.5 years instead of the former planned 8.5 years.	http://femern.com/en/Documentation	22.06.2016	Unofficial translation fo the Danish version "Finansiel analyse af Femern Baelt-forbindelsen inkl. danske landanlaeg"

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
13	Construction and Operation of the Fehmarn Belt Immersed Tunnel is a High-Risk Business Case	Hans Schjaer-Jacobsen	in: "Journal of Financial Risk Management", No. 6, p. 1-15	February 2017	N/A	The Fehmarn Belt immersed tunnel project is supposed to be built and commercially operated by a Danish state owned company and financed by loans guaranteed by the Danish government. The loans are going to be amortized by incomes from the tunnel users. According to plans construction work was supposed to start by 2016 followed by tunnel inauguration in 2022, this has been put on hold awaiting clarification of major uncertainty issues. Since the official financial model is publicly unavailable, the uncertainty profiles presented in this paper are based on a financial model developed by the author covering 60 years of future tunnel operation and validated in terms of project payback period (PBP) compared to published results generated by the official model. Uncertainty is represented and calculated by probabilistic uncertainty representation and Monte Carlo simulation as well as interval analysis. The resulting project uncertainty profiles are presented in terms of a traffic light metaphor: Green light corresponds to a payback period less than 40 years, yellow to 40-50 years, and red to larger than 50 years. It turns out that the tunnel project constitutes a high-risk business case and the likelihood of financial project failure in terms of the payback period being outside of the green light zone is substantially larger than acknowledged by the project proponents and presented to the public. This is primarily due to apparently too optimistic base case assumptions of critical, but uncertain, project variables and methodologically insufficient partial sensitivity analyses.	http://www.scirp.org/journal/PaperInformation.aspx?PaperID=74097	27.04.2017	
14	Scandinavian-Mediterranean Core Network Corridor Study - Final Report	European Commission	European Commission	December 2014	Brussels, Belgium	First corridor study as basis for the work plans.	http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies_en.htm	07.07.2016	
15	Transport infrastructure in the Jutland Corridor - The Danish-German Transport Commission	The Danish Ministry of Transport and Building in cooperation with The Ministry of Economic Affairs, Employment, Transport and Technology in Schleswig-Holstein	The Danish Ministry of Transport and Building	November 2015	Copenhagen, Denmark	Commission analysis of the infrastructure of the Jutland corridor, including a description of infrastructure of all modes (incl. ports), analysis of the traffic development, presentation of current projects on roads and railways, presentation of further transport and infrastructure projects incl. electromobility (construction and operational projects) as recommendations of the commission, overview of the recommendations. Proposals from stakeholders are included in the recommendations. Report does not consider the Fehmarnbelt Fixed Link or the ferry services from Gedser to Rostock and Rodby to Puttgarden.	http://www.trm.dk/en/publications/2015/transport-infrastructure-in-the-jutland-corridor	05.07.2016	

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
16	BeltLogistics: Logistical infrastructure and industrial areas	Marianne Jakobsen, Lars Wewstädt, Interreg	INTERREG IV A Project "BeltLogistics"	2015	N/A	Paper gives an overview of types of logistical infrastructure to be found in the Fehmarn Belt Region (Zealand, Lübeck, Ostholstein and Plön) along with industrial areas. Purpose is to discover potential areas for development of infrastructure with the upcoming fixed link. Basis for strategic measures for companies, infrastructure owners etc. for opportunities for positioning possibilites.	http://www.logregio.de/file/logisticalinfrastructureandindustrialareas_stand01062015_finalversion.pdf	29.09.2016	
17	Zukunftsperspektiven für den Fährverkehr über den Fehmarnbelt	Gernot Tesch	In "Internationales Verkehrswesen : Fachzeitschrift für Wissenschaft und Praxis ; offizielles Organ der Deutschen Verkehrswissenschaftlichen Gesellschaft (DVWG)"; Hrsg.: DVV Media Group; Jg. 4, Heft 5, 2013, S.: 40-43	2013	Hamburg, Germany	According th the Danish state-owned company Femern A/S, 2021 a 17.6 km long immersed tunnel through the Fehmarnbelt consisting of a two-track electrified railway line and a four-lane highway will replace the exiting ferry line between the Puttgarden and Rödby. Ferry operator Scandlines argues against the implementation of the project and has developed a strategy for an emission-free ferry service.	online not available		Article available in German only. Available at ISL library.
18	The Fehmarn Belt Duopoly - Can the Ferry Compete with a Tunnel?	Rafael Aigner	in: DIW Discussion Papers, No. 1539; Deutsches Institut für Wirtschaftsforsschung (DIW)	January 2016	Berlin, Germany	The Fehmarn Belt is a strait between Denmark and Germany, currently served by a ferry. This note analyses the theory of competition between the ferry and a planned tunnel, the Fehmarn Belt Fixed Link. The model is an asymmetric duopoly and addresses two questions: 1. Will the tunnel induce the ferry to exit the market, once it operates? 2. Will the tunnel's toll revenue suffice to cover its cost? To complement the theoretical analysis, the note provides results of a numerical application.	https://www.diw.de/documents/publikationen/73/diw_01.c.523733.de/dp1539.pdf	20.12.2016	
19	ABS/NBS Hamburg - Lübeck - Puttgarden (Hinterlandanbindung FBQ)_Projektinformationssystem (PRINS) zum Entwurf des Bundesverkehrswegeplans 2030	Bundesministerium für Verkehr und Infrastruktur	Bundesministerium für Verkehr und Infrastruktur	2016	Berlin, Germany	Project information data of the hinterland connection of the Fehmarnbelt fixed link in Germany (railway connection from Hamburg to Puttgarden)	http://www.bvwp-projekte.de/schiene/2-011-V01/2-011-V01.html	20.12.2016	No publication but online information
20	Schienenanbindung der Festen Fehmarnbeltquerung	DB Netz AG	DB Netz AG	May 2016	Hamburg, Germany	General information about the project and the background of the rail line of the Fehmarnbelt fixed link in Germany.	https://www.anbindung-fbq.de/de/infobroschueren.html?file=files/...FBQ...pdf	23.09.2016	German version, English version also available.
21	Importance of Fehmarn Belt Fixed Link for Rail Freight Services on the Scandinavia-Germany corridor	HTC Hanseatic Transport Consultancy	HTC for Naturschutzbund (NABU) - Landesverband Hamburg e.V.	March 2016	Hamburg, Germany	The study observes the development of rail based transport flows between Germany and Scandinavia. Additionally, it provides a comparison of the future routing alternatives for railway transportation, Jutland Route and Fehmarn Belt Fixed Link, thereby considering commercial and operational parameters. Incl.: Development of railway markets in Denmark, Sweden, Germany and rail traffic forecasts, analysis of road transport	https://www.nabu.de/imperia/md/content/nabude/verkehr/160317-nabu-gutachten-htc-en.pdf	22.06.2016	Critical view on the construction of the fixed link in regards of less infrastructure involvement on the Jutland route which also would be necessary.

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
22	Ergebnisse der Überprüfung der Bedarfspläne für die Bundesschienenwege und die Bundesfernstraßen	Bundesministerium für Verkehr, Bau und Stadtentwicklung	Bundesministerium für Verkehr, Bau und Stadtentwicklung	November 2010	Berlin, Germany	Results of a survey of plans of necesity for rail and road infrastructure in Germany conducted by the Federal Ministry for Transport.	https://www.eisenbahn-kurier.de/images/stories/aktuell-heft-bilder/hefte-ek/2011-01/bedarfsplan-de2.pdf	27.04.2017	
23	Economy-wide benefits – Technical report Dynamic and Strategic Effects of a Fehmarn Belt Fixed Link	Copenhagen Economics Aps and Prognos AG	Report prepared for the Ministry of Transport and Energy, Denmark and the Federal Ministry of Transport, Building and Urban Affairs, Germany	June 2004	Copenhagen, Denmark	Technical report looking on the current situation and outlook for the region regarding employment, economic and structural situation and trade as well as on the quantification of transport cost reductions and regional distribution.	https://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/economy-wide-benefits-technical-report-june-2004.pdf?__blob=publicationFile	05.01.2017	
24	Regional Effects of a Fixed Fehmarn Belt Link	Copenhagen Economics Aps and Prognos AG	Report prepared for the Ministry of Transport and Energy, Denmark and the Federal Ministry of Transport, Building and Urban Affairs, Germany	February 2006	Copenhagen, Denmark	The purpose of this study is to examine the dynamic and strategic effects of a fixed link across Fehmarn Belt for Storstrøms Amt and Kreis Ostholstein. Of particular interest are the effects that the fixed link will have on the localisation of companies, employment, the tourist industry as well as the cross border cooperation between companies. We analyse the regional conditions for the two regions and identify how a fixed link can affect the economies in each of the regions. We point out policy areas that need attention in order to make the regions ready for the opportunities that a fixed link can offer. Thus, the study is directed at the regions so that they can start a common strategy process.	http://www.bmvi.de/SharedDocs/DE/Anlage/VerkehrUndMobilitaet/Schiene/regional-effects-of-a-fixed-fehmarn-belt-link-february-2006.pdf?__blob=publicationFile	20.12.2016	
25	The Fehmarn Belt fixed link and effects on logistic strategies and industrial development zones	TransBaltic	TransBaltic	June 2012	Malmö, Sweden	Objective of the report was to explore how the Fehmarnbelt fixed link might affect companies' logistics solutions and thereby increase the knowledge base for policy formulations.	http://www.transbaltic.eu/wp-content/uploads/2012/06/The-Fehmarn-Belt-fixed-link-and-effects-on-logistic-strategies-and-industrial-development-zones.pdf	15.06.2016	
26	The effects of the fixed links - case studies from the Great Belt and Oresund	Britt Andresen, Andresen Analyse	Andresen Analyse	May 2013	N/A	The paper looks at practical examples of how the fixed links across the Great Belt and Oresund have created growth and jobs from a larger regional and national perspective.	http://femern.com/en/Documentation	22.06.2016	
27	Wirtschaftliche Chancen und Risiken der festen Querung über den Fehmarnbelt einschließlich Arbeitsplatzeffekte	Rüdiger Schacht	IHK Lübeck	November 2013	N/A	PowerPoint presentation during the Dialogue/Forum about the Fehmarnbelt fixed link in Oldenburg i.H. on 21 November 2013. Short explanation about expected chances and challenges for the region in Eastern Holstein of the fixed link, including the chanced/challenges for the labour market, for tourism and business development	http://www.fehmarnbelt-dialogforum.de/sites/default/files/media/Schacht%20FBQ%20Chancen%20und%20Risiken.pdf	07.07.2016	PowerPoint Presentation slides, no official study. German, only.
28	Feste Fehmarnbeltquerung: Regionale Entwicklungsperspektiven	Christian Wichmann Matthiessen et.al., c	Femern A/S	2011	Copenhagen, Denmark	The change to infastructure and accessibility generated by the Fehmarnbelt fixed link has the potential for creating a new economic, cultural and social development in the regions and countries surrounding the link. The future benefits are considerable. The book is the conclusion from a new scientific study of the regional effects of the fixed link.	online not available		

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
29	The Fehmarnbelt Tunnel: Regional Development Perspectives	Peter Lundhus and Christian Wichmann Matthiessen	in: Terra et Aqua, Number 123, June 2011; IADC (International Association of Dredging Companies)	June 2011	Den Hague, The Netherlands	General report about the Fehmarnbelt Fixed Link and ist impacts with short explanation of the Oresund and Great Belt connections, state of the art of the implementation of the fixed link, technical challenges, financial factors, short inputs about different regional development aspects, such as property prices, logistic change, urban system, commuting/labour market, economy clusters.	http://www.iadc-dredging.com/ul/cms/terraetaqua/document/2/9/6/296/296/1/terra-et-aqua-123-complete.pdf	07.07.2016	
30	The Fehmarnbelt link will be a growth dynamo for the Baltic Sea Region	Christian Wichmann Matthiessen, prepared at the request of Femern A/S	Femern A/S	April 2015	Copenhagen, Denmark	Update on the study "The Fehmarnbelt Fixed Link - Regional Development Perspectives	http://femern.com/en/Documentation http://www.ingo-gaedechens.de/uploads/media/2015_06_25_Matthiessen_Studie_zur_Wirtschaftlichkeit_des_Tunnels_PRO.pdf	22.06.2016	Study/report "The Fehmarnbelt Fixed Link - Regional Development Perspectives" available in English/German/Danish, book, Links for the English and German translation of the Danish original of the Update Paper.
31	Regionales Entwicklungskonzept in Folge einer festen Fehmarnbelt-Querung	N/A	Regionomica und Georg & Ottenströer mit Förderung von Geldern des EU-Zukunftsprogramm Wirtschaft	August 2010	Hamburg/Berlin, Germany	Regional development concept to answer questions how the chances of the infrastructural project of the Fehmarnbelt fixed link can be used optimally by the region in between Fehmarn and Hamburg and how the risks can be minimised. Topics of the regional development concept are tourismus, economics and industrial real estates, transport as well as politics and cooperation - culture and encounter.	http://www.fehmarnbeltachse.de/wp-content/uploads/REK_A1_2010.pdf	28.03.2017	Available only in German.
32	The Green STRING Corridor- from speed and transit to accessibility and regional development	Green STRING Corridor	Green STRING Corridor	September 2014	N/A	The report shows opportunities for establishing a green transport corridor through the Oresund Region to Hamburg for international freight transport. The following topics are highlighted: Development of a green transport corridor, development of transport and logistics in the STRING region and improved accessibilitiy and mobility. Results are i.e.: Need of double track high speed railway systems, coordination of the STRING region transport ministers needed, infrastructure for fossil free fuels needed for road transportation, Coordination of the transport clusters is needed, further fostering of railway transport needed, regional developments should include the industry's opportunities to promote mobility and accessibility, regional business and infrastructure planning should have a strategic focus on good transports, foster political attention.	http://stringcorridor.org/media/102050/greenstring_final_web.pdf	22.06.2016	
33	Final Report BSR TransGovernance project - Applying multi-level governance in transport planning and management in the Baltic Sea Region	BSR TransGovernance Project	BSR TransGovernance Project	N/A	N/A	Report about applying multi-level governance in transport planning and management in the Baltic Sea Region. Including: - example of stimulation of commercial development of a multimodal freight corridor - example of enhancing sustainable regional growth along the TEN-T Core Network Corridors - ensurance that intermodal terminals are strategically located in the transport network - examples regarding cross-border integration areas, macroregional cooperation.	http://www.transgovernance.eu/media/436426/ok_final_report_bsr_transgov_141023.pdf	05.07.2016	

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
34	Dynamics of Employment Clusters in the Fehmarn Region	Jean P. Endres, Per Homann Jespersen, Marianne Jakobsen, Lars Wewstädt	Roskilde University, INTERREG IV A Project "BeltLogistics"	2014	Roskilde, Denmark	The study analyses compared employment data from 2005 and 2011 in a geographical area "Fehmarn Belt Region" formed of City of Lübeck, County of Ostholstein and Zealand Regions. Special attention was given to logistics related activities due to expected challenges in the near future brought by FBFL. Results: Logistical activities had a decrease in employment of more than 5%. Fehmarnbelt fixed link is expected to support logistics activities in the region but more competition from Danish side also is expected. Industries located in the Fehmarnbelt region might benefit from their location between Hamburg and Copenhagen.	http://www.logregio.de/file/employment_analysis_03_06_2014_1.pdf	29.09.2016	
35	Soft Spaces across the Fehmarn Belt: Cross-border Regionalism in Practice	Philip Allmendinger	In: "Soft spaces in Europe: Re-negotiating governance, boundaries and borders"; Hrsg.: Routledge; S. 151-173	2015	London, Great Britain	The past thirty years have seen a proliferation of new forms of territorial governance that have come to co-exist with, and complement, formal territorial spaces of government. These governance experiments have resulted in the creation of soft spaces, new geographies with blurred boundaries that eschew existing political-territorial boundaries of elected tiers of government. The emergence of new, non-statutory or informal spaces can be found at multiple levels across Europe, in a variety of circumstances, and with diverse aims and rationales. This book moves beyond theory to examine the practice of soft spaces. It employs an empirical approach to better understand the various practices and rationalities of soft spaces and how they manifest themselves in different planning contexts. By looking at the effects of new forms of spatial governance and the role of spatial planning in North-western Europe, this book analyses discursive changes in planning policies in selected metropolitan areas and cross-border regions. The result is an exploration of how these processes influence the emergence of soft spaces, governance arrangements and the role of statutory planning in different contexts.This book provides a deeper understanding of space and place, territorial governance and network governance.	online not available		Article available in German only.
36	Wirtschaftsraum A1 - Regionale Wachstumsachse Hamburg-Fehmarnbelt	Dr. Julia Körner und Dr. Sabine Hackenjos	Handelskammer Hamburg und IHK zu Lübeck	February 2011	Hamburg/Lübeck, Germany	The paper shall give recommendations for a development of the region along the German motorway A1 which connects Hamburg and Lübeck and the North Sea and Baltic Sea. The recommendations are also examples for regional cooperation.	https://www.hk24.de/blob/hhihk24/produktmarken/interessenvertretung/downloads/1145332/e632d53d2a45b2b9c978ef352549c94b/Positionspapier_Wirtschaftsraum_A1-data.pdf	28.03.2017	Available only in German.
37	Landesentwicklungsplan Schleswig-Holstein 2010	Innenministerium des Landes Schleswig-Holstein	Innenministerium des Landes Schleswig-Holstein	October 2010	Kiel, Germany	Development plan of the federas state of Schleswig-Holstein from the year 2010. The development plan is basis fro the spatial development of the federal state up to the year 2025. It is oriented along models and strategies decided by the Conference of Ministers for Spatial Planning.	http://www.schleswig-holstein.de/DE/Fachinhalte/L/landesplanung_raumordnung/Downloads/landesentwicklungsplan/landesentwicklungsplan_sh_2010.pdf?__blob=publicationFile	27.04.2017	

No.	Title	Author	Publisher	Year / Date	Place of publication	Content Summary	Website Link	Date of Internet access	Comments
38	Hafenentwicklungskonzept Schleswig-Holstein - Schlussbericht	Jobst Schlennstedt, Thomas Brauner, Dr. Oliver Boldt	UNICONSULT Universal Transport Consulting GmbH im Auftrag von Gesamtverband Schleswig-Holsteinischer Häfen e.V. und Ministerium für Wirtschaft, Arbeit, Verkehr und Technologie des Landes Schleswig-Holstein	July 2013	Hamburg, Germany	Joint port development concept for the ports in the German federal stadt Schleswig-Holstein. The concept focusses on current developments as ECAs, the Fehmarnbelt Fixed Link, TEN-T development, Port Packages III, more ULCV etc. Objectives were to analyse how to use the strenghts of the ports, which new buinsess segments and added value potentials could be activated, how could the positioning of Schleswig-Holstein as seaport region be strengthened. Included: Description of infrastructure, trends in relevant market segments (different commodities), challenges for the ports, comparison of productivity of Northern German port systems, development potentials for the ports.	http://www.schleswig-holstein.de/DE/Fachinhalte/S/schifffahrt_haefen/Downloads/hafenentwicklungskonzept.pdf?__blob=publicationFile&v=1	05.07.2016	Available only in German.
39	Harbour Development Plan 2030	Michael Siemensen	Hansestadt Lübeck; Lübeck Port Authority	January 2015	Lübeck, Germany	Presentation about the Harbour Development Plan 2030 of the Lübeck Port. Background: Reasons, relevant issues for port planning, overview of cargo turnover development in German Baltic Ports, main concept and structure	http://www.logregio.de/file/150119sie_praesentationhep2030_engl.pdf	29.09.2016	Presentations with background information about the Lübeck situation, no official publication.
40	Die wirtschaftliche Bedeutung des Lübecker Hafens - Regionalökonomische Verflechtung und Wertschöpfungskette für Stadt und Region. Abschlussbericht	Jobst Schlennstedt, Björn Pistol, Jens Benecke	UNICONSULT Universal Transport Consulting GmbH	October 2012	Hamburg, Germany	Objective of the study was to define the importance of the Port of Lübeck for the City of Lübeck and the region and in what sense the port industry is intertwined with the regions industries. The different terminals of the Lübeck Port are described and developments of the port analysed as well as regional economic characteristics. Measures for developing a port strategy up to the year 2020 are named.	https://www.ihk-schleswig-holstein.de/blob/swhihk24/standortpolitik/verkehrsinfrastruktur/wasserstrassen/1369350/5c1c94e0ba1960798af00675c12b98dc/Abschlussbericht-Luebeck-Hafenstudie-Oktober_2012-data.pdf	05.07.2016	German study
41	Die hafenverbundene Industrie in Mecklenburg-Vorpommern und ihre Bedeutung für die Logistik	Karl-Heinz Breitzmann	Ostseeinstitut für Marketing, Verkehr und Tourismus an der Universität Rostock	June 2011	Rostock, Germany	Presentation about the important port industries in the federal state of Mecklenburg-Vorpommern, its challenges and chances and impact for logistics industries	http://www.log-in-mv.net/uploads/media/7_Prof._Dr._Breitzmann.pdf	06.03.2017	Presentation for economical background of Mecklenburg-Vorpommern ports, no official publication.
42	Die "Feste Fehmarnbelt-Querung" : die schnelle Verbindung nach Nordeuropa	Albrecht Hinzen	In: "Eisenbahntechnische Rundschau", Hrsg.: DVV Media Group, Eurailpress; Jg. 58, Nr. 7/8 (2009), S. 374-382	2009	Hamburg, Germany	In this report the author elucidates the background, the arguments and the studies performed to date, concentrating on the railway aspect.	online not available		Article available in German only.
43	Markterkundungsverfahren zur Festen Querung des Fehmarnbelt	Kritzinger, Stephan	In: "Internationales Verkehrswesen : Fachzeitschrift für Wissenschaft und Praxis"; offizielles Organ der Deutschen Verkehrswissenschaftlichen Gesellschaft (DVWG) Hamburg; Hrsg.: DVV Media Group; 55. Jg, Heft 5, Mai 2003, S.: 192-199	May 2003	Hamburg, Germany	Before initiating the process of tendering for the fixed link, the German and Danish Ministries of Transport launched an enquiry of commercial interest with the aim of giving the private sector the possibility to express its views on the business opportunities in connection with the project. The enquiry of commercial interest revealed a clear, positive interest from the private sector in participating in the design, financing, construction and operation of the fixed link but a risk remains the uncertain level of revenue to be gained. On basis of the enquiry of commercial interest process, five models were developed which show the financial and organisational requirements for an implementation of the fixed link with a private involvement. This report describes the models and the future procedure.	online not available		Article available in German only.

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44	The perception of the Fehmarnbelt connection among German stakeholders	Sandrina Lohse, Per Homann Jespersen	Roskilde University, Departmen of Environmental, Social and Spatial Change (ENSPAC)	July 2010	Roskilde, Denmark	The study includes: - issues mentioned in the treaty about the German hinterland connection, - enumeration of the institutions that are involved in the Fehmarnbelt discussion in Germany, - analyses and perceptions for upgrading the Hinterland connection in Germany: current strategies and planning process (road and railway connection) - current discussions in Germany bottlenecks/infrastructure problems after 2018, - stakeholder positions.	http://rudar.ruc.dk/bitstream/1800/6654/1/Femern_Rapport.pdf	21.06.2016	
45	A modern transport system between Öresund Region and Hamburg	STRING	STRING	September 2012	Soro, Denmark	A brief description of freight transport development and passenger transport development. The status of two studies: “High Speed Networks in Northern Europe” and “Bottlenecks in the European infrastructure”. STRING recommendations and scenarios of 3 different improvements of the basic infrastructure on land that is planned in Denmark and Germany as a consequence of the construction of the Femern belt Link.	http://www.stringnetwork.se/media/32979/string_infrastructure_270912.pdf	07.07.2016	
46	Feste Fehmarnbeltquerung nimmt Gestalt an	Stehen Lykke	in: "Internationales Verkehrswesen", 65. Jg., Heft 2, Juni 2013, S. 40-42	June 2013	Munich, Germany	General background about the Fehmarnbelt fixed link, the planned tunnel layout, costs, finances, Perspectives and aims.	online not available		Article available in German only.
47	Der Fehmarnbelttunnel : ein grenzüberschreitendes Schienen- und Straßenprojekt	Johnny Restrup-Sørensen	In: "Eisenbahntechnische Rundschau", Hrsg.: DVV Media Group, Eurailpress; Jg. 63, Nr. 7/8 (2014), S. 50-55	2014	Hamburg, Germany	Background information on the tunnel - the largest immersed tunnel for ocmbined road and rail traffic. The author describes particular challenges for the railway operation in the a cross-border rail project and in regards to interoperability and safety.	online not available		Article available in German only.
48	Megatunnel bringt neue Impulse für den Norden: Fehmarnbeltquerung	Anja Zarse	in: "Hamburger Wirtschaft", Bd. 69, 2014, Nr. 6, S. 42-43, Handelskammer Hamburg	2014	Hamburg, Germany	Germany and Denmark will be closer because of the Fehmarnbelt fixed link. The mega tunnel will boost Hamburg as logistics hub. Procurement started which might be interesting for medium sized enterprises.	http://www.hamburger-wirtschaft.de/pdf/062014/index.html#/1/	27.03.2017	Article available in German only.
49	Neue Wege der Kooperation - Schleswig-Holstein und Hamburg in einer gemeinsamen Wirtschaftsregion	Klaus Schrader, Claus-Friedrich Laaser, Rüdiger Soltwedel u.a.	in: "Kieler Beiträge zur Wirtschaftspolitik" Nr. 1, Institut für Weltwirtschaft Kiel	2008	Kiel, Germany	Seeing the chances and challenges of globalisation this report analyses how Schleswig-Holstein can be strengthened by building a joint economic region of Hamburg and Schleswig-Holstein. Analysis of economic structures, trade relations, development of infrastcture, cluster politics, potentials of a cooperation in the Danish-German border region.	https://www.ifw-kiel.de/pub/wipo/volumes/wipo01.pdf	28.03.2017	Available only in German.

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50	Opportunities for Business Cooperation in the Fehmarn Belt Region	Jesper Samson, Morten Heegaard Christensen, Per Homann Jespersen	Roskilde University, Dept. Of Environmental, Social and Spatial Change (ENSPAC)	2011	Roskilde, Denmark	When identifying potential for trans-national cooperation the focus is on value chains, as it is concluded that the Fehmarnbelt Region has little short term-potential for cluster building in the conventional sense. It seems likely that knowledge sharing mainly will take place through more or less formalized relations such as buyer-supplier chains or strategic partnerships, and rather less likely that this knowledge sharing will take place through informal face-to-face contacts in a local milieu. Instead of rejecting the cluster approach entirely, this study argues that the value chain perspective can be used in order to identify cooperation opportunities between the sub-regional clusters. The regional business study in this report identifies the clusters or cluster-like formations in the sub-regions of the entire Fehmarnbelt Region. Three case studies - life sciences, pig slaughtering and biogas for transportation - within the identified strong business areas are examined closer.	http://forskning.ruc.dk/site/files/33063368/Business_Opportunities_in_the_Femern_Belt_Region_1_.pdf	27.03.2017	
51	Cross-border Cooperation of Urban Regions in the Baltic Sea Area	Magdalena Schönweitz	Dissertation eingereicht an der philosophischen Fakultät III der Humboldt Universität zu Berlin	2013	Berlin, Germany	Assuming that the Baltic Sea Region is primarily a region shaped by cities and urban centers, this study examines the emergence and development of cross-border cooperation between metropolitan regions in the Baltic Sea Region. A theoretical toolkit is being developed which is used to alanyse three pilot cases of cross-border cooperation: The Öresund region, the Göteborg-Oslo-Region and the Helsinki-Tallinn region. The similarities and differences of these examples are being compared and factors which promote the development of cross-border cooperation derived.	http://edoc.hu-berlin.de/dissertationen/schoenweitz-magdalena-2014-12-08/PDF/schoenweitz.pdf	05.01.2017	
52	Collaborative Growth. Boosting the Hamburg-Copenhagen-Aarhus Corridors	Carla Binnewies, Luise Brenning, Deik Esser, Jacob Fittkau, Astrid Könönen, Annette Lendal, Peter Andreas Norn, Henrik Seiding	Ramboll Management Consulting	2016	Hamburg, Germany	The German-Danish Corridors connecting Hamburg with Jutland and Greater Copenhagen together with the potential to further expand to Oslo and Stockholm bring many potentials for Denmark and North Germany to develop a stronger competitive edge in the future global competition. Higher growth can be generated by integrating areas as functional regions which needs a more structured approach to existing cross-border collaboration. In this report existing potentials fo rintensified cross-border collaboration in the corridors have been identified. Approaches on how to strengthen the interaction in the corridors have also been developed and five overarching factors were identified. Those are: Liveable cities & regions, Accessibility & mobility, Attracting businesses, Climate and environment	http://fehmarnbeltdays.com/wp-content/uploads/2016/10/CollaborativeGrowth_REPORT.pdf	20.12.2016	Study was conducted by organising three workshops in Hamburg and Denmark and the final study was presented during the Fehmarnbelt Days 2016

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53	Pre-feasibility study of Helsinki-Tallinn fixed link Final report	Harju County Government, City of Helsinki, City of Tallinn	Harju County Government, City of Helsinki, City of Tallinn	February 2015	N/A	In this pre-feasibility study, the preliminary target year for the completion of the fixed link is 2030-2035. Aims of the study were to find out how the fixed link should be integrated to transport networks, to produce rough estimations of the space th elink and traffic solutions it requires for general and county planning, to study if it is possible to develop the link in several stages and to serve several modes of transportation, to observe the financial terms and passenger and cargo flows that would make the project profitable. Approaches and methods: experiences from Oresund Bridge, Fehmarnbelt project and the Channel Tunnel were included, geological analyses as basis for route selections and possibilities for the technical report, scenarios of traffic based on forecasts.	http://www.hel.fi/static/kanslia/Julkaisut/2015/TALSINKIFIX_Final_Report.pdf	05.07.2016	