TransBaltic

Towards an integrated transport system in the Baltic Sea Region

TransBaltic Policy Report 2011

This edition is the second in a series of policy reports produced by TransBaltic. Recognised as a strategic project, TransBaltic will contribute to the implementation of the EU Baltic Sea Strategy by adding sustainable regional growth dimension to the harmonisation actions, which are planned by the national transport ministries (Priority Area 11). In the policy reports TransBaltic identifies policy challenges and sums up research findings and outcomes of debates with stakeholders carried out around and beyond the Baltic Sea. Thereby, TransBaltic aims to inspire politicians, officials and private enterprises within the transport and logistics sector to take relevant policy actions towards an integrated transport system in the Baltic Sea Region.

Authored by:
Dr Wiktor Szydarowski
+46 768 54 20 20
wiktor@szydarowski.com

Contact details TransBaltic
Wiktor Szydarowski
Project Manager
+46 768 54 20 20
wiktor@szydarowski.com

Evelina Hansson Malm
Communication Manager
+46 44 309 35 91
Evelina.hanssonmalm@skane.se

Address Lead Partner
Region Skåne – Regionhuset
JA Hedlunds väg
291 89 Kristianstad, Sweden
Website: www.transbaltic.eu

ISBN 978-91-980129-0-3

Project part-financed
by the European Union
(European Regional Development Fund)

Baltic Sea Region
Programme 2007–2013

REGION SKÅNE

TABLE OF CONTENTS

Introduction

The overall objective of TransBaltic is to provide regional level incentives for the creation of an integrated multimodal transport system in the Baltic Sea Region (BSR). This is to be achieved by means of joint transport development measures and jointly implemented business concepts.

As underlined in the European Union Strategy for the Baltic Sea Region, appropriate public policy response is needed to increase the accessibility of territories and the quality of connections, and to master the increasing flows in and across the Region. TransBaltic is going to contribute to the implementation of the EU Baltic Sea Strategy by adding a sustainable regional growth dimension to the harmonisation actions, which are planned by the national transport ministries (Priority Area 11). Furthermore, the project aspires to develop and test specific transport and logistics solutions, which stem from needs of the Baltic Sea business community and may be introduced to relevant EU and national level policies.

The foresight process around the Baltic Sea, initiated by TransBaltic, helped identify alternative transport development trajectories in the years to come. Their pre-requisites and policy-making consequences are described in the TransBaltic Policy Report 2010. Intensive communication campaign, carried out in late 2010 and early 2011, anchored the findings among transport and logistics stakeholders and coined a recognisable brand of TransBaltic as a strategic macroregional project. The dialogue with the European Commission, the transport ministries of the Baltic Sea countries, the pan-Baltic organisations and allied transnational projects crystallised assignments for TransBaltic in the following implementation period.

In this Policy Report we intend to concentrate more on the green transport scenario in light of new policy challenges as well as natural and socio-economic developments. We will screen the current transport and regional policy processes, attempting to highlight some missing, overlapping or underestimated thematic areas of vital significance for future transport patterns in the Baltic Sea Region. We will also debate on robustness of the integrated transport system in the Baltic Sea area, bringing up some specific aspects of dynamically evolving trade exchange between the Baltic Sea Region and new global economic powers, such as China and India. This developmental driver will definitely affect the geography of the freight flows, and – consequently – will cast a challenge for the economic, social and territorial cohesion of our macroregion. Finally, we will single out exemplary business cases, which may contribute to a better transport co-modality and sustainable regional growth, and which may become a subject for the relevant transport policies.

Same as last year, the current report has ambition to raise awareness of future developments among politicians, officials and private enterprises active in the area of transport and logistics. Thereby - to inspire them for taking up relevant policy actions.

Vision of freight corridors in a single and integrated EU transport system

THE WHITE PAPER ON TRANSPORT AND SUBSEQUENT POLICY DEVELOPMENTS

The newly released White Paper on Transport (2011b) observes a number of old and new challenges determining the ability of European regions to remain fully and competitively integrated in the world economy. Transport development is reckoned among the most serious ones. In the 'business as usual' projection till 2050, its path is estimated to be far from being sustainable, with predominant oil dependence, still growing CO2 emissions, rising congestion and social costs of accidents and noise, and widening accessibility gap between central and peripheral areas.

An ambition set forth by the Commission is thus to break the transport dependence on oil without sacrificing its efficiency and compromising mobility. In practice, transport has to use less and cleaner energy, better exploit a modern infrastructure and reduce its negative impact on the environment and natural assets like water, land and ecosystems. Consequently, the policy actions are expected to enforce ***new transport patterns*** according to the following principles:

- larger volumes of freight and greater numbers of travellers are carried jointly over long distances by the most efficient modes or their combination – for freight this implies multimodal solutions relying on waterborne and rail modes;
- freight shipments over short and medium distances (within radius of some 300 km) are to a considerable extent carried by road transport but with decarbonisation measures applied;
- individual transport is preferably used for the final miles of the journey and performed with clean vehicles;
- information technology caters for simpler and more reliable transfers – this means transformation of nodes (e.g. airports, ports, railway, metro and bus stations) into multimodal connection platforms;
- transport users pay for the full costs of transport in exchange for less congestion, more information, better service and more safety.

Aspiring to see a competitive and resource efficient EU transport system by the year 2050, the White Paper introduces a number of goals and targets to accomplish that. Of particular relevance for TransBaltic is that:

- 30% of road freight over 300 km shall be shifted to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050;
- a fully functional and EU-wide multimodal TEN-T 'core network' shall be completed by 2030, with a high quality and capacity network by 2050 and a corresponding set of information services;
- by 2050, all core network airports shall be connected to the rail network, preferably high-speed, while all core seaports are linked to the rail freight and, where possible, inland waterway system;
- a genuine Single European Transport Area shall be created by eliminating all residual barriers between modes and national systems, facilitating market access to transport services and simplifying administrative formalities.

The above focus on networks, nodes and systemic solutions follows the methodological approach provided in the Green Paper on the future development of the trans-European transport network (European Commission 2009), and presented in the TransBaltic Policy Report 2010. Through the text of the White Paper this reasoning is reflected in frequent invocation of ***freight corridors*** as a means to make the freight multimodality economically attractive for shippers in longer distances and to facilitate the modal shift from road to rail or waterborne transport within the time horizons set. Here, the freight corridors are given two attributes, namely: ***green and efficient***. The former seems to refer to such characteristics as: optimised energy use and emissions, and minimised environmental impacts. The latter is rather associated with: reliability, limited congestion and low operating and administrative costs.

In the network context, the freight corridors of prominence for achieving the EU transport policy ambitions (so called highest European value) are referred to as ***core network corridors***. Hence, by adopting the core network planning methodology, the freight corridors are distinguished not only by transnational flow volumes but also by such criteria as: economic, social and territorial cohesion, spatial planning, environmental and climate change objectives as well as connections to neighbouring countries (European Commission 2011a).

The core network corridors are also given a very important role in geographical dimension. They should contribute to overcoming large disparities in terms of transport infrastructure (in particular between eastern and western parts of the EU), reduce fragmentation of transport modes and link the EU capitals with other main cities, ports, airports and key land border crossings, as well as other main economic centres.

Recalled again in the latest Commission proposal on Union guidelines for the development of the trans-European transport network (European Commission 2011e), the core network corridors shall:

- cover most important cross-border long-distance flows in the core network;
- include, in principle, of three transport modes and at least three Member States;
- embody, wherever appropriate, both land and maritime sections, with the latter built on the Motorways of the Sea concept;
- offer high quality infrastructure with resolved missing links, especially in cross-border parts, and bottlenecks, developed multimodal terminals at sea and river ports and city logistic consolidation centres as well as better rail/airport connections for long distance travel;
- demonstrate a wide application of information technology tools and supply infrastructure for clean fuels;
- become an instrument for implementing the core network by coordinated development and management.

As for the latter, the regulation proposal speaks about institutional structures, called ***corridor platforms***, which shall be established by the Member States and facilitated by European coordinators. They shall be composed of the representatives of the given Member States and, as appropriate, other public and private entities, including relevant infrastructure managers. The role of the platforms would be to identify investment needs (in particular in the cross-border sections), streamline preparation of relevant projects, and resolve issues of concern (like the arrangement of appropriate financing). For that purpose, multi-annual corridor development plans shall be used to set required interoperability and operational solutions on the timeline. Based on that, the Commission will adopt implementing acts (decisions) for each corridor.

The freight corridors are given two attributes, namely: green and efficient.

The regulative setup promoted by the European Commission to achieve an efficient transport system evokes several questions.

The regulative setup promoted by the European Commission to achieve an efficient transport system evokes ***several questions*** on reasonability of aspirations and specific solutions to be applied for freight corridors.

One of immediate reactions points at – as some observers claim – an ***alleged discriminatory approach to long-distance road transport***. This is believed to undermine the co-modality principle, which gives favour to the coordinated use of several means of transport based on efficiency. It is argued that an arbitrary modal shift would jeopardise Europe's transport competitiveness by putting the railways in situation where they would be unable to absorb extra demand (see e.g. *http://www.europeantransport-forum.eu/transport-efficiency/policy/120.html)*. At the same time, road transport is said to be able to demonstrate sustainable co-modality solutions, like longer vehicles (so called modular concept), combined with latest truck technologies, efficient logistics and future alternative fuels. Therefore, perhaps the Commission's intention can also be interpreted as an effort to mobilise the road transport industry for fostering its competitive edge.

The second reservation may relate to the notion of implementing the core network through core network corridors. The Commission proposes an ***arbitrary designation of ten core network corridors*** throughout Europe based on principle that each Member States should participate in at least one core network corridor. The draft regulation presents concrete delineation of such structures, linking so distant destinations as e.g. Hamburg and Lefkosia (Cyprus) or Helsinki and Valetta (Malta). Such an approach provokes to posing a question on the rationale behind the number and course of the core network corridors, e.g. relation to the geography of market-shaped logistics chains across Europe.

The third controversy has to do with the ***composition of the core network corridor platforms***. The draft regulation in its top-down approach ignores the already established or emerging corridor cooperation bodies, which feature relevant public and private stakeholders, and are formed according to the specific policy and market necessities. The transnational Interreg cooperation in the Baltic Sea Region has been particularly strong in delivering evidence for such bottom-up processes. In contrast to that, the Commission obliges the Member States situated on the arbitrary designated corridor to collaborate irrespective of the market needs. Also, no mechanism is provided to secure representation of all relevant parties, including local and regional authorities, in such a management structure, leaving this responsibility to the European Corridor and the Member States (in other words, state governments) to do so, 'as appropriate'.

The fourth aspect concerns ***extension of the core network corridors to the neighbouring countries***. Again, the draft regulation emphasises a need to ensure the connection and interoperability between the core network and the transport networks of the third countries. A conservative reference to necessary cooperation with such countries through promotion of projects of mutual interest (inherited from the Lisbon Treaty) may turn to be too redundant to accomplish good quality infrastructure and comparable service standards on both sides of the EU border. This may compromise the performance of freight corridors crossing the EU territory en route between production and consumption areas in the global perspective.

A NEW EU NEIGHBOURHOOD TRANSPORT PLAN

In the context of the fourth aspect discussed in the previous chapter, it is vital to reflect on the purpose and content of the renewed policy framework, which aims to promote transport infrastructure and market development in the countries covered by the European neighbourhood and enlargement policies. The Communication on 'the EU and its neighbouring regions: A renewed approach to transport cooperation' (European Commission 2011c) is meant to bring 'a new response to a changing neighbourhood' by tailoring the transport cooperation to the needs of each sub-region (understood as a grouping of countries) as well as each country's ambition and readiness to integrate more closely with the European Union.

The EU Neighbourhood Transport Plan contains a number of initiatives on all transport modes and various infrastructure links in order to establish better connections and closer market integration with neighbouring countries. The document recalls that transport cooperation with the EU neighbours has before taken place through a number of bilateral and regional initiatives. With the present document, it is brought into a single policy.

The listed key measures for connecting the transport systems of the EU and its neighbours are projected both in a short-term (till 2013) and a long-term time horizon. Of particular relevance to the freight movement in the Baltic Sea Region corridors are the following proposals:

- bridging the Trans-European Transport Network with infrastructure of the EU neighbours through priority transport projects;
- making better use of rail freight potential by opening markets and by alleviating technical barriers such as differences in rail gauge sizes;
- promoting closer integration of the neighbouring countries to the 'Blue Belt' of free maritime movement in and around Europe;
- investigating possibility for extending common EU-wide intelligent transport systems services to the neighbouring countries;
- promoting deployment of the European Rail Traffic Management System (ERTMS) in the neighbouring countries.

The document pays due attention to the transport flow development on the Eastern rim of the EU, with such countries as: Belarus, Moldova and Ukraine. It takes note of dynamic increase in rail freight flows between the EU and the immediate neighbours in the East, with a 7% increase in the rail freight volume in the last decade and estimated growth of up to 40% in rail freight demand by 2020. Addressing physical and non-physical barriers along the Euro-Asian rail freight corridors, the Commission intends e.g. to: establish strategic frameworks for customs cooperation with Belarus, Moldova and Ukraine; start dialogue with these countries on securing fair, non-discriminatory, transparent and efficient charging systems for the use of railway infrastructure; and tackle insufficient safety, security, environmental, social and interoperability standards as well as poor condition of the rolling stock.

The EU neighbourhood policy takes note of dynamic increase in rail freight flows between the EU and the immediate neighbours in the East.

The Transport Plan sets three particular elements of cooperation with the EU neighbours in fostering the infrastructure interconnections: defining the networks, prioritising projects and mobilising financing.

The EU Neighbourhood Transport Plan sees three cooperation areas: networks, projects and financing.

The first step entails ***defining of regional transport networks*** as a basis for extension of the revised Trans-European Transport Network. In case of the neighbouring countries in the East it is additionally argued that the connection of the TEN-T through such a regional transport network with the networks in Central Asia would respond to future traffic flows and facilitate alternative routes between Europe and Asia. This exercise should also include maritime based intermodal freight transport connections with the neighbouring countries and between them (based on the Motorways of the Sea concept).

The Northern Dimension Partnership on Transport and Logistics will accelerate the implementation of major infrastructure projects in the Northern Dimension area.

As a second step, ***priority projects*** need to be identified in line with a comprehensive set of criteria. Such priority projects should have a regional and EU interest, be located on a regional network, benefit from a firm commitment by the neighbouring countries, aim to alleviate bottlenecks for international traffic such as on border crossings, and improve connections between the revised TEN-T and the regional network. Furthermore, they ought to help increase integration and interoperability between the transport systems of the EU and its neighbours, lead to reduced transport costs and time, facilitate international freight flows and increase safety, security and protection of the environment. As a result of the screening process, a pipeline of priority projects that can be considered for implementation by the Commission and the International Financial Institutions will be gradually established.

The third step refers to making available of ***financing for mature priority projects***. The Commission's recent Communication on a budget for Europe 2020 (European Commission 2011d) suggests that infrastructure projects of EU interest on the territory of EU neighbourhood and pre-accession countries could in the future be linked and financed through the new Connecting Europe facility, allowing financing from different headings of the EU budget under one integrated set of rules. The Commission will also promote such infrastructural interconnections through other existing instruments, under the bilateral and regional support to neighbouring countries from the European Neighbourhood Policy Instrument - including TAIEX, Twinning and ENPI cross-border cooperation (European Commission 2011c).

The EU Neighbourhood Transport Plan is going to be implemented through ***regional frameworks*** established between the Commission and the neighbouring countries for the purpose of transport infrastructure planning and policy cooperation. Following the experience of planning frameworks in the Western Balkans and Southern Neighbourhood regions, similar framework is planned for the six Eastern Partnership countries (Azerbaijan, Armenia, Georgia, Moldova, Ukraine and Belarus). The proposed ***Eastern Partnership Transport Panel*** will bring together the European Commission, the neighbouring countries, the Member States and the International Financial Institutions to discuss actions that are needed for closer market integration, planning of transport networks and preparing the pipeline of infrastructure projects. The panel is expected to liaise with other existing transport initiatives in the region, like the TRACECA programme and the EU Strategy for the Danube Region.

THE NORTHERN DIMENSION PARTNERSHIP ON TRANSPORT AND LOGISTIC

Missing in the EU Neighbourhood Transport Plan, Russia is a subject of a separate transport development initiative implemented within the framework of the Northern Dimension – as a common policy of four equal partners: the European Union, Norway, Iceland and the Russian Federation. The main objectives of this policy are: to provide a common framework for the promotion of dialogue and concrete cooperation; to strengthen stability and well-being; to intensify economic cooperation; and to promote economic integration, competitiveness and sustainable development in a vast geographic area, which covers the Baltic Sea Region, the Barents Region and the Arctic Area.

Established in 2009, the ***Northern Dimension Partnership on Transport and Logistics*** (NDTLP) is envisaged to accelerate the implementation of major infrastructure projects within the Northern Dimension area. The current (as of December 2011) members of the NDPTL are Belarus, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia, Sweden and the European Commission. Based on the signed memorandum of understanding between the abovementioned parties, the objectives of the Partnership are defined as to:

- Work together to improve the major transport connections between the Northern Dimension partners to stimulate sustainable economic growth at the local, regional and global level by focusing on a limited number of priorities that reflect both the regional and national priorities of the Northern Dimension in a balanced way.
- Accelerate the implementation of transport or logistics infrastructure projects along the major transnational connections, and facilitate the approval of projects of mutual interest, through concerted project preparation and by offering faster access to a coordinated financial pool within the geographical scope of the Northern Dimension Partnership.
- Accelerate the removal of non-infrastructure related bottlenecks, including in particular the horizontal measures identified by the High Level Group and the recommendations of the ad hoc working group on logistics problems.
- Set up effective structures to monitor the implementation of the proposed projects and measures, and identify new bottlenecks and make recommendations for their removal.

The preparatory work in establishing the NDTLP was supported by the ***NORDIM project***, commissioned to develop a proposal for the action plan in the five year's time horizon. The project delivered a methodological-analytical study, the scope of which lies very much in line with the approach assumed in the EU Neighbourhood Transport Plan.

The updated version of the final study (WSP Ltd. 2011) contains a trade and traffic analysis in the Northern Dimension area for a base year with forecasts for 2020 and 2030. It also includes a preliminary list of infrastructure projects and a set of methodologies: (1) on project evaluation and appraisal in close cooperation with the International Financial Institutions; (2) on identification of non-infrastructure related bottlenecks (horizontal measures); and on (3) prioritisation of projects and measures. Further, it has recommendations on a minimum data set needed for effective monitoring of the implementation of the action plan by the Partnership.

In other words, the NORDIM report created a basis for developing a ***regional transport network*** and selecting priority projects (on both infrastructure and soft measures side) to fill the agenda for transport planning and policy cooperation between the Northern Dimension countries. Obviously, this work coincides with the efforts animated by the European Union Strategy for the Baltic Sea Region and requires some investigation in order to identify synergies, complementarities and overlaps.

The following chapter brings closer the macroregional transport analysis carried out within the framework of Priority Area 11 (Improve internal and external transport links) of the EU Baltic Sea Strategy and attempts to compare its outcomes with the NORDIM study.

The NORDIM report created a basis for developing a regional transport network and selecting priority projects to fill the agenda for transport planning and policy cooperation between the Northern Dimension countries.

The Baltic Transport Outlook and the NORDIM study as macroregional policy support tools

As explicitly stated in the TransBaltic Policy Report 2010, by 2030 the Baltic Sea Region may have seen considerable changes in the territorial distribution of freight flows, which would set a scene anew for discussion on connectivity and accessibility of the territories around the Baltic Sea. Such a new geography of freight flows will result from the interplay of drivers at different reference scales.

Development scenarios are conceived a methodological attempt to scale the unknown, predict impact of a number of trends and factors, and suggest a way to act in order to maximise benefits and minimise threats. While such a prognostic tool is widely applied as a decision-support basis for EU, national and regional authorities responsible for transport policies, the macroregional level shows a short record in their use. In fact, in the reality of the Baltic Sea Region it does not exist due to scattered traffic flow data, and different methodologies and models applied for networks in individual countries.

The transport ministries of the Baltic Sea countries launched the Baltic Transport Outlook study to address the decision-support deficiency in transport planning.

The transport ministries of the Baltic Sea countries launched the ***Baltic Transport Outlook (BTO)*** study to address the decision-support deficiency. The study, completed in December 2011, has ambition to analyse the current transport performance of the Baltic Sea Region, deliver a proposal for so called strategic multimodal network, identify infrastructure gaps in all transport modes within the Region in the 2030 year perspective, and suggest relevant measures to eliminate them.

TWO DIFFERENT TRANSPORT NETWORKS FOR THE BSR

In line with the general assumptions (integration of the EU TEN-T policy in the general transport development around the Baltic Sea and identification of infrastructure gaps), the Baltic Transport Outlook study comes up with a ***strategic network for the Baltic Sea Region***. Such a multimodal network shall correlate with the TEN-T core network but also contain connections between the important economic, social and territorial locations in the BSR countries and the TEN-T core network.

The two aspects: of facilitating internal and external accessibility of the BSR and of securing specific transport needs in the Region - have become instrumental for creating the BSR strategic network and largely determined the selection criteria. These are:

- access to metropolitan and large functional urban areas, according to the ESPON methodology;
- integration of peripheral regions and islands;
- access to important raw materials and production sites;
- access to administrative and educational facilities;
- access to important gateways for import and export;
- important transport hubs for both passengers and freight, facilitating modal shift.

Thus, assignation of links and nodes to the BSR Strategic Network was not based on just traffic volumes. It also considered such aspects as: geographical location, distribution of areas showing higher than average regional gross product per capita or a need to secure connectivity between strategic networks for road and rail – and the seaport network.

Having so constructed network as a departure point, a 2030 year projection was made by adding already approved investments in transport infrastructure, retrievable from the official plans and programmes of the BSR countries (fig. 1).

The NORDIM study, in turn, proposes a ***NDTLP Regional Network***, which consists of two parts. First one is links connecting the capitals of the NDTLP countries. The second part is composed of links connecting the first part of the network to harbours and terminals as well as to important external destinations. Altogether, the Regional Network carries major part of the international freight flows of the NDTLP countries (fig. 2).

As stated in the NORDIM report, approval of the NDTLP Regional Network in the final shape shall be made after the pattern of the TEN-T core network has been known. Meanwhile, this draft version shall serve as a preliminary working tool when evaluating and categorising individual projects.

***Fig. 2**: The draft NDTLP Regional Network by the NORDIM study Source: WSP Finland Ltd. (2011)*

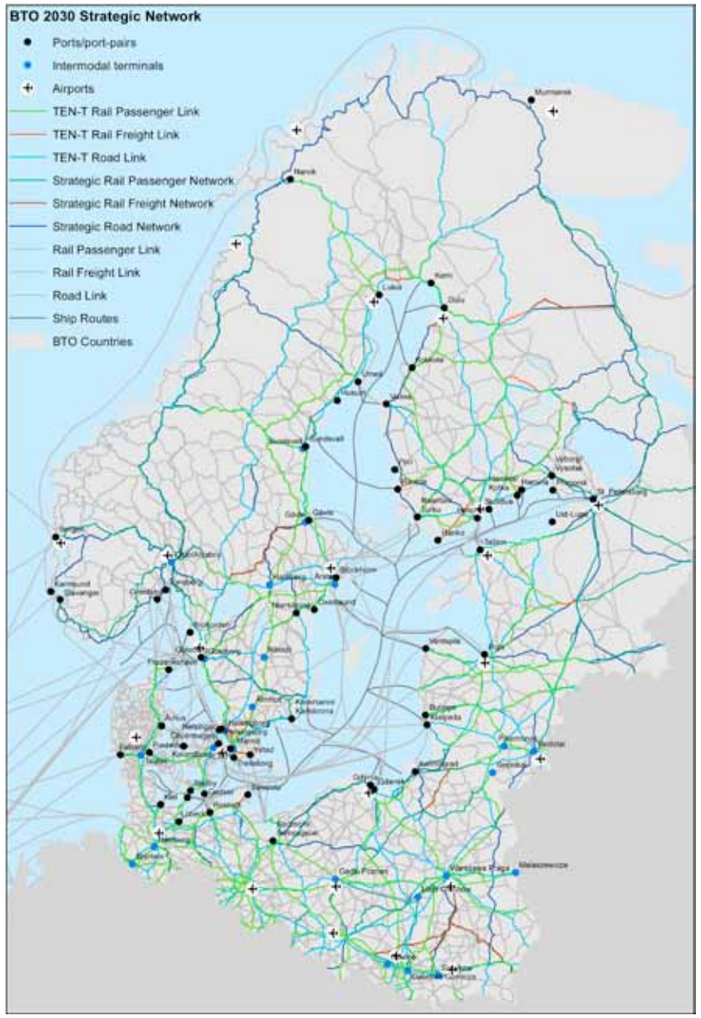


***Fig.1**: The BSR Strategic Network 2030 by the Baltic Transport Outlook Source: Tetraplan A/S et al. (2011)*

FORECAST MODELS

The BTO applies the EU forecast model, called ***TRANS-TOOLS***, which serves the European Commission for policy analyses of European transport networks. The purpose for

The BTO and NORDIM studies are to serve as decision-support tools but show considerable differences.

that choice has been to check performance of the model at the macroregional scale with the same methodological approach and input data (e.g. on general socio-economic trends, transport networks and commodity groups) as for European level investigations. However, specific sensitivity tests for freight transport have been carried out outside TRANS-TOOLS, by means of the global freight demand model developed by NEA (Dutch transport and research training organisation).

In contrast with the BTO, the NORDIM study uses another multimodal freight model, called ***FRISBEE***, which covers the whole Europe, including Russia. Customised to support analyses for the Northern Europe and the North-West Russia, the model operates on extended networks (road, rail, truck-ferry, rail-ferry, bulk and oil pipelines), which cover, apart from the EU, also the Black Sea and the Caspian Sea countries (so called TRACECA network). FRISBEE works on freight demand matrices inherited from the past European-wide model called STAN, with the figures updated to correspond to the volumes observed at borders, main ports and main corridors in the year 2006.

As an outcome, the NORDIM study estimated freight flows for the forecasting years 2020 and 2030 between pairs of countries in the Northern Dimension area, excluding transit traffic to and from third countries. Those trade forecasts have been derived from projected GDP rates and export rates/directions for each country. The forecast volumes were then assigned to the NDTPL regional network for road, rail and sea connections.

FREIGHT SCENARIOS

ONE SCENARIO BY THE BTO

The BTO employs only one scenario, consisting in projection of the likely development trends in demography, economy and transport costs. It is to a large extent based on the European level studies under the auspices of the Commission (such as: ITREN and TEN Connect 2). It also takes into account investments upgrading the current transport network, listed in the national transport programmes and plans.

This so called ***baseline scenario*** is complemented with three ***sensitivity analyses***, which examine how certain variables, like e.g. higher oil prices or road toll system, affect the network performance by 2030. The first one expects rail passenger costs to rise by 10%, the second one addresses rail freight transport costs growing by 10%, while the third one considers unchanged freight transport costs compared with 2010.

THREE SCENARIOS BY NORDIM

The NORDIM study investigates three scenarios ***(base scenario, infrastructure development scenario and soft measures)*** for the years 2020 and 2030. Important assumptions, which determine the scenarios, have been formulated as follows:

- Average unit costs (market prices) by mode, commodity groups and country have the same value as today;
- The transport infrastructure is unchanged, except for the infrastructure development scenario where Fehmarn Belt rail and road links between Denmark and Germany have been added;
- There are no new sea connections or new ports;
- No new flows related with possible new production activities are considered, e.g. new mines, coal or oil exports through the Murmansk port etc.;
- Domestic freight transport is not included;
- CO_2 emission coefficients by mode and ton-km would not change over time.

Differences between the scenarios are subtle as the infrastructure development alternative adds just one connection to the baseline stock (Fehmarn Belt fixed link). The soft measure scenario, in turn, diverges from the baseline by assuming that handling delays at the EU-Russia borders will be decreased by 50% of the current (2006) value. This also applies to Belarusian and EU border.

Further, the NORDIM study considers three particular cases for ***sensitivity tests***. The first one assumes that the national and international importance of the NDTLP Regional Network is recognised and that all NDTLP countries are committed to improve traffic conditions on this network through concrete (yet unspecified) infrastructure and soft measures. In effect, transport times and related costs are estimated to be reduced by 10%.

The second case expects that international agreements will force ship operators to use fuel with less sulphur (cf. IMO regulation imposing the drop of sulphur content in the fuel from 1.5% today to 0.1% in 2015 for ships in the Baltic Sea). This is anticipated to increase operating costs of ship transport by 40%.

The third case corresponds to the changed relation between rail and road transport unit costs, by means of higher fuel price levels for truck transport, which would then affect modal choice in the whole NDTLP network.

POLICY CONSEQUENCES

The two studies, each on its own, are supposed to serve as a decision support tool in planning transport investments in more or less same geographical area and are pursued by the very same national governments (albeit often different departments or even ministries) yet they show considerable differences.

The NDTLP Regional Network reveals a straightforward ***sectoral approach*** to achieve seamless international traffic along the links, which now carry the largest volumes. Evidently, the BSR Strategic Network by the BTO shows a more sophisticated and multi-sectoral methodology, combining elements of transport, socio-economic, and territorial planning, in an effort to increase not only the trade exchange rates but also the accessibility.

In effect of the adopted methodologies, the two networks operate with ***different sets of components***, one included in the other one.

The NDTLP Regional Network is rudimental, composed of main road and rail links, road and rail connectors, major ports and main sea network, with the latter featuring Stockholm-Turku and Tallinn-Helsinki lines as well as the maritime route from the Danish Straits towards the Bothnia Bay and the Gulf of Finland (resembling the sketchy Baltic Motorway of the Sea from the early European Commission documents). It has a basic architecture, which does not have to be adjusted over time, and only calibrated to the layout of the TEN-T core network.

The BSR Strategic Network incorporates all links and nodes of the NDTLP Regional Network, but it shows a denser mesh of nodes and links both on land and on sea, with an additional layer of intermodal terminals. It also has separate lines for freight and passenger traffic. This network is vulnerable to modifications along the timeline, following changes in investment plans of the BSR countries.

In effect of the adopted methodologies, the two networks operate with different sets of components, one included in the other one.

The two unlike methods in the assignation of the transport network in the Baltic Sea area - promoted within the framework of the EU Baltic Sea Strategy and the Northern Dimension Transport and Logistics Partnership - carry substantial ***policy-making implications***. These may be formulated in a following manner:

1. The two networks overlap territorially, with the BSR Strategic Network extending into Russia despite absence of the Russian government in the Baltic Transport Outlook project, and the NDTLP Regional Network covering also the territory of European Union and Norway despite an accent placed on integration and interoperability between the transport systems of the EU and its neighbours (in other words, along the EU-Russia and Norway-Russia border, and in the adjacent zone where the investments could bring a transboundary impact).
2. In order to mitigate this inconsistency, either the two networks shall end at the EU-Russia and Norway-Russia border (as they are compatible) or pre-requisites for approving the BTO Strategic Network on the territory of North-West Russia shall be put on the agenda of the NDTLP.
3. Clear declaration is needed, which of the two networks will in fact be a reference for future projects in the transport system of the Baltic Sea Region and implementation decisions of the European Commission, the EU Member States, Russia, Norway and International Financial Institutions. There is a visible threat that on account of budget constraints the above actors decide to prioritise projects located on the TEN-T core network and the NDTLP Regional Network (outside the EU borders). This would put the BSR Strategic Network in a position of merely an intellectual and one-stand exercise, with a question mark on further use of the Baltic Transport Outlook.

The scenarios and alternatives point at a central role of Denmark in conveying north-south flows, likewise the three Baltic States in case of flows moving in east-west direction. In turn, operational changes in maritime leg of the transport chain may bring significant repercussions for the Saint Petersburg area in terms of serviced volumes.

The freight scenarios employed by the BTO and the NORDIM study give a broad overview of ***freight flows' behaviour*** under various circumstances stimulating transport demand and supply in the Baltic Sea Region (tab.1).

The array of forecasts compiled in Tab. 1 proves, as also stated in the NORDIM report, that the international freight flows in the Baltic Sea Region are ***sensitive to changes in transport conditions***, especially as concerns the cost and the time. In all options, rail transport gains on competitiveness if operational hindrances in that mode are lessened through both infrastructural investments and soft measures. With no actions taken and in case of higher operating costs, freight flows are likely to shift to road transport, in particular if borne over long distances.

In terms of the ***territorial distribution***, the scenarios and alternatives point at a central role of Denmark in conveying north-south flows, likewise the three Baltic States in case of flows moving in east-west direction. These four countries gain the most when the operational environment for the rail transport is improved. In turn, operational changes in maritime leg of the transport chain may bring significant repercussions for the Saint Petersburg area in terms of serviced volumes. This vulnerability is remarkable in case of enforced environmental regulations in maritime shipping (see the sensibility test in sea transport unit costs in the NORDIM report).

***Tab.1**: Effects of the BTO and NORDIM scenarios for the intensity and distribution of freight transport in the BSR*

Freight scenario/alternative	Main assumptions	Consequences for the freight flows in the BSR
	Baltic Transport Outlook	
Baseline Scenario 2030	linear projection of current trends increase in road and maritime costs, rail costs unchanged	• volumes by maritime transport growing by 140% till 2030 (mainly containers), road transport by 70% • pressure on road/rail system in NW Russia, three Baltic States and Sweden (international freight) • large N-S freight volumes on Fehmarn Belt and in the Both nian Corridor (Sweden) • St.Petersburg/Leningrad oblast a BSR gateway (oil trade, containers) • large increase expected also for Gdansk-Gdynia-Kaliningrad belt and SW Swedish ports
Alternative: Rail freight	rail freight transport costs up by 10% compared with Baseline 2030	• drop in rail transport volumes by 21% in average, deepest in Denmark, Germany, Finland and Poland (long distance flows) • subsequent growth in road transport volumes
Alternative: Status quo	unchanged freight transport costs in all modes	• reduction of rail freight by 10%; road transport up to 80% share in the modal shift • Denmark most affected country
	NORDIM study (NDTLP)	
Base Scenario 2020 and 2030	no changes in transport infrastructure (no new connections or ports) transport unit costs of same value as today	• international flows by road transport growing faster than by rail (106% to 80% between 2006 and 2030) • highest international transport volumes in the BSR: Mos-cow-St-Petersburg (for road transport); E-W connections from Moscow to ports in Murmansk, St.Petersburg and in the three Baltic States (for rail transport)
Infrastructure Development Scenario	Fehmarn Belt constructed	• route through Fehmarn Belt attracting 11 million tons on rail link and 8 million toms on road link • rail volumes decreased subsequently on the N-S routes via Jutland and Rostock
Soft Measures Scenario	handling delays at the EU/Russia and EU/Belarus borders decreased by 50%	• rail transport gaining volumes at expense of road transport • reduced volumes on sea network, in particular on routes between the Gulf of Finland and Danish straits/south Baltic ports, respectively
Alternative to Base Scenario: NDTLP Regional Network	traffic conditions improved on the endorsed NDTLP Regional Network	• rail transport gaining volumes at expense of road transport, in particular on E-W route between Moscow, Poland and Germany and N-S route between Öresund, Hamburg and Berlin • overall, higher transport speeds in the whole network
Alternative to Base Scenario: change in sea transport unit costs	operating costs of sea transport increased by 40% compared with the Base Scenario	• road and rail transport gaining much over sea transport in terms of volumes; • decreased volumes on sea routes, in particular in the western part of the Baltic Sea • potential freight flows to change from sea routes to Trans-Siberian Railway
Alternative to Base Scenario: change in road-rail cost relations	operating costs in road transport unit growing by 5% and then 10% (fuel price) operating costs in rail transport unchanged	• rail transport gaining much over road transport in terms of volumes • no impact on sea transport

Source: own elaboration

A decision-support complement by TransBaltic

THE ACHIEVED DELINEATION

The communication between the BTO and TransBaltic stakeholders led to the understanding that an input from TransBaltic should cover insufficient or so far unexplored knowledge on transport development processes, as an input to harmonisation work in Priority Area 11 (*'To improve external and internal links'*) of the EU Baltic Sea Strategy.

This niche to be exploited by TransBaltic contains:

- Thematic scenarios and analyses resulting from the foresight process and subregional interests (sustainable regional growth dimension);
- Inclusion of links and nodes not yet approved by the state governments around the Baltic Sea and thus not included in the BTO study as a part of the strategic network;
- Analysis of the external connectivity and accessibility of the Baltic Sea Region as a transport gateway area for intercontinental flows;
- Impact of specific policy regulations on the freight flow patterns and their territorial distribution.

Furthermore, a longer lifetime of TransBaltic will enable promoting results of traffic flow analyses in the Baltic Transport Outlook at diverse regional fora and thereby better harmonise them with the expectations of different subregions. The results of both can serve joint intermodal transport infrastructure planning between the Baltic Sea Region countries as well as can stimulate further transnational actions within the framework of the EU Baltic Sea Strategy.

Notwithstanding the differences in thematic scope, the BTO and TransBaltic apply the same European transport forecast model (TRANS-TOOLS). However, while the BTO adopts results of the modelling process in a direct way, TransBaltic in some cases calibrates them to obtain more reliable results. This in particular refers to more realistic routing of the flows or shifts between transport modes along the given route (see page 23).
The delineation of scope between the BTO and TransBaltic, with NORDIM study in the background, is presented on the diagram on the left side.

Fig. 3: *Scope delineation between the BTO, TransBaltic and the NORDIM study*

NORDIM	BALTIC TRANSPORT OUTLOOK	TransBaltic
Transport ministries of the ND cooperation	EU transport ministries	Regions + partners
Area: Northern Dimension region (inc. BSR)	Area: The Baltic Sea Region	BSR + factor countries (Belarus, Ukraine, Central Asia, China, India)
Focus on transport infrastructure	Focus on transport infrastructure	Focus on transport infrastructure, logistics services, ICT and knowledge
Macroregional approach	Macroregional approach	Macroregional approach with subregional measures
Mainly internal connectivity + important external links	Mainly internal connectivity	Internal and external connectivity (trans-continental flows)
NDTLP Regional Network 2030 (major corridors as of today)	BSR Strategic Network 2030 (current + approved links)	BSR green network 2030 (strategic network + functional links
Ports and large terminals	Ports and large terminals	Ports and large-medium terminals
3 scenarios + alternatives	1 scenario + alternatives	4 scenarios + alternatives

Source: own elaboration

FOUR VISIONARY SCENARIOS

In aspiration to deliver a broader decision-making base for transnational transport planning, TransBaltic developed four transport and regional development scenarios. They result from the conducted transport foresight process (ref. TransBaltic Policy Report 2010) but have been upgraded to better contribute to the Action Plan of the EU Baltic Sea Strategy.

The four conceived scenarios are of visionary character and provide qualitative projection of trends in territorial development and accessibility as well as trade and transport development patterns unfolding in effect of the EU policies, and the natural and the socio-economic processes.

A longer lifetime of TransBaltic will enable promoting results of traffic flow analyses in the Baltic Transport Outlook at diverse regional fora and thereby better harmonise them with the expectations of different subregions.

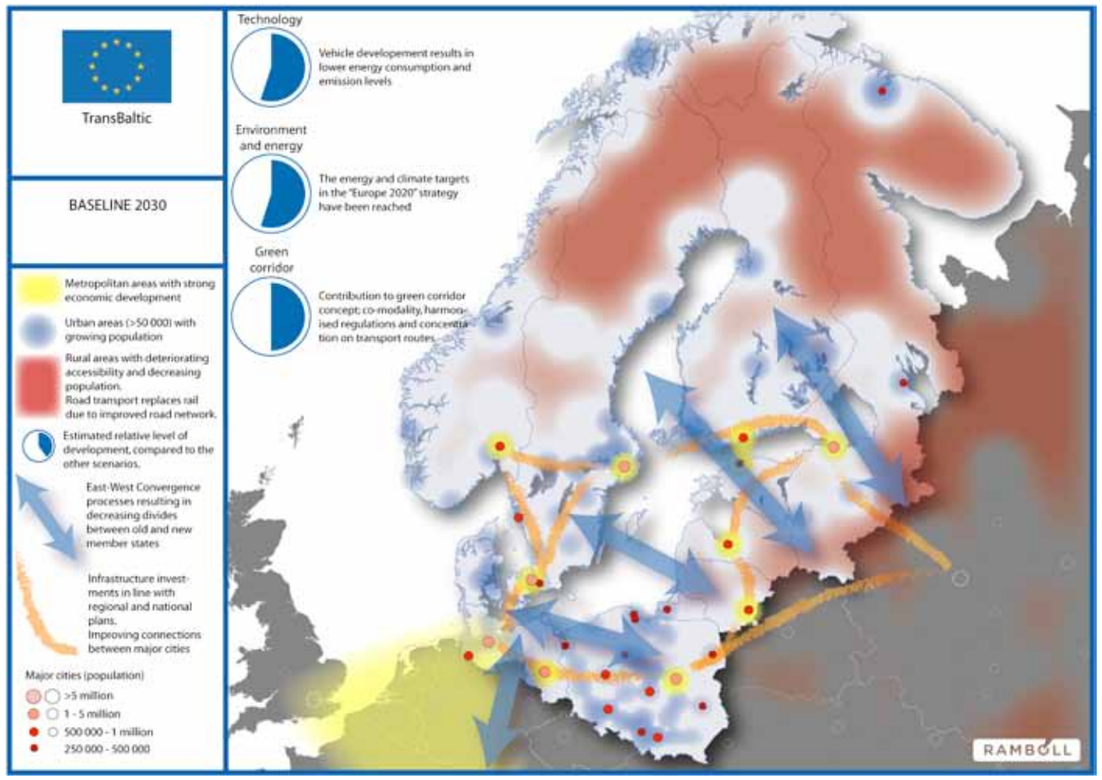


Fig. 4: Territorial visualisation of the baseline scenario *Source: Ramböll (2011)*

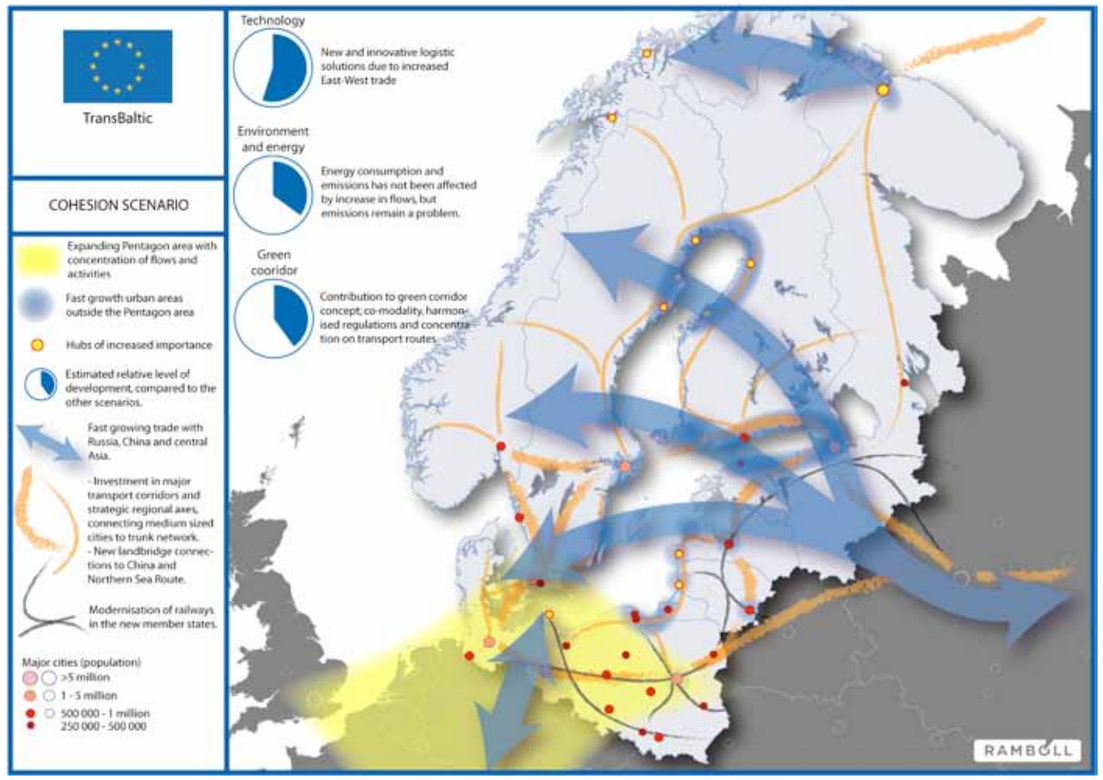


Fig. 5: Territorial visualisation of the cohesion scenario *Source: Ramböll (2011)*

THE BASELINE SCENARIO

The *baseline scenario* (fig. 4) resembles the one produced in the BTO study but has a more distinct territorial dimension. Following the current goals of the EU policies (in particular the Europe 2020 strategy), energy consumption and emission targets will be achieved, on account of, inter alia, new vehicle technologies. The economic convergence processes between the western and the eastern part of the Baltic Sea Region will be continued but, at the same time, disparities between metropolitan and peripheral/rural areas are expected to widen on account of migration movements. Higher transport costs caused by rising oil prices may compromise accessibility of the northern BSR territories and determine a modest development of the Region as a whole, apart from some metropoles. Following the implementation of the national and regional investment plans, connectivity between major cities will grow. In less densely populated areas, improvements in regional and local road infrastructure may vitalise a road transport at the expense of rail services. Consolidation and concentration trends in transport logistics will result in diminished importance of smaller terminals.

THE COHESION SCENARIO

The *cohesion scenario* (fig. 5) considers social, economic and territorial cohesion to become a top priority for the European Union in an attempt to better integrate and provide adequate living conditions in all regions. For that reason significant financial resources from the European Regional Development Fund and the Cohesion Fund will be rendered available for less developed and peripheral areas.

More balanced and slightly faster growth in the Baltic Sea Region than in the baseline scenario will lessen disparities between western and eastern parts as well as between metropoles and the countryside. Vigorous development of the new EU Member States will boost trade with the EU neighbours and the Far East, stimulating fast growth of urban centres and transport hubs located on the east-west corridors. Longer navigation season along the Northern Sea Route is expected to grant the Barents area an important transit role in handling transcontinental flows, bringing growth impulses to the northernmost cities and ports. An intensified trade exchange through the Eurasian landbridge connections will increase demand for improved infrastructure and logistics solutions, in particular in the railway transport on major corridors in the new EU Member States as well as between the new and old Member States. However, in contrast to the baseline scenario, in addition to major corridors, support will also be given to a number of strategic regional transport axes, in order to connect as many medium-sized and small towns as possible to the trunk networks.

According to this scenario the increased transport flows through the Baltic Sea Region will hamper curbing energy consumption and emissions in the transport sector, although more efficient railway services could lead to a better balance of transport modes.

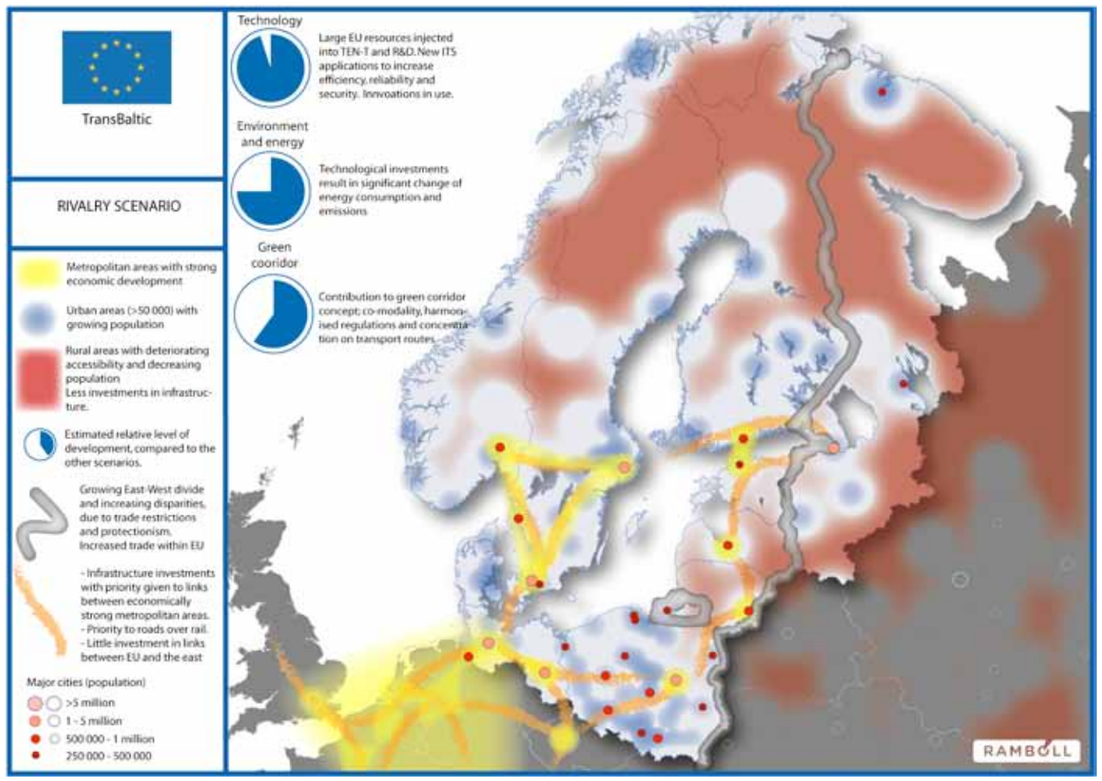


Fig. 6: Territorial visualisation of the rivalry scenario *Source: Ramböll (2011)*

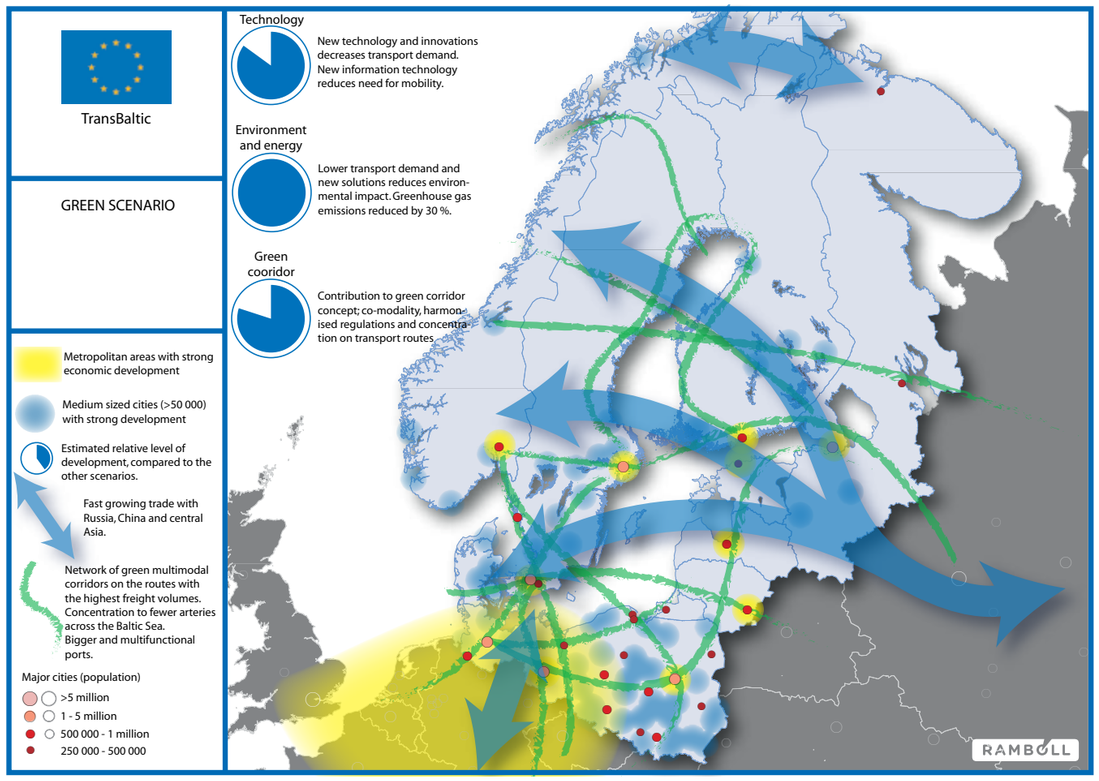


Fig. 7: Territorial visualisation of the green cohesion scenario *Source: Ramböll (2011)*

THE RIVALRY SCENARIO

The *rivalry scenario* (fig. 6) anticipates an opposite direction in the policy framework as the European Union struggles to improve the competitive position of its economy. With much more funding dedicated to R&D, education, transport and ICT, major efforts are placed on internationalisation of clusters and attracting global enterprises to manufacture their products and services in Europe. The policy support is thus granted to the most developed regions that have the best chance for competing on a global scale.

The transport investments are decided according to market demand, with priority given to links between economically strong metropolitan areas as this would produce the most visible added value. In result, the aggregated growth in the EU economy is larger than in the baseline scenario but shows a sharper core-periphery pattern.

While the trade exchange between the EU Member States will continue to do well, the trade with Russia and other external countries is expected to stagnate due to stronger market protection measures and lack of essential investments in cross-border infrastructure. The overall economic development in the BSR will thus slow down, attaining even lower rates than in the baseline scenario. Consequent to concentration of major transport infrastructure investments in the corridors linking the metropolitan areas, economic decline of the rural and peripheral areas may become acute as they will lose transport flows. This may in particular apply to the Northern Periphery area and certain parts of Poland and the Baltic States.

As in the baseline scenario, the increasing energy prices remain a major constraint in the transport sector yet further technological development in the area of ITS and the availability of alternative fuels will make it possible to ensure mobility and economic growth, and at the same time effectively tackle energy consumption and emissions challenges.

THE GREEN SCENARIO

The TransBaltic Policy Report 2010 explores the situation when the European Union regulations and rules of the neighbouring countries have laid ground for developing a network of green multimodal transport corridors in the Baltic Sea Region as a means to make it more coherent. This path would to the maximum extent employ the transport greening policies, which aim at seeing all transport modes complementary to each other (co-modality), in order to reduce the environmental impact and improve energy efficiency from transport. Thus, this path implies that external costs of transport will be internalised, which means that transport users will be obliged to pay for the 'hidden' costs generated by transport (such as air pollution, noise, congestion or accidents).

In broad terms, the *green scenario* (fig. 7) follows the assumptions of the cohesion scenario as regards the overall economic development and trade patterns; however, it highlights an additional positive influence of well coordinated public policies and involvement of the civil society.

The scenario anticipates introduction of regulations, restrictions and incentives at the EU level to tackle both transport demand and transport externalities. This might result in lower total transport work than in the cohesion scenario mainly due to more local production, higher load factor and higher demand for products with low impact on the environment. It is assumed that even more ambitious targets of the Europe 2020 strategy may have been met (greenhouse gas emissions reduced by 30% compared with 1990 levels).

Such a turn will be served by extensive investments in road and waterborne transport, focus on last mile infrastructure to the strategic nodes (ports and inland logistics terminals) as well as the development of new vehicles, technologies and innovative solutions. This may cater for more balanced development in rural and urban areas, with particular benefits achieved by medium-sized cities in

metropolitan areas serviced by efficient public transport networks.

Overall, implementation of the green scenario is deemed not be bring essential shifts in routing, so the future system will still be based on existing nodes and corridors. However, as the green multimodal corridors will be developed on the routes with the highest volumes of freight flows, the centralisation and concentration processes may follow, to effectuate in fewer transit arteries crossing the Baltic Sea Region, bigger and multifunctional ports, and specialised small terminals feeding the main nodes.

SHAPING THE NETWORK OF GREEN MULTIMODAL TRANSPORT CORRIDORS

The TransBaltic Conference 2011 featured a debate with relevant pan-Baltic organisations on desirable components of a future integrated transport system in the Baltic Sea Region, specified earlier in the TransBaltic Policy Report 2010. It gave a joint understanding of main architecture of the system, with the following ***building blocks***:

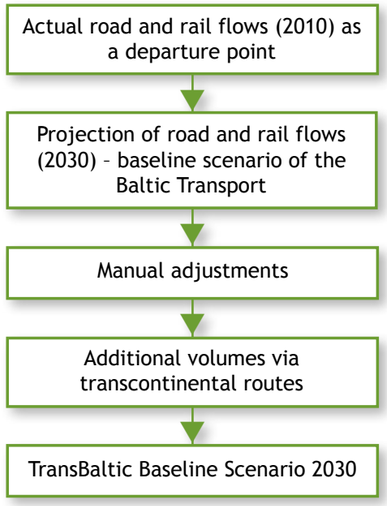
- A network of European and transnational multimodal transport corridors for better external accessibility of the Region, with well developed cross-border sections (for better interoperability of the national solutions);
- Inter-regional and regional transport links, which improve access from the European and transnational corridors to local and regional production areas and customer markets;
- Ports and airports acting as interfaces between land, sea and air transport modes, well connected with their respective hinterlands;
- Inland waterways as a part of intermodal transport;
- Facilities enabling interoperability between modes of transport, with emphasis to railroads and short sea routes,
- Efficient local and regional public transportation, contributing to better mobility within commuting areas and to more compact settlement structures,
- Innovative solutions in logistics and in traffic monitoring systems,
- Platforms for cooperation between public administration, research and business sector to identify potentials and pave the way for future investments,
- Harmonised policy interrelations between transport planning bodies

The above set of connections, nodes, installations, management routines, coordination schemes and governance rules is also unsurprisingly regarded as common for the concept of green corridors, even though the concept itself has not been yet sufficiently contemplated (with a dilemma on the theoretical dissertations vs. practical routines as a departure point; environmental performance vs. economic competitiveness as decisive features; or roles and responsibilities between the various stakeholders in the design and implementation etc.). Having in mind this affinity, the performance of the transport system in the year 2030 was projected based on the mesh of green multimodal transport corridors in the BSR as the most prominent outcome of the green scenario.

The major hypothesis behind the deeper examination of the green multimodal transport corridors is that they are able to attract freight volumes by offering more attractive operational conditions (e.g. traffic speed, lower transport costs etc.) compared with 'regular' corridors. This hypothesis was tested through a combination of modelling work (using the European transport network analysis model called TRANS-TOOLS) and expert judgment.

The TransBaltic Baseline Scenario was given a qualitative, 'visionary' description, based on the predicted trends and patterns in socio-economic, transport and territorial development (see page 18). As it is supposed to provide a reference to how the multimodal green transport corridors could perform in the future, the scenario was further processed to show possible distribution and volumes of flows on the transport network.

STEP 1: PROJECTING FREIGHT FLOWS IN THE TRANSBALTIC BASELINE SCENARIO 2030



In order to keep consistency with the methodological approach by the Baltic Transport Outlook, the same forecast model (TRANS-TOOLS) and input data (road and rail volumes as of 2010) were used, with, however, somewhat different assumptions for the end result.

First, ***some obvious network errors*** generated by the TRANS-TOOLS model were manually corrected. To exemplify, rail flows between the south-eastern Swedish ports (Karlshamn, Karlskrona) as transhipment points and the delivery area of the Stockholm region were prescribed to go along the eastern coast (via Kalmar), while in reality they are bound north-west via Alvesta where they connect to the Scandinavian Corridor linking Öresund area with the Swedish capital. East-West trade flows between Russia and the Western Europe countries, in turn, were projected to go via Latvia and Lithuania, instead of via Minsk, as the model does not contain updated data on infrastructure networks in Belarus. Also, as the model connects geometric centres of the administrative units (centroids) and not the real transport nodes, the lines depicting flows to the ports of Narvik, Kirkenes and Murmansk were ended in the middle of Nordland, Finnmark and the Murmansk region, respectively, and had to be manually extended to the coast.

Second, in opposition to the Baltic Transport Outlook, TransBaltic perceives the future transport system in the Baltic Sea Region to be based on macroregional functionality (gateway area) and not solely on the sum of present infrastructure and those investment projects that have already been decided in the national plans and programmes. For that reason, two ***new elements***, deemed important for the system as such, were added: (1) a fixed link for road and rail transport between Helsingborg (Sweden) and Elsinore (Denmark), and (2) road and rail bypass for the Copenhagen metropolitan area (Ring 5).

Third, TransBaltic promotes braver assumptions for the development of trade exchange between the BSR and Asia through a ***number of alternative transcontinental routes***. That is a unique projection, which maps out the volumes of freight flows in the year 2030, with the judgment of origin and destination areas, entry/exit points, geographical balance (proportion of volumes in each direction) and absorption rate by the areas on the route (see Ramböll 2011).

It is estimated that by 2030 roughly 120 million tonnes per year from Russia, Kazakhstan and China will have been destined for the Baltic Sea Region. While some 90 million tonnes are assumed to represent a direct sea transport via the Le Havre-Hamburg port range and short sea shipping within the BSR, the additional 30 million tonnes per year may emerge on other routes.

The ***Northern Sea Route***, promoted by the Russian government, may, as ice-free periods get longer, by 2030 gain some 2.5 million tones annually. The route will mainly serve Russian

The green multimodal transport corridors are able to attract freight volumes by offering more attractive operational conditions compared with 'regular' corridors.

It is estimated that by 2030 roughly 120 million tonnes per year from Russia, Kazakhstan and China will have been destined for the Baltic Sea Region.

and northern Scandinavian trade with Asia, through the ports of Murmansk, Kirkenes and Narvik. Another route with similar flow volumes is the *North East West Corridor*, a rail solution between northern Scandinavia and Asia with the port of Narvik as a transit gateway to North America. Continuing clockwise, the upgraded *Trans-Siberian railway* is estimated to load on some 7 million tonnes per year, whereof over 1 million tonnes will be transported to and from the EU markets. While the Trans-Siberian railway is presumed to have a balanced flow in both directions, the new railway ***via*** *Kazakhstan* with estimated almost 5 million tonnes will dominantly serve flows from Asia. Some additional freight (1 million tonnes) could be carried along the same corridor but by truck.

An increased interest in short sea shipping will make transport *via the Black Sea* (Odessa) and via *the Adriatic Sea* (the North Adriatic Ports Association – Ravenna, Venice, Trieste, Koper and Rijeka) a significant alternative to direct long sea routes to the BSR. In case of Odessa the freight estimated at 6 million tonnes could be further carried by rail through Ukraine, Belarus and Lithuania, and then from Klaipeda by road ferry to southern Sweden and eastern Denmark. Transport arriving via the Adriatic Sea is forecast to be distributed on a combination of modes along the three landbridge north-south corridors: Sonora/Scandria Corridor via Berlin, Central European Transport Corridor via Prague and Wroclaw, or Baltic-Adriatic Corridor via Warsaw and Gdansk. This alternative may, in total, gain some 6 million tonnes.

The volume split on transcontinental routes between the BSR and Asia as well as the pattern of additional flows on the BSR transport network is presented on Fig. 8 and 9.

Fig. 8: *Alternative transcontinental routes between the BSR and Asia with the volume shares.*
Source: Ramböll (2011)

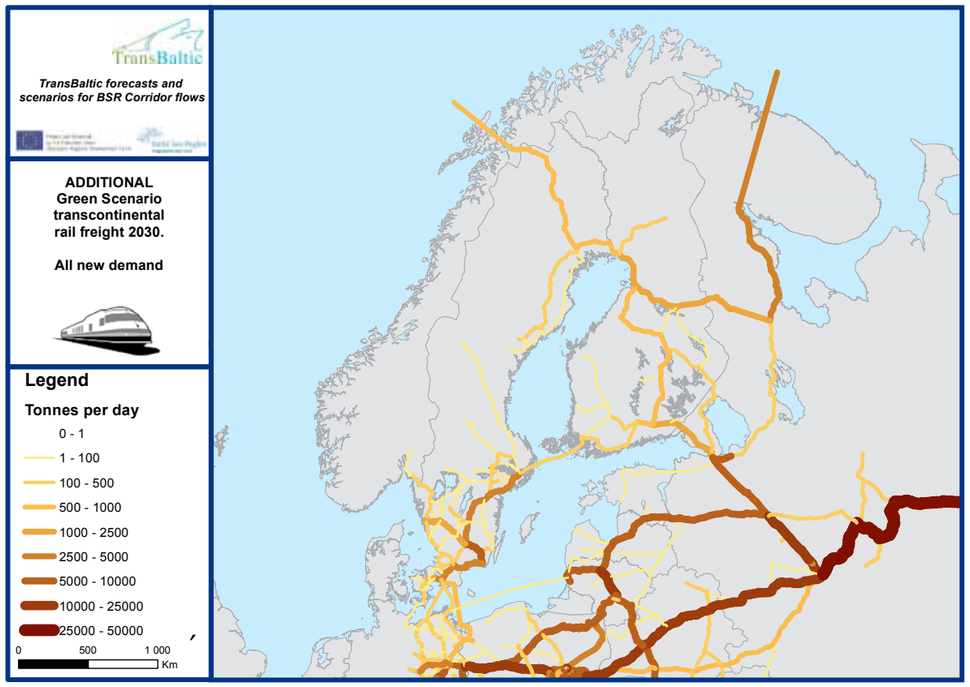


Fig. 9: *Geographical pattern of additional volumes between the BSR and Asia through the alternative transcontinental routes.*
Source: Ramböll (2011)

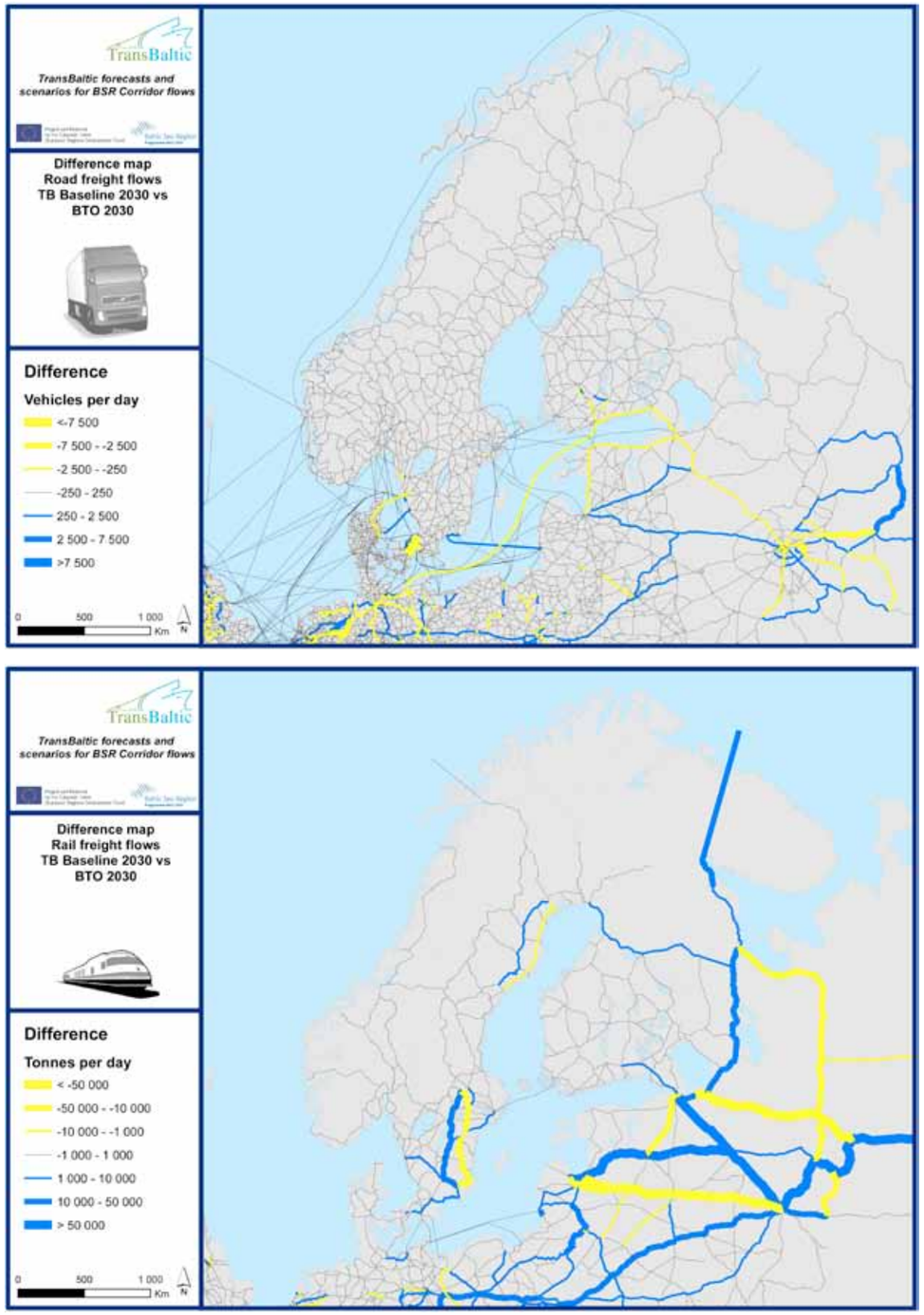


***Fig. 10**: Distribution of road and rail flows in 2030 by the TransBaltic Baseline Scenario in comparison with the BTO Baseline Scenario*
Source: Ramböll (2011)

The subsequent distribution of freight flows according to the TransBaltic Baseline Scenario 2030 is presented on fig. 10.

Augmented with the network calibration and additional flows in the transcontinental trade exchange, the TransBaltic Baseline Scenario 2030 contrasts with the BTO Baseline Scenario in particular when it comes to the routing of rail freight flows. Apart from the route shift in the south-eastern part of Sweden to better match the reality, much more pressure is put on rail connections in western and north-western Russia, Belarus and Latvia.

STEP 2: DESIGNATING THE GREEN TRANSPORT NETWORK

TB Baseline Scenario 2030

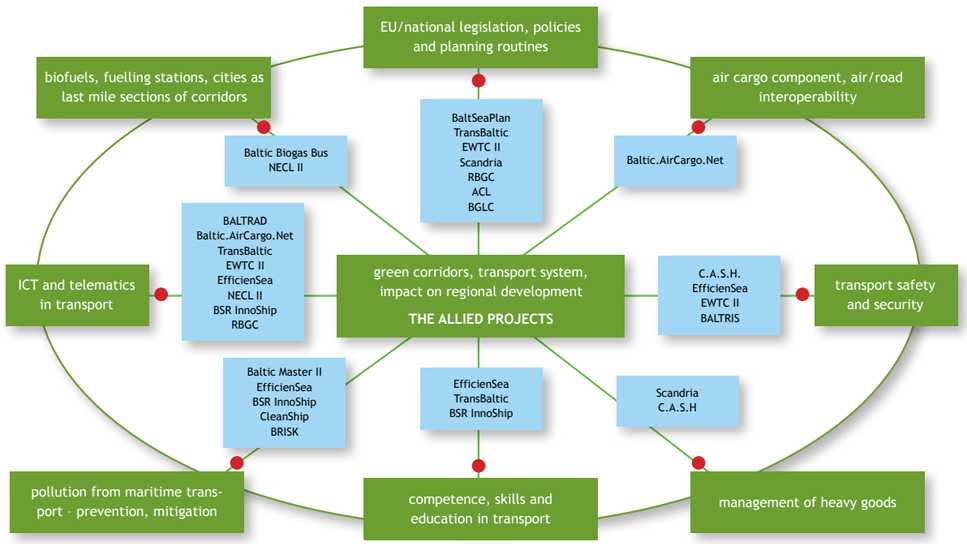
↓

Selection of the green multimodal transport corridors

The flow volume projections according to the TransBaltic Baseline Scenario 2030 are meant to serve as a backdrop for displaying the performance of green transport network. Such a network has thus to be defined based on clear criteria. While a number of efforts by the public administration, research institutions and the business sector are dedicated to identifying corridors with the largest potential for successful greening policies, the approach taken by TransBaltic points at those corridors that are subject of the collaborative process.

One of the project's interim results has been the establishing of so called ***umbrella cooperation*** – an open and informal structure for transnational and cross-border projects dealing with transport and regional growth in the Baltic Sea Region (see fig. 11). Gradually, green transport solutions became a common issue for discussion, exchange of experience and best practise, and joint dissemination towards the shared target audience. It is also expected that essential findings

***Fig. 11**: Thematic cooperation fields of the umbrella structure in the Baltic Sea Region* *Source: own elaboration*



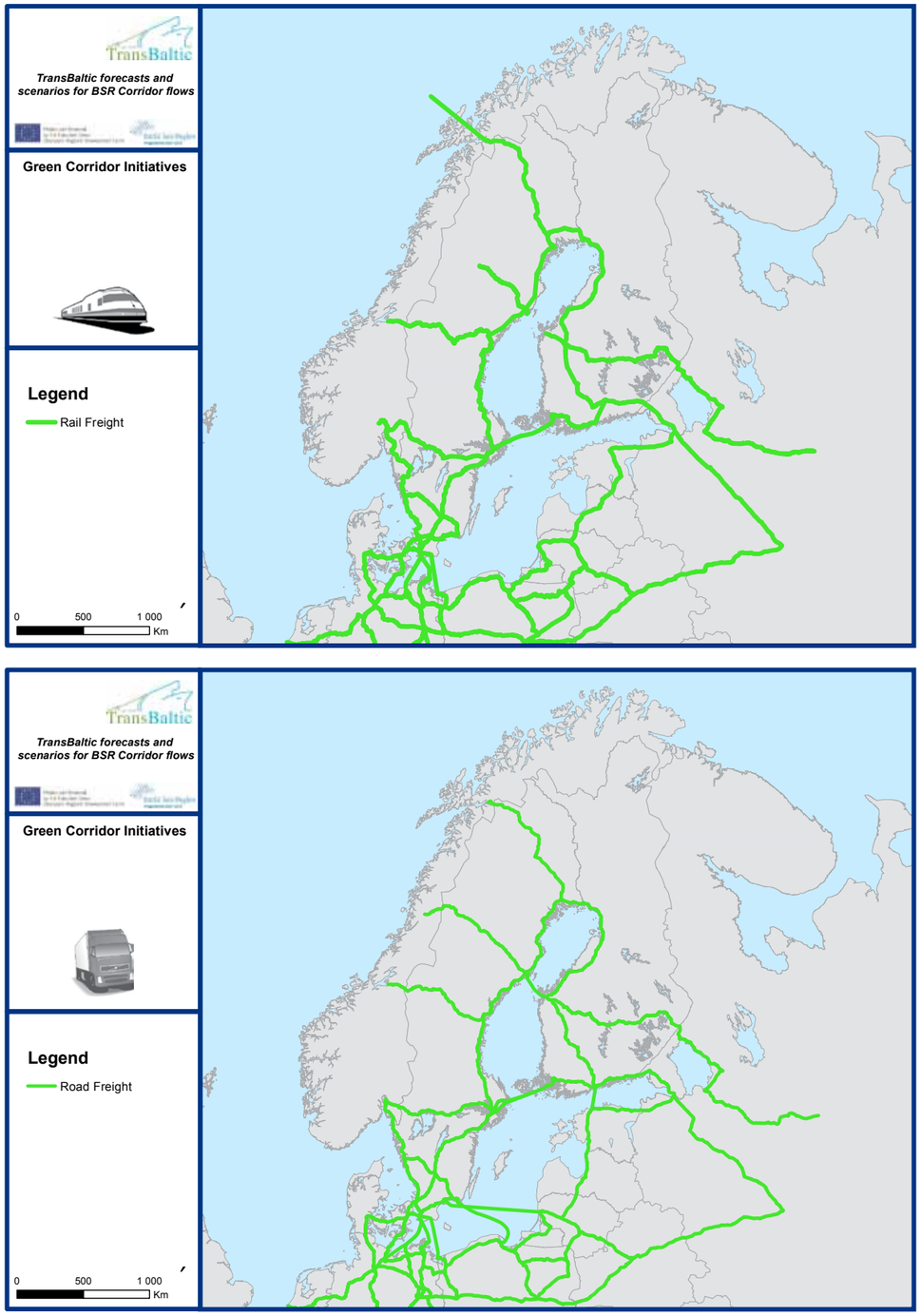


Fig. 12: *Road and rail links (incl. ferry lines) in the BSR classified as the green transport network in the TransBaltic Green Scenario 2030.* *Source: Ramböll (2011)*

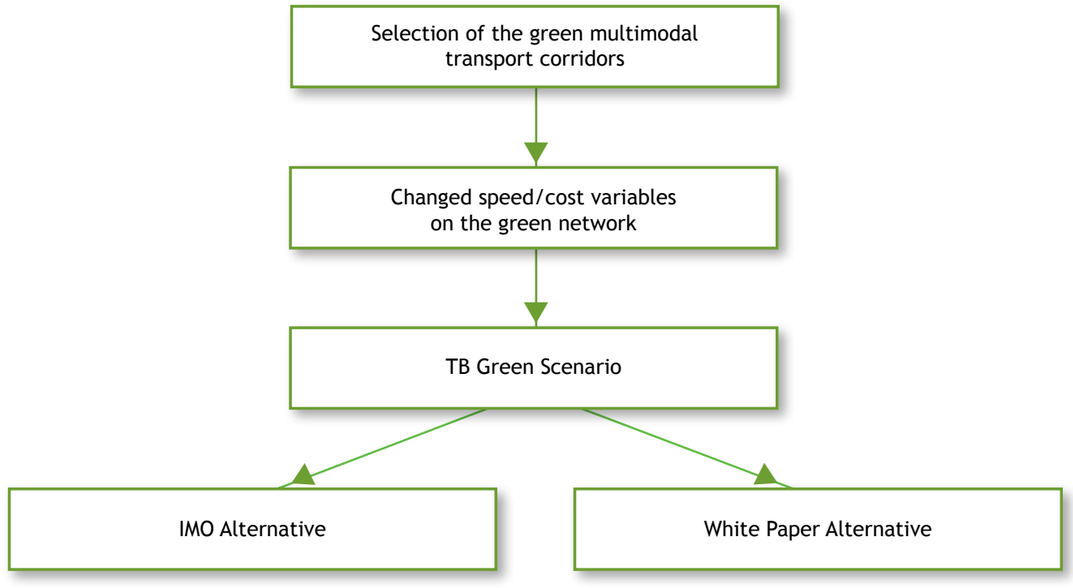
on most effective transport greening measures will be processed together and lifted to the pan-Baltic level in a form of so called BSR blueprints (in other words: macro-level transport development solutions, which stem from the market needs, are customised to the transport and logistics specificity of the BSR and which are beneficial for the sustainable regional development in the BSR).

In the current stage (December 2011), the umbrella cooperation gathers some 9-10 projects, with most of them dealing with specific transport corridors. Hence, in order to create a harmonised context for more in-depth investigations in the umbrella framework, the principle for designating the green transport network in the modelling work was to choose links of interest for the transnational transport corridor projects in the Baltic Sea Region.

A layout of the green multimodal transport corridors processed in further analyses is given in fig. 12.

The modelled green transport network consists of links of interest for the transnational transport corridor projects in the Baltic Sea Region.

STEP 3: ARRIVING AT THE TRANSBALTIC GREEN SCENARIO 2030 AND THE POLICY ALTERNATIVES



As said earlier, the TransBaltic Green Scenario 2030 assumes stimulation of freight flows by means of well coordinated public policies and involvement of the civil society. The network of green multimodal transport corridors, well spread over the whole BSR territory, is central to this reasoning. They are expected to be an area of policy intervention, with specific regulations, harmonisation measures and incentives, where the appointed management bodies (with eminent role of the public administration) develop and implement steering mechanisms to supervise and repair performance failures.

The Green Scenario projects a slight shift of freight volumes from the regular to the green transport network.

Such corridors could be deemed more attractive to the stakeholders than other parts of the transport network as they may offer better operational conditions. For the modelling purposes, the attractiveness asset was interpreted as a 'cheaper' and 'faster' transport of goods (freight transport cost lowered by 2 eurocent per vehicle-km and rail speed higher by 30% on the green transport network as compared with other links).

The modelling analysis resulted in a number of ***important observations*** (see fig. 13). With the improved parameters as above, the green multimodal transport corridors are capable of carrying 10% more volumes, in approximation, as compared with the linear trends explored in the TransBaltic Baseline Scenario. They also manage to capture flows from other parts of the network where such operational facilitations have not been accomplished. With a particular strain predicted on the rail ferry links, a policy dilemma may thus be flagged up, whether investment in rail ferries may be a viable option to consider aside efficient intermodal terminals.

The subsequent distribution of freight flows according to the TransBaltic Green Scenario 2030 is presented on fig. 14.

The Green Scenario projects a slight shift of freight volumes from the regular to the green transport network. An increase of volumes on the road connection along the coast of Estonia and Latvia may result from the system error in the TRANS-TOOLS model.

Fig. 13: *Performance of the green transport network in the TransBaltic Green Scenario 2030*
Source: Ramböll (2011)

Million tonne-km per year within BSR	TB2030 Baseline	TB2030 Green scenario	Change %
Road tonne-km on Green network	642	734	14%
Road tonne-km not Green network	746	688	-8%
Road tonne-km total	1,387	1,422	2%
Rail tonne-km on Green network	533	570	7%
Rail tonne-km not Green network	443	408	-8%
Rail tonne-km total	975	978	0%
Road ferry tonne-km on Green network	132	140	6%
Road ferry tonne-km not Green network	818	765	-7%
Road ferry tonne-km total	950	905	-5%
Rail ferry tonne-km on Green network	3	3	10%
Rail ferry tonne-km not Green network	3	2	-23%
Rail ferry tonne-km total	6	6	-7%
Sum tonne-km on Green network	1,309	1,448	11%
Sum tonne-km not Green network	2,009	1,863	-7%
Sum tonne-km total	3,319	3,311	0%

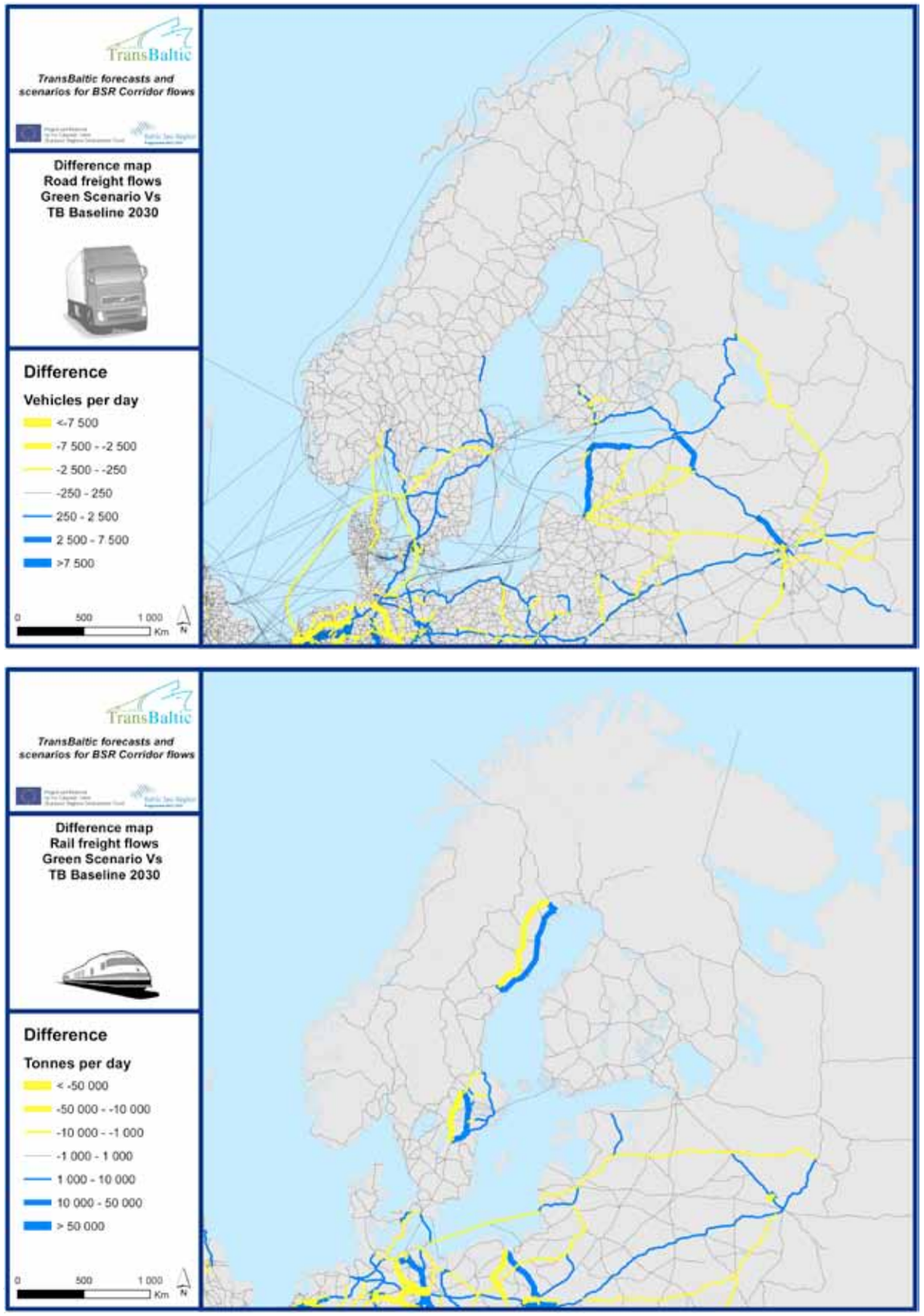


Fig.14: *RDistribution of road and rail flows in 2030 by the TransBaltic Green Scenario in comparision with the TransBaltic Baseline Scenario.* *Source: Ramböll (2011)*

The TransBaltic Green Scenario 2030 can be interpreted as a mainstream trajectory with changes occurring in the network of green corridors through moderate policy measures and decisions of market actors.

MODERATE AND PROGRESSIVE OPTIONS

Apart from the modal shift anticipated in the TransBaltic Green Scenario (shifting of a portion of long-distance road transport by trucks to other modes), also possible improvements in technologies by the year 2030 may largely determine transport externalities on the green network. Two considered options – named *'moderate'* and *'progressive'* - predict different advancement of technological changes as regards: the vehicle size, engine, fuel, traffic utilisation (traffic management, route choice or driver's behaviour) and transport utilisation (larger units, modular units etc.), which in consequence influences such aspects as: road safety, traffic noise, climate effects and air pollution.

Mitigation of environmental impacts is remarkable especially in the *'progressive option'*. It sees broader use of alternative fuels, much more advanced road and rail traffic noise abatement techniques, and technological innovations in truck and maritime transport (including ferries), which reduce emissions (in particular CO2 emissions in maritime shipping). In effect, the anticipated technological innovation may reduce traffic noise, climate effects and air pollution by the range of 20-40%, improving traffic safety by 60% as compared with the 2010 levels.

POLICY ALTERNATIVES

The TransBaltic Green Scenario 2030 can be interpreted as a mainstream trajectory with changes occurring in the network of green corridors though an interplay of moderate policy measures and decisions of market actors. On this ground, a number of other trajectories can be created, which are impacted by more extreme or radical policies.

The first, labelled the *IMO Alternative*, tackles the sulphur regulation introduced by the International Maritime Organisation and considers its implications for the flow patterns in the BSR green transport network. The revised Annex VI to MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships) lowers the maximum allowed content of sulphur oxides (SOx) in the oil fuel at the global level from 4.5% to 3.5% from 2012 and to 0.5% from 2020. However, in case of so called SECA areas (Sulphur Emission Control Areas), which encompass the Baltic Sea, the North Sea and the English Channel, the limits will be stricter and drop to the level of 0.1% from 2015.

For the purpose of the modelling, this was translated into 30% increase in maritime transport costs on the Baltic Sea. In addition, subsequent re-routing of the flows is envisaged, with north-south corridors gaining volumes over the traditional maritime route through the North Sea (via Black Sea from 5% to 10% in the overall share; from the Adriatic Sea northwards from 5% to 10%, with direct conventional sea route falling from 75% to 65% in the overall share).

Consequences of the IMO regulation for the geography of freight flows are presented on fig. 15. Volumes on both the road and rail ferries are affected, with the latter hit particularly hard (decrease by 50%). Longer shipping routes across the Baltic Sea evidently lose cargo, as it moves to the coastal road connections as well as inland corridors linking Moscow, St.Petersburg and Nordic capitals with Western Europe. The North-South rail corridors gain on competitiveness, conveying much more freight from the Mediterranean, Adriatic and Black Sea ports into southern part of the Baltic Sea Region.

The other trajectory, named the *White Paper Alternative*, elaborates on the EU transport policy assumptions to move 30% of the cargo from road to rail transport in the long-distance range traffic (over 300 km) by 2030. Again, for the modelling purpose, the shift was translated as the moving of 30% of the volumes from road to: rail, short sea shipping and ferries in the green transport network in the BSR.

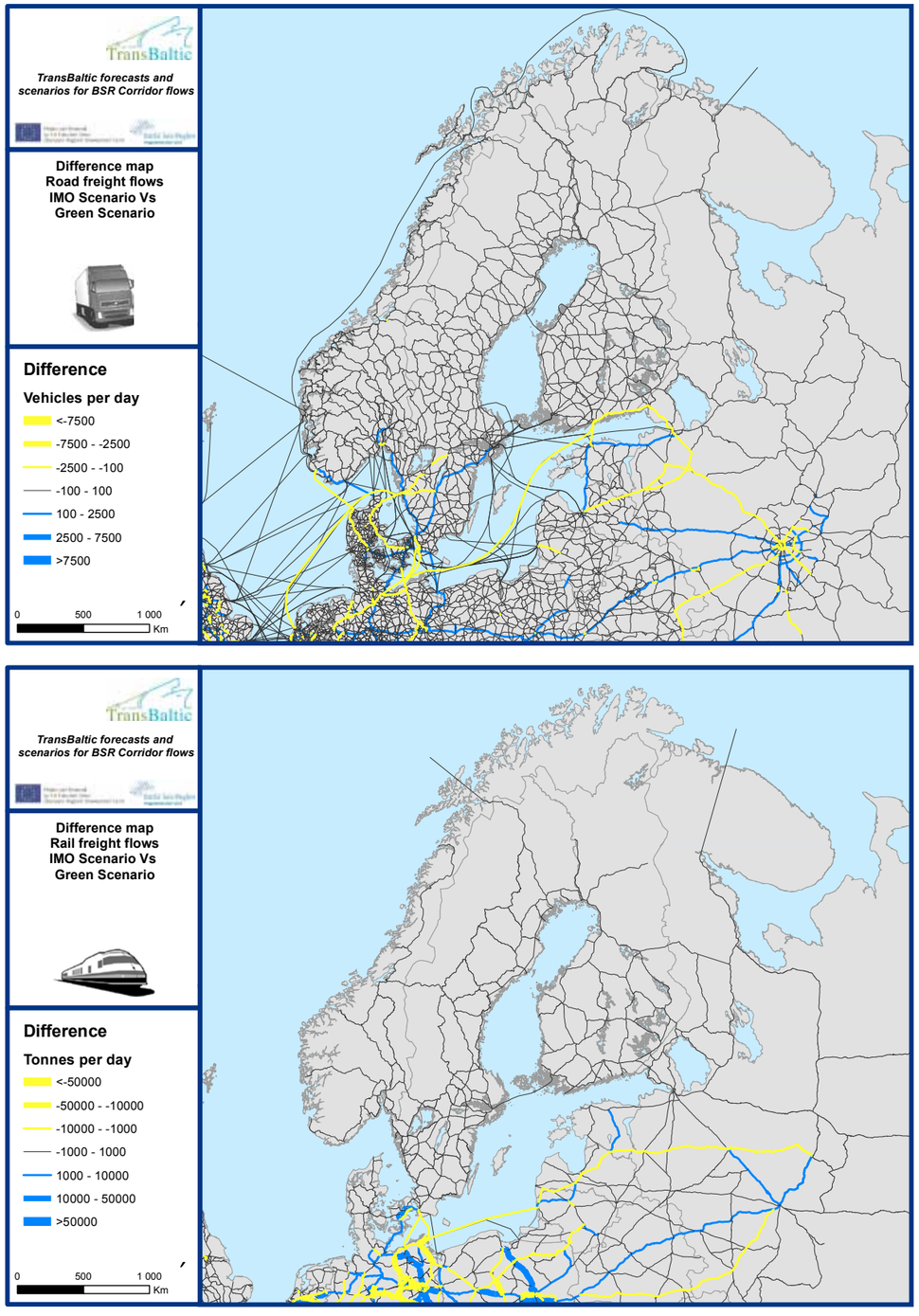


Fig. 15: Impact of the IMO sulphur regulation on freight volumes in the green transport network in the BSR.
Source: Ramböll (2011)

The analyses by the BTO, NORDIM and TransBaltic show critical areas and parts of the future integrated transport system in the BSR.

The resulting projection (fig. 16) shows a growth in rail transport volumes by 34% in the green network, while for rail connections in general the figure goes up by 20%. High volume inflows are notably visible on road and rail ferries. Road traffic diminishes the most on the saturated mesh of connections in the south-western part of the BSR, compensated by increases on rail-borne routes between northern parts of Scandinavia through the Danish Straits to consumption areas in Western Europe as well as on northwest-bound and westbound routes from the Moscow area.

POLICY CONSEQUENCES

The performed analyses in the complementary set of three initiatives (Baltic Transport Outlook, NORDIM study and TransBaltic) expose critical ingredients of the future integrated transport system in the Baltic Sea Region. Respective of the given scenario or development alternative, these are either structural components of the system or specific geographical areas, which are likely to see significant freight flow changes on account of circumstances already now foreseen. Among them are:

- *North-South railway links*, the capacity of which may be challenged due to re-routed flows (see e.g. the impact of IMO Regulation);
- *Road/rail ferries and intermodal terminals in the port areas*, which will certainly become fundamental in securing efficiency of the transport system performance, as seen in several scenarios;
- *The Barents Area*, which is going to serve both north-south and east-west freight flows (mostly raw materials) to the processing and consumption areas in Europe and the Far East;
- *A cluster of Russian ports in the Gulf of Finland*, which - apart from liquid fuels - are forecast to handle still growing volumes of containerised goods for the national market;
- *Ports of the three Baltic States (Estonia, Latvia, Lithuania)*, which will enter even more intense competition for rail-borne cargo on landbridge connections to Central Asia and China;
- *Gdansk-Gdynia-Kaliningrad* belt, with the ports expected to note highest growth rates and in need of developing efficient railway connections with the hinterland;
- *The Danish Straits*, where the awaited high traffic intensity on north-south connections may seriously challenge capacity of the existing and planned road and rail infrastructure.

Particular attention of the public policies for those elements as well as exposed geographical areas through mitigation and improvement measures will be indispensable for sustaining the robust performance of the whole system.

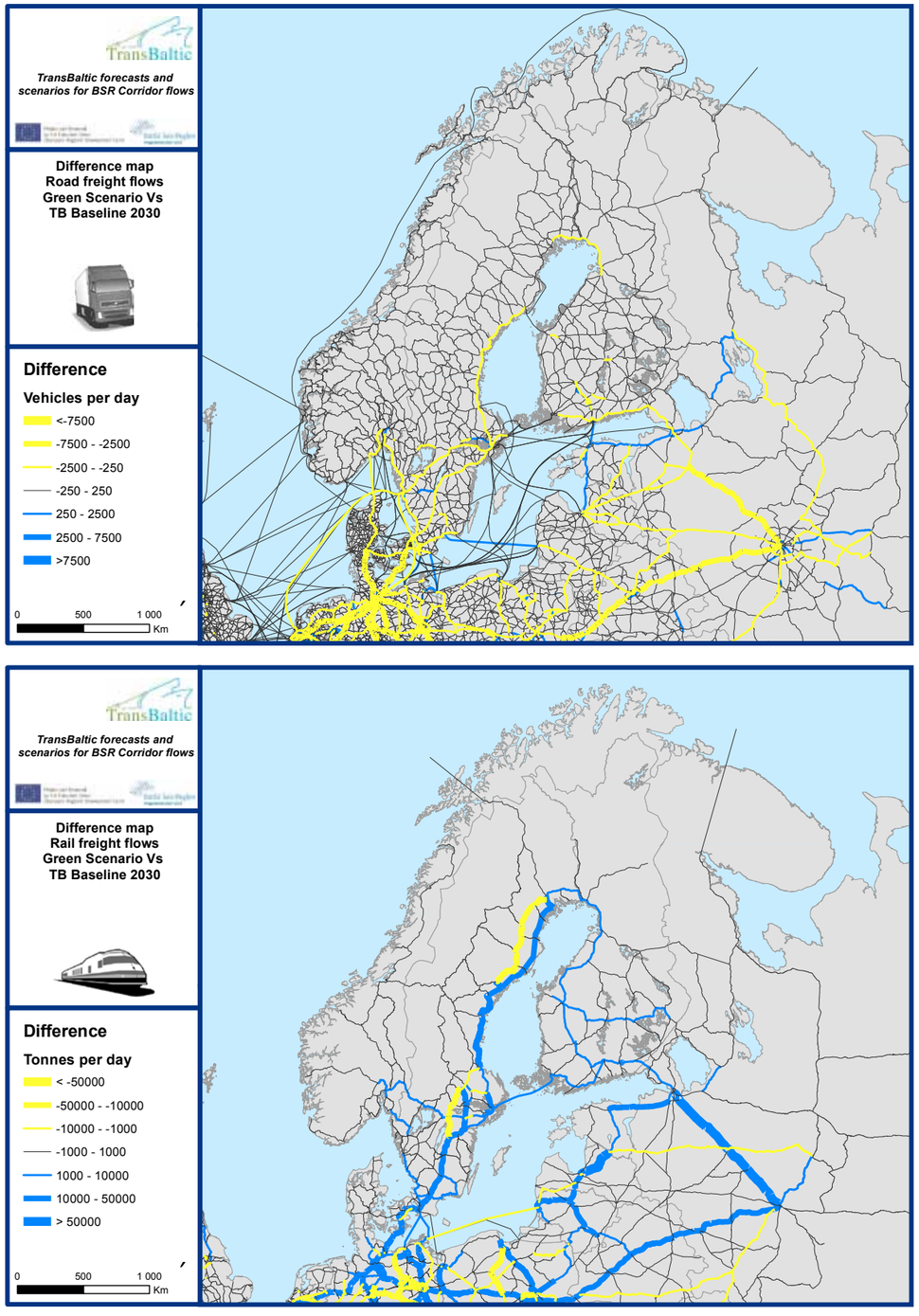


***Fig. 16**: Impact of the EU Transport White Paper assumptions on freight volumes in the green transport network in the BSR .*
Source: Ramböll (2011)

Rising challenges for a robust transport system in the Baltic Sea Region.

Current developments bring new evidence for transcontinental freight flows on the Northern Sea Route.

The integrated transport system in the Baltic Sea Region will be growing in a turbulent environment, affected by policies, rules and regulations of individual countries, the intergovernmental structures and the European Union. This includes the strategic policy framework created by the Europe 2020 priorities, the future EU cohesion and transport policies and the Northern Dimension policy; numerous regulations dealing with specific aspects of transport and logistics on land and sea, and state legislation. On the ground, the normative setting is juxtaposed with socio-economic and natural developments to altogether form a scene for market decisions.

The possible development trajectories, presented in the previous chapter, attempted at incorporating a few of the identified drivers into the analyses of the transport system's behaviour. Some of the scenarios and alternatives looked at territorial and modal shift impact of policy acts (e.g. the White Paper or the IMO sulphur regulation), tackled the technological changes in transport or addressed the landbridge connections emerging between Europe and Asia. Without doubt, a combination of the already known and future drivers is going to change the geography of freight flows in the Baltic Sea Region, which would require different policy responses that the ones being on the agenda today.

This awareness-raising chapter looks more into growth processes in some geographical areas, which - albeit in the periphery or outside the Baltic Sea Region – are presumed to become ***significant change drivers*** for the transport patterns in the near future.

THE NORTHERN SEA ROUTE

The very early assumption made in the TransBaltic project entailed that the gradual opening of the Northern Sea Route along the Russian Arctic coast and transport investments on the European-Asian landbridge might provide new opportunities for transcontinental cargo flows. Subject to research and foresight discussions summarised in the TransBaltic Policy Report 2010, the route was, however, not seen as an important part in the transport system of the Baltic Sea Region.

This was first and foremost argued in the context of allegedly short navigation season along the Siberian coast, thought to reach about 4-5 months only by the end of the 21st century. Another argument pointed at a low profitability of the route, as it would depend on substantial investments in the fleet, harbours and landside connections. Also, being part of the transport strategy by the government of the Russian Federation, the route was found a political issue, prone to administrative steering and preferential bias.

In sum, the Northern Sea Route was seen as a route for a top-down regulated traffic of bulk cargo, serving exports of Russian crude oil and other raw material resources in Siberia and territorial waters of the Arctic Sea to North America and the Far East.

The year 2011 brought, however, ***some new evidence***, with the highest number ever of vessels in transit from Murmansk to another country. Rapid shrinking of the ice sheet in the Arctic Ocean made the route accessible about one month longer than usual, allowing to use larger vessels than before. In the season lasting from late June till late November, altogether 34 vessels sailed the whole Northern Sea Route, transporting in total 820 000 tons of cargo (mainly the liquid bulk). By comparison, in 2010 only four vessels used the route for transit to another country, and the total amount of cargo was 111 000 tons (BarentsObserver.com, 29 November 2011). The season saw also the first supertanker on the route (162,000 dwt Suezmax-class 'Vladimir Tikhonov') with gas condensate from Honningsvåg in northern Norway bound for markets in Southeast Asia. It covered the distance from Novaya Zemlya to the Bering Strait in barely seven and a half days. Another record was set with the largest ever bulk carrier (75,600 dwt Japanese-owned "Sanko Odyssey") sailing the Northern Sea Route from Murmansk with iron ore bound for China (BarentsObserver.com, 1 September 2011).

With climate models predicting further decline of the ice cap down to complete ice-free situation by 2030 or even earlier (cf. International Panel on climate change), the advantage is taken by the manufacturing and shipping companies in trading iron ore and oil products. The latter are transported to the port of Murmansk by railway from western Siberia or smaller tankers from Varandei or Vitino oil terminals in the Russian north (BarentsObserver.com, 18 November 2011). The Russia's private oil company NOVATEK, which currently develops the Yamal LNG project, intends to use the Northern Sea Route for gas export to the markets in the Asian-Pacific region. Also, even larger vessels transporting iron ore along the northern coast of Russia are in production. The Korean company Hyundai Heavy Industries conducts model tests on a new ice-protected bulk carrier with a deadweight of 190 000 tons. This will be the world's largest commercial vessel specially constructed for operations in the Arctic and being able to break ice up to 1,7 meters thick (BarentsObserver.com, 26 August 2011). Shipment of oil, gas and general cargo along the Northern Sea Route is expected to get additional boost by means of ***political decisions***. In the plans of the Russian government the route is to become a key global transport artery, competing to more traditional routes, when it comes to price, safety and quality. The investment portfolio contains plans for new nuclear-powered icebreakers, development of safety infrastructure along the NSR (including ten new bases for search, rescue and communication) and a new Law on the Northern Sea Route, which will regulate tariffs for icebreaker assistance on the route (BarentsObserver.com, 25 September 2011). The Russian government also resumed talks with Canada on revival of the Arctic Bridge – a sea route connecting Murmansk and Churchill (BarentsObserver.com, 23 November 2011).

The set of climate change tendencies and policy measures leads to some rough estimations that by 2020 cargo transport volumes through the Northern Sea Route may have increased to ***64 million tons***. Through the privatisation process of the Murmansk Commercial Sea Port and the establishment of a special economic port zone (tax and customs benefits, reduced administrative barriers), Murmansk may turn into a high-tech and internationally-oriented transport hub, with cargo flows anticipated to triple by 2030 (BarentsObserver.com, 2 December 2011).

By 2020 cargo volumes transported on the Northern Sea Route may have increased to 64 million tons.

With the completed impressive infrastructural programme The Xinjang Uyghur Autonomous Region may become a freight gateway, which receives consumer goods from inland China and distributes them to Central Asia, Russia and Europe.

THE NEW SILK ROUTE

As emphasised in the TransBaltic Policy Report 2010, the growing middle class in Russia and the latest tendency of reallocating low-cost production from the Chinese coastal areas to the north-west interior speak for considering landbridge connections to become real trans-continental alternatives.

With the completed impressive infrastructural programme (new border roads, railways and a network of logistics centres), the Xinjiang Uyghur Autonomous Region (XUAR) may become a freight gateway, which receives consumer goods from inland China and distributes them to Central Asia, Russia and Europe. It is estimated that the delivery time of shipped goods by rail from China through the XUAR via Kazakhstan to western parts of Russia will take about ten days (Shcherbanin 2010). This target is even more probable with ambitious transport development plans by the Kazakh government.

The development project of the ***'Western Europe-Western China'*** International Transit Corridor is viewed by the Kazakh government the major integrator of European and Asian regional systems of motorways, with the total budget of 6.7 billion USD, whereof the loan envelope is 3.5 billion USD (incl. 2.125 billion from the World Bank Group - the largest loan to date granted to a single country, and smaller loans from the Asian Development Bank, the Islamic Development Bank and the European Bank of Reconstruction and Development). The budget involves also state resources and private investments.

***Fig. 17**: The 'Western Europe-Western China' International Road Corridor* *Source: http://europe-china.kz*

The project will provide cargo transportation on three main directions: China – Kazakhstan, China – Central Asia, China – Kazakhstan – Russia – Western Europe (see fig. 17). The route will run along one branch of the ancient Silk Road, connecting the Chinese port of Lianyungang with Moscow and Saint Petersburg on the distance of 8,445 kilometres. The section of 2,715 km will cover the Kazakhstan territory, from the town of Khorgos on Kazakhstan's border with the People's Republic of China (PRC), through Almaty and Shymkent, and to the western border with the Russian Federation. Out of that, 2,237 km will be constructed or reconstructed.

Respective bank analyses (see e.g. *http://beta.adb.org/news/new-silk-road-link-europe-asia)* regard the new transport corridor, which spans the world's largest landlocked country, comparably transformative.

Despite the current financial crisis, road-freight transport in the corridor is forecast to grow by about 10% a year to reach 2.5 times higher volumes by 2020. Compared with pre-project activity, the project adds 61% to total trade and transport activity in Kazakhstan by 2020 and is expected to increase Kazakhstan's gross domestic product by 68% above the 2010 baseline. Also, Russia and China are expected to gain significantly from the corridor through trade linkages, with potential real GDP gains of 4 and 6%, respectively, by 2020 and 12% and 17% by 2030. Exports and imports are potentially 32% and 33% higher, respectively, by 2020, and 63% and 64 % higher by 2030. The improved road will increase travel speed 40% by 2015, while reducing freight transport costs by half. It will improve road safety standards, lead to a decline in accident rates and also shorten travel distances. As an example, it will allow Chinese cargo to reach Europe in 10 days by land instead of the present 45 days by sea and of 14 days on the Trans-Siberian Railway.

Along the road corridor project, the Kazakh government's infrastructure development programme features also the upgrading of rail infrastructure on the so called ***'New Eurasian Land Bridge'***. This railway route begins at Lianyungang, goes through China (Long-Hai Railway and the Lan-Xin Railway) to Alatav-Dostyk on the Kazakh border and then runs through Kazakhstan and Russia to the ports of Western Europe and the ports in the Baltic countries. The landbridge was opened in 1990 and measures 10,900 kilometres in length. The international transport service, provided since 1992, has a block train service between Lianyungang and Alma-Ata, with a distance of 4,700 km and a runtime of 7-8 days, as a solid foundation for future services between China and Europe (NEA et al., 2010).

The state investment plans envisage upgrading of the railway line Aktogai – Dostyk and the border transhipment point at Dostyk to serve 25 million tonnes of freight by 2015, from 12-13 million tones in 2006-2007. Those two years were a turning point for cargo development on this landbridge as the ratio of imports to exports changed considerably (with more commodities now being exported from China) and the changing scope of transport operations on this axis (more volumes bound to Russia and Europe). This increase of non-Kazakhstan cargo made that the New Eurasian Land Bridge assume an increasing role as an international transport corridor (NEA et al., 2010).

Another component of the rail infrastructure investments in Kazakhstan is the ***new railway line*** and second international railway border crossing point (located south-west from Dostyk), based on the intergovernmental agreement signed with China in 2006. The 298 kilometres-long single-track 1,520 mm gauge line from Zhetigen near Almaty to Khorgos on the Chinese border was completed in late 2011. It will ease congestion at the existing Dostyk border crossing and cut 550 km from the route between China and southern Kazakhstan. The government believes this will lead to an in-

crease in transit traffic, from the level of 5.5 million tonnes of rail freight using the Zhetigen-Khorgos line to 25 million tonnes forecast by 2020 (Railway Gazette International, 4 August 2009).

At Khorgos, facilities are being constructed to tranship freight to and from a 295 km standard-gauge branch connecting to the Chinese Railways' Urumqi line. The so called 'Khorgos' International Cross-border Cooperation Center (see *http://www.mcps-khorgos.kz/en)* is located on the border between China and Kazakhstan covering the area of 528 hectares. It will form a ***special economic zone*** with favourable legislative regulations in force to enhance cross-border trade and business cooperation. This will include a visa-free entry regime up to 30 days for the citizens of Kazakhstan and the People's Republic of China in order to stimulate the development of business, trade and transport networking.

The Zhetigen-Khorgos railway line and the Khorgos ICCBC, alongside a network of trade and exhibition centres, a dry port, a transport and logistics complex, an industrial zone and a complex of industrial enterprises, will be the part of the future ***industrial and logistics hub*** 'Khorgos – Eastern Gates' (http://www.railways.kz/en/node/2109). Its purpose would be to create optimal conditions for attracting foreign direct investment in non-commodity, export-oriented, high-tech and competitive production, developing the transport and logistics industry, improving the transit potential of Kazakhstan in the Europe-China direction, and manufacturing of finished products with high added value.

One of the new facilities along the Eurasian landbridge is a shuttle container train named 'Saule', which connects China (Chongqing) with Western Europe (Antwerp) via Kazakhstan (Dostyk), Russia, Belarus and Lithuania (Klaipeda). The anticipated weekly service, inaugurated in October 2011, cuts short the transport time of goods between the two end points by the factor of four compared with the traditional sea route.

TRADE EXCHANGE WITH INDIA

As stated by De (2011), Asia has become the new hub of global container trade, where China and India are the two major drivers of the global economy. This underlines the importance of transportation links between the BSR and India, not only for a strengthening Asia-Europe connectivity but also for facilitating effective global production networks and supply chains.

Notwithstanding vast achievement in the global dimension, the interregional trade between the BSR and India has been ascertained by De to be fairly low. While India's diversity, vast population and rapid economic growth provide huge opportunities for trade, investment, and economic growth, several visible and invisible trade barriers hamper trade exchange potential. Among them are: poor physical connectivity, inadequate trade facilitation measures (e.g. tariff cuts), lack in standards, high transport cost or unfriendly regulations to name a few. Also, the trade with India is unevenly distributed across BSR countries, with Germany and Russia being two major trade partners for sourcing selected products (containerised goods and iron & steel products in case of Germany; fertilisers, iron & steel products and petroleum, oil, and lubricant products in case of Russia).

De's study suggests that the India-BSR trade exchange and connectivity should aim to improve the performance of regional infrastructure and eliminate the technological asymmetry in transportation between them. Since India's trade with its partners is mostly carried out by ocean, shipping connectivity plays a critical role in enhancing merchandise trade flow.

De estimates the current volume of container trade between India and BSR to be about half a million TEU (about 7.43 % of India's total trade), with high export-import disproportion (about 66 thousand TEU exported to BSR in 2009 and as much as 440 thousand TEU imported from the Region). At the same time, the Indian government's forecast predicts total container handling volumes in Indian ports to reach 21 million TEU in 2014 from 9 million TEU in 2009. Therefore, it is expected that more shipping lines will serve Indian coast in future, and there is urgent need for improving container port capacity in India.

De observes that while many shipping lines offer direct liner services between Indian and European ports, no service connects Indian ports with directly with the ***Scandinavian part*** of the Baltic Sea Region. At present (2011), three ports, namely: Hamburg, Rotterdam, and Southampton, work as hubs for Indian cargoes moving to and from that area. Such a deficit can be explained by low volume of trade between India and the Scandinavian part of the BSR, which doesn't generate much cargo for a regular and direct liner service business. However, in view of the rising trade between India and the Baltic Sea countries, feasibility of opening direct liner services should be explored.

Such an effort turned out to be successful for the competitor to the Baltic ports – five seaports located in the northern part of the Adriatic Sea (Ravenna, Venice, Trieste, Koper, Rijeka), which established ***an alliance*** (called NAPA) to cooperate in the planning of road, rail and maritime infrastructure, as well as the harmonisation of regulations and procedures in the field of port service provision. The NAPA'a ambition is to jointly promote the Northern Adriatic route from the

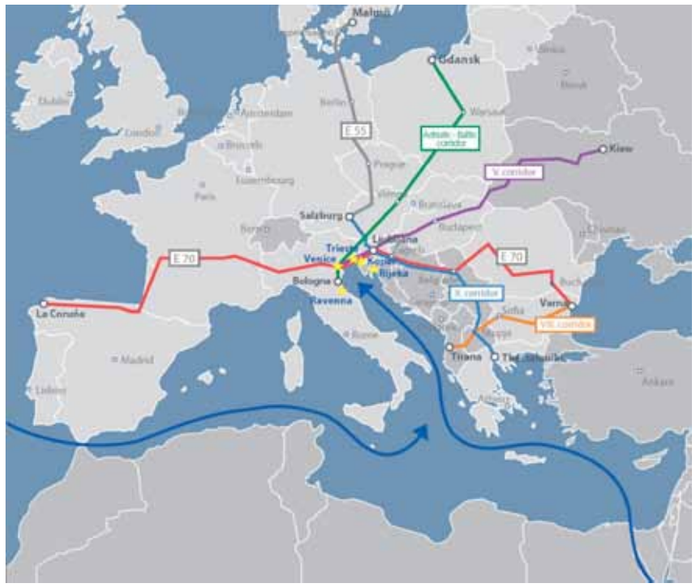


Fig. 18*: Strategic location of the NAPA ports for maritime routes and land transport corridors* *Source: http://www.portsofnapa.com*

Far East via Suez to Europe as the cheaper and greener alternative to the North European ports (distance about 2,000 nautical miles shorter and lower CO2 emission). With more than 100 million tonnes of cargo handled every year, including over 1.1 million TEU (2009), and proximity to large commercial and industrial hubs like Vienna, Munich and Milan, the alliance boasts to offer a perfect multimodal gateway to the key European markets (see fig. 18).

Realising a target of increasing container traffic with Middle and Far East markets, in October 2011 three NAPA ports of Koper, Ravenna and Venice established a regular container line with Indian ports of Nava Sheva and Mundra. Thereby, the Northern

The Indian government's forecast predicts total container handling volumes in Indian ports to reach 21 million TEU in 2014 from 9 million TEU in 2009.

New maritime service North Adriatic Sea-India via Port Said West

***Fig. 19**: New maritime service between the NAPA ports and India*

Source: http://www.portsofnapa.com

The most significant obstacle to the development of intermodal transport services along those routes is attributed to the institutional constraints.

Adriatic gateway is expected to become the entry point for Indian cargo to markets in Central and Eastern Europe and create an option for European cargo to reach the quickly increasing Indian market in roughly 18-21 days (see fig. 19).

POLICY CONSEQUENCES

The trade exchange prospects between the BSR and Asian economies – through the Northern Sea Route, the New Silk Route or direct linear service with Indian ports – suffer from several barriers. Some infrastructural hindrances are being addressed (e.g. cross-border transhipment facilities, icebreaking escorts, terminal investments in Indian ports etc.), some others are still on the agenda (e.g. low capacity of rail terminals on the New Eurasian Land Bridge, as signalled by NEA et al., 2010).

However, the most significant obstacle to the development of intermodal transport services along those routes is attributed to the ***institutional constraints*** as they deteriorate the competitiveness and make the trade expensive. Among them are (NEA et al., 2010; De, 2011):

- Incomplete transport coordination mechanisms for the entire route/corridor, which result in complex transit formalities and slow and unreliable transit times;
- Insufficient customs operations (e.g. large number of import/export control points, poor coordination between customs and inspection departments, inadequate and outdated customs procedures etc.), which lead to long transit times and poor efficiency;
- Lack of unified tariffs and poor information service;
- Weak security standards along the whole route/corridor.

Apart from access to international conventions related to transport and liberalisation of trade (wherever plausible), ***strengthened regional cooperation*** (by the countries located on the route) is recalled as an obvious mitigation measure. The installed multilateral cooperation is thus expected to set appropriate legal frameworks for the transit of cargo, with rules, regulations and standards regionally harmonised and incorporated into the state legislation. There is also a need for higher level coordination among many concerned stakeholders and agencies, which should lead to optimal cross-border infrastructure and single-stop and single-window customs throughout the whole route (De 2011).

The same author raises a postulate of an ***India-BSR cooperation initiative*** to address the regional infrastructure needs and to enable institutions and policies. Integrated regional connectivity would provide substantial benefits to smaller countries by giving them access to the world market at a lower cost. A strategic partnership or an association (with governments, chambers of commerce, think-tanks etc.), is thus recommended to combine the efforts of businesses, policy makers, and governmental agencies for stronger economic relations by means of a structured agenda or an action plan. This may lead e.g. to higher investments from the BSR in the Indian container port sector.

Following the argumentation in the TransBaltic Policy Report 2010, with the observed latest evolvements in the policy and business sphere, a fistful of ***hypothetical consequences*** may be specified, covering:

- A drop in port turnover volumes on the Baltic Sea, with some services terminated – as an effect of the IMO regulation;
- Progressive feeding of the BSR market from southern Europe's ports by road transport (trucks) – as above;
- New hub developments on the Baltic Sea, with Gdansk/Gdynia as a new gateway to the BSR market, and some other Baltic ports to aspire for such function – due to market choices of the global players and growth processes in China and India;
- Fewer transit corridors and bigger, multifunctional ports competing for Asian cargo on the landbridge connections – due to market processes;
- Boom in rail services to Russian ports – an effect of a combined governmental policies and market decisions;
- Political attention moving from the Baltic Sea cooperation to the Barents Sea cooperation – on account of reviving mining industry in the north of Europe;
- Dichotomy of the BSR transport network, with green transport solutions well developed in the western part of the area, and the new EU Member States and Russia investing in conventional infrastructure and services, resulting in a new East-West territorial divide.

The business perspective of an integrated transport system in the Baltic Sea Region

The analysis of possible transport development trajectories in the Baltic Sea Region, determined by natural and socio-economic evolutions, and policy-related processes at various governance tiers, is one of the cornerstones for TransBaltic. Another vital component features a business perspective of the compatibility and robustness of transport networks and logistics patterns of the Baltic Sea countries, the deficiency of which is viewed as one of most prominent barriers to economic prosperity and growth in the Region.

In this context TransBaltic explores some exemplary ***business concepts***, which on one hand contribute to a better transport co-modality, with more integrated road, rail and waterway infrastructures, but on the other - stimulate sustainable regional growth. As they envisage a collaborative process where the public authorities, commercial actors and research institutes jointly develop and test particular facilities and solutions, such concepts may bring an important contribution to transport and regional development policies. Also, on their own, they can provide for greener and more cost efficient transport operations in the Baltic Sea Region.
Respective of the process maturity, TransBaltic aspires to either:

- facilitate networking and transfer of experience from the carried out demonstrations to other relevant sites in the BSR, or
- create local private/public clusters and develop measures to mitigate the local deficiencies, or
- prepare general recommendations to influence national, macroregional and EU policies.

The chapter presents interim results of the project cooperation with business stakeholders in respective thematic areas. It derives from the produced expertise reports (with reference sources indicated) and progress presentations by the engaged project partners.

DRY PORTS - A STRATEGIC CONCEPT FOR EXPANDED PORT CAPACITY AND CONTROLLED TRAFFIC FLOWS

This concept addresses problems encountered by several container ports around the Baltic Sea. Shortage of space, lengthy queuing times, cumbersome road access and low cargo volumes supplied by rail push the port authorities to consider moving a part of operation landwards. Such a new facility, labelled 'dry port', would be directly connected by rail to the seaport and allow shippers to leave and/or collect their commodities in intermodal loading units as if directly at the seaport. It would also offer service that is available at seaports (customs clearance, maintenance of containers, storage, forwarding, etc.).

TransBaltic intends to make the dry port concept more known and better applied in the Baltic Sea Region by presenting examples where the implementation led to operational cost savings, opened new markets, improved economic activities and reduced CO_2 emissions. Overall, TransBaltic aspires to deliver a feasible implementation scheme for a ***network of BSR dry ports***.

The project created a number of demonstration sites to connect dry port concept stakeholders - seaports, hinterland logistics service providers, customers and regional/local authorities. One of the sites works with an optimum pre-gate parking system to improve cargo delivery efficiency through adequate location, implementation of a booking system and interconnection with traffic information system.

An already delivered study (Bergqvist 2011) describes pre-requisites for a profitable dry port in Scandinavia and the necessary market conditions for successful implementation of the concept in specific development conditions in the northern part of the BSR (Swedish region of Västerbotten and the two potential dry port sites: the Nordic Logistic Centre in Umeå and the terminal in Stensele).
The study enumerates several key factors for development and implementation of dry ports following the accumulated experience in Sweden, such as:

- ***market potential***, with optimum circumstance if the dry port development process is accompanied by a logistics establishment in the area, such as a large distribution centre;
- ***local entrepreneurs***, usually responsible for business development within the public sector and particularly evident for small dry ports in the absence of a distinct private investor and project manager who are common for major infrastructure projects;
- ***financiers***, capable of subscribing to a collaborative process, having strong regional ties and familiar with large infrastructure projects of a very long duration;
- ***localisation***, which may cause tension between the neighbouring municipalities as dry ports usually have a larger catchment area than the municipal boundaries; this may significantly delay and hinder the development process;
- ***regulatory framework***, shaping local commitment and good cooperation between public and private actors to ensure a sustainable and efficient transport system (e.g. by securing open access to dry port facilities and independence and transparency in their use);
- ***efficient rail production***, with existence of adequate rail transport facilities nearby the site;
- ***efficient terminal operations***, related to the design and layout of the dry port itself.

Although not yet validated for the whole BSR, the general recommendation for the public sector in supporting the dry port development and implementation stemming from the Bergqvist's study is to ***create and animate the collaborative process***. This may mitigate a potential conflict between stakeholders in the neighbouring areas at the localisation stage as well as improve business profitability, especially in case of small-scale shippers and carriers interested in dry port operation. In that context a local/regional university may play an important role in adding a neutral platform where analyses can be initiated and discussed in an academic framework. This in particular refers to making reasonable judgments on a potential catchment area for dry port services, to avoid excessive saturation and capturing of the volumes. The issue of overlapping capacities is particularly complicated as there might be several local development processes in a region in different phases.

EMPTY CONTAINER MANAGEMENT – AN EFFORT TO EASE THE CONGESTED TRANSPORT NETWORKS

The large amount of empty containers on the move is induced by the imbalance of cargo flows and the required compensation of surplus and shortage of empty containers between nodes in the transport chain (e.g. ports or hinterland depots). The repositioning of empty containers causes extensive logistics costs and ties up capacities in transportation and storage. Furthermore, these inefficiencies lead to negative environmental impacts, such as air pollution and excessive land use. The land-intensive storage of empty containers comprises additionally a social dimension if the port expands towards a residential area.

Added value:
Offers possibility to improve transport efficiency and reduce CO2 emissions along the transport corridors and in the port-adjacent areas
Boosts economic competitiveness of a hinterland region

Long-term target:
An emerging network of BSR dry ports

Along with the increasing containerisation of cargo flows, empty container management has become an issue in the BSR, with general volumes *over the EU average* and strongly imbalanced moves in the south-eastern and eastern Baltic Sea ports (e.g. Saint Petersburg, Tallinn, Klaipeda and Gdynia). The TransBaltic report on empty container management in the Baltic Sea Region (Wolff et al., 2011) presents a multifaceted overview of current status, affected players, impacts and a possible scope of intervention in the container transport chain. Its purpose is to improve knowledge and initiate development of systemic solutions decreasing empty container flows in the Region.

The spectrum of stakeholders dealing with empty containers encompasses port, terminal and hinterland operators, shipping lines and other transport operators, shippers and consignees, container leasing companies as well public authorities (regional, local and port administration). The impact type and degree varies for each stakeholder. To exemplify, while empty container management is not regarded an area of responsibility by several port authorities, they happen to be affected by severe problems occurring from movements of empty boxes (e.g. a need to provide transport infrastructure and storage areas). At the same time, however, several of them do not collect relevant data.

The report presents a number of approaches applied by the empty container management stakeholders in mitigating negative impacts of empty movements evaluated through the survey. Among them are:

- *information and communication technology measures* (ICT) to find free slot capacities (e.g. virtual container yard initiated by a neutral actor, e.g. port authority);
- *managerial and organisational measures*, managerial and organisational measures, to improve the container utilisation rate by more active searching for return cargo, the pooling of containers or optimisation of a network of depots;
- *pricing measures*, aimed at shifting costs by freight rate surcharges or incentives to re-route the flow to a desired drop area;
- *technological measures*, to reduce not the number but a volume of empty containers (e.g. through the use of foldable boxes);
- *policy measures*, to limit the volumes of empty containers in the port area or a port region through regulations determining the allowed periods of movements or duration of stay.

As derived from the performed survey, the future empty container management strategies will have to rely on a combination of measures. They need to be adjusted to specific transport chains (corridors) based on perspectives of specific actors and flow characteristics.

Added value:
Facilitates balance of trade exchange in the North-South and East-West directions
Deploys better efficiency in the entire transport system

Long-term target:
Reduced empty container volumes transported across the BSR

ICT TOOLBOX – AN AID IN OPTIMISING THE MODAL CHOICE

Road transport is a traditionally favoured mode among shippers and forwarders on account of several reasons. Some of them are of behavioural character and result from a general lack of awareness about benefits offered by intermodal transport, low transparency and accessibility of adequate information or incompatible electronic services between customers and carriers. Evident is also reluctance of many carriers and freight forwarders to offer their services through open internet platforms, which results in incomplete databases (Andrzejewski 2010a).

TransBaltic selected two routes in the Baltic Sea Region to analyse competitiveness of the various modes of transport: (1) for containerised goods from Shanghai to nine business centres in Poland via Rotterdam, Hamburg and Gdansk and (2) for goods transported by ro-ro ferries from Norway/Sweden to Poland. By comparing transport services of different operators based on real timetables and tariffs in the tested routes, the project intends to facilitate access to information in planning intermodal supply chains. Thus, freight decision-makers may find it easier to create their own effective supply chains based on an intermodal offer.

The tool's functionality in assessing the competitiveness of different modes in the two routes, based on actual market data on the cost of delivery or lead-time, were demonstrated to the stakeholders (incl. shippers, forwarders, intermodal operators, terminal operators, research and development institutions and IT sector companies).

The exemplary cost comparison analysis on the Hamburg-Poland route (Andrzejewski 2010a) confirms the principle that in the current cost/time circumstances the transport of 40 feet container by road is unbeatable on a distance below ca. 750 km. Container train option becomes more competitive only on routes to farther destinations, which shall encourage shippers to carry out freight negotiations with intermodal transport operators to obtain reduction in transport cost.

In case of individual 20 feet containers (with a weight of cargo between 20 and 24 tonnes), the relatively low freight rates offered by rail operators make this offer very attractive, with the overall transport costs much lower comparing to road deliveries, reaching 20-30% difference on medium to long distances. However, the combined delivery consisting of two 20 foot containers on single road chassis is again much more competitive on road due to division of a road freight charge between two shippers. This unique opportunity is not available from railway operators.

The demonstrations reveal that one possible way of reducing transport cost may be the use of *alternative modes* to road transport on longer routes, which to certain extent results from the preferential pricing policy applied by the operators of intermodal and maritime transportation to large, bulk containers shippers. In that respect, the market position of small enterprises is weaker as they operate with single or a few containers and either are not familiar with the other alternatives or consider them uncompetitive. In the context of significant investments in inland and sea port terminals, a more positive attitude of small and medium-sized enterprises towards intermodal transport requires the provision of *market expertise*. This can contribute to reducing transport costs and to greater use of greener modes of transport (Andrzejewski 2010a).

For that TransBaltic is going to promote purchasing alliances among clusters of local small and medium companies. Such alliances may lead to consolidation of volumes and reduction of freight cost, which may in turn present an interesting offer for sea and railway carriers (as they are mainly focused on large customers).

Added value:
Promotes behavioural shift among transport users in favour of intermodal transport
Supports co-modality objectives of the EU Transport Policy

Long-term target:
A behavioural shift among BSR shippers and forwarders in using intermodal solutions in road transport

COMPETENCE MANAGEMENT SYSTEM IN HARBOUR LOGISTICS – A BOOST FOR QUALITY SERVICES

The Baltic Sea ports are in need of well qualified labour force, the supply of which is hampered by lack of harmonisation and best practice exchange in *vocational education and training* (VET) between the Baltic Sea Region countries. As diagnosed in the TransBaltic project, the sharp national profile of such services is determined by specific demographic and economic condition of each country, the EU membership status and traditional concentration on 'my Port Logistic Cluster'. Moreover, increasing European- and worldwide quality demands on logistics service and a need to implement the EQF (European Qualification Framework) require transnational curricula and standards for employee qualification.

TransBaltic wishes to overcome this deficiency by testing the adaptability of the *Competence Management System* (CMS) - a web-based, non-commercial and standardised platform for training, assessing and matching harbour logistics competencies – to the changing national environments.

The project, in cooperation with VET institutions, created alliances across the borders (Hamburg, Estonia and the Kaliningrad Region) and selected a few ports to run a series of showcases in the prioritised qualification modules (e.g. container checking and handling of dangerous goods). These CMS modules are now customised to integrate policy framework needs (such as the International Standard Classification of Occupations and EQF). They will also reflect specific local/regional education conditions (such as the VET infrastructure) and incorporate the needs of sector enterprises in given countries and port regions.

In Estonia, the training system for port and logistics has not attained the maturity level. An overarching national qualifications framework for lifelong learning (NQF) is currently being developed to cover the full range of professional competences, including VET. This process is geared towards improvement in comparability between formal school leaving certificates and work-based (professional) competences and qualifications, which open the entrance to the labour market. Currently, the graduation certificate from a VET or higher education institution alone does not give the graduate a professional qualification in Estonia, which must be obtained by passing a professional examination. A new model of occupational standards is to be gradually developed in the period 2008-13 as an obligatory basis for curriculum development.

The customised CMS is going to be evaluated at the pan-Baltic level and may become a *standardised platform for transnational VET cooperation* in the Baltic Sea Region, offering certified training - in compliance with the European Qualifications Framework and lifelong learning needs. Thus, it may drive a transnational cooperation of ports, terminal operators and local/regional administration in harbour training and education.

BACKUP SOLUTIONS IN RAIL FREIGHT TRANSPORT

Norway has been successful in introducing rail freight as an integrated part of intermodal transport on the domestic market. Meanwhile, the situation as regards the international freight traffic is much different.

Having mapped obstacles, which determine the low market share for rail freight service between Norway and other Baltic Sea countries (Railconsult 2010), TransBaltic focused on less evident aspects, which add to the existing infrastructural bottlenecks and administrative/legislative hindrances. The report pointed out that a *lack of trust* in the railways' ability to deliver the quality expected by the market is for many potential customers the argument to choose other transport options. This mistrust is based on several factors charted through the survey among the stakeholders, such as:

- Lack of reliability (no corridor approach in rail service planning, no transborder coordination between rail operators in handling the freight when on track, no plans to mitigate delays & service disruption etc.);
- Slow process of circulating information about delays, damaged goods etc. between all involved parties;
- Cultural differences, which make it difficult to fully understand expectations of the parties as regards the delivery;
- Education profile of service buyers, with the background in road and maritime transport logistics.

The report also screens whether commodities suitable for rail transport on international routes may reach sufficient volumes to allow for a sustainable rail service. Such a potential was detected on the north-south route, which today is serviced merely by 6 freight trains daily as compared with 2400 trucks.

Through the dialogue with freight owners, rail transport companies, forwarders and relevant public authorities, TransBaltic selected two specific measures to ease rail transport constraints along the north-south route. These are: (1) to utilise freight terminals as backups in case of severe traffic disruption or delay, and (2) to improve awareness among forwarders, operators and customers of intermodal transport assets through a series of workshops supported by the Norwegian Logistics and Freight Association.
The former measure is in line with the EU White Paper on Transport's idea on Mobility Continuity Plans as a possible means to ensure service continuity in case of disruptive events. Such plans should address the issue of prioritisation in the use of working facilities, the cooperation of infrastructure managers, operators, national authorities and neighbouring countries, and the temporary adoption or relaxation of specific rules.

The created *public-private alliance* (with terminal owners, terminal managers and national infrastructure managers) focused on developing an operational concept to open intermediate terminals for emergency unloading of trains in case of longer line closures, and, in the next step, to remove the train once unloaded. The worked out solution, which is: to order an additional back up schedule by the train operator and use it if the major delay occurs, is viewed by the stakeholders as reasonable, predictable and fitted to the capacity during normal traffic situation. A concrete demonstration project may then follow towards necessary contracts with train operators.

In this context a complementary study was made a on the possibilities to launch regular intermodal container transports between Poland and Scandinavia (Andrzejewski 2010b). As estimated, currently only approximately 4% of volumes (in terms of the tonnage) are served by rail, and percentage of containerised goods in the trade exchange between those two areas is very low.

The report highlights quite large potential to initiate intermodal flows on the traditional ro-ro routes crossing the Baltic Sea (via ferry links: Ystad-Swinoujscie and Karlskrona-Gdynia). Along with ongoing modernisation of rail track infrastructure and investments in container terminals both inland and in ports, the *public support* is required to encourage operators to launch regular intermodal container transports in the form of block trains. Such actions should aim at:

- Conducting market research to identify commodities susceptible to containerisation and rail transport via with specific routes and by particular trading partners;
- Assist the intermodal operators in creating good offers for the market based on long-term return;
- Promote intermodal services to the identified companies involved in trade between Poland, Sweden and Norway.

Added value:
Increases labour force mobility and employability throughout the Baltic Sea Region
Improves adaptability of skills and education to technological change

Long-term target:
Diminished shortage of well qualified labour force in the Baltic ports

Added value:
Increases labour force mobility and employability throughout the Baltic Sea Region
Improves adaptability of skills and education to technological change

Long-term target:
Diminished shortage of well qualified labour force in the Baltic ports

Towards a macroregional transport action plan

The solutions to policy challenges in the Baltic Sea Region worked out by TransBaltic will be put together and systemised at the end of the project lifetime. The so called ***macroregional transport action plan*** will certify a joint strategic planning process where the regional authorities cooperating in TransBaltic and allied transport corridor projects synergise with the relevant EU and national level structures (e.g. national transport ministries cooperating in the Baltic Transport Outlook study, coordinators of Priority Area 11 in the European Union Strategy for the Baltic Sea Region or Northern Dimension Transport and Logistics Partnership) for the purpose of an integrated multimodal transport system in the BSR.

The action plan will highlight the issue of mobility and accessibility as key pre-requisites for economic, social and territorial cohesion, as well as of the competitiveness and attractiveness of the whole Baltic Sea Region. As stated in the resolution of regional politicians attending the TransBaltic Conference 2011, an ambition to develop an integrated multimodal transport system requires actions to improve interoperability of transport modes, better connect the national and regional transport networks across the borders, invest in transport logistics and skills, and to minimise social and environmental impact of transport operations. Furthermore, the integrated multimodal transport system in the Baltic Sea Region must be robust enough to efficiently absorb increasing transport flows in the global scale and perform the gateway function for intercontinental trade exchange.

In that context the action plan will contain measures that promote an integrated multimodal transport system in the Baltic Sea area from ***the sustainable regional growth perspective*** and at the same time are differentiated to illustrate development ***specificities of the individual subregions***.

The measures envisaged in the macroregional transport action plan will span from infrastructure improvements for networks, ports and terminals to efficiency-raising suggestions in logistics, traffic information, transport management and human skills. An important part of the document will be the recommendations from specific business cases (described in the previous chapter), which will be transformed to so called blueprints (‘macro-level transport development solutions, which stem from the market needs, are customised to the transport and logistics specificity of the BSR and which are beneficial for the sustainable regional development in the BSR’). Wherever possible, the action plan will also contain inputs from the cooperating projects and stakeholders.

Thereby, the action plan will form an ***important complement*** of the transport harmonisation actions by the national governments, initiated with the Baltic Transport Outlook study, and a substantial input to the implementation of the EU Baltic Sea Strategy.

Literature

Andrzejewski L., 2010a, Demonstration of ICT toolbox for planning intermodal supply chains, Institute of Logistics and Warehousing, TransBaltic project report, Poznan, http://www.transbaltic.eu/reports-results/

Andrzejewski L., 2010b, Prospects for increase of railway flows between Poland and the Nordic Triangle, TransBaltic project report, Poznan, http://www.transbaltic.eu/reports-results/

Bergqvist R., 2011, Rail-road intermodal terminals (dry ports) and necessary market conditions, Expertise report for the TransBaltic project, http://www.transbaltic.eu/reports-results/

De P., 2011, India-BSR trade exchange and connectivity: a myth or reality?, Expertise report for the TransBaltic project, http://www.transbaltic.eu/reports-results/

European Commission, 2009c, TEN-T: a policy review. Towards a better integrated Trans-European Network at the service of the common transport policy, Green Paper, COM(2009) 44 final, Brussels

European Commission, 2011a, The New Trans-European Transport Network Policy. Planning and implementation issues. Commission Staff Working Document, SEC(2011) 101 final, Brussels

European Commission, 2011b, White Paper. Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system, COM (2011) 144 final, Brussels

European Commission, 2011c, Communication from the Commission to the Council and the European Parliament. The EU and its neighbouring regions. A renewed approach to transport cooperation, COM (2011) 415 final, Brussels

European Commission, 2011d, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A budget for Europe 2020, COM (2011) 500 final, Brussels

European Commission, 2011e, Proposal for a Regulation of the European Parliament and of the Council on Union guidelines for the development of the trans-European transport network, COM(2011) 650/2, Brussels

NEA, et al, 2010, Situation and perspectives of the rail market. Final Report: TREN/R1/350-2008 Lot 2, Zoetermeer, the Netherlands

Railconsult, 2010, Intermediate report WP5.5, TransBaltic project report, http://www.transbaltic.eu/reports-results/

Ramböll 2011, TransBaltic forecasts and scenarios for BSR Corridor flows 2030, TransBaltic project report, http://www.transbaltic.eu/reports-results/

Shcherbanin Y.A., 2010, Status report concerning planned transport investments in Russia, Belarus, Ukraine, Central Asia and the Far East, TransBaltic project report, http://www.transbaltic.eu/reports-results/

Szydarowski W., 2010, TransBaltic Policy Report 2010, TransBaltic project report, http://www.transbaltic.eu/reports-results/

Tetraplan A/S, et al, 2011, Baltic Transport Outlook, Executive report – final version, www.baltictransportoutlook.eu

Wolff J., Herz N., Flämig H., 2011, Report on empty container management in the Baltic Sea Region. Experiences and solutions from the multi-actor perspective, Hamburg University of Technology, Institute for Transport Planing and Logistics, TransBaltic project report, http://www.transbaltic.eu/reports-results/

WSP Finland Ltd., 2011, NORDIM. Preparing the Northern Dimension Partnership on Transport and Logistics. Final Report - updated 30 June 2011, European Commission DG MOVE

Four visionary scenarios by TransBaltic

Appendix to TransBaltic Policy Report 2011

BASELINE SCENARIO	
THEMATIC AREA	**TRENDS**
EU policies	• no major changes
Economic development	• business as usual (economic growth in the world and the BSR follows the OECD forecast, 2% annually in BSR by 2030) • more modest economic development in the areas outside the wider Pentagon area (territory between London, Paris, Milan, Munich and Hamburg), which now expands towards some major European cities (among them: Copenhagen, Stockholm, Oslo, Berlin and Warsaw - except for a few large metropolitan areas and some tourist regions - due to rising oil prices
Territorial development and accessibility	• further east-west convergence processes decreasing divides between the old and new Member States • urban development up to 2030 will be very much in line the development of today, concentration of growth in large cities and metropolitan regions while rural areas will lose population – increasing disparities between metropoles and peripheral rural regions • slow but steady decline in the northern part of the Baltic Sea Region, especially in the areas far from small and medium-sized urban centres, because of deteriorating accessibility (caused by rising oil prices)
Trade pattern	• no major changes • further concentration of economic flows and activities in the Pentagon area
Transport development	• no major changes • higher transport costs because of rising oil prices • in less densely populated areas railways are in many cases replaced by road transport due to improvements in regional and local road networks
Technology	• vehicles will be developed fast towards lower energy consumption and lower emissions
Terminals	• smaller terminals will lose their importance
Infrastructure	• slow development of infrastructure in line with national and regional plans • infrastructure investments improving connections between major cities and their accessibility • all major transport infrastructure projects included in the medium- and long-term national investment plans of the BSR countries and adjacent countries responsible for the generation of intercontinental traffic (e.g. China, India, Ukraine and Central Asian republics) are completed
Environment and energy	• energy consumption and emissions from the transport sector has followed the “Europe 2020” strategy path and reached the 20/20/20 climate and energy targets (greenhouse gas emissions reduced by 20% compared to 1990 levels, the share of renewable energy sources in the final energy consumption increased to 20% and a 20% increase in energy efficiency)

COHESION SCENARIO	
THEMATIC AREA	**TRENDS**
EU policies	• social, economic and territorial cohesion a top priority for the EU policies aiming at fuller integration of various parts of Europe and provision of adequate living conditions in all EU regions • significant financial resources from the ERDF and Cohesion Funds are earmarked for the less developed regions
Economic development	• economic development in the BSR will be slightly faster than in the baseline scenario due to fast growing trade with Russia, Central Asia and China (east-west trade) • high growth rates of the new Member States will prevail with weaker dominance of metropolitan areas in comparison with the baseline scenario
Territorial development and accessibility	• with respect to the baseline scenario, disparities between East and West and between cities and countryside have decreased, while the lack of further enlargement processes has deepened divides between the EU and its neighbours • the Pentagon area of concentration of flows and activities has a much wider reach than in the baseline scenario, and includes a larger number of cities in the close peripheries. Another difference is the emergence of several peripheral growth areas • differences in accessibility between the wider Pentagon and peripheral areas have been some-what reduced thanks to transport investments in favour of peripheral regions • quick growth in those urban centres, which serve as gateway ports and hubs for trade in the east west direction (mainly cities on the Baltic Sea coast + capitals linked to the east-west corridors in both western and eastern parts of the BSR). • transit role of the Barents area in handling intercontinental flows boosts the development of the urban centres and ports in the northern part of BSR
Trade pattern	• faster increase in east-west trade, as compared with the baseline scenario, makes it possible to develop several transport corridors in that direction, with much more important role of some hubs than today • increased demand for improved infrastructure and new transport solutions, and in particular for rail transport
Transport development	• greater attention to a better balance of transport modes and efficient railway and waterway systems • obsolete railway systems are being modernised in the new Member States in order to limit the growth of road traffic and curb constraints of oil price and oil supply • opened new landbridge connections to China • the Northern Sea Route will be open during the summer months • Murmansk will play an important role as a major hub
Technology	• new and innovative transport logistic solutions facilitated by increased east-west trade
Terminals	• a selective number of hubs will play a substantial more important role than today as i.e. Murmansk, Umea, Liepaja, Klaipeda, Karlshamn, Sassnitz to mention some
Infrastructure	• main priority is the development of efficient transport infrastructure on major corridors in the new Member States as well as between the new and old Member States • a difference with the baseline scenario is that, in addition to major corridors, support is also given to a number of strategic regional transport axes, in order to connect as many medium-sized and small towns as possible to the trunk networks • new infrastructure in particular railways will be developed as well as infrastructure in some selected hubs/ports • construction of high speed train lines
Environment and energy	• the energy consumption and the emissions in the BSR have not been changed due to increased transports flows • total emissions are still a problem area

RIVALRY SCENARIO

THEMATIC AREA	TRENDS
EU policies	• EU policies significantly reshaped because of disappointing results in the implementation of the Lisbon Strategy • EU expenditures targeted towards R&D, education, transport and ICT to boost the overall global competitiveness of the European economy • Major efforts developed to support the transnational cooperation of clusters and to attract global enterprises to Europe • policy support thus granted to the strongest regions that have the best chance for competing at a global scale
Economic development	• aggregated growth in the total economy is larger than in the baseline scenario but shows sharper core-periphery pattern as transport policies have favoured the development of corridors between large metropolitan areas • in effect of the growing East-West divide, the overall economic development in the BSR will slow down and will be lower than in the baseline scenario
Territorial development and accessibility	• attention is put on the accessibility of the strongest regions, especially with regard to the overcoming of physical obstacles in major transport corridors • a very deep and limited concentration of growth in the Pentagon area in general and in metropolitan areas in particular • settlement trends will continue to favour metropolitan areas at expense of the rural hinterland, which will lose population and workplaces
Trade pattern	• trade exchange between EU Member States will continue to develop well, while the trade with Russia and other external countries will stagnate due to stronger protection against exacerbated external competition (antidumping measures; preference for European products etc.) • several restrictions and hindrances for the development of trade with Russia as well as with Central Asia and China will persist and even grow in significance because of highly competitive relations between the global economic areas
Transport development	• trend towards 'urban crowding' results in a strain on the transport policies in the Nordic capital regions, while the northern periphery area and certain parts of Poland and the Baltic States see the essential basic services no longer automatically provided • as in the baseline scenario, the increasing energy prices remain a major constraint in the transport sector yet further development of high-speed train networks and the availability of substitution fuels make it possible to ensure the level of long-distance mobility necessary to maintain robust economic growth • modal shift not the primary priority
Technology	• significant EU resources (much more than in the baseline scenario) are injected in the TEN-T and into research and technological development, in order to counteract the price increase of fuel • efforts towards the economic use of innovations • large variety of ITS applications are developed and implemented to increase transport efficiency, reliability and security, to optimise the use of infrastructure and to satisfy mobility needs • transport flows are accompanied by traffic information systems, both for the transport of goods and persons
Terminals	• Some hubs will lose their importance, especially those located outside major corridors between large metropolitan areas
Infrastructure	• transport investments are decided according to market demand, with priority given to links between economically strong metropolitan areas as this would produce the most added value • in most European regions, the volume of investments in rail infrastructure is lower, especially in the rural areas • no particular investments in cross-border infrastructure between the EU and the eastern neighbours
Environment and energy	• energy consumption and emissions from the transport sector have changed significantly due to technological investments

GREEN SCENARIO

THEMATIC AREA	TRENDS
EU policies	• well-coordinated public decisions (carbon taxes etc.) and active involvement of the civil society in a global context of economic recovery and stability • EU regulations facilitating the greening of transport corridors and stimulation of business models, to balance the market-driven approaches with consumer needs • harmonisation measures introduced in order to enhance functionality of green corridors (certification, product labelling of terminals and particular services, and through common cargo safety standards)
Economic development	• concentration of public resources on the support to economic growth branches likely to generate new jobs • economic development in the BSR as in the cohesion scenario
Territorial development and accessibility	• more balanced development in rural and urban areas will be the result of more environmental behaviour when it comes to production and living conditions • policies favour the development of medium-sized cities of the metropolitan hinterlands serviced by efficient public transport networks, corresponding to the objective of polycentricity
Trade pattern	• trade pattern in the BSR as in the cohesion scenario • threat of disrupted transport chains due to different policies in the EU ('green solutions') and in the neighbouring countries ('business as usual)
Transport development	• total transport volumes will be lower than in the cohesion scenario mainly due to more local production, higher load factor and new more environmental friendly behavior as well as higher demand for products with low impact on the environment • objective of curbing down greenhouse gas emissions leads to a shift in modal split in favour of rail and waterborne transport at the expense of road and air transport • green corridors developed on the routes with the highest volumes of freight flows inducing centralisation and concentration processes, with fewer transit arteries crossing the Baltic Sea Region and bigger, multifunctional ports
Technology	• significant increase of technological investments, especially in sectors related to the 'green economy' • demand for environmental friendly vehicles and other products has lead to an extensive development of new technology and innovative solutions • numerous innovative applications are developed in the field of information technologies aiming at reducing transport externalities
Terminals	• more and smaller terminals than in the other scenarios have emerged • intermodal solutions
Infrastructure	• extensive investments in rail and waterborne transport to meet the market demand for transport solutions with low impact on the environment • a network of green multimodal transport corridors (including short sea sections, MoS links) spread across the BSR territory • focus on the last mile infrastructure to the strategic nodes (ports and inland logistics terminals)
Environment and energy	• reduction of greenhouse gas emissions through a variety of measures (energy, transport, heating etc) targeted through incentives but also restrictive measures and new norms (taxes, regulations etc) • due to decreased transport demand and innovative transport solutions the environmental impact is lower than in any other scenarios • more ambitious targets of the Europe 2020 strategy have been met (greenhouse gas emissions reduced by 30% compared with 1990 levels)

Grafisk form och produktion: ID kommunikation.
Tryck: Skånetryck 2012.

TransBaltic

Address: Lead Partner
Region Skåne – Regionhuset
JA Hedlunds väg
291 89 Kristianstad, Sweden

A STRATEGIC PROJECT CO-FINANCED BY THE EU BALTIC SEA PROGRAMME 2007-2013

TransBaltic, as one of few transnational projects so far, has been granted a strategic status by the authorities of the EU Baltic Sea Region Programme 2007-2013. In that way the decision-makers acknowledged the role of TransBaltic in fostering the sustainable development of the Region, the project's wide geographical coverage, deep focus on implementation and the strong political backup at the national level.

The overall objective of TransBaltic is to provide regional level incentives for the creation of a comprehensive multimodal transport system in the Baltic Sea Region. This is to be achieved by means of joint transport development measures and jointly implemented business concepts.

Duration: 1 June 2009 to 31 December 2012 / Budget: 5.4 million EUR

PARTNERSHIP

Region Skåne (Lead Partner), Region Västerbotten (SE), Lahti Regional Development Company (FI), Eastern Norway County Network (NO), Region Blekinge (SE), Region Sjaelland (DK), Self-government of the Pomorskie Voivodship (PL), Vest Agder County (NO), Västra Götaland Region (SE), The Institute of Logistics and Warehousing (PL), Maritime Institute in Gdansk (PL), West Pomeranian Business School (PL), Hamburg University of Technology (DE), Øresund Logistics (DK/SE), Maritime Competence Centre (DE), Vilnius Gediminas Technical University (LT), Hamburg Port Authority (DE), Self-government of the Warmińsko-Mazurskie Voivodship (PL), Estonian Maritime Academy (EE), Latvian Transport Development and Education Association (LV)

For more information visit www.transbaltic.eu

Project part-financed
by the European Union
(European Regional Development Fund)

Baltic Sea Region
Programme 2007–2013

REGION SKÅNE