

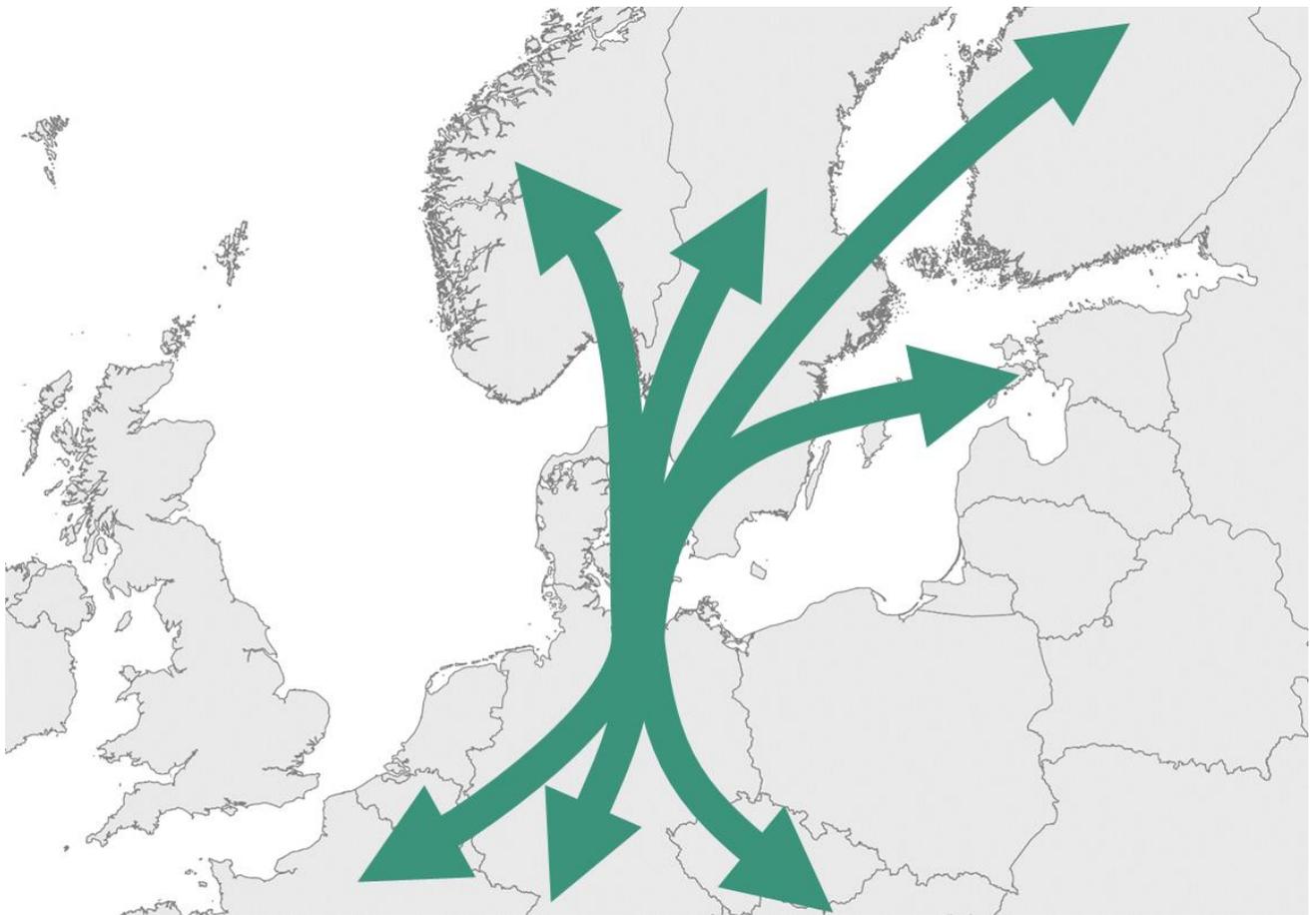


Guidance Paper

“How to use the Fehmarnbelt Fixed Link as impulse for regional growth”

TENTacle, WP2, GoA 2.1, Case Main Output

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Summary

This report has been developed within the framework of TENTacle – a transnational cooperation project co-funded by the Interreg Baltic Sea Region Programme of the flagship status in the EU Strategy of the Baltic Sea Region. It is the final output of the Fehmarnbelt Pilot Case (WP 2.1) which consists of representatives from Guldborgsund Municipality (DK), Rostock Port (DE), the Institute of Shipping Economics and Logistics (DE) and Port of Hamburg Marketing (DE). Individual reports by each project partner can be found in the download section of the [TENTacle](#) website.

Once completed, the Fehmarnbelt Fixed link (FBFL) will be an important part of the Scandinavian-Mediterranean (Scan-Med) TEN-T core network corridor. It is envisaged that the planned tunnel for road and rail transport reduces the transit time between Rødby on Lolland and Puttgarden on Fehmarn to seven minutes by train and ten minutes by car. As of 2018, the tunnel is expected to be opened in 2028.

The Pilot Case looks at the forecasted effects of the future FBFL 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 affect the patterns how companies position their logistics facilities in northern Germany and Scandinavia. Offering an opportunity for more efficient transport and logistics solutions. This report covers the impact area of the FBFL investment, understood as the territory along the Scan-Med Corridor axes from Copenhagen in the direction of Hamburg and Berlin. It contains a summary of results of the conducted analyses, studies and stakeholder interfacing process within the Pilot Case. It also includes place-based measures addressing the development measures, both in the direct fixed link area and in the more distant parts, which might see negative flow displacement effects (e.g. loss of supply chains and outflow of production and service companies to better accessible locations).

Port of Hamburg Marketing conducted a survey addressed to relevant companies and institutions – public and private – to learn more on anticipated challenges and/or possibilities caused by the FBFL. Target groups of the survey were (cargo) transport and logistics service providers/operators incl. ports, local/regional administrations/authorities, and business support organisations located in the future Fehmarnbelt catchment area of Northern Germany, Eastern Denmark and Southern Sweden. 271 entities were contacted from the three countries and feedback was received only by 28. The survey shows that although each stakeholder is unique in its logistics strategy and that infrastructure measures are part of a large set of parameters influencing logistics choices, some similarities arise, especially within the clusters. It 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 shortly prior to that.

The traffic modelling performed for the TENTacle Fehmarnbelt pilot case by the ISL largely confirms the results of the stakeholder interaction process. Both show that the future price of the tunnel is the decisive variable, particularly for the very cost-sensitive cargo sector. Therefore, the actual amplitude of shifts cannot yet be forecast precisely. However, the route choice calculations show which transport routes will see an increase of traffic and which ones will see a decrease. This helps identifying the changing transport flows in the hinterland and hence the potential impact in

different regions and modes of transport. The most direct and unambiguous change is the shift of existing rail traffic from the Jutland route to the FBFL. Regarding the competition between the new fixed link and the existing ferry services, the studies find that passenger traffic will see much stronger shifts than cargo traffic. Furthermore, those shifts most strongly affect the nearby ferry routes Puttgarden-Rødby and Rostock-Gedser.

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

The following best-practice examples in the Fehmarnbelt region are summarised in this output:

- Three studies on the effects of the FBFL on the Region Rostock and the business of the port for the three defined cargo groups: paper and forest products, agriculture products and products from the steel industry sector
- Accumulated experiences on how to benefit from the FBFL for regional development in Guldborgsund Municipality
- Further examples from: KielRegion as regional planner and business support organisation and stakeholders from the Port of Lübeck as a port authority and terminal operator
- Lessons learned from three past infrastructure projects: Oresund Bridge, Brenner-Base-Tunnel and Amsterdam Schiphol airport

In all of the above examples, stakeholder involvement was started at an early stage of the planning process in order to take the caveats, but also the local knowledge into account. Most of the examples also conclude that the interaction process should go beyond the final approval of the infrastructure construction. If stakeholder involvement is regarded as a bothersome but necessary means to ‘push through’ an infrastructure project, its true potential is not used.

The final chapter covers recommendations for each of the defined stakeholder groups on how to benefit from the future FBFL, regardless of expected traffic gains or losses according to the forecasts.

Content

Summary	2
Content	4
List of figures	5
Abbreviations	6
1. Background and Introduction	7
1.1 TEN-T Scandinavian Mediterranean Corridor and the Fehmarnbelt Fixed Link	7
1.2 Overview of involved stakeholders	10
2. Expected changes for traffic flows and regional effects after the opening of the Fehmarnbelt fixed link	11
2.1 Market Perception	11
2.2 Study results	14
2.3 Comparison.....	18
3. Best-practice examples in the Fehmarnbelt region and experiences from past infrastructure projects	21
3.1 Place-based measures	21
3.1.1 Case Study Rostock.....	21
3.1.2 Case Study Guldborgsund	24
3.1.3 Examples from Kiel and Lübeck.....	28
3.2 Lessons learned from past infrastructure projects	31
3.2.1 Oresund Bridge.....	31
3.2.2 Brenner-Base-Tunnel.....	32
3.2.3 Amsterdam Schiphol airport development	33
4. Recommendations and Action Plan	35
4.1 Future-oriented business opportunities	36
4.2 Recommendations for regional planners	37
4.3 Recommendations for logistics site planners (port planners, hinterland planners).....	38
4.4 Recommendations for political actors	39
References	41

List of figures

Figure 1: TEN-T core network corridors.....	8
Figure 2: Femern portal on Lolland	9
Figure 3: Location of relevant stakeholders	10
Figure 4 – Changes induced by the FBFL (2035 model results).....	15
Figure 5 – Changes induced by the FBFL in Guldborgsund municipality (2035 model results).....	16
Figure 6 – Changes induced by the FBFL in Rostock (2035 model results).....	17
Figure 7 – Changes induced by the FBFL in Hamburg (2035 model results).....	18
Figure 8: Swedish and Finnish export quantities to the hinterland of Southern Baltic ports 2001 - 2014 (purple: sawn timber; green: pulp; red: paper)	21
Figure 9: Location of Business Park Falster at the intersection of two European transport corridors E55 and E47	25
Figure 10: Traffic flows. Number of trucks and volume of train freight today and in 2028 in 2038 ..	26
Figure 11: Identified development opportunities	27
Figure 12: The overall scenario model of the analysis.....	28
Figure 13: HEP Lübeck.....	31
Figure 14: Two-dimensional strategic response matrix	35
Figure 15: The Guldborgsund method for a regional development process for larger infrastructure investments.....	37

List of tables

Table 1: Number of received stakeholder feedback	11
Table 2: Opinion in general regarding the FBFL (Survey results).....	12

Abbreviations

BSR	Baltic Sea Region
BSRP	Baltic Sea Region Programme 2014-2020
CNC	Core Network Corridor
EU	European Union
FBBC	Fehmarnbelt Business Council
FBFL	Fehmarnbelt Fixed Link
ISL	Institute of Shipping Economics and Logistics
LHG	Lübecker Hafen-Gesellschaft GmbH
LPA	Lübeck Port Authority
TEN-T	Trans-European Transport Network

1. Background and Introduction

1.1 TEN-T Scandinavian Mediterranean Corridor and the Fehmarnbelt Fixed Link

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 CNCs are an instrument of EU transport policy, aimed to improve mobility, intermodality and interoperability on major transport axes across Europe by identifying and then removing the most critical 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 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. The corridor stretches from Finland and Sweden in the North, to the island of Malta in the South, covering Denmark, Northern, Central and Southern Germany, the industrial heartlands of Northern Italy and the southern Italian ports.¹ It is composed of "nodal" infrastructure such as airports, seaports and rail-road terminals of the core network. As regards modal and infrastructural interconnection between the Trans-European, regional and local transport networks, "urban nodes" are of specific importance as generators of both passenger and freight traffic. In freight transport, freight villages or "interporti" are often used to consolidate cargoes. Eight out of the "Top 20" European freight villages, including the top four, are located on the Scan-Med corridor.² It is the largest of the corridors in terms of core network length – with more than 9,300 km

¹ European Commission: *Scandinavian-Mediterranean*. URL: https://ec.europa.eu/transport/themes/infrastructure/scandinavian-mediterranean_en.

² Cox, Pat (2016): *Scandinavian Mediterranean. Second Work Plan of the European Coordinator*. Brussels. URL: https://ec.europa.eu/transport/sites/transport/files/2nd_workplan_sm.pdf, p. 4.

of core rail and greater than 6,300 km of core road network – together with 25 core ports, 19 core airports, 45 core intermodal terminals and 19 core urban nodes.³

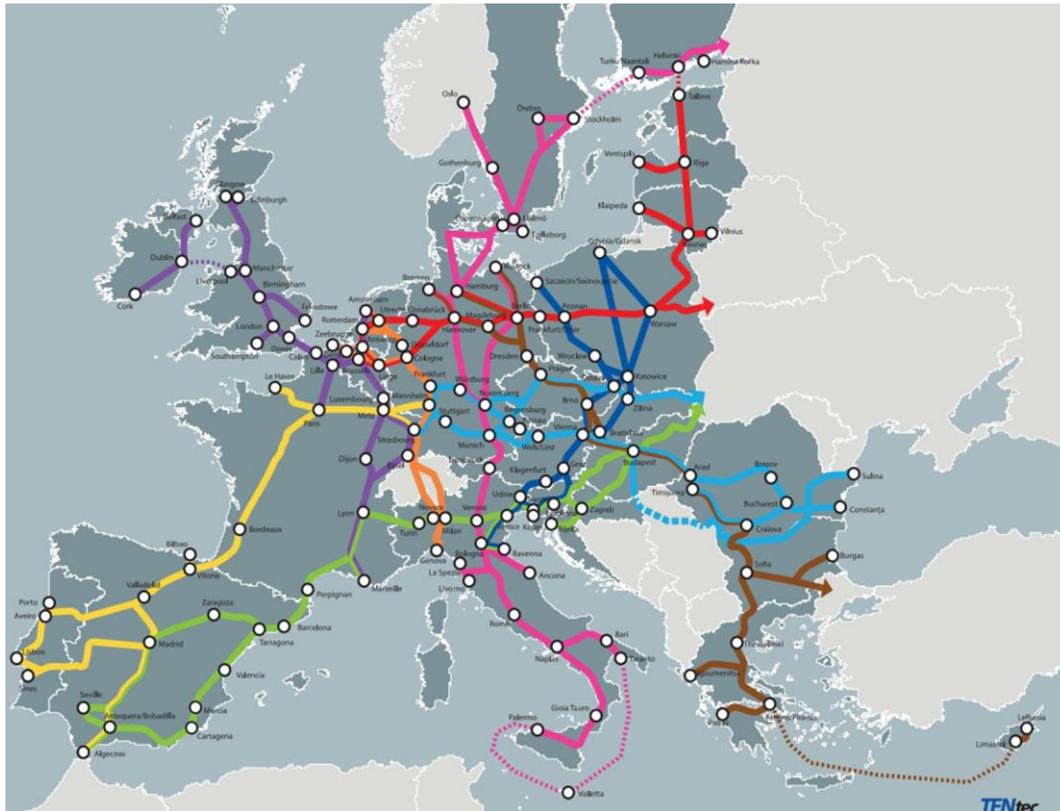


Figure 1: TEN-T core network corridors
Source: European Commission

The most significant projects on the corridor are the Brenner Base Tunnel and the Fehmarnbelt Fixed Link (FBFL), including their access routes. The latter is a key element of the central north-south artery between Scandinavia and Central Europe within the Scan-Med corridor.

The tunnel is going to run east of the ferry ports Puttgarden and Rödbyhavn and will connect the Danish island of Lolland with the German island of Fehmarn.⁴ Its catchment area comprises the Zealand archipelago, Schleswig-Holstein and Hamburg. Parts of Mecklenburg-Vorpommern and, when discussing major cities, Rostock are also included in the Fehmarnbelt region.

³ Ibid., p.6.

⁴ Restrup-Sørensen, Jonny (2014): *Der Fehmarnbelttunnel. Ein grenzüberschreitendes Schienen- und Straßenprojekt*. In: *ETR - Eisenbahntechnische Rundschau*, Vol. 7+8, p. 52.



Figure 2: Femern portal on Lolland
Source: Femern A/S

With a length of 18 kilometres, 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 country 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.⁵

Contrary to the Oresund Bridge, the Fehmarnbelt tunnel is not situated in a densely populated area. The main aim of the tunnel is improving the link between Scandinavia and Central Europe. A large part of both passenger and cargo traffic will be long-distance transiting the regions on both sides of the corridor.

The fixed link will considerably reduce the travel time for this traffic: Whilst the current ferry transit takes 45 minutes (plus waiting time), train passengers will require only seven minutes, car drivers no more than ten. The duration of a train journey between Hamburg and Copenhagen is expected to be about 3 hours compared to 4,5 today, given that all hinterland infrastructure projects are realized until the completion of the tunnel's construction.

The Fehmarnbelt Pilot Case as part of the of the TENTacle project looks at the effects of this new infrastructure investment on the routing of freight flows and - consequently - on business models of the transport and logistics industries (incl. ports) in the impact area of the future fixed link. New transport options and shorter transport times are likely to influence the existing patterns of how companies position their logistics facilities in northern Germany and Scandinavia, with an

⁵ Federal Ministry of Transport and Digital Infrastructure: *Fehmarnbelt Fixed Link*. URL: <https://www.bmvi.de/SharedDocs/EN/Articles/G/fehmarbelt-fixed-link.html>, accessed 6 June 2018.

opportunity for more efficient transport and logistics solutions. The overall aim of the 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 open before 2028 (as of October 2018).

This guidance paper summarises the results of the stakeholder interfacing process fed by the analyses and studies carried out. It contains place-based measures addressing the development measures both in the direct and the more distant area, which might see negative flow displacement effects, and recommendations to different stakeholder clusters in the BSR.

1.2 Overview of involved stakeholders



Figure 3: Location of relevant stakeholders
Source: Port of Hamburg Marketing

The report covers the impact area of the FBFL investment, understood as the territory along the Scan-Med Corridor axes from Copenhagen in the direction of Hamburg and Berlin.

Today, the regions are connected by bridges in Denmark (e.g. Great Belt,) and sea ports with vessel companies specializing in ferry and 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 from the ports and ferries.

2. Expected changes for traffic flows and regional effects after the opening of the Fehmarnbelt fixed link

2.1 Market Perception

A survey (*Perception of the Fehmarnbelt fixed link*) was conducted and sent to relevant companies and institutions – public and private – to learn more about anticipated challenges and/or possibilities caused by the FBFL.⁶ 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 Fehmarnbelt 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. Some stakeholders can be sorted into two or more categories.

Table 1: Number of received stakeholder feedback

<i>CLUSTER</i>	<i>NUMBER</i>
Business Support Organization (Cluster, Chamber of Commerce, etc.)	8
Ferry Operator	3
Freight Forwarder/Rail Operator	3
Local/Regional Authority/Administration	7
Port Authority	3
Port Authority/Terminal Operator (Port)	4
Terminal Operator (Port)	4
Other	2

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. It 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 affect companies' decisions might change when the fixed link is opened. Those variables can for

⁶ TENTacle Project Fehmarnbelt Pilot Case: *Dialogue with Baltic Ports and Logistics Stakeholders*. URL: http://www.tentacle.eu/a/uploads/dokument/TENTacle_Fehmarnbelt_Pilot_Case_Dialogue_with_Baltic_Ports_and_Logistics_Stakeholders_1.pdf.

example be changes in the market demand, competition and business models as well as in political decisions about taxes and regulations.

Table 2: Opinion in general regarding the FBFL (Survey results)

<i>CLUSTER</i>	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

Although 50% of the feedback is positive, however the “opinion positive” is also often a political decision seen in an overall context that contains many “but”.

Stakeholders from the cluster “**Local-, Regional Authority or Administration**” mostly have a positive perception of the FBFL. 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 majority of the **business support organizations** in the FBFL catchment area (e.g. Chambers of Commerce, Merchant’s Leagues) also support the construction of the tunnel for 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 modal 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 a stakeholder is not directly part of the Scan-Med Corridor and its infrastructure investments, certain positive impacts are still anticipated. The KielRegion 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 representatives from Kiel 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 route

instead of the B202/203, then only Hamburg would benefit from the fixed link in the opinion of KielRegion. That is why KielRegion is actively lobbying for their area.

Stakeholders from the Lübeck area in general expect positive impacts of an operating FBFL. They expect the region to “*benefit 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 Chamber of Industry and Commerce 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.”

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 from 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 depending 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.

Interviewed stakeholders from the **ports** of Stralsund, Wismar, Copenhagen Malmö, Gothenburg, Trelleborg and Lübeck currently have a neutral opinion towards the infrastructure investments of the FBFL, although some of them expect negative impacts for their business activities.⁷ The same is the case for two anonymous inputs from the cluster “**Freight Forwarder/Rail Operator**”.

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 labour 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 trigger 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 which they did not specify any further.

⁷ The recipients of the survey represent in most cases both port authority and terminal operator.

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, they are also aware of possible risks:

“The improvement of the transport corridor between Scandinavia and continental Europe through Denmark could lead to a substantial shift of cargo flows from sea to road and rail, in case a “level-playing-field” is not safeguarded by the authorities.”

This fear of unfair competition is also mentioned by stakeholders from the Port of Trelleborg. The same applies to the Port of Rostock, which at the same time emphasize negative effects for its business resulting from a modal shift back from sea to road both for cargo and passenger traffic. Especially the number of intermodal units currently passing the ports will very likely be re-routed to the FBFL. Subsidiaries as for example on the Oresund 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 volumes in cargo traffic will not increase significantly, especially to and from Sweden. This could further lead to capacity challenges and bottlenecks. Other Scandinavian ports agree with this perception, although some stakeholders see the long-haul trucking industry as an exception:

“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...?”

On the one hand, the most deciding factor mentioned by all stakeholders who are in general not content with the FBFL is an unfair advantage for the tunnel due to state subsidies. On the other hand, 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 intend to close 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 use of state advantages and dumping prices due to overoptimistic traffic forecasts including competitive assumptions.

2.2 Study results

The most recent traffic demand forecast commissioned by Fehmern A/S largely focuses on traffic shifts between the Fehmarnbelt and the competing links. The most direct and unambiguous change is the shift of existing rail traffic from the Jutland route to the FBFL. As regards competition between the new fixed link and the existing ferry services, the authors of the demand forecast find that passenger traffic will see much stronger shifts than cargo traffic and that those shifts most strongly affect the nearby ferry routes Puttgarden-Rødby, Travemünde-Trelleborg, Travemünde-Malmö, Rostock-Trelleborg and Rostock-Gedser.

The traffic modelling performed for the TENTacle Fehmarnbelt case by the ISL largely confirms the results of the existing traffic forecasts.⁸ Here again, the future price of the tunnel is the decisive variable, particularly for the very cost-sensitive cargo sector. Therefore, the actual amplitude of shifts cannot yet be forecast precisely. However, the route choice calculations show which transport routes will see an increase of traffic and which ones will see a decrease. This helps identifying the changing transport flows in the hinterland and hence the potential impact in different regions and modes of transport.

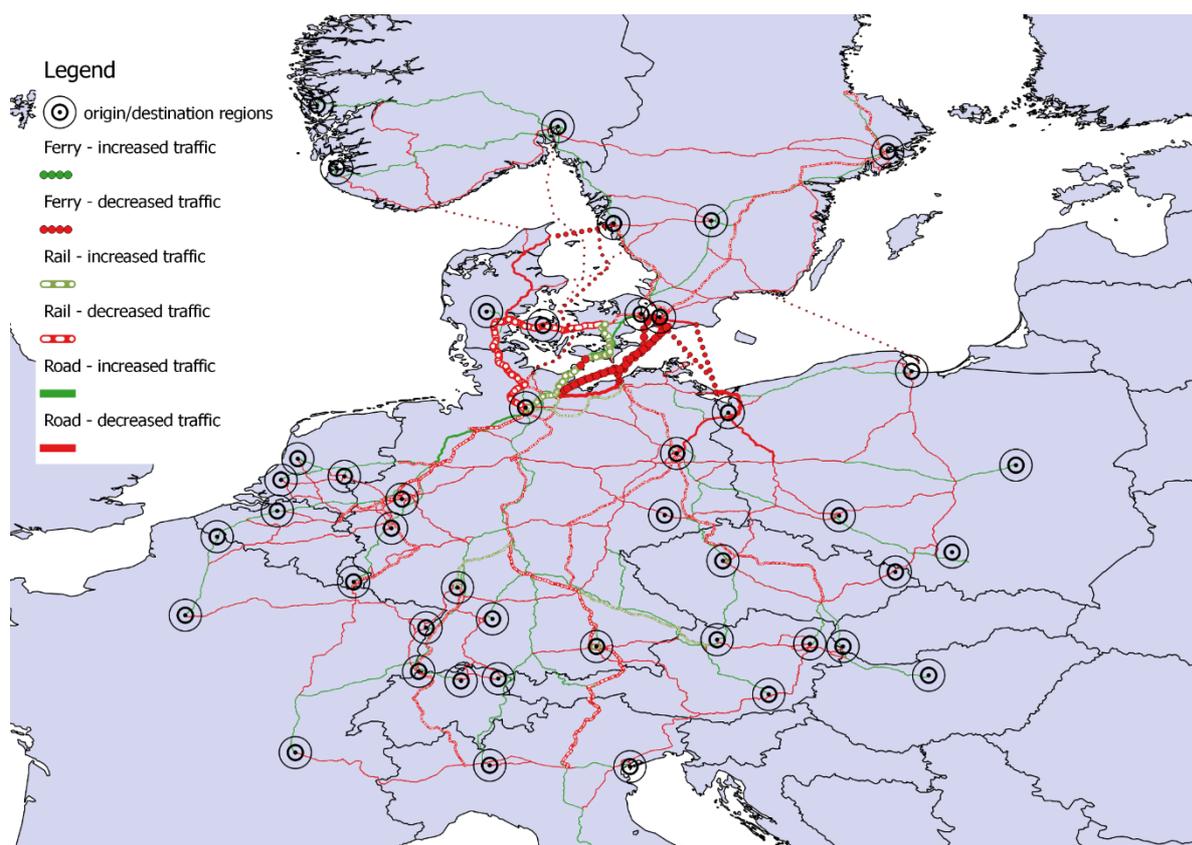


Figure 4 – Changes induced by the FBFL (2035 model results)
Source: ISL transport cost model

The most striking impact of the traffic modelling is the traffic shift of rail traffic from the Jutland route to the FBFL. The regions along the current rail corridor between Copenhagen, Kolding and Hamburg will see international traffic (much of it between Sweden and Germany) disappear from their rail tracks while the regions on the Copenhagen-Falster-FBFL-Hamburg link will face increasing rail traffic.

The second larger shift affects the existing ferry services. It is not limited to the Puttgarden-Rødby ferry link, but also concerns the other ferry services between German Baltic Sea ports on the one hand and Denmark and Sweden on the other hand. To a lesser extent, services between Szczecin and Sweden are also going to be affected.

⁸ All studies conducted by the ISL can be found on the [TENTacle](#) website.

The shifts take place because for some forwarders and some origin/destination relations, the new transport option using the FBFL is more attractive than the ferries, so it will be their preferred choice. The higher the cost and time advantage, the more forwarders will shift their traffic to the new link. Whether or not it is more attractive depends on the route, i.e. on the start and end of the transport chain. Except for truck traffic shifted from the Puttgarden-Rødby link to the tunnel, the traffic shifts also imply a shift of traffic in the hinterland both to the North and to the South.

In order to illustrate the importance of the regional approach to traffic modelling, this report focuses on three model regions: Guldborgsund, Rostock and Hamburg. Each of these regions will be affected in a different way by the opening of the FBFL.

Guldborgsund Municipality will see a strong increase of both rail and truck traffic. The traffic shifts concern mostly long-distance transit traffic between Sweden or the Copenhagen area and Central or Western Europe. Rail traffic will most likely not create additional value but may increase the nuisance level. Truck traffic is different. Drivers can no longer rest and eat on the ferry if they take the tunnel, so this must be done before or after. There is a potential for various services which has been studied by Guldborgsund Municipality (see chapter 3.1.2).

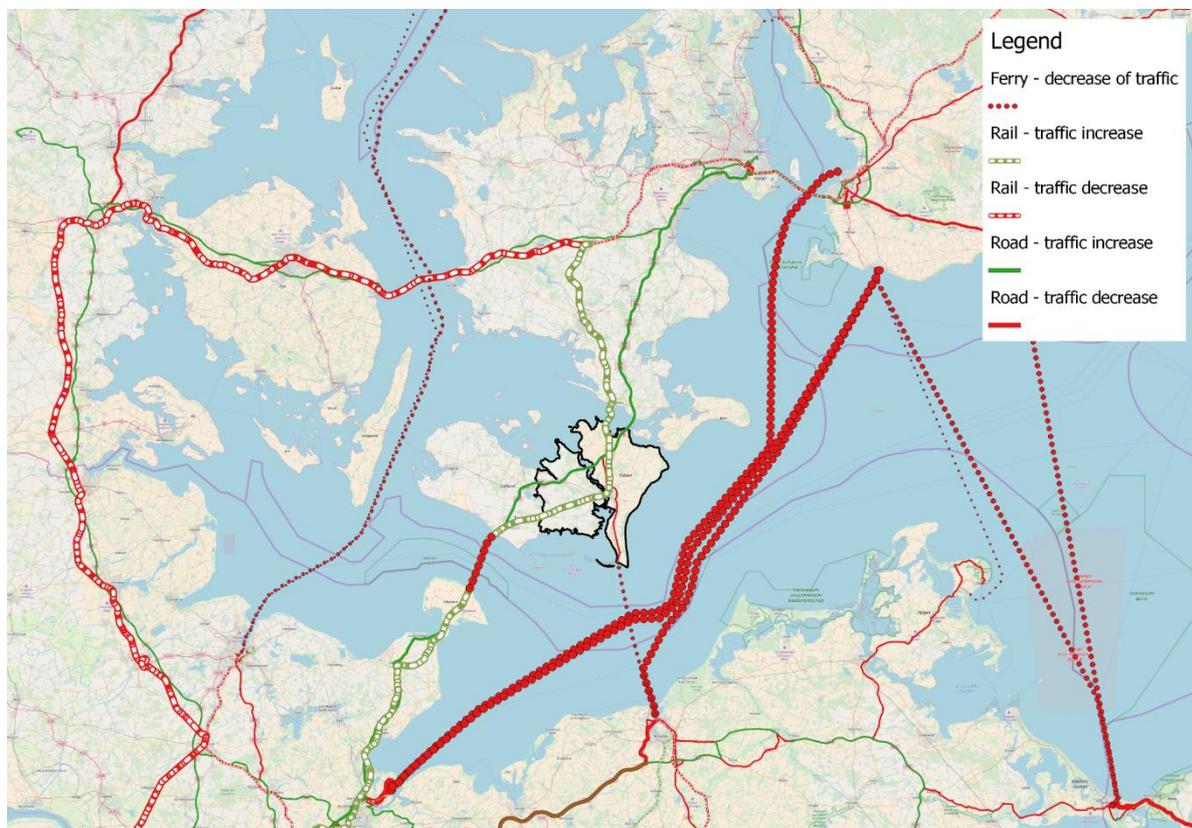


Figure 5 – Changes induced by the FBFL in Guldborgsund municipality (2035 model results)
Source: ISL transport cost model; map: OpenStreetMap contributors

The city of Rostock faces a different challenge. It will unambiguously see decreasing traffic volumes for rail and truck. Contrary to Guldborgsund Municipality, rail traffic does create a lot of added value in the port thanks to intermodal handling in the port and related services. Rostock serves as a rail hub between Scandinavia and Central Europe with various regular rail connections to Germany, Italy, Austria and the Czech Republic. The region hence needs to come up with a strategy to counter

the possible loss of traffic and to develop new markets where the loss of traffic cannot be halted (see chapter 3.1.2).

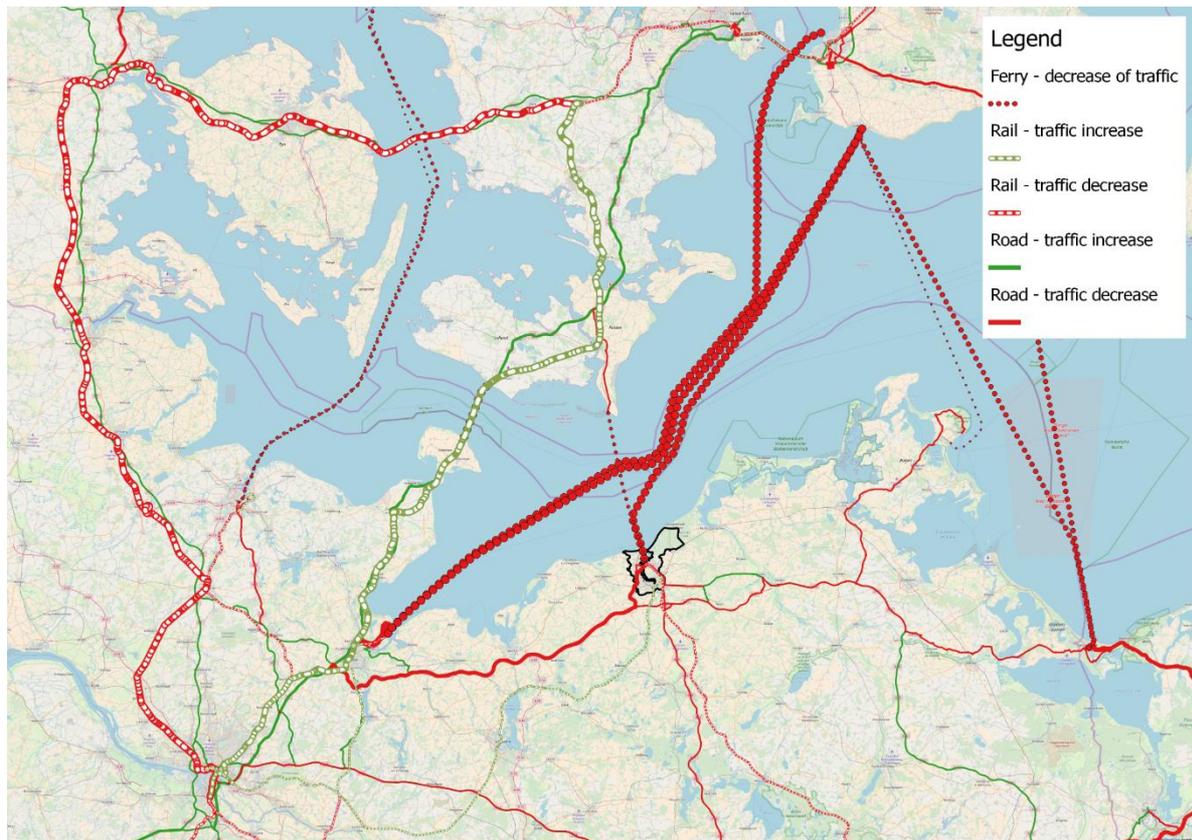


Figure 6 – Changes induced by the FBFL in Rostock (2035 model results)
 Source: ISL transport cost model; map: OpenStreetMap contributors

The third model region, the city of Hamburg, is facing a change of traffic flows with more traffic coming in from the Northeast and less traffic from the Northwest. The first question is, of course, whether the infrastructure is ready for this shift. For the A7 between Hamburg and Flensburg, the decrease of truck traffic may be seen as a welcome relief, but a sensitive traffic increase will be noted on the A1. In terms of strategy, Hamburg may work to further develop its rail terminal in Hamburg-Billwerder, which already offers many rail connections to Scandinavia, into the central rail hub for consolidating traffic between Denmark and Sweden on the one hand and Central and Western Europe on the other hand. The tunnel may also offer an opportunity to extend the hinterland of the port of Hamburg to Falster and even Zealand.

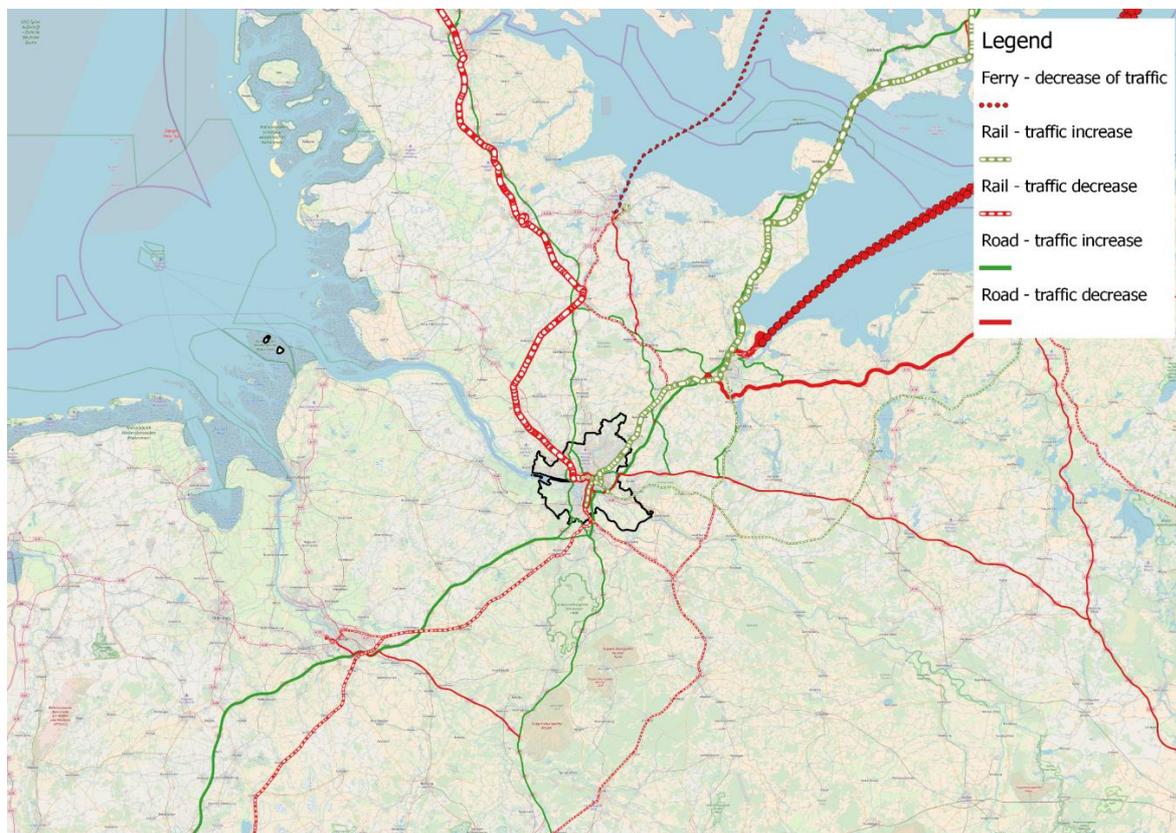


Figure 7 – Changes induced by the FBFL in Hamburg (2035 model results)
Source: ISL transport cost model; map: OpenStreetMap contributors

As a conclusion, there will be regions winning additional traffic and others losing traffic. If it is pure transit traffic, losing traffic may actually be a relief while in those regions providing value-added services (incl. handling and storage activities in ports) related to cross-Baltic transport, a loss of traffic may severely affect the local economy. In any case, each region must prepare as much as possible for the changes in order to reap the potential benefits or dampen the negative impact (see chapter 4).

2.3 Comparison

Most stakeholders confirm the expectations and positions described in the analysis conducted by the ISL. New transport options and shorter transport times are likely to change existing logistical infrastructure in northern Germany and Scandinavia. This will introduce new opportunities, but also challenges for the economic development in the regions.

But it is only possible to reap benefits of the FBFL if the hinterland connections in Denmark and Germany are sufficiently established and all bottlenecks are abolished. The following bottlenecks were mentioned in the survey answers as well as the transport analysis:

- A two-track, electrified railway line for the full length, and a continuous 4-lane motorway from Lübeck to Copenhagen, including the Fehmarnsund 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 from the FBFL 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 in Northern Germany. Increased traffic and more cargo volumes can only lead to positive effects if the given infrastructure is able to handle them.

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 can be concluded 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 publications analysing the effects of the FBFL. Regional authorities and business support organizations tend to be the most active, while private stakeholders (i.e. terminal operators, freight forwarders, rail operators), who do not have a strong opinion on the tunnel, are less likely to actively prepare for it by conducting analyses or studies, at least not yet. That is also a reason why it is not easy to generalize conclusions concerning their logistics decisions related to the FBFL. The transport industry seems to plan max. 5 years ahead, except for ferry operators and port authorities which need to plan and adjust their operational and infrastructural capacities in the long run (< 20 years). 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, where benefits are forecasted 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. Particularly small- and medium-sized companies have to be included in the activities of, for example, cluster and business support organizations. Actual implementation of recommendations must be initiated by the stakeholders themselves, though. Support measures (e.g. EU regional funding programs) are available if needed.

When asked if they actively plan to develop strategies for transforming the region or re-organize their business to prepare for the FBFL, most of the stakeholders who see the tunnel in a positive or negative light confirmed this. 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.

The most common measures mentioned in the survey were:

- 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. Hamburg, Schleswig-Holstein and Kiel represented by their respective ministries for transport and tourism, Chambers of Industry and Commerce 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).

Most regional authorities in the German impact area of the future FBFL are founding members of the Fehmarn Belt Business Council (FBBC), 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 FBBC:

- organizes conferences on the topics Fehmarnbelt Region and FBFL,
- develops positions,
- maintains the FBBC secretariat as a contact point for various clusters of stakeholders 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. Both organizations are good examples of efficient stakeholder involvement in multi-level corridor governance.

3. Best-practice examples in the Fehmarnbelt region and experiences from past infrastructure projects

3.1 Place-based measures

3.1.1 Case Study Rostock

The case studies conducted by the Rostock Port within the framework of the TENTacle project analyses the effects of the FBFL on the Region Rostock and the business of the port. Main aim is to examine whether the construction of the tunnel has negative impacts on the handling volume for three defined cargo groups: Paper and forest products, agriculture products and products from the steel industry sector.⁹ All studies look at market tendencies, future potentials and the competitive position of South Baltic Ports like Rostock concerning this future infrastructure investment within the South Baltic Sea Region.

In the segment of **forest and paper industry** it is worth to mention that almost half of the 60 million tons of forest products produced each year in Sweden and Finland are exported to the EU-28 countries. Of this, a little more than 20 million tonnes are carried to the hinterland of the German Baltic Sea ports or of the future FBFL. This quantity is transported in different shares with ships, trains and trucks.

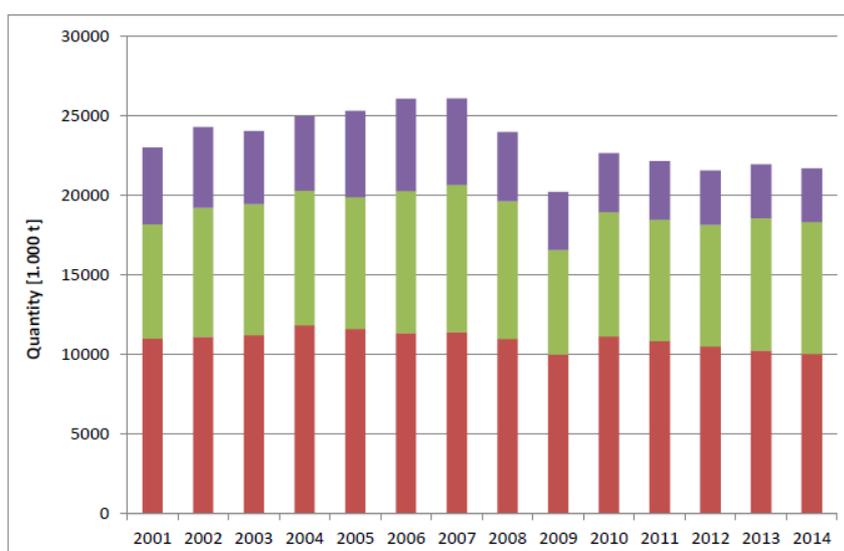


Figure 8: Swedish and Finnish export quantities to the hinterland of Southern Baltic ports 2001 - 2014 (purple: sawn timber; green: pulp; red: paper)

Source: Study on the *Impact of the Fixed Fehmarn Belt Link on the Transport of Forest Products from Northern to Central Europe*

⁹ All studies conducted by Rostock Port can be found on the [TENTacle](#) website.

However, transport via rail and road includes in many cases a ferry leg and is thus closely linked with maritime transport. Based on the analysis of specific databases, approx. 65% of the total Swedish export is for destinations in the hinterland of South Baltic Sea ports and the future FBFL. This means that two-thirds of the industry transport volumes are shipped using maritime transport chains, which are endangered by the construction of the fixed link. The results of this specific study also consider an increased segment-specific share of rail transports particularly likely to use the fixed link and additionally endanger the maritime business.

Since the FBFL reduces the distance for rail and direct road transports by 160 km each way, the consultants and the operators of port infrastructures along the German Baltic Sea coast expect less volumes for the maritime transport industry and a relocation to rail and road. This will primarily affect exports from Southern and Central Sweden. In conjunction with foreseeable structural changes in the production of forest products (wider range of varieties offered combined with smaller batch sizes for paper, more high-quality pulp) and the expansion of modern rail infrastructure, it is likely to see higher market shares for rail transports, especially for combined transport.

According to the study's results, the share of railway traffic in the export of Swedish forest products will increase from the current level of around 25% to roughly 30% after opening the FBFL. The modal shift is expected to take place almost exclusively through the switch to combined transport at the expense of direct road transport, thus in part at the expense of ferry connections.

Compared to the forest and paper industry in the Nordics, the **steel industry** is not as dominant. It is nevertheless an important industry sector. Globally, steel as construction material will continue to grow in the future according to available forecasts. Crude steel production in the European Union oscillated after a drop by 5% in 2012 between 162 and 169 million tonnes in the following years. The share of Nordic countries in EU crude steel production was about 5% (approx. 8 million tons). Crude steel production in Sweden and Finland stands at 2.8% and 2.5% respectively of EU-28 production. Nordic countries foreign trade in iron and steel showed ups and downs in the last decade following the world market development. Total turnover changed only marginally in the course of ten years. Trade with geographic groups showed different dynamics, intercontinental trade was the most dynamic (China, Japan and South Korea). From a European perspective, the trade with countries in Eastern Europe was most dynamic.

Sweden's main trading partners by total volume are Germany, Finland, Norway, United Kingdom and Italy. Finland's exports were mainly destined for the Netherlands, Germany and Sweden. Transport of iron and steel between Nordic countries and the continent is carried by sea, rail and road and thus affected by the construction of the FBFL. The estimated share of sea transport in this field amounts to considerably more than half of the produced volumes.

In 2016, the biggest volumes in breakbulk sea transport from Sweden were reported going to Spain and Belgium and coming from the Netherlands, Finland and Belgium. Main Nordic ports for breakbulk iron and steel are Tornio, Frederiksværk Havn, Oxelösund and Raahe. All these ports can theoretically be reached via the Baltic Sea ports in the catchment area of the future FBFL and might lose handling volumes. Based on a comprehensive investigation on recent developments (production and consumption), the total cargo volume for steel product flows are expected to grow to around six million tonnes in 2035. If the FBFL receives more subsidies of any kind after its opening, steel volumes currently transported via Baltic Sea ports might be relocated to the land-based route.

The third study covered the possible effects of the FBFL on the **agriculture market** in the BSR. It investigates the commercial activities of the five most significant and internationally operating enterprises in the grain trade and their subsidiary companies.

Currently, Rostock and Hamburg are important transshipment ports for grain and contract huge import flows to fill big bulk cargo vessels for intercontinental export trades. This general trend could change, if and when new land-based transport capacities are in place and thus endanger the current business and volumes at one or both of these locations. One example: For goods such as rapeseeds – harvested in Scandinavia and Eastern Europe – Rostock is today the ideal place of transshipment. In order to keep this market advantage, the existing logistics chain from the cultivation regions to the appropriate real estate properties in the Port of Rostock needs to be improved and most of all adapted economically wise. By constructing heavily subsidized new infrastructure capacities, this might be impossible in the future.

As result of the study within the TENTacle project, it was concluded that the planned construction of the Fehmarnbelt tunnel will not affect the agricultural logistics chain to a large extent. As far as it could be recognized from current figures of the cargo traffic, neither the cargo flow of a western link (to Hamburg) nor the flow of the eastern link (to Rostock) will significantly affect each other. Therefore, it is very unlikely that because of the construction of the FBFL itself, agrarian quantities from the Port of Rostock could be shifted to other routes in a substantial volume. Consequently, it has thereby no direct or any significant impact on the handling volumes of agriculture product via the Port of Rostock.

Against this general development process and consequences for the port industry, strategies need to be developed in order to keep or in the best case improve its market position. The high additional transport capacity coming from the new FBFL / tunnel will most likely lead to a remarkable relocation if currently sea-based routes shift to land-based transport chains as long as the new capacity is fully used. When it comes to the transport of paper and other forest industry products such as pulp, the ferry and port operators in the Southern BSR have limited means to secure their current transport shares, since the construction of the FBFL is highly subsidized and constitutes rather a political than an economic decision. However, especially for the segment of forest products exports from Southern Sweden to Central Europe, we see some opportunities to preserve their positions by

- developing logistics services for the forest industry in southern Baltic Sea ports, in particular by taking over the distribution function in the hinterland (on a continental, regional but also local level),
- further increasing the number of combined transport services to support those requested intermodal logistics services,
- strengthening their general market position in the combined and container transport to create paired transport patterns with the export of forest products in a southern and consumer products in a northern direction.

Looking at the steel market, however, one development trend – the decreasing size of shipments to the level of part trailer loads – could help to keep the business via ports at the current or at least a sufficient level. Intermodal units are perfectly suitable to such part trailer loads. Another option for the port industry is to establish so-called steel distribution centres. This relates most of all to ports in the South Baltic Region, which are the entrance point for shipments from Sweden to the continent.

Such logistics centres could serve bigger regions with their specific steel product demand with bundling of smaller shipments into bigger units, either to similar centres far away in Continental Europe or directly to consumption points in Central Europe. Even the regional distribution could be organized using this steel service centre at a South Baltic port.

However, even if – as mentioned above – there is no dramatic negative effect from the FBFL on the agriculture segment, there is a potential to increase the market share. One option developed in the study is to create added value by higher attainable grain prices due to transport-based cost savings (compared with Hamburg). Based on the results of the investigations mentioned before, additional grain quantities for Rostock within the identified commodity streams can be attracted. To achieve this, the consultants recommend actions to strengthen the intra-regional cooperation between the regions (e.g. Guldborgsund) to stronger integrate the Danish agriculture industry into the logistics concepts for exports via Rostock.

3.1.2 Case Study Guldborgsund

The Tentacle project has provided experiences on how to benefit from the FBFL for regional development in Guldborgsund Municipality (DK).

Two European transport corridors run through Guldborgsund Municipality:

- The western corridor E47 that runs from Scandinavia through Guldborgsund crossing the Fehmarnbelt and going to Hamburg and Western Europe.
- The eastern corridor E55 that runs from Scandinavia through Guldborgsund and Gedser to Rostock and towards Berlin and Eastern and South Europe.

Guldborgsund City Council focuses on the development opportunities that exist from the transport corridors, for the business community as well as for the total community. With the planned huge investment in the western transport corridor and the establishment of the FBFL, the following questions were raised:

1. How can commuters utilise the much faster transport possibilities and reach a much larger number of jobs within reasonable daily travel distances?
2. How can companies utilise the improved traffic infrastructure for their own transport needs of staff, materials and products to the markets?
3. How can local companies utilise the opportunities for providing services to the passing passenger and cargo traffic; e.g. services from a simple fuel filling station to restaurants, cargo storage, safe parks and combined terminals?
4. How can these development opportunities be promoted among the regional business community?

In the current case study, the two last questions are in focus.¹⁰

¹⁰ All studies conducted by Guldborgsund Municipality can be found on the [TENTacle](#) website



Figure 9: Location of Business Park Falster at the intersection of two European transport corridors E55 and E47

The starting point for the business development process was to get updated and precise data on the future traffic volume and changes in the traffic patterns following the establishment and the opening of the FBFL in 2028. What types of transport modes and in what numbers would pass through the municipality when the FBFL actually opens in 2028 and how would it look like ten years later in 2038?

Updated analyses show that the current (2016) traffic includes 1.4 million trucks, which in 2028 will increase by 38 % to 1.9 million trucks and ten years later in 2038 it will have increased by 68 % to 2.4 million trucks.

For the train cargo through the transport corridor, the current figures amount to 93,000 tonnes, which will increase to 118,000 tonnes in 2028 and to 144,000 tonnes in 2038. However, cargo transported by rail would above all be international transit cargo, providing limited business opportunities in Guldborgsund Municipality.

A few minor cargo harbours exist in the area (Orehoved, Nykøbing and Gedser) close to the transport corridor. However, the analyses showed no indications that the FBFL would result in increased cargo volumes via these harbours.

It is therefore concluded that it is within the increased truck cargo traffic that possible new business opportunities should be found.

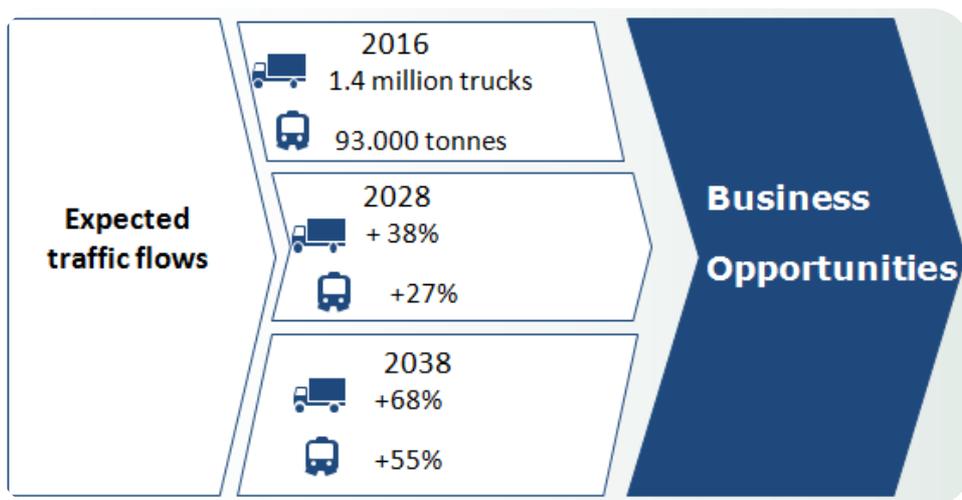


Figure 10: Traffic flows. Number of trucks and volume of train freight today and in 2028 in 2038

Source: Analysis of potentials and stakeholders of Business Park Falster

Based on the new and updated traffic data a close dialogue with key stakeholders was initiated. Private transport and logistics companies, production companies with large transport needs, trade associations and planning authorities were invited to a workshop for a joint discussion on new long-term development opportunities arising from the increasing traffic volume. The Business Park Falster, located at north Falster where the two transport corridors from east and west meet, was a specific focus for the discussion.

The key stakeholders proposed and commented on investment opportunities within transport and logistics in relation to the current local and regional supply and demand, the broader development trends, trends in digitalisation and automation and new national and EU regulations. The findings of the stakeholder workshop were further elaborated in 15 in-depth interviews with stakeholders such as private transport and logistics companies, production companies with large transport needs and other potential investors in traffic support infrastructure.

The mapping analysis showed that the Business Park area had a relevant location both with regards to current ferry connections and the future Fehmarn Belt Fixed Link. The analysis also showed that the business area can meet the demand from a broad range of companies, including companies within the transport and logistics industry as well as production companies with a large need for transport. Individual companies may have specific immediate needs, but the interviews did not point to a broader immediate demand among local companies for a business area aimed at transport intensive industries.

The analysis thus points to a situation where the increasing demand for truck freight has not yet materialised among local companies. However, when this does happen among local companies, the business area at Exit 43 provides very relevant development opportunities. In addition, this part of the analysis concludes that the business area may be targeted at relative immediate demands for facilities related to safe storage and rest time for drivers. The analysis suggested that facilities

related to safe storage ('safe park') and rest time ('motel') for truck drivers would be the most relevant profile for the business area in the short run.

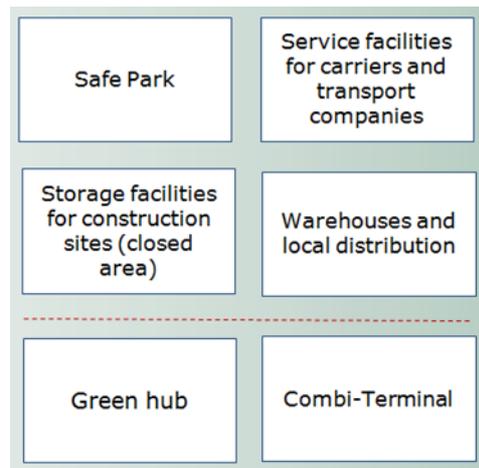


Figure 11: Identified development opportunities

Source: Analysis of potentials and stakeholders of Business Park Falster

The Safe Park has been identified as the most relevant and promising development idea for a traffic support infrastructure investment. The three other investment opportunities above the red line in figure 11 are also relevant, but with less immediate importance from local stakeholders. The two investment opportunities below the red line are business ideas that will await the actual situation in 2028 and 2038.

Three important driving factors speak for an increasing demand for a safe storage and rest time areas for drivers within a short period of time: Firstly, during spring 2017, some EU Member States have introduced a ban on drivers holding the regular weekly rest of 45 hours in the cab of the vehicle or nearby the vehicle. A similar ban is expected in Denmark in the next parliamentary session, and this speaks for new forms of accommodation for the truck drivers. Secondly, there seems to be increasing problems with long-haul drivers who park illegally in existing rest places or in residential neighbourhoods everywhere in Denmark's central transport corridors. Finally, an increasing number of robberies, stolen vehicles and, in particular, thefts from the parked trucks is experienced all over Europe, and some buyers of transport with high-value products are pushing for more secure parking solutions.

The result of the workshop and mapping of the development opportunities provided a solid basis for further detailing the opportunities which the stakeholders jointly had prioritised as the most promising. The detailed model for the safe park suggest a basic scenario called "Safe park and motel (including warehouse facilities)" and a number of relevant add-on scenarios that could be developed as building blocks during a time horizon of 3-5-10 years, where an expected increase in demand for truck freight will materialise, leading to an increasing demand for additional services at Business Park Falster.

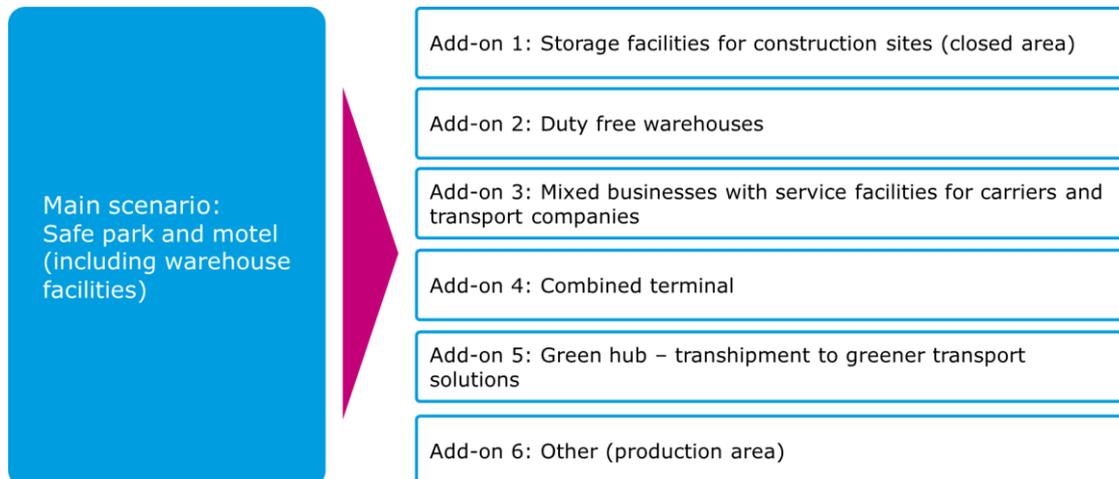


Figure 12: The overall scenario model of the analysis

Source: Analysis of potentials and stakeholders of Business Park Falster

The process described above with early involvement of various types of stakeholders has strengthened the analysis of mapping the potential development opportunities and has provided a sense of ownership to the development process and a broader awareness to opportunities arising from the coming increasing traffic passing the municipality.

The investment opportunity for the safe park was further developed into a business plan. In this phase the early involvement of stakeholders provided a further benefit as selected stakeholders participated in developing specific elements in the business plan, as well as they involved their business network in testing the business idea. Developing the business plan included identification of potential investors, assessing economic key indicators, outlining physical construction phases and identification of potential operators. An investment prospect and a short film were made to support promotion of the business model.

The development process for the safe park has now reached the realisation phase. This is the phase where an identified investor or a consortium of investors sign a contract with the landowner and start physical work for establishing the safe park. Currently, two companies have been contracted by Guldborgsund Municipality to search and approach investors throughout Europe.

3.1.3 Examples from Kiel and Lübeck

Even if the **Port of Kiel** is not directly part of the Scan-Med Corridor and its infrastructure investments, certain positive impacts are still anticipated. Kiel is located east of the FBFL. The port is the third largest hub port in Northern Europe. It is one of the most versatile Baltic Sea ports. Its favourable 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 strategically 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.

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). To increase the attractiveness of the area it focuses

on regional development by collaborating with experts from companies, academic institutions, public administration and similar establishments in several regional projects on the topics of living, mobility, economy and science. The FBFL is included in the following regional planning dossiers: "Regionales Entwicklungskonzept", "Masterplan Mobilität KielRegion", and in "Potenzialanalyse zur Ost-West-Hauptverbindungsachse B202/203" (all in German).

The "Master Plan Mobility" is the first mobility strategy for the Kiel region. It provides mobility solutions for cities and communities in the whole region and explores the possibilities of joint mobility planning. It includes different action strategies and a list of suitable measures to meet the pre-defined goals. The assessors' recommendations make it possible to leverage synergies in mobility planning to achieve modern mobility through strategic implementation and to comply with climate protection goals. The FBFL has been considered for the development of the regional transport database. Therefore, it is reflected among other things in future modal split changes. The master plan was developed in accordance with various projects and activities throughout the region, e.g. the mobility concept for sustainable public local and regional transport, the potential analysis for traffic demand in the district of Plön or the potential analysis B202/203.

The federal highway B202/203 runs straight through the KielRegion from east to west. It is the first route connecting the Baltic Sea with the North Sea coming from the FBFL. That is why more transport and more tourists are expected to pass 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. The original approach was to inquire all communities along the B202/203 about their views and plans for the community regarding the FBFL and to identify local potentials that can be tackled together (bottom-up approach). Unfortunately, the feedback did not turn out as anticipated and the method had to be adapted. The response from stakeholders along the route presented no foundation for defining potential development opportunities in larger areas of the region. According to them, the construction of the tunnel and its usefulness for the region was still too far off in the future.

The feedback from the communities had to be sorted and new potentials were defined in strategy workshops. The findings were completed by consulting expert panels. To legitimize important interim steps, a project group of representatives of the districts, the city of Kiel, the Chamber of Industry and Commerce, the federal state Schleswig-Holstein and the KielRegion was set up. The rest of the planned activities in the analysis are now carried out as top-down projects.

According to KielRegion there are several reasons for the problems during its first approach:

- Communities named mainly short-term and small-scale projects, because the effects from the FBFL for every individual community is not yet predictable for them
- Difficulties to reach the ideal contact person in each community
- Questionnaires that were too complicated and too far from reality
- Concept and possible project ideas should have been predefined and more specific before approaching the communities

The Master Plan Mobility was published in August 2017 (German only), while the final version of the potential analysis of the B 202/203 was finalized in September 2018. It concludes that larger infrastructure projects create a framework for developing potentials, which can have a positive as well as a negative impact on the region. The positive effects should not be overestimated, but rather

considered as a bonus to the already existing endogenous potential of the KielRegion. As one of the few interstate east-west traffic routes in Schleswig-Holstein and the first east-west axis from Scandinavia to Germany, the connection could play an important role in exploiting these potentials. One deciding factor for the success is the visibility of the B 202/203 as a vital traffic axis. So far, it only exists on paper, but not in the minds of users. Promotion of the axis as an important touristic and logistics east-west connection is needed. Service offers along the route have been rather local and are strongly geared to motorised private transport. Strong networking across the entire KielRegion, and in some segments and beyond (from coast to coast), is needed to make the best use of B 202/203.

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 port 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. In 2017, 21.8 million tons were handled by the LHG.

Stakeholders from the Lübeck region in general expect positive impacts of an operating FBFL. They expect the region to “*benefit 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 area.*” At the same time the local Chamber of Industry and Commerce 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*”. 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 subsidies and/or the pricing is politically motivated.

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 harbour development plan (in German: Hafenentwicklungsplan (HEP)) with a projected timescale up to 2030. The FBFL is one of the major infrastructure projects influencing this plan. The HEP is based on traffic/trade forecasts and describes the type, quantity and size of incoming vessels, existing and future harbour equipment for loading/unloading as well as the resulting requirements for the harbour/port infrastructure (technical equipment, piers and needed area space). The overall goal is to create acceptable concepts together with all stakeholders for a time horizon of 10 to 20 years.

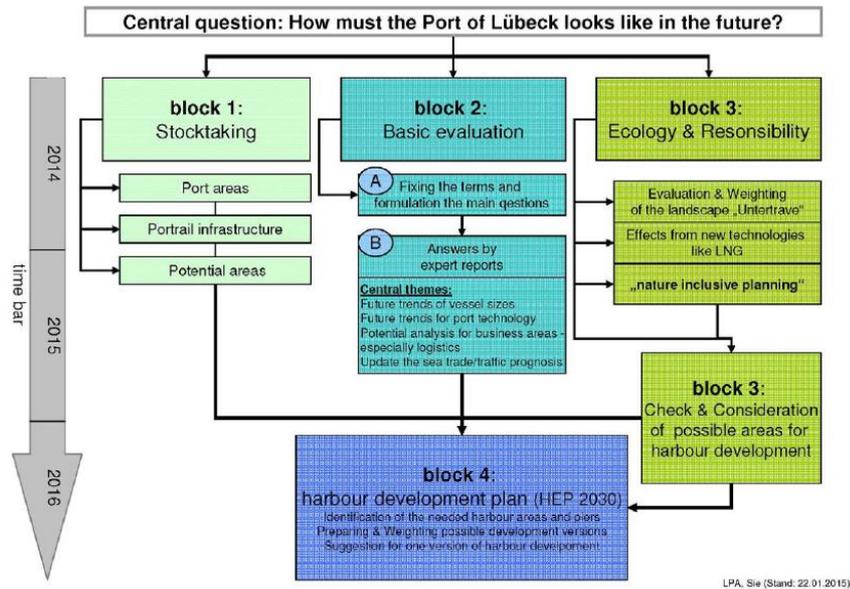


Figure 13: HEP Lübeck
Source: LPA

Two ways of benefitting from the tunnel have been identified so far: new logistics centres, possible for rail traffic to/from Sweden, and the expansion of Nordlandkai which is already on its way.¹¹

3.2 Lessons learned from past infrastructure projects

Large infrastructure projects do not only need a large budget (decided on by local, regional or national politics), they also need a governance that tries to build support or – at least – take up concerns expressed by civil society organisations or local communities. During the past years, a lot of effort has been put into these accompanying processes, so a lot can be learned from these experiences. In this section, three infrastructure projects are analysed in detail: the Oresund bridge, the Brenner Base Tunnel and the development of Schiphol airport during the past years.

3.2.1 Oresund Bridge

To express the binational partnership of the project the hybrid name “Øresundsbron” was created. The “Øresundsbro Konsortiet” was established to reduce the number of acting governmental institutions in the preparatory, implementing and operating phase.

The Konsortiet is in charge of the coordination of the 150 involved authorities and governmental actors on both the Swedish and the Danish side – applying for permissions, concessions and so on. It was charged with designing, building, operating and financing the link and consulting with private stakeholders.

Particularly strong stakeholder interests were presented by environmental protectionists. Already at an early stage of the project a public participation process was launched to meet these strong

¹¹ Universal Transport Consulting GmbH (UNICONSULT) for the Hanseatic City of Lübeck und Lübeck Port Authority (2016): *Potenzialanalyse für ein Logistikzentrum Lübeck. Hafenentwicklungsplan 2030* (German only). Lübeck. URL: http://www.luebeck.de/stadt_politik/buergerinfo/bi/_tmp/tmp/45-181-136624344990/624344990/01061805/05-Anlagen/01/Anlage_KurzfassungGutachten7.pdf.

interests and the Konsortiet had prepared alternative project proposals. Ten public hearings were held. As a result, construction design proposals of environmental activists, especially in the area of the accessing roads, were included into the design of the project.

These public participation possibilities were considered a key for the success of the project. Later on, it was stated that: “Without the accommodation of these concerns in the design and construction methods, it is almost certain that this project could not have been realised.”¹²

In both countries and at all times, stakeholders could follow the progress of the project in established information centres. In addition to these information centres, public announcements of the development were transferred through newsletters, press releases, TV interviews, broadcasts, brochures, annual reports, models and a web presence. Information became “a strategic management tool”. In this regard the usage of hydro informatics and information technologies was mentioned and recommended for future projects. The central environmental information and management system (called EAGLE) visualized environmental changes and impacts (almost) in real time giving stakeholders the opportunity to contribute/oppose in real time as well.

From these experiences, a credo for stakeholder involvement was formulated: “Stakeholders should be considered partners not opponents.”

3.2.2 Brenner-Base-Tunnel

On the 10th of April 1994, the “Brenner centre line” was included in the TEN priority list. From 1999- 2002 the contemplated trail for the tunnel was determined. Between 2015 and 2017 public participation processes took place.

Particularly the passage north of the Brenner needed particular consideration due to the densely populated valley of the river Inn. The larger the population in an affected area the more individual and particular interests may need to be considered during the spatial (infrastructural) planning process. As in the Oresund bridge case, people from two countries are involved. When interests of the population or other stakeholders are not considered at an early stage, risks of delays or halts through juridical and nonjuridical complaints at a later stage of the project are higher. Juridical disputes and/or temporary or even indefinite halts of the planning or construction processes increase the costs for the project, which then again decrease public acceptance. To avoid such a vicious circle and to increase public acceptance for the project, large-scale public participation processes for the Brenner Tunnel were initiated.

The following key elements for successful public participation processes were deducted from this experience:

1. The aim of the committee and the planning process should be accurately determined early on.
2. A (neutral) mediator should be put in charge in order to create a level playing field, guarantee equal opportunities and prevent conflicts of interest.

¹² Thorkilsen, M./Dynesén, C. (2001): *An owner's view of hydroinformatics. Its role in realizing the bridge and tunnel connection between Denmark and Sweden*. In: *Journal of Hydroinformatics* 03.2.2001, IMA Publishing.

3. Stakeholders, governmental institutions, municipalities, NGOs, citizens etc. should be – wherever possible – organised in subcommittees to reduce the amount of negotiators. This can replace endless and costly negotiation processes with all stakeholders. In other words, grass-root democratic processes become representative democratic processes.¹³ For the Brenner tunnel planning committee altogether 25 meetings were held, five with the stakeholder groups, and 20 more within the stakeholder subgroups themselves.
4. A central contact point (here: information office “Brenner Nordzulauf” in Rosenheim) should be established where individuals can receive information and find the right contact person for their stakeholder subcommittee.

3.2.3 Amsterdam Schiphol airport development

The “Alders Table” (Alderstafel) set up to accompany the expansion and development of Amsterdam Schiphol airport is an example of success. After having been implemented by the former “Queens commissioner of the province Groningen”, Hans Alders, in 2006 for participation processes in the enlargement of Schiphol airport, it is now an ongoing format also used for Lelystad and Eindhoven airports (see www.alderstafel.nl).

Alders set a few basic principles:

1. “Negotiation is giving and taking”
2. Negotiations take place in meetings and not by means of press statements
3. Participants accept the assignment of the Cabinet, of which growth of Schiphol is one of the starting points
4. Respect for the different interest of the participants
5. Results and working documents are confidential unless it is decided to make them public
6. Participants have a mandate to negotiate and participants are responsible to make sure their supporters are well informed
7. Rules on communication, Mr. Alders is the one and only spokesman

“Members” of the Alders table are local governments, inhabitants, the national government, Airlines, Dutch Air Traffic Control (LVNL), and Schiphol Airport.¹⁴

The results of negotiations were translated into a White Paper covering all issues from increased competitiveness of the airport to noise reduction and CO₂ emissions. Since then, the Alders table meets every second month to monitor the implementation.

¹³ In another planning process of a bypass road in Fügen (Austria) the number of individual stakeholders was reduced by the election of 13 individuals into a committee who then represented all private stakeholders.

¹⁴ See Gordijn, H. (2016): *Airport Capacity. The Dutch Approach*. Presentation. URL: <https://english.kimnet.nl/binaries/kimnet-english/documents/presentations/2014/10/08/airport-capacity-the-dutch-approach-kopie/airport-capacity-the-dutch-approach.pdf>.

In all of the above examples, stakeholder involvement was started during an early stage of the planning process in order to take the caveats, but also the local knowledge into account. However, the Alders table and the “Øresundsbro Konsortiet” show that stakeholder involvement can and should go beyond the final approval of the infrastructure construction. If stakeholder involvement is regarded as a bothersome but necessary means to ‘push through’ an infrastructure project, its true potential is not used.

4. Recommendations and Action Plan

The Fehmarnbelt Pilot Case looked at the effects of this planned 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 tunnel.

Generally speaking, there will be traffic corridors and regions with increasing traffic and regions with decreasing traffic. Both may have positive or negative effects on a region, or even both depending on the stakeholder group.

	Strategies to mitigate negative impacts for stakeholders	Strategies to realize gains/benefits for stakeholders
Reduced traffic on existing links as a result of the Fehmarn-Belt fixed link	e.g. subsidizing traffic infrastructure/operations which are vital for intra-EU supply chains and passenger traffic in order to maintain critical utilization thresholds	e.g. redeveloping unneeded traffic infrastructure into residential zones / reaping environmental benefits where traffic can be reduced
Increased traffic on existing links as a result of the Fehmarn-Belt fixed link	e.g. pre-emptive measures to identify future bottlenecks in the traffic infrastructure / provide easy access to funding to measures to shield against noise or pollution on heavily utilized traffic links.	e.g. establishment of logistics parks where new traffic volumes will align / seizing opportunities to bundle traffic using new intermodal connections to shift cargoes from road to rail

Figure 14: Two-dimensional strategic response matrix
Source: ISL

Based on a detailed impact analysis, regional planners and business stakeholders must hence develop strategies that either make them benefit as much as possible from the new opportunities or alleviate negative impacts. Once the strategies are clear, they can be translated into Action Plans for the different stakeholder groups.

4.1 Future-oriented business opportunities

Most studies conclude that freight forwarders and transport operators that are using road and rail infrastructures located in the corridor node areas will benefit significantly from the FBFL. The tunnel will provide a shortcut route by rail and road between Scandinavia and the mainland of Europe. This means that the transport operators will be able to transport their goods faster and with more flexibility. Part of the goods transported on road today may shift to rail when the tunnel is in place, but there will also be shifts from existing ferry routes to the tunnel. Although the actual opening of the infrastructure project is still nearly ten years away, stakeholders from these clusters should start preparing their businesses better now than later, irregardless of gaining or losing traffic according to forecasts. Joining or following the activities of one of the very active governance or business support organizations on the corridor is a good opportunity to receive information about the construction process, influence implementation measures and reap benefits from the completed infrastructure investments through cooperation (e.g. FBBC, STRING or local Chambers of Industry and Commerce).

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*".

Each partner will have its own role. Shippers, forwarders and rail operators, for example, may cooperate among each other in order to create new transport offers such as regular rail connections. Logistics services providers and their customers may discuss the demand for new warehousing and consolidation facilities on or near the corridor. In some cases, cooperation between businesses and the public sector will bring the most promising results.

4.2 Recommendations for regional planners

In the Guldborgsund Municipality Case Study the work has focused on how to benefit from the FBFL for regional development. In addition, the work has provided a more general model identifying distinct phases in the development process with an early and continued involvement of local and regional stakeholders, private transport and logistics companies, production companies with large transport needs, trade associations and planning authorities.

The different steps can be summarised as a documentation phase, a relation phase and an interaction phase.

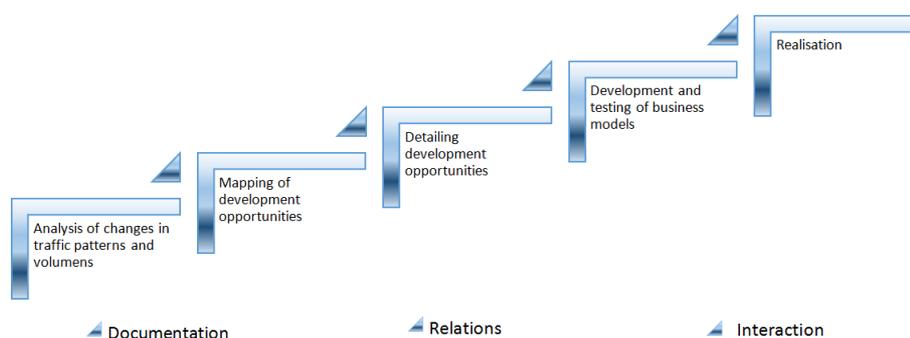


Figure 15: The Guldborgsund method for a regional development process for larger infrastructure investments

The documentation phase starts with updating and accumulating concrete figures for the future traffic patterns and traffic volumes. Based on this data, local and regional stakeholders are involved and invited to propose and discuss potential investment opportunities relevant for physical planning and traffic infrastructure. In the case of Guldborgsund Municipality, this resulted in specific mapping of opportunities.

In the following phase, the established relationships to the stakeholders are continued with in-depth interviews detailing the investment opportunities. The most promising plans are prioritised. Business models are developed and tested through close dialogues with stakeholders.

The process establishes a sense of ownership of the business models among stakeholders and their network supporting a sound and realistic planning among the local planning authorities.

In the final phase, the realisation phase, the business models are presented to potential investors, which may - or may not - include the involved stakeholders.

4.3 Recommendations for logistics site planners (port planners, hinterland planners)

If political decision makers or relevant authorities make the decision to build a new transport infrastructure, port authorities, logistic site planners and their partners often realize or expect negative effects on their well-established business. In order to cope with these challenges and to be able to compete with that new transport offer, they need to think about their business model or to change their long-term development plans and activities in order to at least keep their competitive position. This process might include infrastructure projects and/or market focussed activities.

From a strategic point of view, the port authority and its partner (here and in the following even as synonym for logistics site planners) should focus its development strategy and process according to their existing customer needs to keep a strong and trustworthy business. This is of outmost importance when there is a risk of losing business to the new transport opportunity. The same applies to any maintenance activity to keep the provided infrastructure in a sufficient and state-of-the-art condition (well-planned maintenance strategy; replacement measures etc.) while keeping existing transport infrastructures in a good shape, port authorities should always try to build reliable contacts to their customers and discuss potential adaptations based on requirements coming from new transport equipment or industry standards.

Given the fact, that ports are only a node in the transport network (transition point between land and sea), it is even a pre-requisite to have high-capacity hinterland connections, which do not interfere smooth running logistics chains along the transport route. This includes permanent optimisation of handling and storage facilities – also within the port area – to reduce waiting and handling times for the forwarding industry. Digitalisation, real time data transfers directly with the customer's information system and reliable communication is a must have in this context. That refers on the one hand to the connection between the location managed by the port authority and the hinterland transport network on the other hand to have a reliable lobby activity to convince the responsible public authority to act in that meaning. All partners involved should understand their activities as competitive transport offer that works like a charm and at least on the same operational level as a fixed link. Continuous and non-interrupted transport understand ferries as floating bridge between the coastlines.

When it comes to market focussed activities, the port authority should not only strive to keep the existing relationship, but also to fight for any new customers to have a broad as possible customer base. Possible actions to be successful here might be an extended communication of the specific advantages of using the provided infrastructure compared to other locations. Another option is the provision of attractive and competitive logistics activities on site to offer a wide range of services to the market and to create unique selling points, either by the port authority itself or with help of independent service providers. In that sense, the port authority should always look for new or still not sufficiently developed options which the market request already or for products which might become more important in the future.

4.4 Recommendations for political actors

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 leading politicians in Germany.

“We need more real support from German politicians, 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 in order make sure that volume flows via rail into and out of our business area will not be disturbed or negatively affected in any way” (Terminal operator port).

To benefit from the FBFL, the hinterland connection on the German (e.g. between Hamburg and Lübeck) side still needs to be updated in accordance with the people living in the near vicinity. Fear of additional traffic and noise as well as lack of information fuels the negative perception of the tunnel in those regions. Awareness-raising measures need to be intensified to inform the residents about every step of the projects and involve them in the construction process.

It is even worth to mention at this point, that there is fear among maritime industry stakeholders, that the construction and operation of the FBFL will not only disturb the competition, but also devalue heavy investment costs in port infrastructures. The maritime industry realized huge investments into ships, terminals and berths to create a well working and very reliable transport offer connecting the continent with Scandinavia. Funds from public, national and European budgets were used to support these investments. Political decision makers need to consider this important fact while thinking about the construction of such new transport infrastructures leading to a loss of taxpayer's money.

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, labour 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

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

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