TRV 2016/38557

Impact analysis of the TEN-T Core Network Corridors in the Baltic Sea Region

Contribution to the discussion

Cases: Fehmarnbelt link and Rail Baltica

Photo: Mikael Damkier, Mostphotos

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Abstract

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. Region Blekinge is lead partner for TENTacle. The Swedish Transport Administration (Trafikverket) leads one of the TENTacle workpackages and finances this report. Expertise work for this report has been provided by Ramböll Sverige AB.

The report presents a qualitative analysis of economic, social and territorial impacts generated by the implementation of the TEN-T core network corridors (CNCs) in the Baltic Sea Region (BSR). Due to a broad spectrum of aspects and the wide geographical area addressed, the analysis does not provide an exhaustive view on the possible implications of the CNCs on the development of regions and possible strategies of involved stakeholders. Rather, based on two exemplary cases on large infrastructure projects on the corridors (mega-projects of Fehmarnbelt link and Rail Baltica), it offers an input to the discourse on how to evaluate long-term social and economic consequences of the infrastructural developments along the EU priority transport axes in a larger territorial scale.

The impacts analysed in the report are divided into impacts that can be attributed to the performance of the CNCs as a functional system and impacts that are, in consequence, enabled by that functional system (so-called WEI – wider economic impacts). The report makes a geographical projection of both the positive and the negative impacts, paying attention to the issue of absolute and relative effects generated in different geographical areas. The focus is a qualitative assessment of impacts, while recognising the additional need for quantitative measurements of effects.

The report also examines the distribution of impacts among some pre-determined categories of stakeholders in the BSR. Finally, the report proposes some possible governance and policy measures to strengthen the win-win effects of the CNC s implementation.

The report argues that the implementation of CNCs as studied for the two large infrastructure projects to be completed in the years to come, brings substantial impact on the modal choice and accessibility to the functional transport system. Better commuting opportunities, extended labour markets and enhanced cross-border interoperability induces changes in the modal choice for passenger transport, provided the public transport operators ensure an adequate service offer. The better reliability, reduced time and cost for freight transportation along the corridor correspondingly results in wider mode and route choice options for freight owners and forwarders in managing the supply chains.

In geographical terms, the accessibility benefits are not confined to the very region of the mega-project but are spread along the respective corridor and permeate to all economic sectors. Transport mode options of preference to the interregional travellers and industries will vary depending on the distance from the very investment sites.

Importantly, the corridor nodes and regions both gain and lose on the competitiveness scale. Even though most of them gain through the better connectivity, some of them may record a relative decrease in accessibility and competitiveness.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

For areas located more distant to the corridors as well as for corridor cities and towns located in-between the nodes, a relative decrease in accessibility could cause displacement effects. Losing high-skilled labour force and exporting companies to the peer cities and regions may bring increased spatial polarisation, with the metropolitan areas and changeover hubs receiving additional boost to their higher population numbers and good economic performance. For areas most remote from the corridors, such as northern Scandinavia, such displacement effects would be insignificant.

The CNC implementation generates diverse effects for the stakeholders, depending on their geographical location in relation to the corridor and the level they represent (national, regional, local). Again, the changes induced by the new transport infrastructure are illustrated in this report in relative terms as they denote the comparative shift of the stakeholder's standing as compared with the other ones impacted by the investment. The grade of assessed impacts gives valuable input for how expedient the policy and action response should be to contain the challenge for prosperity and growth and to achieve the win-win situation, also for areas with foreseen negative impacts.

The limited scope of investigation does not allow for developing a very comprehensive listing of policy and action recommendations to the analysed stakeholder groups. They require further elaboration based on extended investigation, the direction of which are proposed further in this chapter. Still, some generalised recommendations to stakeholders may be drawn up on that basis.

Recommendations to national authorities:

- Plan for functional connections (i.e. road/rail access infrastructure feeding the traffic to the corridor nodes to the CNCs) at a national level to connect corridor catchment and void areas to the corridors and encourage regional and local stakeholders to plan for functional connections towards the CNCs
- Monitor the economic development changes influenced by the CNCs across the corridor node areas as well as the catchment and void areas and whenever seen as necessary and appropriate - implement policy measures to strengthen positive impacts and mitigate the negative impacts
- Strengthen the positive impacts of the completed corridor investment by complementary action removing any major cross-border obstacles for regional integration (e.g. between Malmo/Lund and Copenhagen, which would benefit growth processes in the larger area of western Scania in Sweden)
- Consider distributional policies, such as subsidies, tax policy measures or growth initiatives, for the corridor transit areas (if felt to be suffering from a tunnel effect) and the corridor void areas if there is need for counteracting the polarisation effects accelerated by the corridor investments, and a possible socio-economic decline threat in the more distant rural areas (e.g. Jutland in Denmark and eastern parts of the three Baltic States)
- Consider facilitating and/or supporting complementary governance organisations to help the public and market stakeholders benefit from the completed corridor investments through cross-border or transactional cooperation

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

- Evaluate the transport network capacity and provide investment measures should the incoming volumes following the modal shift as a result of the investment in question be too excessive to be accommodated in the current network

Recommendations to regional and local authorities:

- Monitor the growth in population triggered by the relocation of labour force to the corridor node areas, and resulting matching between labour demand and labour supply, and provide necessary measures, e.g. in availing plots for housing projects and logistics operations
- Monitor the labour market and business development situation in the corridor catchment areas to mitigate any larger depopulation and relocation processes that might occur due to the completed corridor investments
- Consider preparing positioning strategies for the cities and towns whose competitive situation is predicted to change, either positively or negatively, due to the completed corridor investments
- Prepare supportive sustainable socio-economic growth measures for the corridor transit areas that might suffer from a relatively lower accessibility and – in consequence - encounter relocation processes
- Consider facilitating and/or supporting complementary governance organisations on the corridor to help the public and market stakeholders benefit from the completed investments through cross-border or transactional cooperation
- Mobilise public and market stakeholders for coordinated action to alleviate the predicted negative impacts of the completed corridor investments, e.g. by organising cooperation across the administrative borders and sectors to improve the access to the corridor nodes, integrate public transport services and connect the local industries to international networks

Recommendations to transport market stakeholders:

- Prepare adaptation strategies to the completed corridor investments, with new opportunities for planning and managing the intermodal supply chains resulting e.g. from shorter delivery times, better capacity and interoperability between transport networks and between transport modes; this also includes opportunities related to a better access to intercontinental markets
- Analyse market perspective and potentially find alternative market niches for the services negatively affected by the completed corridor investments, e.g. ferry operations in the south-western part of the Baltic Sea or airports losing passengers to now better accessible hubs
- Consider investments in the network of logistics centres located at the corridor hubs
- Provide adequate train capacity for serving commuting traffic in the labour markets now extended due to the completed corridor investments
- Consider setting up or joining complementary governance organisations on the corridor to receive information about the implementation process, influence the corridor implementation measures and benefit from the completed investments through cross-border or transactional cooperation

The project partnership and the research contributors to this report welcome readers' feedback to the report and are eager to transmit the findings to any further work in that direction. Possible follow-up investigation areas are specified in the final chapter of this report.

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

Content

List of figures

List of tables

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Abbreviations

CBA	Cost-Benefit Analysis
CNC	Core Network Corridor
EEIG	European Economic Interest Grouping
EGTC	European Grouping of Territorial Cooperation
ENPI	The European Neighbourhood and Partnership Instrument
ERTMS	European Railway Traffic Management System
EU	European Union
GDP	Gross Domestic Product
IPA	The Instrument for Pre-Accession Assistance
MoS	Motorways of the Sea
RIX	Riga International Airport
TEN-T	Trans-European Transport Network
WEI	Wider Economic Impacts

1. Introduction

1.1 Background to the TEN-T CNCs

In December 2013 the European Parliament and the European Council agreed on a set of new guidelines for the development of the Trans-European Transport Network (TEN-T). The aim of the TEN-T is to strengthen social, economic and territorial cohesion of the European Union and contribute to the creation of a single European transport area which is efficient and sustainable, increases the benefits for its users and supports inclusive growth.[1]

The TEN-T regulation (no. 1315/2013) specifies both the infrastructure which is included in the TEN-T and what technical requirements should be fulfilled regarding the TEN-T infrastructure. According to the TEN-T guidelines the network should be fully functioning by 2050. Parts of the network are classified as a core network and should be fully functioning by 2030.

Nine core network corridors (CNC) are, in the current budget 2014-2020, prioritised for EU-funding to facilitate the implementation of the TEN-T core network. A work plan for implementation of each corridor with financed investments is updated every second year.

Motorways of the Sea (MoS), is the maritime pillar of the TEN-T and the horizontal priority of the Connecting Europe Facility (CEF). It aims to promote green, viable, attractive and efficient sea-based transport links integrated in the entire transport chain.

The trans-European network of Motorways of the Sea is intended to concentrate flows of freight on sea-based logistical routes in such a way as to improve existing maritime links or to establish new viable, regular and frequent maritime links for the transport of goods between Member States, in order to reduce road congestion and/or improve access to peripheral and island regions and States.

Additionally, the European Railway Traffic Management System (ERTMS) should replace current national train control and command systems within the core network. The implementation of the ERTMS will allow cross-border interoperability and create a Europe-wide railway system.

1.2 CNC's in the Baltic Sea Region and Connected Corridors

The Baltic Sea Region is crossed by four of the nine European core network corridors as shown in Figure 1. The **Scandinavian – Mediterranean** corridor starts from the border between Finland and Russia and from Oslo through Sweden, Denmark, Germany, Austria, Italy and ends in Malta. The **North Sea – Baltic** corridor connects ports at the North Sea to Warsaw and to the border to Belarus. From Warsaw the corridor turns northwards to Helsinki via the Baltic states. The **Baltic – Adriatic** corridor runs from Swinoujscie and Gdynia/Gdansk in Poland to ports in the northernmost part of the Adriatic Sea. The **Orient/East – Med** corridor connects the ports of Rostock, Hamburg and Bremerhaven/Willhelmshaven via Berlin and Prague to ports in Bulgaria and Greece. The corridor stretches to Cyprus.

[1] EU. (2013). *EU Regulation no 1315/2013.*

An important transport link, the Bothnian Corridor, connects the Scan-Med Corridor with the transnational network of transport connections in northern Europe. It stretches out both on the Swedish and the Finnish side of the Bothnian Gulf. With focus on the development of core north-south railway infrastructure to enable the further industrial growth in northern Scandinavia, it has been the strategic area of cooperation between politicians, regional stakeholders, industry and national authorities in Sweden (via the formal network registered under the name Botniska korridoren) and in Finland (with no formal network established). Recently (summer 2018) the Bothnian Corridor promoters received the support from the two national governments to argue for extending the Scan-Med Corridor northwards along the Gulf of Bothnia and the leg to the Narvik port in Norway.

A similar collaboration is initiated in the Scan-Med corridor between Oslo and Stockholm called Oslo-Sthlm 2.55. The initiative aims to improve the railway between Oslo and Stockholm and is supported by the Swedish government.

The Northern Axis is one of the five Trans-European transport axes defined by the European Commission High Level Group in 2005. The Northern Axis connects the northern EU with Norway to the north and with Belarus and Russia and beyond to the east. Parts of the network are included in the Scandinavian-Mediterranean corridor.

The TEN-T network channels the increasing trade flows within the EU, as well as trade further east. One example of an important connection eastwards is the Belt and Road Initiative that aims to connect Asia, Europe and Africa. The Silk Road Economic Belt is linking China to Europe through Central Asia and Russia by rail. The Maritime Silk Road is instead focusing on using Chinese ports to link China with European ports, among others the Adriatic ports which are part of the CNC Baltic-Adriatic. With increasing trade eastwards and possible change of trade patterns it can be expected that logistically central areas in the eastern EU will gain increasing importance for European trade and businesses.

1.3 The TENTacle Project

Implementation of the CNCs has a large but untapped potential to stimulate positive effects in the Baltic Sea Region (BSR) beyond the pure transport sector and beyond the immediate geographical areas the CNCs cross. Therefore, in 2015 Region Blekinge initiated the EU-project TENTacle[2] co-funded by the Interreg Baltic Sea Region Programme. The aim of TENTacle is to"improve stakeholder capacity to reap the benefits of the core network corridors implementation for the prosperity, sustainable growth and territorial cohesion in the Baltic Sea Region".

The TENTacle project pays special attention to the distribution of benefits out of the CNCs across the BSR territory and for that reason the project partnership suggested a typology of regions in relation to their geographical distance to the corridors. These are: corridor node and transit areas (located along a CNC); corridor catchment areas (located in a close distance to one or more CNCs); and corridor void areas (located farther away from the CNCs). As the Orient/East – Med Corridor barely follows the conventional BSR boundary as determined by

[2] www.tentacle.eu

the Interreg BSR Programme [3] (see Fig. 1) the project works only with the three corridors: Scandinavian-Mediterranean, North Sea – Baltic, and Baltic Adriatic.

Here the Motorways of the Sea (MoS) are not illustrated but these clearly represent an important transport element to be further integrated in the network of the CNCs.

The Swedish Transport Administration (Trafikverket) is one of the partners in the TENTacle project and responsible for this study together with Region Blekinge. The Swedish Transport Administration procured a study from Ramboll AB, which was an important input to this this report, which has been further developed by the TENTacle WP5 Management team, Wiktor Szydarowski, Maria Öberg, Björn Hasselgren, Katja Höltkemeier (until June 2018) and Inga Gurries. The TENTacle WP5 Management team also appreciates the valuable support of WP 5.1 task leader George Panagakos from the Technical University of Denmark, in the preparation of the report. Valuable comments have also been received from other partners and task leaders in TENTacle.

[3] Interreg Baltic Sea Region Programme. (2018). *About the programme.* Accessed: 2018-04-11. https://www.interreg-baltic.eu/about-the-programme/area.html

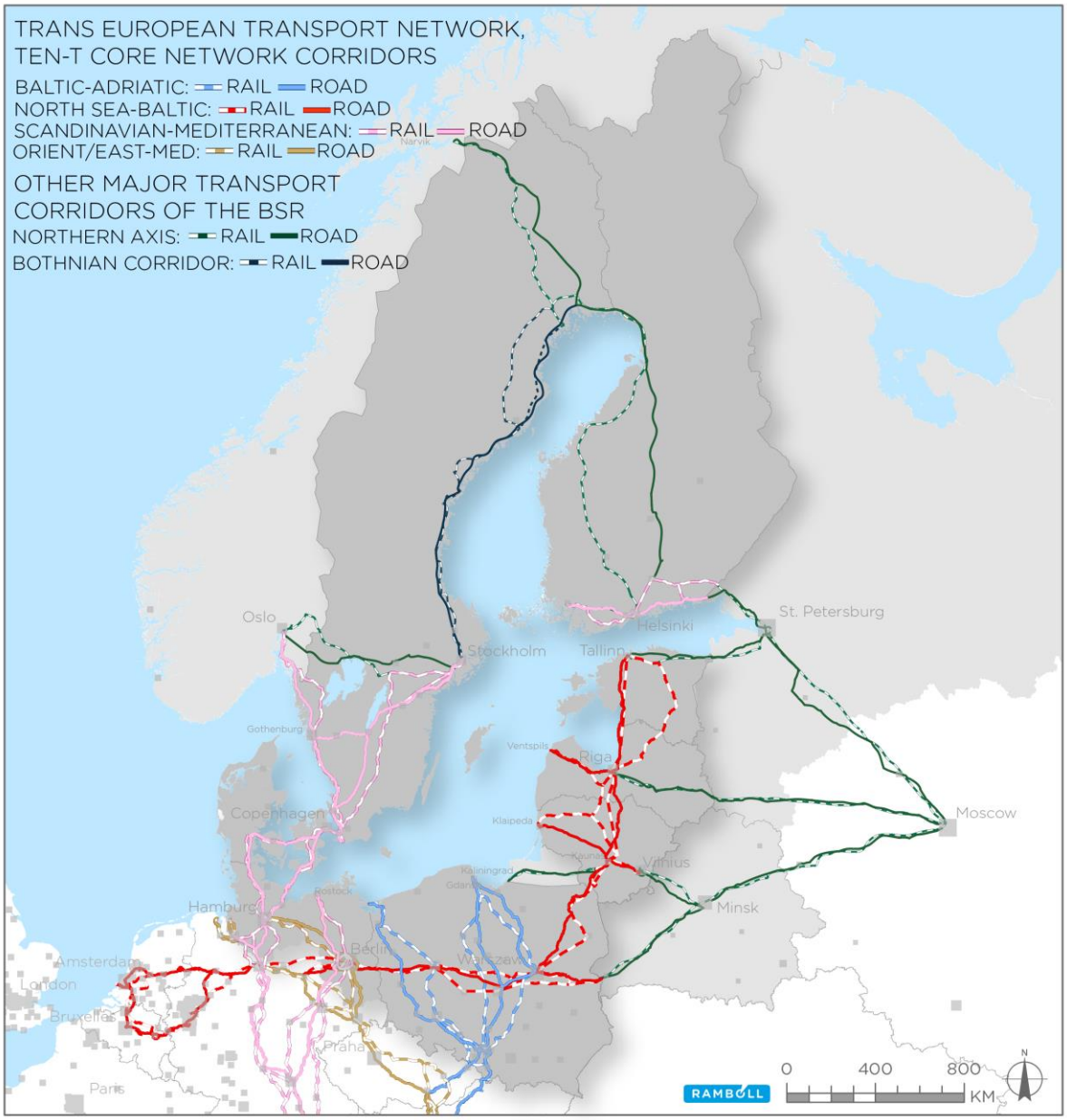

Figure 1. Baltic Sea Region with TEN-T Core Network Corridors, together with other major transport corridors, linking the region to the east and the west.
Source: Ramböll Sverige AB

1.4 Objective, scope and delimitation

The objective of this study is to provide a qualitative analysis of economic, social and territorial impacts related to the implementation of the CNCs in the BSR. The impacts are divided into impacts that can be attributed to the performance of theCNCs as a functional system and impacts that are, in consequence, enabled by that functional system, i.e. WEI – wider economic impacts

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

Most of the direct and indirect effects of infrastructural investments in the transport market are captured in conventional appraisals, e.g. cost-benefit analyses (CBA). However, particularly large infrastructure investments are expected to generate effects that are not limited to just the very transport system. They are expected to spread out and affect the wider economy. In the literature, such effects are often referred to as wider economic impacts (WEI). Typical WEI are caused by agglomeration effects, labour market effects and effects in production as well as by the change in land value. These effects are discussed further in chapter 2 and provide a scientific ground for the further chapters in the report.

Two case studies featuring the Fehmarnbelt link and Rail Baltica are presented in chapter 3 as an example of large infrastructure investments on the corridors (so called mega-projects) that may provide either positive and negative implications or both, for the development of regions depending on their proximity to the CNCs. A broad spectrum of aspects and the wide geographical area for possible investigation at the limited budget and time limits set upon this investigation does not allow to draw conclusive statements for the impacts of CNCs on their surroundings just based on these two cases. Rather, it shall be seen as an input to the continued discourse on how to evaluate long-term consequences of the infrastructural developments along the priority transport axes in a larger territorial scale.

It is important to emphasise that the report attempts to capture both the positive and the negative impacts that new transport infrastructure likely will bring from a both functional and wider economic perspective related to geographical location and stakeholder groups.. The analysis focuses primarily on long-term economic impacts that arise when the CNCs are fully completed, hence the outcomes of construction phase are not in the scope. Further, the analysis does exclude maintenance and re-investment components of the infrastructure investment. It takes into account the reasoning in the guidance by Swedish Transport Administration to discard smaller investments from any WEI analysis as the direct effects of smaller investments are not substantial enough to create wider economic impacts[4].

Based on the findings in chapter 3, chapter 4 aims to clarify the distribution of identified impacts for different stakeholder groups. The findings are discussed based on the three pre-determined TENTacle geographies: corridor node and transit areas; corridor catchment areas; and corridor void areas.

Finally, the report proposes some possible governance and policy measures to strengthen the win-win effects of the CNC s implementation and then elaborates on possible policy responses for stakeholder groups to strengthen the ability to benefit from the CNCs.

[4] Trafikverket. (2017). *Trafikverkets hantering av" Wider Economic Impacts" och analys av regionalekonomisk utveckling.*

2. Impact Analysis

This chapter aims to address and analyse the impacts that are expected to be generated from implementing the TEN-T CNCs. This study will primarily focus on long-term impacts that arise when the CNCs are fully implemented.

Therefore, the impact analysis will focus on identifying impacts that can be:

(1) attributed to the performance of CNCs as a functional system;

(2) enabled by the functional system – in a form of wider economic impacts (WEI).

When analysing positive and negative impacts, the study will reflect upon whether the CNCs contribute to environmental, social and/or economic sustainability. Additionally, the impacts assessed in this study are likely to affect different areas in different ways, depending on their geographical location in relation to the corridors. The corridor node and transit areas, along with the corridor catchment areas, may benefit more from the infrastructure investment in comparison to the corridor void areas which may experience relative negative effects being more remote from the CNCs. Areas that are located on, and close to the corridor, but do not have a direct connection to corridor nodes may experience similar relative negative effects as the corridor void areas. This will subsequently be referred to as the "tunnel" effect.

This study discusses both absolute and relative effects generated in different geographical areas. Void areas and to some extent transit areas may experience a lower growth rate and wealth relative to areas closer to the corridor. While the absolute effect in these geographical areas may be, in general, positive however compared to some other geographical areas that are benefitting the most from the investment they may experience a relatively decreasing accessibility and thereby a relative decrease in competitiveness rankings.

Figure 2 below illustrates an interpretation of absolute and relative change in accessibility.

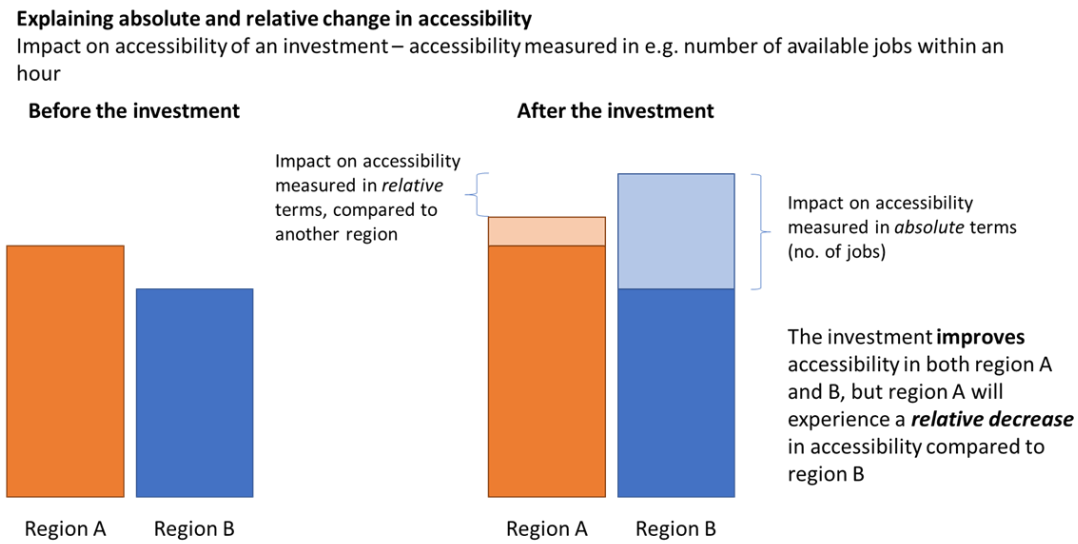

Figure 2. Interpretation of absolute and relative accessibility change.

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

2.1 Impacts to be expected from the CNCs as parts of functional systems

In the following sections impacts from the CNCs as part of functional systems are analysed. Geographical areas may experience these impacts as both positive and negative depending on where, in relation to the corridor, they are located. The impacts that are essentially analysed are the changes in accessibility, quality and capacity. It should be acknowledged that areas can experience a relatively negative effect in relation to peer areas that are benefitting more from the infrastructure investment in terms of accessibility, quality and capacity. The areas categorised as void or transit may experience an absolute increase in, for example, accessibility but, may at the same time, face a relative decrease in competitiveness compared to areas located closer to the corridor nodes where accessibility improves even more – as illustrated in the introduction to this chapter.

Positive effects

Investments in transport infrastructure generally have the purpose of improving the accessibility, the quality and/or the capacity of transport systems. Such improvements will create positive effects by facilitating increased transport flows in the system.

For instance, an investment that has the objective of filling in a missing link, or a missing transport mode, results in an improved accessibility and invigorates the passenger and freight transport between the connected nodes. Hence, improvements in accessibility will lead to positive effects, as they may allow the residents and labour force to travel longer distances due to travel time savings, and this may enable trips that have not taken place prior to the change. For freight, better accessibility attracts, for example, more logistic companies and facilitates decisions on locating new intermodal terminals.

Depending on the type of accessibility improvement, emissions of greenhouse gases, air pollution and noise may be reduced. For instance, improving the accessibility by train may lead to changes in choice of transport modes, i.e. people who generally travel by car may opt for the train instead. The same effect may be true for freight transport, that is, if the accessibility by railroad improves, some firms may be inclined to change their choice of transport mode from truck to train. A transfer of transport flows from road to railway is likely to decrease emissions of both greenhouse gases in general, and air pollution in particular. The investment would then be contributing to environmental and social sustainability by mitigating climate change and reducing health-hazardous pollutants in cities.

Another effect that may be expected from investing in missing links is a change in transport costs. Whether the change is positive or negative depends on the type of measure. For instance, a positive effect would be generated if the investment improves accessibility and reduces travel time. This change affects both passenger and freight transport positively as the generalised cost[5] of transport is reduced. However, the net effect to consumers depends on whether the new link is financed by charges on the users of the new link or by tax revenues that are collected from a wider collective. No extra charge on a new link is, in reality, very unlikely.

[5] *In transport economics the generalised cost is the sum of monetary and non-monetary costs of a journey. A non-monetary cost is e.g. cost of carbon emissions.*

An investment may also have the purpose of improving the capacity. Measures leading to capacity improvements will typically, at least in the short term, lead to an alleviation in congestion and improved reliability of the transport system. In addition, the improved capacity may result in travel time savings as there will be less congestion and presumably better traffic flows.

The improved road and railroad capacity may also lead to changes in emissions of greenhouse gases, air pollution and noise. Depending on whether the improved capacity leads to increased road traffic flows or just to the alleviation of congestion, emissions may either increase or decrease, at least in the short term. The level of emissions depends on both speed and traffic flow volumes on roads. An increase in speed on roads generally leads to more emissions. However, alleviation of congestion may decrease stop-and-go traffic, which will affect the level of greenhouse gas emissions positively. If the change leads to a decrease in emissions it will contribute to environmental and social sustainability in a positive manner.

An infrastructure investment - if located on the state borders (cross-border investment) - may also of course in the long term lead to more coordinated standards and more harmonised regulations between the countries involved, which in turn may boost connectivity and network interoperability on a wider territory, e.g. along the international transport corridor.

Negative effects

Even though the objective of a transport infrastructure investment is to create a positive net effect to society, it may also generate some adverse effects.

As previously mentioned, an accessibility and/or capacity improvement may lead to changes in emissions of greenhouse gases, air pollutants and noise. Again, the effect may be positive if the change in accessibility leads to a shift in transport modes, e.g. from road to railroad. However, if the accessibility improvement increases instead the road traffic, the investment has the opposite effect and thereby leads to an increase in emissions, assuming that no technological development, e.g. cleaner fuels and more efficient combustion systems, is parallel introduced. The long-term impact in the form of increased levels of greenhouse gases may give rise to health issues among citizens due to the exposure to higher levels of air pollution and noise. This development would lead to some adverse effects on social and environmental sustainability.

The effect on transport cost is ambiguous as the cost may increase following an investment. An infrastructure investment can lead to, for example, more expensive train tickets or tolls to be paid by travellers in return for the use of the new or improved link.

Additionally, in the long term, an accessibility and/or capacity improvement may induce an increase in traffic, which, in turn, creates a loop where investments targeted to solve an accessibility/capacity problem in the end leads to more generated traffic. The transport network will eventually reach saturation and thereby again require additional measures to improve accessibility and capacity.

2.2 Wider economic impacts enabled by the CNCs

Investments in transport infrastructure are expected to bring benefits that are not limited to just direct effects in the transport system. The effects of a substantial investment are estimated to spread and affect the wider economy. These impacts are essentially not captured in conventional appraisals, for example cost-benefit analyses (CBA). In the literature, they are often referred to as wider economic impacts (WEI).[6]

In this chapter, the WEI will be analysed and discussed in terms of positive and negative consequences that may arise from implementing the CNCs. Impacts that are expected to be generated are the following:

- Economies of agglomeration
- Changing dynamics in labour markets
- Changes in competition between firms
- Change in land value

Positive impacts

One positive impact that may follow from implementing the CNCs is the agglomeration economies along, and in close proximity to, the corridors. Economies of agglomeration can be defined as clusters of economic activity in a region.[7] This phenomenon may arise as a result of the improved accessibility. Improved accessibility increases the attractiveness of a region and may lead firms to relocate closer to each other. More firms in one region generally leads both to more competition between firms, greater specialisation and an increased industry diversity.

Additionally, agglomeration can lead to economies of scale *within* a region, that is, the region benefits from its large size and the large supply in input markets,[8] i.e. markets that supply goods and services that are used by companies to produce other products. The increased competition in input markets leads to the lower costs for producing goods and services, which consequently also decreases the overall production costs.[9] The result is a further increase in competition as new firms enter the market due to the lower costs of production; this effect enhances agglomeration even further. Moreover, agglomeration economies often generate spill-overs of knowledge, innovation and technology between firms that boosts the productivity and the efficiency of a region even more.

[6] European Union, Interreg Central Baltic. (2018). *FinEst Link, Helsinki – Tallinn Transport Link.*
[7] Bothnian Green Logistics Corridor report: *The Wider Economic Impacts of Transport Investments.*
[8] Trafikverket. (2017). *Trafikverkets hantering av "Wider Economic Impacts" och analys av regionalekonomisk utveckling.*
[9] Department for Transport UK. (2016). *TAG UNIT A2.1 – Wider Economic Appraisals.*

Another effect that arises due to the agglomeration is usually the lower transport costs for both passenger and freight transport. The effects of lower transport costs are transferred to non-transport markets as households and businesses change their behaviour.[10] For example, a reduction in transport costs may lead to new firms entering the market due to lower overall production costs. This will ultimately result in a more efficient market as the market price decreases and the output produced increases. Consumers will then benefit from more services and goods to a lower cost.

Positive effects of a transport investment may spread to the labour market as well.[11] Transport costs, including time and reliability, affect individuals' decisions about whether or not to work in a particular area, where they locate and how far they are willing to commute. If, as a result of a transport improvement, more people decide to work in a particular area and some people are prepared to travel further to higher payed jobs, the full benefit *to them* from their additional trips will be captured by conventional appraisal methods in estimating benefits from generated trips. Lower travel expenses for work related trips mean that the labour reserve wage, i.e. the minimum wage accepted, falls which in turn leads to an increased labour supply.

The increased labour supply is expected to lead to increased productivity and overall increased employment and production. For households, increased accessibility to a region may enable the possibility of commuting to other cities and regions. Improved accessibility in combination with an increased industry diversity leads, not only to more work places, but also to a greater variety of occupational opportunities for more workers. This in turn increases the probability of a better match between the employer and the employee. A region that increases its industry diversity, that is, where more different types of firms are locating, will also increase its robustness to fluctuations in the economic cycle.

Better matching between demand and supply in labour markets also increases productivity since the employee is a better fit for his/her job, that is, the employees work with what they do best.[12]

Land values in the areas positively affected by CNCs would be expected to increase. This is an effect connected to increased accessibility and attractiveness in locating businesses and housing in nodes and areas favourably affected by the CNCs. The land increase effect is ambiguous and has to be studied in detail in order to predict the magnitude of changes. Increases in centrally located areas might also be off-set by decreasing land values in less favoured areas.

To summarise, implementing the CNCs may promote social sustainability as the investments in transport trigger more work places in other economic sectors, contribute to a lower unemployment and to a better matching rate between labour demand and supply. In terms of the economic sustainability, the CNC implementing may lead to an increased economic productivity and hence to the economic prosperity in these areas that have an easy access to the corridor. Such positive effects are more likely to benefit areas close to the corridor, such as corridor node areas and corridor catchment areas, rather than corridor void areas but also to some extent corridor transit areas.

[10] Department for Transport UK. (2016). *TAG UNIT A2.1 – Wider Economic Appraisals.*
[11] Baltic Sea Region Programme. (n.d.) *The Wider Economic Impacts of Transport Investments.*
[12] Bothnian Green Logistic Corridor. (n.d.) *The Wider Economic Impacts of Transport Investments.*

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Negative impacts

Transport infrastructure investments can also offset negative impacts in a geographic area. One effect may be that the economic activity relocates from one location to another. Hence, different regions can be affected in different ways depending on their proximity to the CNCs. Corridor void areas are examples of areas that may be negatively affected by the implementation of the CNCs as they become relatively less attractive to investors and firms, which, in turn, affects population and economic growth. The specific effects for any location though have to be analysed individually.

This does not necessarily mean that the impact is negative in absolute terms. Void areas could very well benefit from the CNCs compared to the current situation, for example, through better access for long-distance transport, even though they do not benefit as much as corridor node areas. Implementation of the corridors may, as a result, lead to relocation of production and economic activity from one region to another i.e. displacement effects.[13] Similar effects are anticipated for areas that are located in, or close to, the corridors but without a direct connection to the corridor. These areas can be referred to as being struck by the tunnel effect. That is, they are close to the corridor but have no opportunity to benefit from it.

In a CNC context, impacts on the labour market may also strike differently in different areas, depending on the proximity to the CNCs. Contrary to the corridor node and transit areas and the corridor catchment areas, the corridor void areas are likely to be at a relative disadvantage as a result of implementing the CNCs since the anticipated growth in economic activity and labour markets is expected to centre along the corridors. Furthermore, an increase in land value in one area may ultimately lead to a decrease in another area as it becomes comparatively less attractive for firms and households. Corridor void areas may experience a relatively lower demand for land since corridor node and transit areas are becoming more attractive to invest in.

To summarise, corridor void areas, as well as transit areas, may experience negative effects, to some extent relative to corridor node and corridor catchment areas. However, void areas will benefit in absolute terms as accessibility for long-distance travels and freight transport increase. Altogether, the net effect to the Baltic Sea Region is expected to be positive due to transferred economic activity which will draw on the benefits generated by economies of agglomeration. This development is assumed to boost the economic activity even further.

[13] Department for Transport UK. (2016). *TAG UNIT A2.1 – Wider Economic Appraisals.*

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

3. Geographical Distribution of Impacts

3.1 Introduction

The analysis of impacts generated by a transport infrastructure investment on the functional system and further impacts triggered in other economic sectors (WEI) revolves around the positive aspects of the improved accessibility, quality and capacity in the transport network. The reduced transport cost and travel time savings will contribute to the total benefit of the investment, as described in a conventional cost-benefit-analysis, no matter the size or geographic location of these benefits.

However, apart from providing benefits to the region through an improved accessibility, e.g. in terms of available jobs or the supply of services within a set time frame, the investment in infrastructure improves accessibility also in other regions, sometimes even to a larger degree. The region's accessibility level thus becomes relatively lower, as compared to such peer regions which record better accessibility gains. In this chapter and further on in the report, such a change in accessibility in relation to another region will be referred to as a relative decrease in accessibility (see also Fig. 2). This, in turn, is expected to result in a decrease in the region's attractiveness and competitiveness in the peer ranking. Hence, an investment could cause both positive and negative WEI, despite improving the accessibility, capacity and quality of the transport system.

In addition to the understanding of the spatial distribution of changes in accessibility over the regions influenced by the investment, an analysis of the spatial distribution of WEI also requires an understanding of the context of the investment. Hence, the analysis must address the characteristics of the regions influenced by the investment, as well as the spatial aspects and relationship between the influenced regions.

The analysis of the spatial distribution of WEI and impacts on the functional system, covers two different cases of investment in the TEN-T CNCs within the Baltic Sea Region; the Fehmarnbelt link and the Rail Baltica. The analysis of the two cases focuses on whether the investment and the potential WEIs will contribute positively or negatively to the regional economic development.

3.2 Case Fehmarnbelt link

The Fehmarnbelt link will be an 18 km long immersed tunnel[14], connecting Rodbyhavn on the Danish island of Lolland with the German island of Fehmarn. The Fehmarnbelt link will consist of a four-lane motorway and a double-track electrified railway. The project not only entails the establishment of a link across the Fehmarnbelt, but also an extension of the hinterland connections in Denmark and Germany. The existing railway connecting to the tunnel, both on the Danish side and the German side, will face a significant upgrade (double-track and electrification). The road infrastructure in northern Germany connecting the tunnel will also be upgraded, to a four-lane road with 120 km/h speed limit[15]. The link is expected to open for traffic in 2028.

When completed, the link under the Fehmarnbelt, together with the upgraded rail infrastructure on both sides of the link, will have a decisive impact on the time it will take to travel by train between the different areas in the Fehmarnbelt region. The journey across the belt will be reduced by approximately one hour, while freight traffic transiting through Denmark will be saved a 160 km detour through Jutland[16]. The direct train between Hamburg and Copenhagen will take 2.5 hours. With stops in intermediate cities such as Lübeck and Ringsted, the train ride will take less than 3 hours. Today the journey by train between Hamburg and Copenhagen takes 4.5 hours. The time savings of course apply also to connections beyond the Fehmarnbelt region. Distances and travel time between cities in Scandinavia and cities on the continent will decrease due to the time savings provided by the link and travel times will decrease even further due to the upgraded infrastructure along the corridor.

Furthermore, trains will likely run far more frequently on the route, further enhancing the accessibility by train, compared with today.

The upgrade of the adjoining railway connections to the tunnel will reduce journey times, not only for those travelling between Denmark and Germany, but also for regional transports north and south of the tunnel. For those living on the Danish islands of Lolland, Falster and Zealand, the reduction of travel times by train will be significant. From Nykobing-Falster to Copenhagen, the journey time will be cut from 90 minutes to less than an hour and the train journey between Copenhagen and Næstved is forecast to be reduced from 41 to 23 minutes when the upgrade of the railway is completed[17].

3.2.1 Estimated spatial distribution of impacts from the Fehmarnbelt link on the CNCs as a functional system

The Fehmarnbelt link, together with the additional investments described above and the subsequent reductions in travel times by train, is expected to have a substantial effect on passenger transport by train along the corridor. Regional commuting by train along the corridor south from Copenhagen is expected to increase considerably, due to the reduced travel times and increased frequency of trains. In addition to increased regional commuting a general increase in demand for passenger transport by train is to be expected along the

[14] *An immersed tunnel is made up of hollow concrete elements, cast on land and assembled section by section to form the tunnel*
[15] *"Traffic forecast for the Fehmarnbelt Link" Femern A/S, November 2014 (femern.com/en/Documentation)*
[16] *"Traffic forecast for the Fehmarnbelt Link" Femern A/S, November 2014, pp 56 (femern.com/en/Documentation)*
[17] *https://femern.com/en/Benefits/Benefits-for-me/Lolland-Falster*

corridor, including southern Sweden and northern Germany, as a result of the improved accessibility by train.

Radically improved travel times by train will likely affect the demand for air flights on relatively short distances in the region. The demand for flights between Copenhagen and Hamburg will most likely become limited and the demand for flights between Copenhagen and Berlin could decrease to some extent as well. Hence, a modal shift from cars to trains for regional commuting and from flights to trains for some longer interregional journeys is to be expected from the link.

Shorter travel times to Copenhagen Airport will expand the airport's catchment area, including areas of northern Germany, thus strengthening its role as an important air hub in northern Europe.

For freight transport, avoiding the 160 km detour via Jutland, coupled with the increased capacity of the railway system, will reduce time and possibly costs for transporting goods by rail between Scandinavia and the continent. The link is thus expected to result in an increased demand for freight transportation by rail, but also may cause flow displacement effects because of a change of routes, from Jutland to the Fehmarnbelt corridor.

A large proportion of the flow of goods via Funen and Jutland to the continent is expected to be substituted by the more direct corridors available with the new Fehmarnbelt connection. This will reduce the amount of traffic on the Great Belt link and thereby ease the capacity constraints. However, rerouting the traffic to the Fehmarnbelt corridor, together with possible rerouting of freight flows from the ferries across the southern Baltic Sea to the Fehmarnbelt link (see below) will of course increase the capacity utilization on the road and rail network along the Fehmarnbelt corridor. Furthermore, the link and the upgrade to double track of the adjoining railway system will increase the capacity and redundancy of the railway system, which in turn has positive effects on the reliability for the railway, making it less vulnerable to disturbances.

Today, freight transport along the corridor is dominated by transportation of export products from the Swedish base industry (forest, paper and steel) whose production sites are mainly located in central and northern Sweden. These transports, especially from industries located inland rather than along the coast where sea-transport is generally an option, are likely to benefit from the increased redundancy in the system, but also from the reduced transport times. Manufacturing industries in the western and southern part of Sweden are likely to benefit from shorter transport times for combined transport trains.

Hence, there is a possibility for a modal shift from sea to rail. An improved railway connection to the continent could be induced for goods,that are currently being transported from inland to the ports of central and northern Sweden, to be transported by train through Sweden and further to the continent. The limited capacity in the Swedish railway system will, however, be an obstacle to meet the expected demand. Additionally, the terminal Machen in Hamburg might face problems with serving more train movements due to current capacity restraints.

Still, the enhanced rail transport opportunities do not necessarily imply that large portions of freight volume will be shifted from services by road. The last mile investments in Denmark and Germany, with the latter country planning to upgrade the section to Puttgarten to a four-lane road, and to increase the speed limit to 120 km/h would add additional time savings to

the crossing of the belt through the link, which itself replaces the 45 minutes' ro-ro transit with the 10 minutes' drive.

Finally, a possible change of routes from the ferry routes across the southwestern part of the Baltic Sea to the link across the Fehmarnbelt, coupled with the modal shift from road to rail, may result in a slight reduction of cars and trucks on the roads leading up to the ports, for example, Rostock-Berlin, Malmo-Trelleborg and Travemünde-Lübeck.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

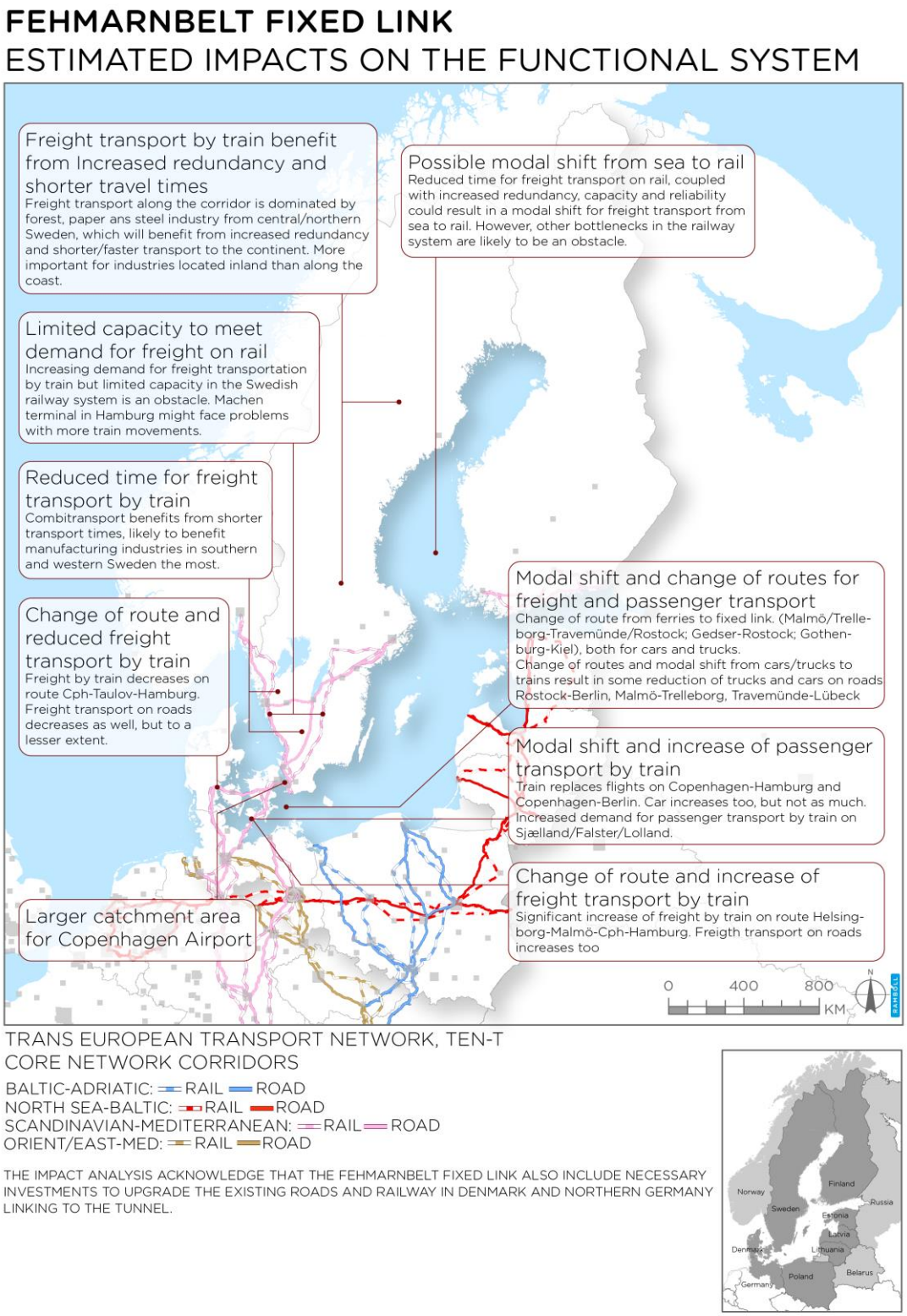

Figure 3. Estimated impacts on the functional system (Fehmarnbelt link). Source: Ramböll Sverige AB

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

3.2.2 Estimated spatial distribution of Wider Economic Impacts from the Fehmarnbelt link

The analysis of the spatial distribution of WEI originating from the construction of a link across the Fehmarnbelt, coupled with a significant upgrade of the adjoining railway infrastructure, is based on an initial analysis of the expected positive impact on the transport market, that is, improved accessibility, quality and capacity of the transport infrastructure.

Denmark

The Copenhagen region is expected to be the main beneficiary from the new Fehmarnbelt link, as it profits from the improved accessibility to the continent, particularly to the Hamburg region. Furthermore, the Copenhagen region would benefit vastly from the upgrade of the railway towards the tunnel, providing radically improved opportunities to commute from Lolland/Falster to the metropolitan region and between the intermediate corridor nodes along the route. Hence, the investment can be expected to contribute to a further expansion of the Copenhagen functional region, incorporating regions that are currently beyond commuting distances for most people and create a larger common labour market.

Chapter 2.2 of this report has outlined the various economic benefits related to regional growth and economies of agglomeration. The improved accessibility, greater level of centrality and continued expansion of the Copenhagen functional urban region can be expected to increase the region's competitiveness and attractiveness compared with similar regions around Europe. The Danish capital is thus expected to become more attractive as a location for new businesses within different sectors of the industry.

Apart from the core of the Copenhagen metropolitan area, that is, the capital itself, the corridor nodes along the improved railway can also be expected to benefit significantly. The accessibility will improve not only in absolute terms, but also in relative terms compared with regions of similar character and size, but where the accessibility will improve markedly less from the investment. Hence, the corridor nodes are likely to become more attractive as potential locations for both labour and businesses.

In all the nodes along the improved railway, especially nodes where travel times to the city of Copenhagen improves the most compared with today, for example, Nykobing-Falster, Næstved and Vordingborg, the demand for land for housing and businesses can be expected to increase. It is likely that such an increase in demand would in turn result in an increase in property and land values in and around those nodes.

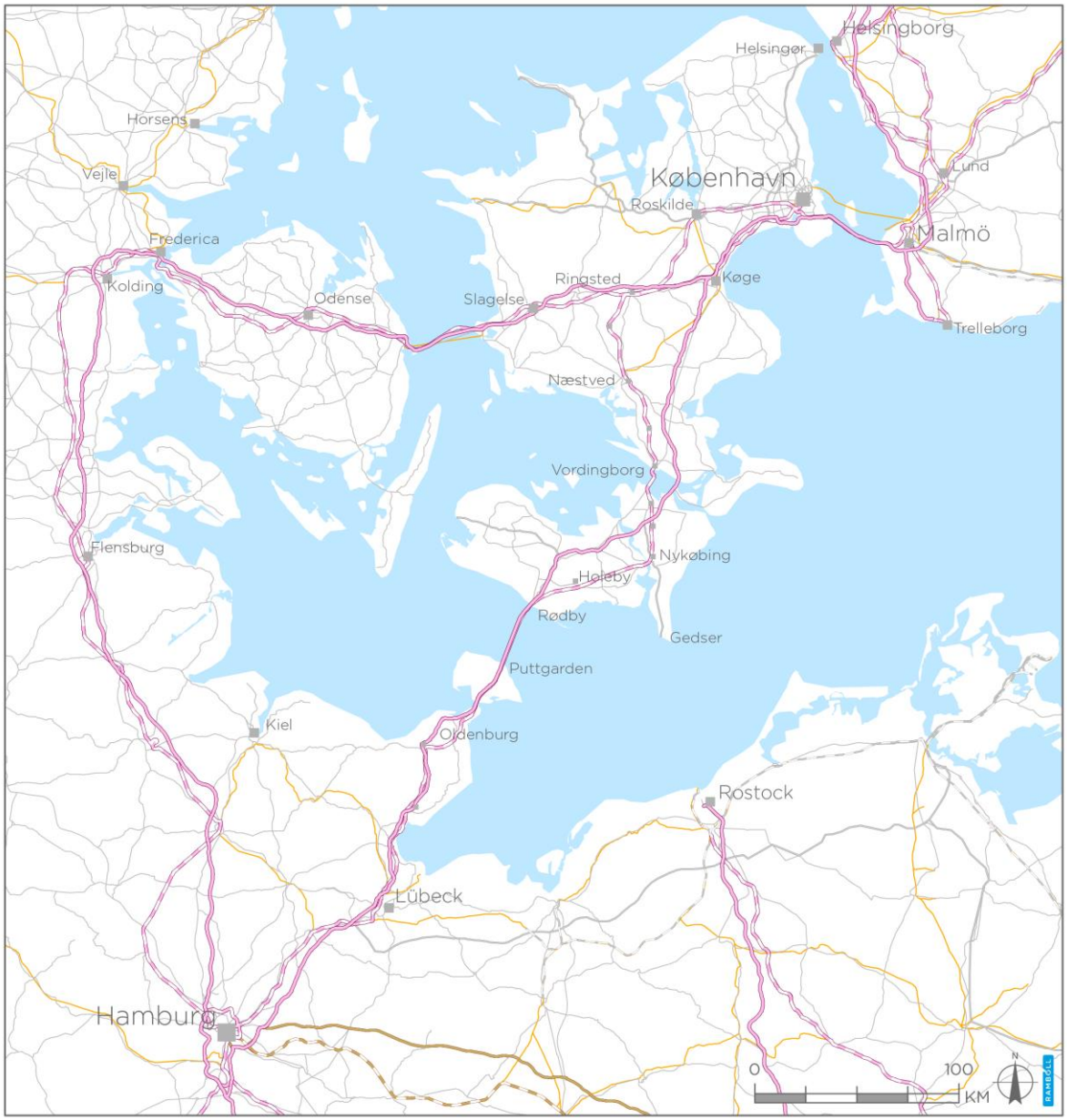

Figure 4. The Fehmarn corridor and its surrounding regions. Pink roads/rail are part of the Scandinavian Mediterranean TEN-T CNC Source: Ramböll Sverige AB

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

In regions where the level of accessibility becomes relatively lower, in comparison with the nodes along the improved railway, attractiveness and competitiveness decreases, in relative terms. Consequently, displacement effects of various sorts may occur. These negative impacts are most likely to affect Jutland, with the most impact being felt along the existing land route to Germany. Over time, relocation of existing businesses to the corridor on Zealand/Falster could occur as the improved accessibility along the corridor provides better accessibility to the market, lower costs for transport and access to a larger pool of skilled labour. However, a relative decrease in accessibility could also make it more difficult to attract new businesses and labour to certain areas of Jutland. Relocation of labour to the Fehmarnbelt corridor could also occur, as the nodes along the corridor could provide better accessibility to more and better suited jobs, with potentially better salaries and lower transportation costs. These displacement effects also include a likely decrease in demand for land and housing, causing a drop in values and prices.

Due to the mainly rural character of Lolland/Falster and Fehmarn/North Eastern Holstein, together with the fact that travel times between any sizable urban areas in Denmark and Germany will still be too long for daily commuting between the two countries, the additional cross-border commuting originating from the link can be expected to be very limited. Hence, the new connection across the Fehmarnbeltbelt link is not expected to generate the same kind of cross-border labour market effects as the link across Oresund did, which connected two major urban areas.

Germany

On the German side of the link across the Fehmarnbelt, the nodes Lübeck and Oldenburg are expected to be the main beneficiaries in terms of WEI from the improved connections to Hamburg, benefitting from the improved commuting facilities to the metropolitan area. These nodes, especially Lübeck, are expected to become more attractive for establishment of new businesses and labour, compared with regions where accessibility is less or not at all affected by the investment. Of those regions, Rostock and the surrounding northern part of Mecklenburg-West Pomerania is likely to be the most negatively affected and thus most likely to experience negative WEI. A relative decrease in accessibility could cause displacement effects over time, with existing businesses possibly relocating and new businesses preferring the Fehmarnbelt corridor, where accessibility is relatively better. Furthermore, the strategic importance of the port of Rostock as a hub for ferry transport is likely to decrease due to the proximity to the link.

It is possible to argue that the Hamburg region would benefit as much as or more than the Copenhagen region from the new investment, as the travel times reduces equally in both directions and agglomeration effects usually favour the largest economies. However, the added value emanating from the improved accessibility is rather different and of different importance for the different regions respectively. Already surrounded by several major cities within similar distance as that of Copenhagen, the added value from adding another major city to its existing market is arguably smaller for Hamburg, than the added value for Copenhagen emanating from adding Hamburg to its current market. For the same reasons, the positive WEI south from Hamburg are expected to be rather limited and of less value.

Sweden

The improved accessibility to the Hamburg region and the continent through the link across the Fehmarnbelt is expected to benefit the southern parts of Sweden. However, the impact is expected to decrease rather quickly outside the Swedish southernmost region Scania, with the increasing distance to the Copenhagen metropolitan region and the continent. Closer to Copenhagen, the expected growth of the metropolitan region, providing accessibility to more jobs and labour, coupled with the reduced travel times to Hamburg, is expected to generate WEI. Removal of remaining cross border obstacles for integration of Malmo/Lund and Copenhagen would further enhance WEI in southwestern Scania.

The link across the Fehmarnbelt will reduce travel times between Hamburg and Stockholm to the same extent as between Hamburg and Copenhagen. However, the positive impact expected from reducing travel times between two metropolitan regions from 4,5 hours to 2,5 hours is completely different to the impact of reducing the travel times between two metropolitan regions from roughly 9 hours to 7 hours. The impact from reducing travel times by train by two hours on such a long connection as Stockholm-Hamburg is further limited by the availability of much faster options, i.e. air transport on the route. Hence, the positive impact on the Copenhagen region is expected to be more significant, than on the Stockholm region, or any other region in Scandinavia.

For the basic industries in central and north Sweden and for manufacturing industries in western Sweden, the redundancy given by the link, the shorter travel time and the upgraded railway system in Denmark and Germany is expected to have positive effects on transport and logistics costs, thereby improving the industries competitiveness to some extent. These improvements are, however, not expected to be sufficient for any sizeable impacts related to economies of agglomeration to occur, nor changing dynamics in labour markets, changes in competition between firms or change in land value.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

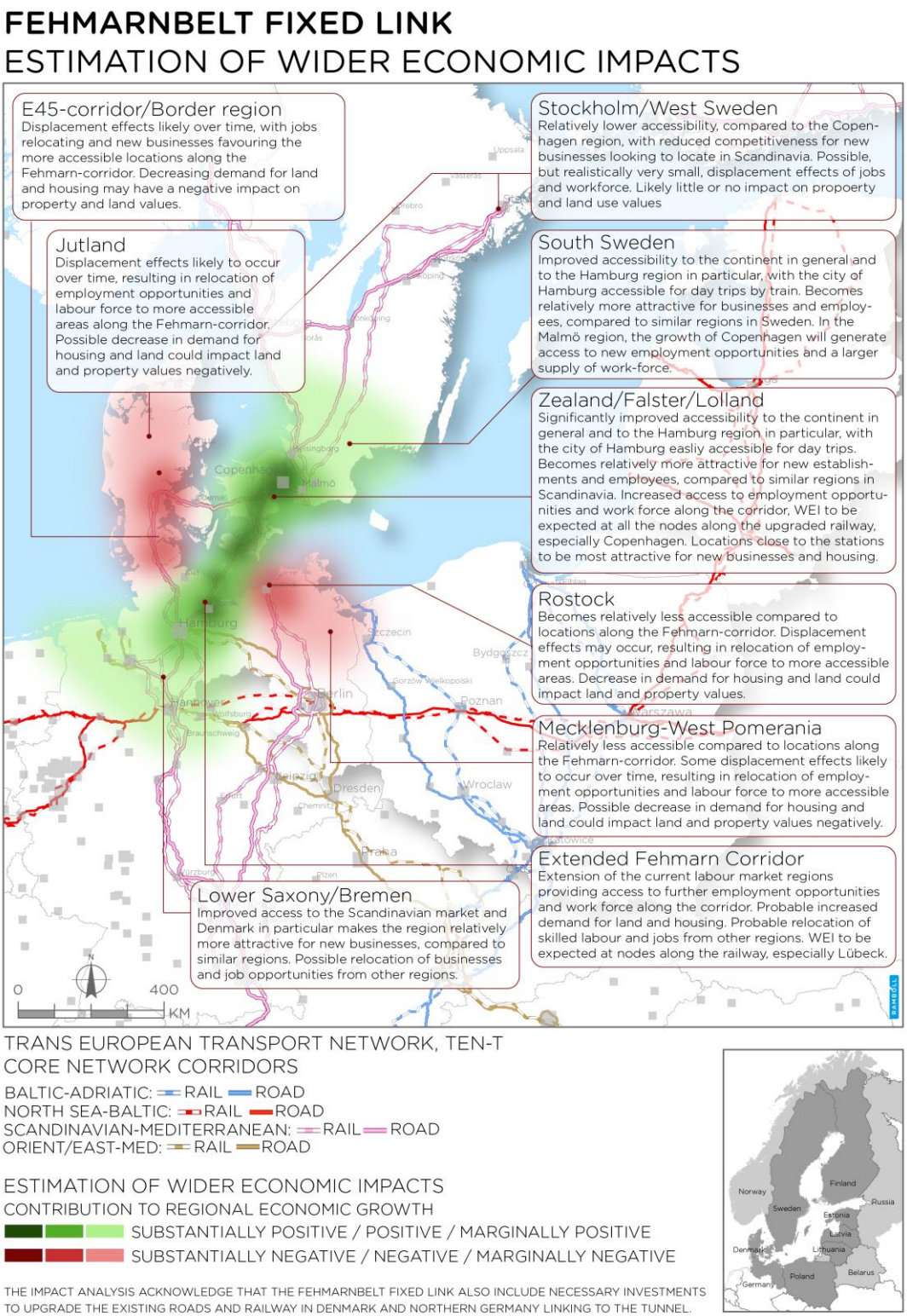

Figure 5. Estimation of Wider Economic Impacts (Fehmarnbelt link). Source: Ramböll Sverige AB

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

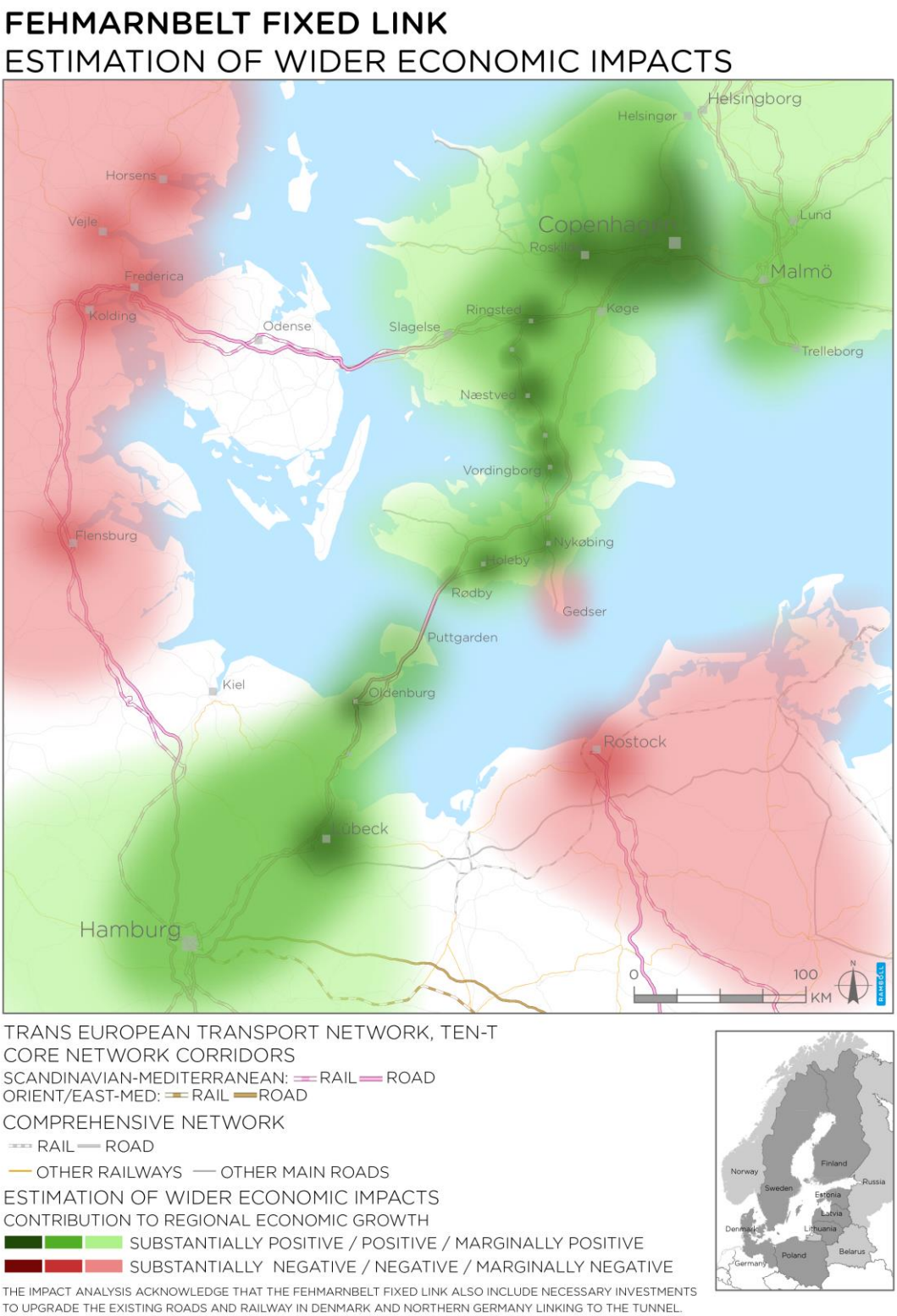

Figure 6. Estimation of Wider Economic Impacts (Fehmarnbelt link). Source: Ramböll Sverige AB

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

3.3 Case Rail Baltica

Rail Baltica[18] is planned as a conventional European standard gauge (1435 mm) double track electrified railway line, with a design speed of 240 km/h for passenger trains. The railway line will also be used for freight trains. The new railway will run between Tallinn and the Lithuania-Poland border, connecting with Pärnu, Riga, Riga Airport, Panevėžys and Kaunas. There will also be a connection between Vilnius and Kaunas as a part of the new railway. The new Rail Baltica infrastructure, together with the new rail service, will allow to significantly reduce travel times between the corridor nodes, as pictured below, thus providing better accessibility between the major cities within the Baltic states.

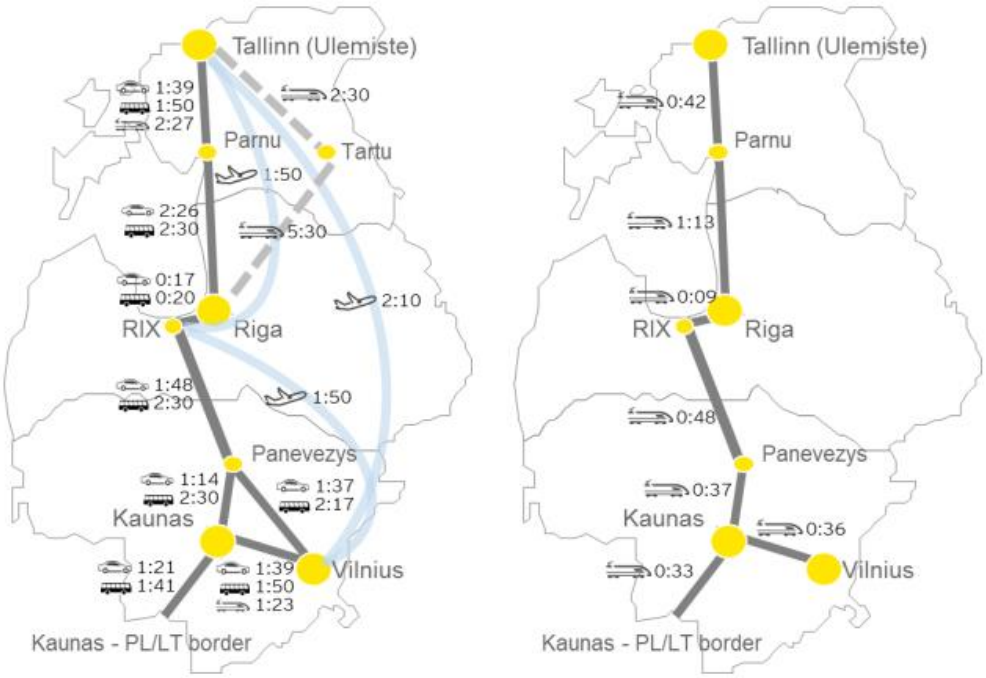

Figure 7. Existing travel times (left) compared to forecasted travel times with Rail Baltica (right)[19]

Furthermore, Rail Baltica is expected to improve the freight potential by rail. Removal of the break-of-gauge barrier on the border of Lithuania and Poland and the establishment of intermodal logistics terminals of adequate capacity in each country is expected to make rail more competitive as mode of transport for freight. Rail Baltica will provide an alternative for the import/export traffic of the Baltic States and for transit traffic in the region, that is, mainly the trade of Finland and Poland with the countries in the region.

3.3.1 Estimated spatial distribution of impacts from Rail Baltica on the CNCs as a functional system

Rail Baltica will result in considerably shorter travel times between the corridor nodes along the new railway. As travel times by train will decrease vastly, a modal shift from cars and buses to passenger trains is reasonable to expect. In the relations Tallinn-Riga and Vilnius-

[18] *In the work plan for CNC North Sea Baltic the railway project is referred to as Rail Baltic which also includes the railway between Polish-Lithuanian boarder and Warsaw.*

[19] *EY (2017) Rail Baltica Global Project Cost Benefit Analysis Final Report*

Riga, the travel times by train will become competitive compared to aviation. Thus, a modal shift from air transport to railway can be expected, too.

For most relations, travel time by train will provide new opportunities for daily commuting between the nodes along the railway and thereby an increasing demand for transport can be expected. As labour markets are currently predominantly domestic, it is likely that the improved commuting opportunities arising on domestic routes, for example, Pärnu-Tallinn, Panevéžys-Kaunas and Kaunas-Vilnius, are the most likely to be realised in terms of increased daily commuting. Cross-border commuting between Pärnu-Riga and Panevéžys-Riga, which are both relations within reasonable commuting distance, is likely to experience a smaller increase in commuting compared with the previous mentioned domestic relations.

Riga international airport (RIX) is already today a hub in the aviation system. Air transportation to/from Tallinn and Vilnius is likely to decrease but access via Rail Baltica to the airport will make RIX conveniently accessible from all the Baltic states. The position as an airport hub will strengthen and become more competitive in relation to the airports in Tallinn and Vilnius.

Rail Baltica will offer a shorter route for freight transport in north-south direction and with the European standard gauge. Freight transport will thereby become more competitive and offer new possible routes for Finnish and Russian goods, and possibly also for goods to and from areas further east, for example, China.

The ports of Klaipeda, Liepaja and Ventspils are connected with wide gauge tracks to the the Russian railway system. For these ports, as well as Riga, the main transport flows are in east-west direction and will thereby be less affected by Rail Baltica, but remain important for handling trade with Russia.

The container ports in Tallinn and Riga, as well as logistics centers, can benefit from the access to railways with both the European and the Russian gauge. Logistics centers in Kaunas and Salaspils (Riga) can gain increased competitiveness for handling goods to be reloaded between the two railway systems.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

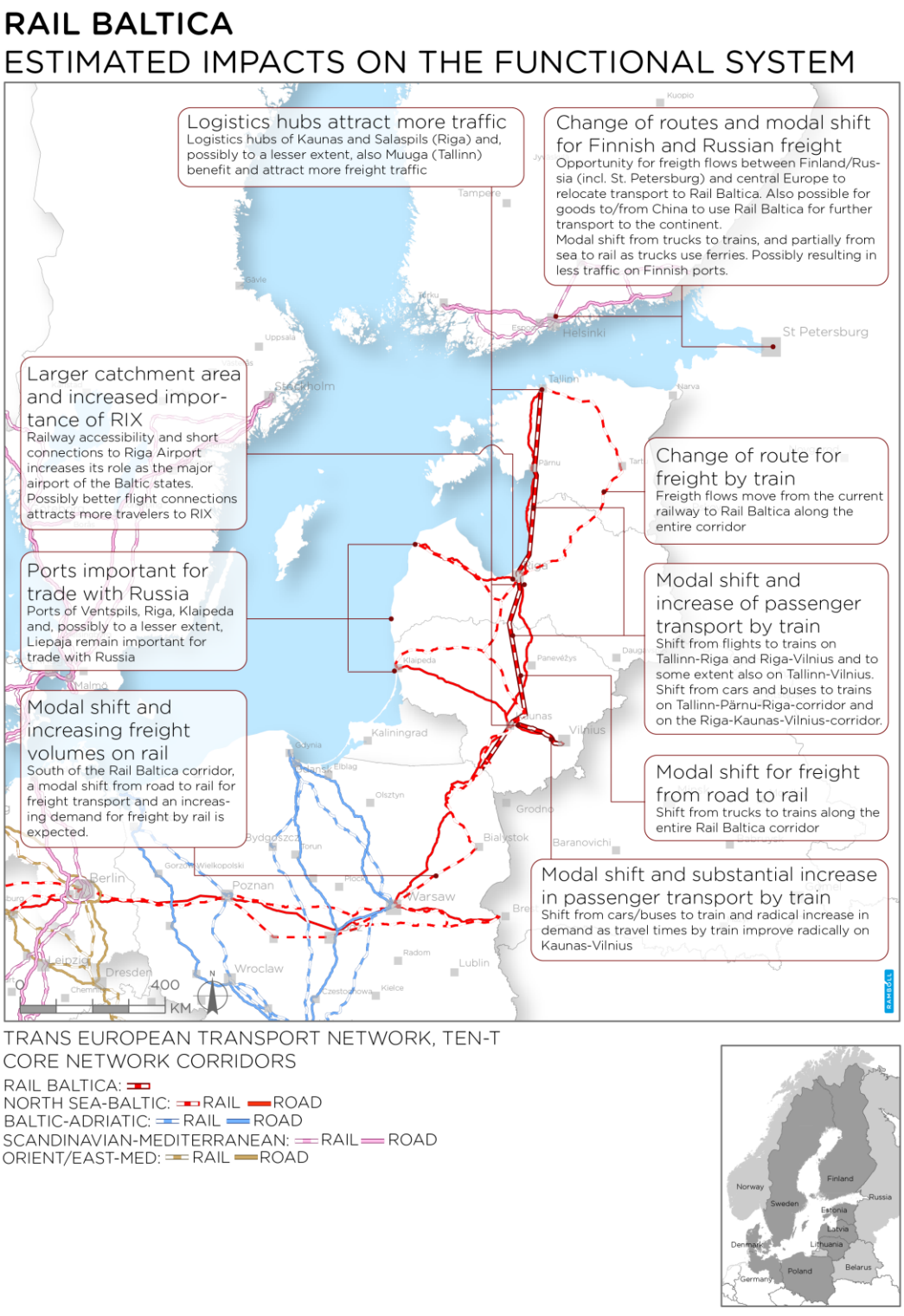

Figure 8. Estimated Impacts on the Functional System (Rail Baltica). Source: Ramböll Sverige AB

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

3.3.2 Estimated spatial distribution of Wider Economic Impacts from Rail Baltica

The analysis of the spatial distribution of WEI originating from the construction of a new railway between Tallinn and the Lithuanian-Polish border is based on an initial analysis of the expected positive impact on the transport market, i.e. improved accessibility, quality and capacity of the transport infrastructure.

Estonia

In Estonia, the new railway is expected to particularly benefit the nodes: Tallinn and Pärnu. The capital is expected to gain from the improved accessibility, especially to the Riga region, as it becomes easily accessible for day trips by train. On the national level, the Tallinn region is expected to benefit mainly through displacement effects, as businesses and labour is expected to relocate to the capital from other parts of Estonia where accessibility decreases relatively to the capital. Thus, the Tallinn region is expected to grow further and accommodate an even larger proportion of the Estonian population than today, when almost a third of the Estonians live in the capital (430 000 of 1.32 million[20]).

Tallinn's attractiveness and competitiveness may significantly increase when the Rail Baltic is coupled with the future investment on the fixed link connecting the city to Helsinki and further northwards, with the option to construct an Arctic railway link in the future. . In comparison with Vilnius/Kaunas and Riga, for the Rail Baltica investment alone, the functional region of Tallinn is not expected to increase by much as the railway only adds the relatively small Pärnu region to the current labour market.

The Pärnu region, on the other hand, is expected to benefit significantly from the improved accessibility to the Estonian capital. As the travel time to Tallinn is expected to be more than halved to approximately 45 minutes, the Pärnu region is likely to become part of the Tallinn functional region and labour market. Thus, already being a major Estonian tourist destination, the sea-side town of Pärnu will add a high level of accessibility to Tallinn to its appeal. Furthermore, Riga and the international airport will also be within a relatively short train ride, adding to the high centrality of the Pärnu region. It is therefore likely that Pärnu and its surrounding region will experience markedly positive WEI, resulting in an increase in demand for land and housing, thus causing an increase in property values in the region. Some of these impacts are likely to be displacement effects, that is, relocation of businesses and labour force from other Estonian regions where accessibility decreases relatively to the Pärnu region.

The regions affected by a relative decrease in accessibility are likely to be the eastern parts of the country. As labour and businesses looking to relocate to more accessible areas are primarily relocated to urban, rather than rural, areas, displacement effects from the new railway are likely to affect the cities of the void areas most. The larger town of Tartu, in eastern Estonia, could become most negatively affected by the improved accessibility from Rail Baltica, possibly experiencing displacement effects where existing businesses and labour relocate to Tallinn/Pärnu, as well as increasing difficulties to attract new labour and businesses to the region. The countryside, on the other hand, is likely to be less affected by the improved accessibility provided by Rail Baltica. Consequently, businesses and labour

[20] *Source: http://andmebaas.stat.ee*

relocating could cause demand for housing and land to decrease in void areas, thus resulting in decreasing property values.

Furthermore, as the distances between the stops along the new railway are considerable (see Figure 7), it is possible that the new railway may result in tunnel effects along the route, where intermediate small towns and villages may suffer from reduced accessibility by public transport if the current bus service is reduced along the route.

Latvia

In Latvia, the capital Riga is the main beneficiary in terms of WEI from the new railway. Accessibility to the other capitals of the Baltic states will improve radically and the importance of the international airport as the major hub in the region is further strengthened by the Rail Baltica-connection to the airport. The centrality of the Riga region will thus be further enhanced, strengthening the strategic location of the Latvian capital. Riga's attractiveness and competitiveness compared to similar regions, for example, Stockholm, Helsinki, Copenhagen, will increase, making the region more attractive for new businesses and, consequently, skilled labour.

The new railway will not directly affect the opportunities to commute to the capital from other parts of Latvia. Hence, regional growth through incorporating labour markets that are currently beyond reach is not expected. Instead, the Riga region is expected to grow mainly through relocation of labour and businesses within certain sectors of the industry from other Latvian regions to the capital. Similar to Estonia, relocation is expected to happen from the eastern parts of the country, and displacement effects are most likely to affect the urban areas of eastern Latvia, for example, Daugavspils, most. The western parts of Latvia also face a relative decrease in accessibility, compared with the capital region. Hence, displacement effects are possible also in the western part of the country. As businesses and labour look to relocate to more accessible areas, demand for housing decreases in areas affected negatively from Rail Baltica, resulting in a possible decrease in property values.

Lithuania

The new railway is expected to reduce the travel times between Kaunas and Vilnius to less than 40 minutes. The likely outcome from such a drastic reduction of travel times between two major cities is the emergence of a large functional region and a common labour market. The new functional region is likely to attract new business to locate within the Vilnius/Kaunas region and the region will become more competitive and attractive in general due to the expected growth, along with the greatly improved accessibility, especially to Riga and Warsaw.

Together with the Vilnius/Kaunas region, the town of Panevéžys in northern Lithuania is expected to be the main beneficiary from Rail Baltica. Providing access to both Riga and Kaunas in less than an hour and to Vilnius in less than an hour and half, Panevéžys is likely to experience WEI similar to the Estonian town of Pärnu, as described above. New businesses will be attracted to the high level of centrality, combined with lower prices for land and housing and good access to skilled labour and supply of services in the metropolitan areas. Skilled labour will be attracted to the location in between two major urban regions, providing access to a large supply of potential jobs within reasonable commuting distances.

The town and surrounding region of of Panevéžys is likely to experience an increase in demand for housing and new land for businesses to establish on. The areas close to the central station of Panevéžys will become most attractive, both for housing and businesses, due to the highest level of accessibility,

While the Vilnius/Kaunas region and the town of Panevéžys are likely to experience positive WEI, other regions of Lithuania are likely to experience displacement effects. Cities in central/western Lithuania, for example, Šiauliai, Telšiai and Mažeikiai, where accessibility decreases relatively to the nodes along Rail Baltica could come to experience negative WEI, with labour and businesses possibly relocating from these urban areas to regions where accessibility improves from Rail Baltica.

Poland

The improved accessibility to the major cities of the Baltic states will to some extent strengthen the importance of the strategic location of Warsaw and Bialystok on the core network corridors, thus making these regions somewhat more attractive and competitive, compared with other regions less affected by the improved accessibility from Rail Baltica. However, the WEI are expected to be small. The added value emanating from the improved accessibility to the Baltic capitals is rather limited, especially for a major city like Warsaw, and, especially as the distances remains substantial, even to the Lithuanian cities.

In general, Warsaw is more likely to benefit from infrastructure and accessibility improvements towards Germany along the CNC North Sea Baltic, as well as improved connections towards Gdynia/Gdansk and towards the more densely populated southern parts of Poland, than from Rail Baltica. As a freight node, Warsaw (and Lòdz) will benefit from a central position in relation to terminal areas as Gdansk, Poznan as well as improved connection with growing manufacturing regions in southern Poland, Czech Republic and Slovakia.

Finland

For Finland, the impact on accessibility from Rail Baltica is expected to be limited, mainly due to the absence of tunnels or bridges across the Gulf of Finland. Any arrival from/departure to Finland will require the use of sea (or air) transport, thus making Rail Baltica much less competitive compared to direct air travel from e.g. Helsinki. Given the location of Finland, sea transport is the dominant form of freight transportation with the EU and most transport by road and railway requires ferry. However, the new railway through the Baltic states will provide an additional option for freight transport between Finland and continental Europe. Furthermore, while trade (in million tonnes) with the Baltic states is currently of limited importance for Finland[21], trade is forecasted to grow by more than three times over the next couple of decades[22], increasing the importance of Rail Baltica for the Finnish economy.

[21] *https://atlas.media.mit.edu/en/profile/country/fin/#Origins*
[22] *EY (2017) Rail Baltica Global Project Cost-Benefit Analysis. Final Report. 30 April 2017*

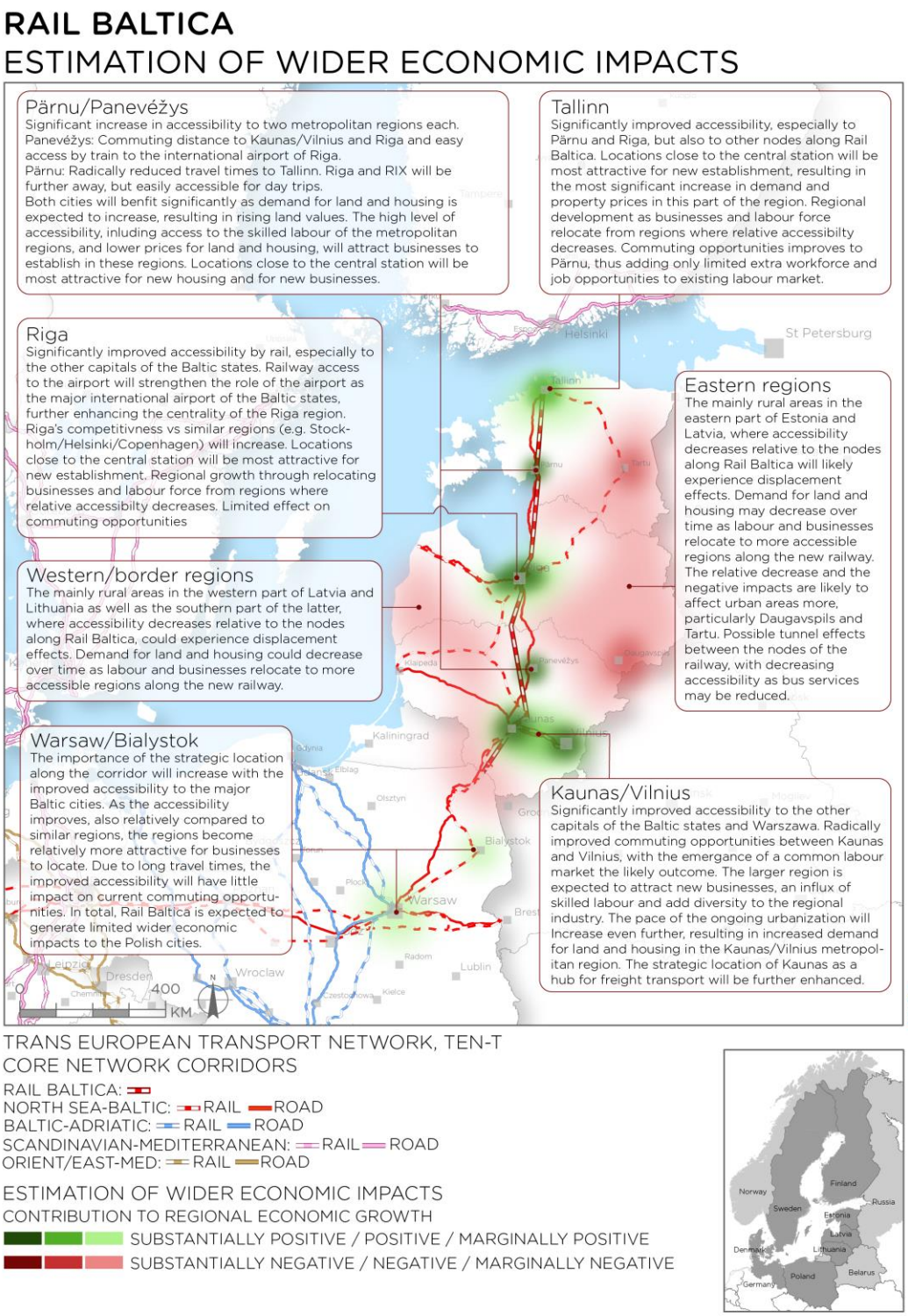

Figure 9. Estimation of Wider Economic Impacts (Rail Baltica). Source: Ramböll Sverige AB

TRAFIKVERKET
REGION BLEKINGE
Interreg Baltic Sea Region
EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

3.4 Summary and conclusions

Substantial impact on modal choice and accessibility in the transport system

The two cases analysed in this chapter, the Fehmarnbelt link and Rail Baltica, are large infrastructure projects (so called mega-projects) and the volume of investment made to remove the respective missing link is going to substantially change the flow patterns and modal choices along the two transport corridors.

For passenger traffic, the travel time reduction and the increased density of train services mean better opportunities for commuting, even across national borders. A challenge, however, would be to satisfy the growing demand for commuting by means of an adequate public transport offer both along the corridors, in the now extended labour markets, but also in the closest proximity to corridor nodes (node access services). This also applies to the cross-border commuting opportunities.

The new passenger train services, provided they offer high quality rides for commuters and business travellers, may likely affect the demand for air flights on relatively short distances along the two corridors and capture some car traffic volumes in interregional travels.

For freight transport, the new corridor investments offer a better redundancy in the transport network between the Nordic countries and the mainland of Europe, while the presumed better service reliability as well as the reduced time and cost for freight transport along these two corridors give freight owners and forwarders wider mode and route choice options in managing the supply chains. This may imply decisions on some service operations in proximity to the corridor if they relatively lose on attractiveness, e.g. in case of ferry lines in the south-western part of the Baltic Sea (see Chapter 4). The new investment for Rail Baltica offers a shorter route also for intercontinental transport flows, in particular for Finland (if combined with the Tallinn-Helsinki fixed link and the Arctic Rail).

Still, the larger flow volumes likely rerouted to one specific corridor in effect of the infrastructure investment may require further capacity. Such improvements would be necessary to mitigate congestion in other parts of the transport system. These effects would have to be closely monitored over time.

In geographical terms, the accessibility benefits are not confined to the very region of the mega-project but are spread along the respective corridor and permeate to other economic sectors. The variety and the magnitude of these benefits decrease, however, over the distance from the investment site, with other transport options becoming more viable (e.g. air connections or short sea shipping) to keep the cost/time within reasonable limits for interregional travellers and industries.

Corridor nodes and regions both gaining and losing in terms of competitiveness

As the overall accessibility will improve radically in the nodes along the Fehmarnbelt corridor and the Rail Baltica corridor, theses nodes will also experience an increase in *relative* accessibility, that is as compared with nodes along alternative corridors or areas outside the corridors, where accessibility remain unchanged or improves significantly less. However, within the corridor the nodes are going to compete for services and customers as illustrated by the envisaged development path of the airports serving the corridor regions. In effect of

shorter travel times, the airports in Copenhagen and Riga are likely to expand their catchment areas to the expense of Hamburg in the former case and Vilnius and Tallinn in the latter, thus they will cement their regional hub position. Consequently, the losing hubs will see a relative decrease in accessibility and competitiveness.

A similar pattern applies to the predicted regional growth along the corridors, with both the absolute and the relative gains privileging the metropolitan areas that will likely see the further spatial expansion, even to the extent of transforming into joint functional regions (Vilnius-Kaunas). Although in absolute terms the smaller corridor nodes may become more attractive as potential locations for both labour and businesses, some of them may be outperformed by the peer nodes, thus their attractiveness and competitiveness will decrease in relative terms. This requires some smart strategies to position the city/town in the corridor context (see Chapter 4).

A relative decrease in accessibility could cause displacement effects in regions away from corridors and smaller corridor towns

Since the labour force is a limited resource, the expected growth of the corridor nodes can only occur if the labour relocates from other regions. Hence, even though these regions through ordinary investments may still be on the growing path, their relative accessibility (in relation to the corridor regions and nodes) is going to decrease. If the business and labour market of the corridor regions and nodes boosted through the large transport infrastructure investment is absorptive enough, some exporting companies and residents in productive age are going to relocate there. Consequently, displacement effects of various sorts may occur in the corridor catchment and void areas, including: less and lower paid jobs, lower income tax base, higher transportation costs, and decrease in demand for land and housing, which would cause causing a drop in price levels.

The displacement effects will likely make the Tallinn metropolitan region grow even faster and accommodate an even larger proportion of the Estonian population than today. This might require adequate national policies to mitigate negative effects in surrounding areas.

Net effect expected to be positive but increasing regional disparities as a possible utcome

The two transport infrastructure investments studied in this report are on their own likely going to accelerate the spatial polarisation of growth. The most positive impacts are estimated to fall upon the capital and metropolitan areas, already most populous and competitive, with much of the country/region's labour force and high economic performance. In contrast, the areas located farther away from the two corridors (e.g. Jutland in Denmark and eastern parts of the three Baltic States) to be experiencing the negative impacts, are predominately rural, with low population density. These areas will face increasing difficulties to attract new labour force and businesses while at the same time trying to prevent losing their own economic assets.

In the corridor scale such polarisation trends are likely to occur if the public transport offer does not provide good accessibility to corridor nodes from smaller towns and villages located in-between.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

4. Impacts on stakeholders

In the following chapter, the impacts identified in chapter 2 are distributed among different stakeholders based on the analysis of the geographical distribution presented in chapter 3. These are presented here as an example of impacts on different actors on different spatial levels in the economy.

The ambition is to group the stakeholders on a rather aggregated level and discuss how the different stakeholder categories are affected from transport infrastructure investments such as Fehmarnbelt link and Rail Baltica. The stakeholders are divided into public stakeholders and market stakeholders.

Public sector stakeholders are then further divided into:

- National authorities
- Regional authorities
- Local authorities

The market stakeholders are divided into five different groups, these are:

- Transport operators – Freight
- Transport operators – Passengers
- Industry – Goods
- Industry - Services
- Passengers/Users

These groups can, of course, be further divided into smaller groups or entities, and will sometimes be discussed as such in the text below.

The estimated magnitude of the impacts on stakeholders in the Fehmarnbelt link and Rail Baltica are presented in Table 1 and Table 2 below. The magnitude is presented with +, 0 and – which represent the relative impact from the investment. The plus signs should be interpreted as a relative positive change in which there are three levels: marginally positive (+), positive (++) and significantly positive (+++). A zero sign should be understood as a neutral or ambiguous effect. The minus signs should also be interpreted as a relative negative change, also consisting of three levels: marginally negative (-), negative (--) and significantly negative (---).

The reader should keep in mind that a minus sign does not necessarily mean that these stakeholders will experience an absolute negative change but rather a *relative* negative change to those who benefit the more from the investment. Furthermore, the comparison is made horizontally between different types of areas and is not a comparison between before and after the investment is made.

The following text will discuss the estimated impacts on these different types of stakeholders from a general point of view. However, some examples of each respective investment will be highlighted. In addition, the discussion about various impacts below uses the three different regional areas which the TENTacle project focuses on: corridor node and transit areas; corridor catchment areas; and corridor void areas.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Table 1. Estimation of total impacts on stakeholders from the implementation of Fehmarnbelt link, based on qualitative estimations

Fehmarnbelt link				
Area / Stakeholders	Corridor node and transit areas		Corridor catchment areas	Corridor void areas
	Node	Transit		
National Authorities	++	+	+	+
Regional Authorities	+++	++	+	0
Local Authorities	+++	+	0	0
Transport operator - Freight	++	+	+	0
Transport operator - Passengers	+++	+	++	0
Industry – Goods	++	+	++	+
Industry – Services	+++	+	+	0
User/passengers	+++	+	++	0

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

Table 2. Estimation of total impacts on stakeholders from the implementation of Rail Baltica, based on qualitative estimations

Rail Baltica				
Area / Stakeholders	Corridor node and transit areas		Corridor catchment areas	Corridor void areas
	Node	Transit		
National Authorities	+++	0	++	0
Regional Authorities	+++	0	+	-
Local Authorities	+++	-	0	-
Transport operators - Freight	+++	0	+	0
Transport operators - Passengers	+++	0	+	0
Industry – Goods	++	0	+	+
Industry – Services	+++	0	-	0
Users/Passengers	+++	0	++	0

National Authorities

The stakeholders considered in this group represent government authorities (responsible e.g. for transport policy and administration, labour market and economic growth). Although their area of jurisdiction encompasses the whole country, the report suggests that the CNC impacts on the national stakeholders are analysed for each geography separately, to draw conclusions on specific policy and action response required.

The transport administration authorities are affected directly by the completed corridor investments they need to plan resources and carry out measures to maintain and further improve the functional transport system, with due attention to planning the corridor access infrastructure. Modal shifts will inevitably occur and the added transport volumes will have to be accommodated by the existing infrastructure. In addition, transport administration authorities will have to examine how to connect the farther areas (catchment areas and void areas) to the corridor so that these areas have the ability to also gain from the investment.

National ministries, labour market authorities and agencies of economic growth will have to monitor the economic development in the corridor node areas as well as the catchment and void areas and when seen as necessary and appropriate - implement policy measures. However, the demand for distributional policies would be thinkable also for corridor transit areas (whenever negatively affected by the tunnel effect) and corridor void areas that might lose even more in terms of economic competitiveness. In the Fehmarnbelt case, Denmark will experience these impacts to a greater extent relative to Sweden and Germany. For Rail Baltica, the Baltic countries; Estonia, Latvia and Lithuania will benefit more from the investment relative to Poland and Finland.

Regional Authorities

This group of stakeholders consist of regional planning authorities and public transport authorities. Depending on whether the affected regions are corridor node areas, corridor catchment areas or corridor void areas, the regional authorities will be affected differently. For example, corridor node areas will experience regional growth and prosperity as economic activity will cluster in the corridor nodes. Consequently, the regional authorities will have to address the growth in population triggered by the relocation of labour force to and within the region.

In addition, dynamics in the labour market may be affected as the matching rate between labour demand and labour supply is expected to increase, and by that, unemployment rates in the region may be decreasing. Transit areas may be affected by the tunnel effect and may suffer from relatively lower accessibility - experiencing more or less the same effects as corridor catchment areas or corridor void areas.

The regional authorities in the corridor catchment areas may experience much of the same impacts but to a lesser extent. However, they might also have to avert negative impacts in terms of depopulation as people and firms move closer to the corridor node areas. That is, they might have to mitigate displacement from their region to a region closer to the corridor.

For the Fehmarnbelt link, the corridor void areas are mostly expected to experience negligible effects from the investment. However, one exception is northern Sweden, where regions may be positively impacted in terms of an increase in export of goods, for example, paper and

metal industries. This may increase economic development in these regions which will have to be facilitated by the regional authorities.

In the case of Rail Baltica, corridor void areas within the Baltic states may experience displacement effects such as depopulation and relocation of firms. Corridor void areas in Poland and Finland are likely to be only marginally affected by the investment.

Local Authorities

This stakeholder group includes municipalities, local planning authorities and public transport authorities that are operating on a local level. Like the regional authorities, the local authorities situated in the corridor node and transit areas will have to address the significant benefits that will impact the local area. For example, population growth must probably be addressed through new housing projects with connected physical and social infrastructure. In addition, the labour market may prosper, and unemployment rates decrease.

The impact on local authorities in corridor catchment areas is ambiguous since it can be both positive and negative. They might have to work with mitigation of displacement effects, such as depopulation and relocation of firms. However, they may also benefit from the development in their neighbouring areas located closer to the corridor as the greater economic activity creates spillover effects of knowledge, innovation and technology to these areas. Corridor transit areas are expected to experience the same effect as corridor catchment areas as it is possible that they will experience a tunnel effect.

Local authorities in corridor void areas may experience a relative loss in attractiveness and competitiveness compared to areas closer to the corridor.

Transport Operators – Freight

Freight transport operators include: ferry operators, rail operators, terminal operators and haulage contractors.

Operators that are transporting by road and rail located in the corridor node areas will benefit significantly from the transport infrastructure investments.

For example, the Fehmarnbelt link provides 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. Goods transported by truck will probably to some extent still use the ferry lines, for example, Trelleborg – Travemünde and Malmo – Travemunde, as truck drivers use the time on the ferries to rest. The ferry line Rodby-Puttgarten is likely to become negatively affected as it becomes obsolete when the tunnel is in place. The ferry lines may have to shut down the operations because of the link. In addition to the shift between rail and road, transport flows will increase as a result of Fehmarnbelt and Rail Baltica.

For Rail Baltica, the operators in corridor node areas that are transporting by rail will benefit significantly from the investment as the accessibility to the rest of Europe increases substantially with the new railway and gauge standard.

The net effect on transport operators in corridor catchment areas is positive for both Fehmarnbelt and Rail Baltica. Conditions for transporting goods by train as well as trucks, to

and from continental Europe, will improve radically as the new routes are faster and shorter. Transport operators in void areas are generally expected to be unaffected by the change.

Transport Operators – Passengers

This group of stakeholders consist of passenger train operators, coach companies and passenger ferry-operators.

In corridor node and transit areas, an increase in demand for trips by train is expected. This is not only positive for train operators along the corridors, but the connecting local public transport will also benefit from the change as the demand for connecting trips is going to increase as well.

Overall, passenger train operators will gain new customers in the catchment areas. Passenger transport providers (both by rail and road) will benefit as demand for regional, and to some extent cross-border, travels increases. In the case of Fehmarnbelt, passenger ferries will be affected negatively as the demand for these journeys will decrease due to the link. The passenger ferries between Rodby-Puttgarten may become obsolete when the tunnel is in place.

For the case of Rail Baltica, passenger transport operators will also benefit significantly from the investment, especially in the corridor node areas as the demand for trips by train will increase substantially. A shift from air to rail is possible between origin and destination points along the corridor, thereby airlines operating these routes today may be negatively affected as the demand for air travel decreases. On the other hand, they will also gain passengers because of the better accessibility to the RIX airport with Rail Baltica.

Passenger transport operators in the corridor void areas will experience little or no impact as distances from the corridor are too long to generate any larger volumes of travelers. Shorter travel times will not influence passengers' demand for travel a great deal.

Industry – Goods

Stakeholders in this group are essentially manufacturing industries and export companies.

In the corridor node and transit areas these industries benefit as it becomes easier to export goods from one country to another between the origin and the destination areas if connected by the two corridors. As a result of both the Fehmarnbelt link and Rail Baltica the cost and time of transporting the goods are significantly reduced and thereby exporting industries in the affected areas will benefit in particular.

There should not be any significant changes in corridor catchment areas in terms of transportation of goods. However, some industries may face potential displacement effects where firms and labour move to the corridor node areas. Nevertheless, this effect is anticipated to be insignificant. Industries, especially those that are export oriented, benefit as the accessibility to continental Europe improves. Industries in catchment areas also benefit from growing markets adjacent to theirs as they may take advantage of spillovers of knowledge, innovations and technologies.

In the case of Fehmarnbelt, industries in corridor void areas in northern Sweden may also benefit as the redundancy on the railway increases with shorter and faster transport routes compared with today. At the same time there is a risk that ferry line operators between Germany and Denmark/Sweden might be negatively affected by the Fehmarnbelt link. This could lead to a diminished redundancy. Other areas that are considered to be void are likely to be unaffected.

Industry – Services

This group of stakeholders consists of service-oriented industries, such as the tourism industry, consulting industries etc.

In corridor node and transit areas, the service sector is likely to benefit significantly from the Fehmarnbelt link and Rail Baltica as the accessibility to more and better skilled/matched labour increases. The population is anticipated to grow in the node areas which will trigger demand for more services. A high level of accessibility in the node areas will also attract contact-intense sectors such as event-oriented firms, conference centers, hotels, research facilities and universities etc.

As accessibility decreases relative to the corridor node areas, service industries in the catchment areas may suffer from the expected displacement effects, for example, less labour available, a relatively smaller local market etc. In catchment areas closer to the corridor, the impact on service industries is likely to be both positive and negative, depending on the type of industry. For example, Fehmarnbelt can benefit the service industry in the southwestern part of Sweden through a growing Copenhagen region, especially if it results in population growth on the Swedish side of Oresund as well. New types of services can potentially establish because of a growing region.

Service businesses in corridor void areas are likely to be insignificantly affected by the new investment on the corridor.

Users/Passengers

Users and passengers are defined as travellers traveling by train, bus or car and consumers of goods and services.

Users and passengers located in corridor node and transit areas will benefit significantly from the Fehmarnbelt link and Rail Baltica investments as the accessibility between the corridor nodes and travel time will be reduced substantially. The improved railway will increase the possibility to commute to Copenhagen and Hamburg in the case of Fehmarnbelt and to Riga and Tallinn in the case of Rail Baltica. Furthermore, consumers may benefit from lower prices of goods and services as a result of an increase in productivity and lower transport costs.

In corridor catchment areas, passengers and users will also benefit from the accessibility change but to a lesser extent than in the corridor node and transit areas. Users and passengers in corridor void areas are expected to be unaffected as the change in travel time will not change their propensity to travel the distance in question.

Users and passengers who are located in the areas that may experience a negative effect (in relative terms) would possibly have relatively less travel possibilities and therefore fewer job opportunities. This might give rise to a discussion on appropriate policy measures to mitigate these effects.

5. Policy response and action

The magnitude of envisaged corridor investment impacts on the stakeholder categories in the three geographies (national, regional and local) presented in Chapter 4 serves as a guiding tool on how expedient the policy and action response should be to contain the challenge for prosperity and growth for the given geography.

5.1 Recommendations to stakeholders

As already argued, the limited scope of investigation, with only two investment cases under analysis, does not allow for developing a very comprehensive listing of policy and action recommendations to the analysed stakeholder groups. These require further elaboration based on extended investigation, the direction of which however is proposed further in this chapter. Still, some preliminary and generalised recommendations to stakeholders may be drawn up on that basis.

However, they form an interesting basis for discussion with the representatives of the stakeholder groups in question, to what extent their strategies and measures take into account the CNC implementation and the impacts generated.

Recommendations to national authorities:

- Plan for functional connections (i.e. road/rail access infrastructure feeding the traffic to the corridor nodes to the CNCs) at a national level to connect corridor catchment and void areas to the corridors and encourage regional and local stakeholders to plan for functional connections towards the CNCs
- Monitor the economic development changes influenced by the CNCs across the corridor node areas as well as the catchment and void areas and whenever seen as necessary and appropriate - implement policy measures to strengthen positive impacts and mitigate the negative impacts
- Strengthen the positive impacts of the completed corridor investment by complementary action removing any major cross-border obstacles for regional integration (e.g. between Malmo/Lund and Copenhagen, which would benefit growth processes in the larger area of western Scania in Sweden)
- Consider distributional policies, such as subsidies, tax policy measures or growth initiatives, for the corridor transit areas (if felt to be suffering from a tunnel effect) and the corridor void areas if there is need for counteracting the polarisation effects accelerated by the corridor investments, and a possible socio-economic decline threat in the more distant rural areas (e.g. Jutland in Denmark and eastern parts of the three Baltic States)
- Consider facilitating and/or supporting complementary governance organisations to help the public and market stakeholders benefit from the completed corridor investments through cross-border or transactional cooperation

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

- Evaluate the transport network capacity and provide investment measures should the incoming volumes following the modal shift as a result of the investment in question be too excessive to be accommodated in the current network

Recommendations to regional and local authorities:

- Monitor the growth in population triggered by the relocation of labour force to the corridor node areas, and resulting matching between labour demand and labour supply, and provide necessary measures, e.g. in availing plots for housing projects and logistics operations
- Monitor the labour market and business development situation in the corridor catchment areas to mitigate any larger depopulation and relocation processes that might occur due to the completed corridor investments
- Consider preparing positioning strategies for the cities and towns whose competitive situation is predicted to change, either positively or negatively, due to the completed corridor investments.
- Prepare supportive sustainable socio-economic growth measures for the corridor transit areas that might suffer from a relatively lower accessibility and – in consequence - encounter relocation processes
- Consider facilitating and/or supporting complementary governance organisations on the corridor to help the public and market stakeholders benefit from the completed investments through cross-border or transactional cooperation
- Mobilise public and market stakeholders for coordinated action to alleviate the predicted negative impacts of the completed corridor investments, e.g. by organising cooperation across the administrative borders and sectors to improve the access to the corridor nodes, integrate public transport services and connect the local industries to international networks

Recommendations to transport market stakeholders:

- Prepare adaptation strategies to the completed corridor investments, with new opportunities for planning and managing the intermodal supply chains resulting e.g. from shorter delivery times, better capacity and interoperability between transport networks and between transport modes; this also includes opportunities related to a better access to intercontinental markets
- Analyse market perspective and potentially find alternative market niches for the services negatively affected by the completed corridor investments, e.g. ferry operations in the south-western part of the Baltic Sea or airports losing passengers to now better accessible hubs
- Consider investments in the network of logistics centres located at the corridor hubs
- Provide adequate train capacity for serving commuting traffic in the labour markets now extended due to the completed corridor investments

- Consider setting up or joining complementary governance organisations on the corridor to receive information about the implementation process, influence the corridor implementation measures and benefit from the completed investments through cross-border or transactional cooperation

5.2 Possible follow-up investigation areas

The limited scope of the investigation behind this report leave way for examining the CNCs impact through other territorial cases to validate and further extend the policy and action proposals listed above.

One area of particular interest is the infrastructure investments in the Motorways of the Sea (MoS) as sea connections of the CNCs and the linking component between the respective corridors. The TENTacle project sees a viability of analysing the role that the MoS can play in the functional system of the CNCs (when the three core network corridors of Scandinavian-Mediterranean, North Sea-Baltic and Baltic-Adriatic form a network of primary transport axes over the Baltic Sea Region) and the WEI in effect of investment in the shipping infrastructure between the corridor ports and their last mile connections.

This area of further investigation follows the reasoning made by the European Coordinator for the Motorways of the Sea, Brian Simpson, in his Detailed Implementation Plan for MoS as of April 2018 where he stated that:

"MoS is also the way to connect short sea links and maritime transport services with the Core network Corridors and MoS links the junctions allowing the connection of different CNCs" (page 31).

The further investigation based on the qualitative approach featured in this report can also be applied in other TENTacle pilot cases for the main transport infrastructure investments in the adjacent CNCs, as well as by any other transport corridor project dealing with social, economic and territorial consequences of the CNC implementation. Based on such widened qualitative studies specifications for quantitative analyses can also preferably be developed.

TRAFIKVERKET REGION BLEKINGE Interreg Baltic Sea Region EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

References

BSR Transgovernance project (2014). Applying multi-level governance in transport planning and management in the Baltic Sea Region

Baltic Sea Region Programme. (n.d.) *The Wider Economic Impacts of Transport Investments*.

Briant et al. (2015).

Dept. For Transport. (2016). *TAG UNIT A2.1 - Wider Economic Impacts Appraisal.* London.

East West Transport corridor. (2012). *Strategy and action plan.*

EU. (2013). *EU regulation no. 1315/2013*

EUCOM. (2005). *Extension of the major trans-European transport axes to the neighbouring countries and regions.* Report from the High-Level Group chaired by Loyola de Palacio

EUCOM. (2016). *Baltic Adriatic. Second workplan of the European coordinator Kurt Bodewig*.

EUCOM. (2016). *North Sea Baltic. Second workplan of the European coordinator Catherine Trautmann*.

EUCOM. (2016). *Scandinavian Mediterranean. Second workplan of the European coordinator Pat Cox*.

EUCOM. (2016). *Orient East Med. Second workplan of the European coordinator Mathieu Grosch*.

EUCOM. (2016). *ERTMS. Second workplan of the European coordinator Karl Vinck*.

EUCOM. (2015). *Motorways of the Sea. Detailed implementation plan.*

Freedman (2013).

IMF (2012).

Jonathan David Ostry, Andrew Berg, Siddharth Kothari. (2018). *Growth-Equity Trade-offs in Structural Reforms. IMF Working Paper*

Fraunhofer (2015). *Cost of non-competion of the TEN-T.*

SEB Trans-Link (2005). *Baltic link – final report.* 2005

Trafikverket (2017). *Hantering av Wider Economic Impacts och analys av regionalekonomisk utveckling*

Transport and Infrastructure Council. (2016). *Australian Transport Assessment and Planning Guidelines - T3 Wider Economic Benefits.* Commonwealth Department of Infrastructure and Regional Development

Michael J. Trebilcock. (2014). *Dealing with Losers: The Political Economy of Policy Transitions*.

Öberg, Maria (2017). *Governance for sustainable development of major European transport corridors: The Scandinavian-Mediterranean TEN-T core network corridor*. Luleå tekniska universitet, Institutionen för samhällsbyggnad och naturresurser, Arkitektur och vatten.

https://www.bothnianarc.net/-se/bothnian-green-logistic-corridor/

http://www.northerndimension.info/

https://eeas.europa.eu/topics/eastern-partnership_en

http://www.barentscooperation.org/en

https://beltandroad.hktdc.com/en/belt-and-road-basics

http://www.ved.gov.ru/files/images/Nadya/special_economy_zone_eng.pdf