TransBaltic scenarios and foresight 2030

Foresight debates

August 2010

TransBaltic

Towards an integrated transport system in the Baltic Sea Region

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

Baltic Sea Region
Programme 2007–2013

REGION
VÄSTERBOTTEN

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Disclaimer:

”This report does not necessarily reflect the opinion of the members of the TransBaltic project”.

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1 Introduction

Region Västerbotten, as work package leader for the TransBaltic work package 3, has committed Tetraplan to develop scenario descriptions and monitor the foresight process for 5 foresight debates during the spring of 2010, concerning TransBaltic task 3.3: The Baltic Sea Region intermodal transport foresight process.

The work includes applying a foresight method through a participatory process involving stakeholders in order to develop concerted visions of the future of transport in the Baltic Sea Region and development paths to obtain these visions.

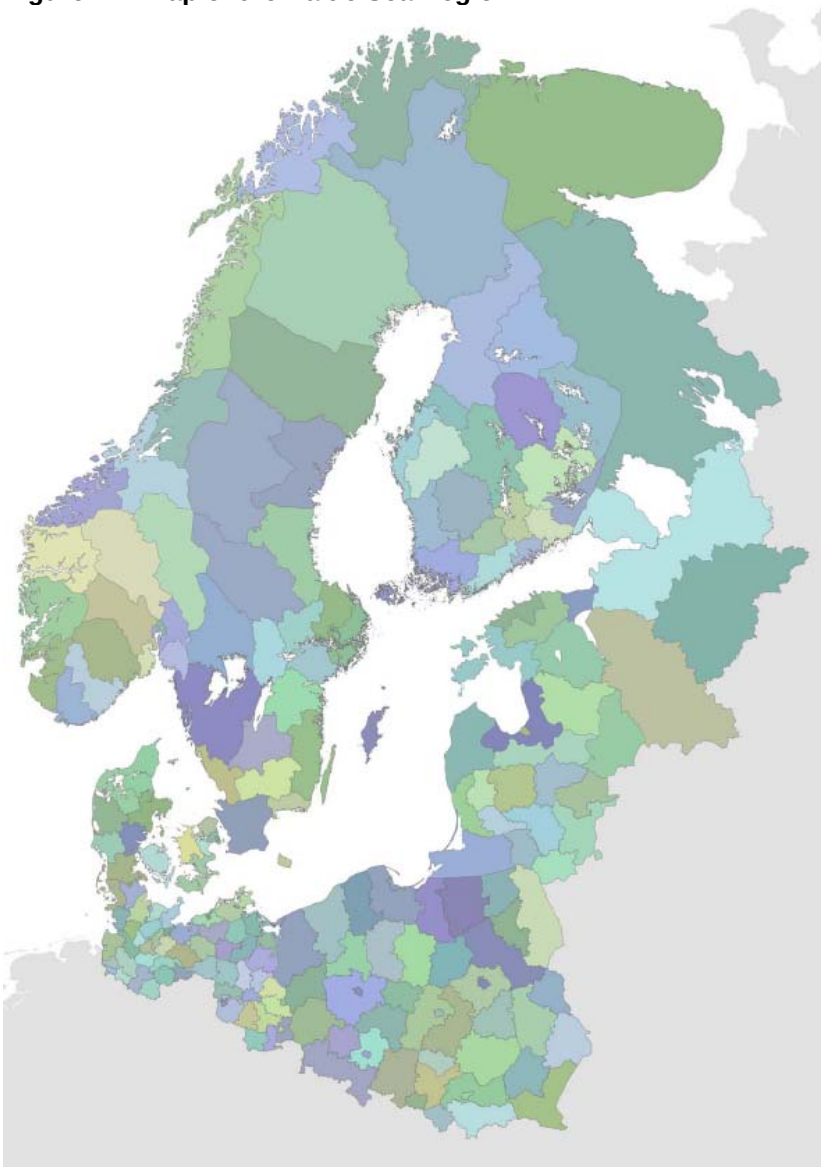
The project includes following three work tasks:

- Creating scenarios
- Moderating 5 debates on the future visions
- Report on the results

2 Defining the TransBaltic area

The Baltic Sea Region is defined as including the Baltic countries Estonia, Latvia and Lithuania, the Nordic countries of Denmark, Finland, Iceland, Norway and Sweden, Northern Germany (Berlin-Brandenburg, Bremen, Hamburg, Mecklenburg-Vorpommern, Schleswig-Holstein and district Lüneburg of Nieder-Sachsen), Poland and Russia's North-western region including the exclave Kaliningrad. The Baltic Sea Region (excluding Ice-land) is illustrated in Figure 2.1.

Figure 2.1. Map of the Baltic Sea Region



3 Scenarios for TransBaltic

3.1 Background information

3.1.1 Baltic territorial cooperation and transport strategies in turbulent times

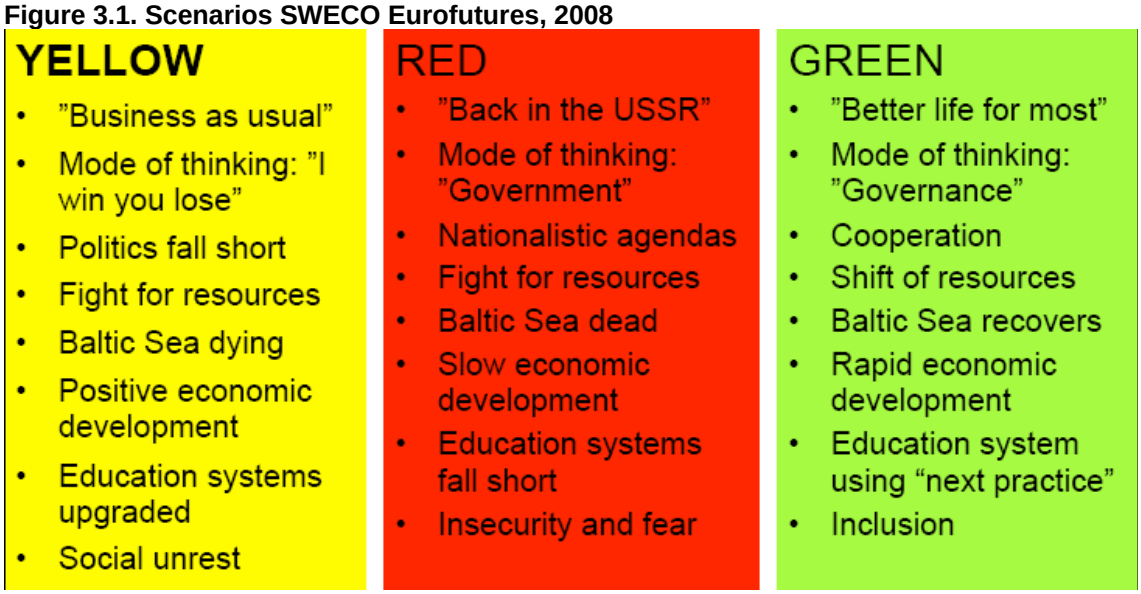
The Baltic Sea Region as defined in Figure 2.1 comprises 10 nations or part thereof and more than 105 million inhabitants at the end of 2007.

According to the Baltic Development Forum, the Baltic Sea Region shares many historical ties, which often are symbolised by the legacy of the Hanse around the Baltic Sea. Thus, the Baltic Sea has been the facilitator of integrative processes in more than 1,000 years with more intensive periods than other. Naturally, the Cold War to a large extent hindered extended cooperation, but when the Berlin Wall fell in 1989, new strong ties emerged. Nowadays the Baltic Sea Region is interlaced by a myriad of formal and informal cross-border organisations signalising the multidimensional scale of interaction.

This evolution shows a positive and hopeful undertone, but unexpected events may happen globally, and there is a need for strong cooperation and political leadership. The actual economic recession, having severe impacts in the Baltic region, may indicate the need of a shift of old paradigms.

In 2008 the Swedish International Development Aid (SIDA) developed the scenarios Red, Green and Yellow for the Baltic Sea area (Figure 3.1). The scenarios included the expectations for the future i.e. integrating areas like Russia and the Far East, and perhaps using the North–East Passage, if the ice melts down north of Russia.

Figure 3.1. Scenarios SWECO Eurofutures, 2008

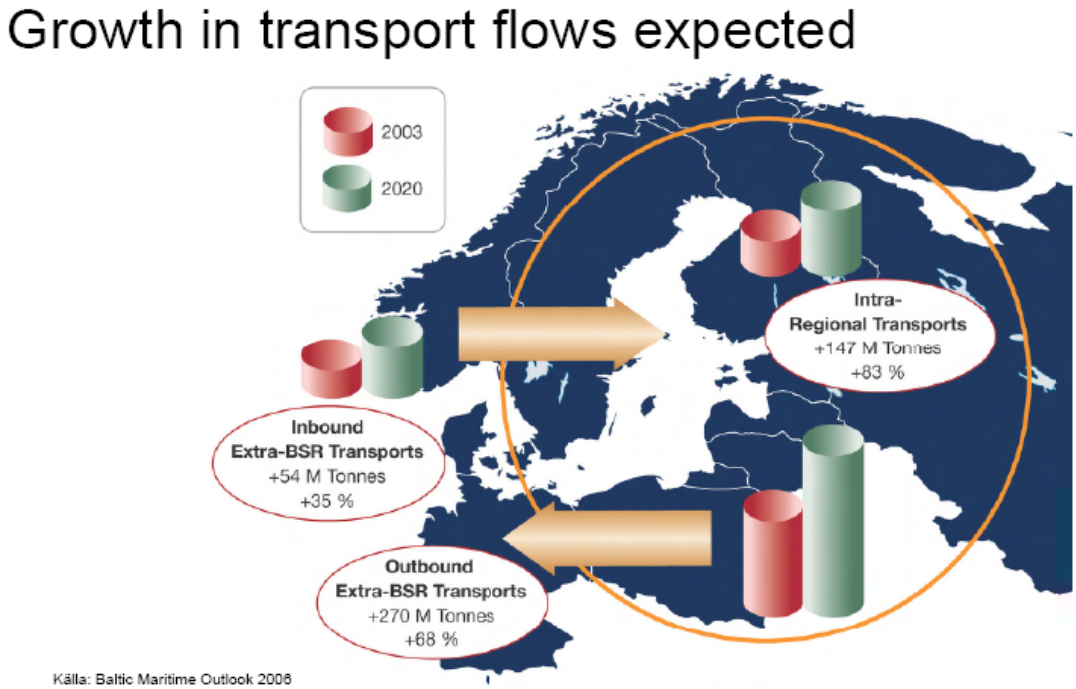


The conclusion from these scenarios are that territorial cohesion (expressed by “Governance”, “Cooperation”) could be improved by a number of different policy issues linked to the Lisbon Agenda and the objectives of economic, environmental and social sustainability (e.g. Innovation, research and development, transport development), from a “More integration in the Baltic Sea” (overcoming the income gap between east and west) to an “Improved cohesion and accessibility” (integrating the national transport sectors and improving interoperability), resulting in “rapid economic development”, “next practices in education” and “social inclusion”).

According to Ulf Savbäck, Head of Section, Sweden’s Prime Minister Office, Stockholm consequences of territorial division are still visible in the Baltic. East-West connections are poorly developed, and there is a need for large investments in infrastructure. Until 2013 the Baltic Sea countries will invest 95 billion € in infrastructure – mainly with a national and north-south perspective. There are deficiencies concerning roads, railways and ports thus also hampering the development of efficient intermodal solutions.

Figure 3.2 shows the expected growth of transport flows from 2003 to 2020, based on the results from the Baltic Maritime Outlook from 2006.

Figure 3.2 Baltic Maritime Outlook 2006. KyAMK, Maritime and Ports, Jorma Rytkönen



Källa: Baltic Maritime Outlook 2006

The Baltic Maritime Outlook indicates a higher growth in transport flows inside the Baltic Sea Region than between the BSR and the surrounding world. One of the main reasons is that the trade between Russia and Germany is expected to grow considerably. The outbound trade between the Baltic Sea Region and the outer world is dominant in the trade pattern. However, this flow mainly consists of oil and other raw materials, and ex-

pectations are, that this will prevail up to 2020 (according to the BMO 2006). A similar pattern has been found for 2030 in the TENconnect study carried out for the EU Commission, where the flows are dominated by the fast developing Russian economy, which is mainly based on exploiting and exporting raw materials.

Figure 3.3. Trade in 2003 (Nordregio)

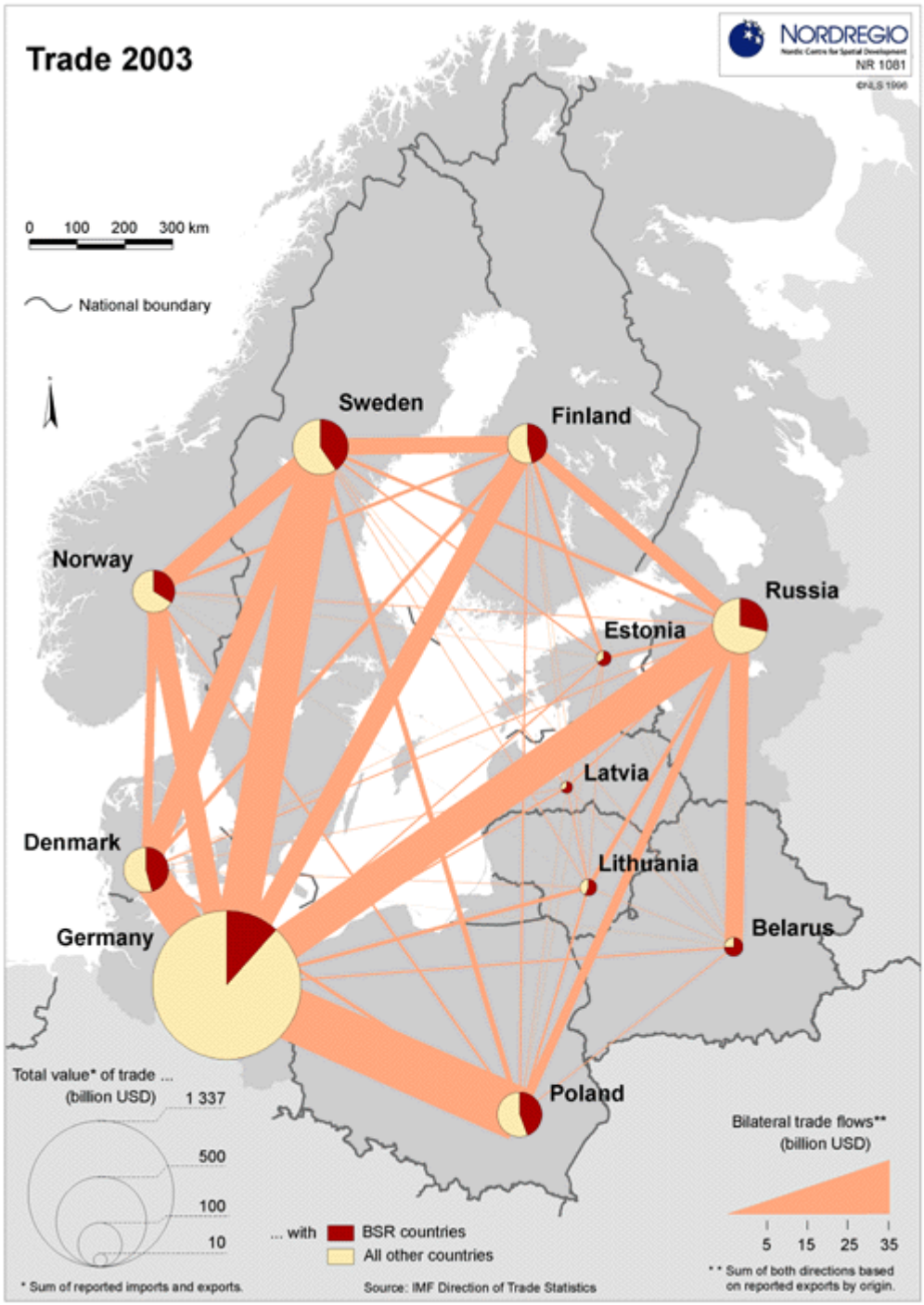


Figure 3.3 shows that the main trade flows in economic terms are focussed on Germany, but also flows between Sweden and Denmark and Sweden and Finland are considerable. Russia has strong trade relations to Germany and Poland and trade between Germany and China is also considerable.

It is noted, that Figure 3.2 shows the trade in volume and the value per tonnes is low in the Russian trade, therefore showing very high volumes of trade.

The SIDA scenarios are measured against the EU scenarios described above. The EU scenarios are by nature more overall, but they contain aspects which could compare with the BSR scenarios. These aspects will be brought forward in the subsequent chapters.

3.1.2 European territorial planning

The dominant view of Europe at the beginning of the economic and political integration, is reflected in the so-called *Rhine extended corridor* (from Rotterdam to the Alps, reaching the north of Italy, and also South East England) concentrated most of European economic added-value activities and was intensively connected internally and to the rest of Europe and the World (this corridor was called the *Blue Banana* by RECLUS). This corridor included some of the densest populated areas in Europe and a large number of metropolitan regions, Paris being the main exception. Beyond this *core*, there were other regions with fewer people (e.g. North Germany and Scandinavia) as well as less developed regions, like the Iberian Peninsula. The Structural Policies were set up taking this view in consideration and thus aiming at compensating peripheries being distant from core European markets, promoting their economic development and reducing the risk of excessive labour migration from the south towards the north.

The process of enlargement of the European Union geography towards the North and the East made obvious the need to develop this initial view, since there are more developed and less developed regions in the North, all being geographically peripheral in relation to the European core. These regions are well-connected with relatively intensive trade, such as the Nordic countries.

The spatial development studies made by DGREGIO, like Europe 2000 and Europe 2000+, introduced the concept of *macroregions* and the idea of integrating transnational and cross-border zones economies. One of the European Macroregions is the Baltic Sea Region as indicated in Figure 2.1.

The Baltic Sea Region is considered one of the macro regions with most advanced cooperation strategies, being one key element for future development. However, the level of co-operation has been constrained between Russia and the Baltic States, thus lowering the overall development perspectives for the BSR.

Based on Europe 2000 and Europe 2000+, the European Committee of Spatial Planning developed over the years the ESDP (European Spatial Development Prospective) which has been a main political reference of Spatial Development in Europe. This reference has been replaced with the Territorial Agenda for the European Union, which was agreed between the ministers for regional planning in 2007.

3.1.3 The concept of territorial cohesion

The analysis of the territorial planning and development has lead to development of territorial policies encompassing all EU member states. In general the Member States have opposed that EU should take on any responsibilities for the land use planning and development within the different countries. However, an opening has been achieved lately with reference to the Lisbon Treaty, which states that EU shall promote economic, social and territorial cohesion, and solidarity among Member States. This statement is a cornerstone in the EU structural policy, in the EU regional policy as well as in the EU transport policy. However, the introduction of territorial cohesion as a pillar in policy formulation is based on recognition of the massive differences in locational aspects across the EU. Some regions have considerable disadvantages due to distance, development and nature, and territorial cohesion has been developed to create opportunities for all regions irrespective of their location. Therefore, funding is also at the heart of territorial cohesion leading to discussions about sector funding contra general funding promoting issues like territorial cohesion.

The Council decision of October 2006 points out that the aim of the cohesion policy should be aligned with the Lisbon agenda, and that funds should be directed towards the objectives of

1. increasing the attraction of member states, regions and cities by improving accessibility and ensure that sufficient services are available

2. improving innovation and stimulate the growth in the knowledge economy by ensuring sufficient capacity for research and development, including availability of new information and communication technology

3. create more and better jobs by attracting more people to more income generating employment, and improve the human capital

The council stresses the importance of the third pillar in the cohesion strategy, the territorial cohesion. Territorial cohesion is seen as an important step towards a balanced development, a sustainable society and social integration. Further the territorial goal should be achieved by agreed common development strategies for the national, regional and local levels, mainly in order to ensure ideas for mainstreaming national and regional cohesion programmes.

Particularly actions related to point 1 above are closely related to improving and extending the transport sector, including infrastructure, and the council decision specifically points out the 30 priority projects, particularly the parts crossing borders. But also investments in secondary connections should be prioritized, particularly those providing access to the core network, main terminals and those links improving connections between urban and rural communities.

Rail infrastructure should be given increased support in order to ensure EU's objectives of economic, environmental and social sustainability. Increased use of the railway is an important pillar in both the cohesion and transport policy, and the recent (2009) development where climate considerations have become a central objective of the EU transport policy, improvement of the rail infrastructure is going to be further advanced in order to

create a level playing field for competition between the transport modes. Particularly the aim of sustainable environment and creation of green corridors are policy issues, which underline the need for integration of ports and other important terminals in the core rail network.

The cohesion policy also adopts the importance which the common transport policy attaches to improving interoperability of the railways. In the TransBaltic context this is an important issue. The rail infrastructure in Finland, the Baltic States and Russia relies on wide gauge tracks, while the rail system in Sweden, Norway, Denmark, Germany and Poland is based on the normal gauge. However, there are many other differences between the different national rail infrastructure networks, e.g. safety regulations, current systems, Automatic train control and education systems. Serious efforts need to be carried out in order to make the systems interoperable.

The cohesion policy also includes actions related to environmentally sustainable networks particularly in urban areas. Further, actions are recommended aiming at creating better connections between remote and peripheral regions and the core network. In this context focus is on improving secondary connections in order to create missing links, and prioritize green corridors to these regions.

In the TransBaltic area Motorways of the sea is an important main transport concept, which should be integrated in the actions related to green corridors and sustainable transport solutions where it is relevant.

The policy of cohesion and the cohesion funds can be utilised for the actions mentioned above. The purposes are in many respects similar to the aim of the structural funds and the Trans European Network funds. Therefore, purposes and funds related to regional and transport policies are expected to be grouped together in the future, making the distribution of European funds more uniform and based on as objective criteria as possible.

Apart from the important development of transport infrastructure within the strategic cohesion programme, the strategy also underlines the need for strengthening synergies between environmental protection and growth, and approaches solutions for reductions of Europe's intensive use of fossil fuel.

The other two aspects (2) and (3) above do not contain specific references to the development of the transport sector, but underlines the fact for all regions being served by fast internet and other means of electronic communication.

In a separate chapter, the Council decision stresses the territorial cohesion dimension by pointing out that this dimension makes the cohesion policy applicable in the different geographical locations in EU. Specific mention is made of isolated or distant regions, arctic regions, regions with low population density and mountainous areas. The Baltic Sea Region contains all types of regions, and therefore the territorial cohesion dimension, which seeks to introduce mechanisms ensuring a fair and level development of the different regions in Europe in order to fulfil the Lisbon Agenda, concerning job creation and growth. The territorial cohesion aims at distributing funds for urban development and for assisting regions with particular geographical challenges.

One of the important set of actions related to territorial cohesion according to the council decision, is actions producing a more balanced, polycentric development through the development of the urban network and creation of connections between the economic most advanced cities and other cities, both nationally and in EU. Therefore, it is important to identify the growth poles and other cities forming the nodes in the network, and also identifying the most important links connecting these growth poles and cities. The growth poles contribute to a balanced and sustainable development of nations and EU as a whole. The territorial cohesion underlines the important interrelation between the urban area and its surrounding rural area, which is an integrated part of the territory. The decision underlines the need for urban areas to carry out medium and long term planning and involve citizens in the planning process.

The decision stresses the need for cross-border co-operation in order to release the territorial potential, and other co-operation possibilities are also underlined with the triple helix partnerships between private, public and research/education partners.

The Commission issued a green book on territorial cohesion in which the Member States were asked to detail the concept of territorial cohesion and the answers to the public consultation resulted in 400 answers, and these were then summarised in a short paper “Territorial Cohesion: Unleashing the Territorial Potential” presented at a conference in Kiruna late 2009.

Territorial cohesion is, in all its political, economic, social and environmental components, a necessary ingredient for development and competitiveness. On the other hand, it is also true that inefficient public policies on territorial cohesion (e.g. over-investment on transport infrastructure, subsidies to non-competitive economic sectors…) may reduce the economic competitiveness of sectors and territories. One of the challenges is development of indicators which are able to combine effects of funding with improvement of territorial cohesion in EU.

This aspect has been further investigated by Fabrizio Barca (An Agenda for a Reformed Cohesion Policy, April 2009), which proposes to redefine territorial cohesion into a long term strategy on place-based policy, which opens for a reformation of the way the EU budget for cohesion and structural changes is being used. Barca argues that a large share of the community budget should be allocated for a place-based strategy. And he is quite firm on concentrating on a few core priorities with economic and social objectives. Barca proposes to choose these core priorities from following candidates: Innovation, Climate change, Migration, Children, Skills and Ageing. In this context the transport system plays an subordinate role, but will most likely continue as a set of core actions in order to obtain objectives related to the place-based strategy for the chosen core priorities.

The suggested Baltic scenarios should be developed taking into consideration development in transport drivers, and looking at the overall policies for promoting territorial cohesion taking into account spatial development and transport policies. Following questions should be asked under different scenario conditions:

- What are the current and future transport needs in the Baltic Sea Region (BSR)?
- What infrastructure is required to fulfil the transport needs?

- Is it possible to ensure a sustainable transport development in and between the BSR countries?
- How can the investments be financed and coordinated?

The questions posed above are being studied in detail in the current Baltic transport Outlook (BTO). The main idea in the analysis is to adopt the EU Commission proposal concerning a European Core Network into a Baltic Sea Macroregion Core Network. The policy behind the BSR Core Network is to ensure an identified infrastructure network including important terminals and ports based on common principles adopted by all the BSR countries and application of elements of infrastructure planning principles applied in the 10 different countries. No common planning procedures exist in the BSR. Therefore a common core network has to build on overall principles which can be agreed by the countries.

In the BTO, transport and traffic data developed on a uniform basis for the complete BSR are applied for establishing the core network. But the core networks cannot be established unless the general policy principles for the infrastructure networks have been agreed. This discussion is presently ongoing.

3.2 Global trends

In this section global trends related to transport drivers are briefly introduced to provide a context for the spatial development and transport-related scenarios to be presented in the next sections.

3.2.1 A period of accelerated transition

When defining scenarios for the next decades, it is worthwhile to consider that we are living in a transition period (according to many thinkers, e.g. James Martin), moving towards a post-carbon society in 2050.

All things considered, the main driving forces shaping the future of Europe in the next decades are well-known: ageing populations, economic globalization, and technological innovation in energy, biotechnology, nanotechnology and transportation. The rhythms and intensities of these driving forces and their impacts on mobility and transport are however unknown.

2050 is considered by many influential authors (e.g. Ray Kurtzweil) as a *Singularity Point* in human history, since the capacity of computers and electronic communications to manage information will be, if currents trends continue, inconceivable. The highly centralized and hierarchical industrial system developed in the 20th century, largely based on mass production of standardised goods and using coal and oil as energy, is slowly changing into a post-carbon society, a decentralised and networked production system based on non-carbon energy able to provide highly customised goods and services. Technological innovations are already creating important social impacts. For example, for the first time in human history, teenagers are generally more familiar with new technologies than their parents or teachers, and numerically enormous virtual communities are emerging.

Two paramount conclusions can immediately be derived for European planners at the beginning of this transition period:

- Uncertainty is large, since we are in a transition period (in relation to migration, the emergence of Asian economies, the market penetration of new energy sources, transport technologies, etc.)

- The impact of public policy can also be large. Political decisions in the next few years may produce an acceleration of emerging trends, (for instance in relation to the implementation of already existing transport technologies, such as electric vehicles, online pricing, or intelligent traffic management systems), or can constrain these tendencies. Different regions of the world may have very different economic evolutions on the future depending on how they are able to take advantage of new technologies in order to increase the productivity of their economies.

Table 3.1 provides a summary of major Megatrends, Seeds and Wild cards usually mentioned in the literature.

Table 3.1. Summary of Mega trends, seeds and wild cards usually referred to for construction of futures

	MEGATRENDS (↗)	SEEDS (emergent trends) (✓)	WILD CARDS (surprises) (✕)
DEMOGRAPHY	-World population tending to stability (9Bn people; China's growth inflected in 2000). EU27 remains stable around 500 m. people -Urbanisation increases. More and bigger mega-cities (urban population, from 20% in 1950 to 50% in 2010) -Neo-rural communities -New communities, desire to belong	-Global real state developments in Dubai -Global green cities such as Masdar (Abu Dhabi) -Self-detached communities, eco-villages and micro-nations (Arcosanti, Sieben Linden, Sealand…)	-Pandemics -New diseases (lifestyle diseases, aging…) -Mass migrations
SOCIETY	-Cosmopolitanism, cultural diversity. -Individualism -Ageing -Lifelong learning (LLL) -From "Lifestyle" to "Healthstyle" -Growing health markets (food, tourism, wellness, pharmacy, biotech) -Emotional rationality -Sensory and experience society -Higher women participation	-Eyesight and hearing implants -Gene therapies -Functional foods -Slow food -Environmental values (green consumerism) -Robots in everyday life (vacuum robots, driverless trains and cars…) -Telepresence	-Artificial food production -Nanotech-organic life creation -Cyborgisation -Humans assimilated into net. Immortality chip, humans move into cyberspace

	MEGATRENDS (↗)	SEEDS (emergent trends) (✓)	WILD CARDS (surprises) (✕)
INFORMATION	-Growing capacity of storage and transfer -Information technology creates new markets -Spread of digitalization in all spheres -Multi-layered GIS in every sphere -From micro to nanotechnologies -Digital convergence	-Artificial intelligence (neural networks, fuzzy logics, genetic algorithms…) -GoogleEarth -NanoChip Company is building an a nano-based alternative to flash memory that will store terabytes of data at lower cost	-Virtualization of real world -Brain downloading -Intelligent / self-learning / self-conscious machines. -DNA computers -Internet breakdown
ECONOMY	-Less hours of work per week -Retirement age increases (active elderly) -Poverty declining but economic gap rising -New middle classers in BRIC economies -New growing markets: health, environment, leisure, food -Network economy: from hierarchy to network -From “labour mobility” to “capital mobility”	-Labour week length in France from 40 to 35 hours -Temporary research consortiums integrated by multiple partners	-Retrenchment from globalization -Global economic / financial collapse
ENERGY	-Renewable energy growth -Diversification of energy sources -Decentralization of energy production -Sustainable and safer nuclear energy (new generation IV reactors with closed fuel cycle)	-NIF facility in US fires its first bundle of 8 beams in 2005, achieving highest ever energy laser pulse of 152kJ -ITER experimental fusion facility scheduled by 2011 -Superconductors	-Commercial nuclear fusion -Zero point energy engineered / commercialized -Fuel cells replace internal combustion engines -Low-cost mass hydrogen production
MOBILITY	-Increasingly mobile society -Bigger contrast between fast and slow: faster business mobility but slow cities, slow food… -Increasing long distance travelling -More intelligent and assisted vehicles -Public transport, more personalized (personal rapid transit) -Normalization and miniaturization of freight transport	-Electric cars (Toyota Prius) -Urban smaller cars (Tata Nano) -Abu Dhabi commercial Podcar system -Slow cities in Italy and Germany -TGV breaks 570km/h speed barrier in 2007 -Emma Maersk container ship carries over 15.000 TEUs -Airbus A380, with capacity for 850 passengers	-Teleportation -Space travel

	MEGATRENDS (↗)	SEEDS (emergent trends) (✓)	WILD CARDS (surprises) (✕)
ENVIRONMENT	-Green wave -Environmental industry growth -Ecopolitics -Climate Change -Growing market for waste handling	-Carbon sequestration facilities in Sleipner and Snöhvit (Norway), Weyburn (Canada) and Salah (Algeria) -Biomass boilers -Coal production from waste	-Green wave bubble crash -Ice caps melt -Asteroid hits earth -Mega volcano eruption
GOVERNANCE	-Networked society -Rising trust in experts and friends rather than in corporations and politicians -Glocalization (global and local at once) -Decrease of participation in election processes. -More conservative politics due to elderly people weight in society -Security policies growing -Transnational crime, conflict and corruption -New economic world order: global governance shared among more than one	-Social communities in internet (facebook, twitter…) -NGOs are growing popularity -Video-control	-III world war -Withdrawal of democracy -End of intergenerational solidarity -Political correctness creates new dark age

3.2.2 Main drivers: likely evolutions

Based on the previous table, a likely image of Europe as a whole for the coming decades could be as follows:

- Stable in demographic terms, 500 m. people within the EU27
- Ageing population (increase from 19% in 2005 to 29% in 2030)
- More urbanized (increase from 72% in 2005 to 78% in 2030)
- Increasing migration from northern countries to southern countries (old age migration)
- Maintaining social welfare and social inclusiveness
- Multicultural
- Enlarged, integrating many neighbouring countries in the East, and South (either becoming “United States of Europe”, or a much larger “euro-zone”, or both, if a “variable geometry” is adopted)

- In a world with China and India becoming more important players
- With a public sector staying at its current size, or being marginally reduced
- With growing pensions, health care and other public services and expenses, making larger infrastructure and research investments more difficult to finance
- Growing exponentially in terms of information exchange
- Moderate economic growth, with increasing productivity, even if at lower ratios than US and Asia
- More closely connected to Russia and former USSR republics
- More closely connected to North African countries, where some regions will emerge economically
- Internal EU policy reforms towards more open markets

In relation to transport, general trends towards this baseline scenario could be:

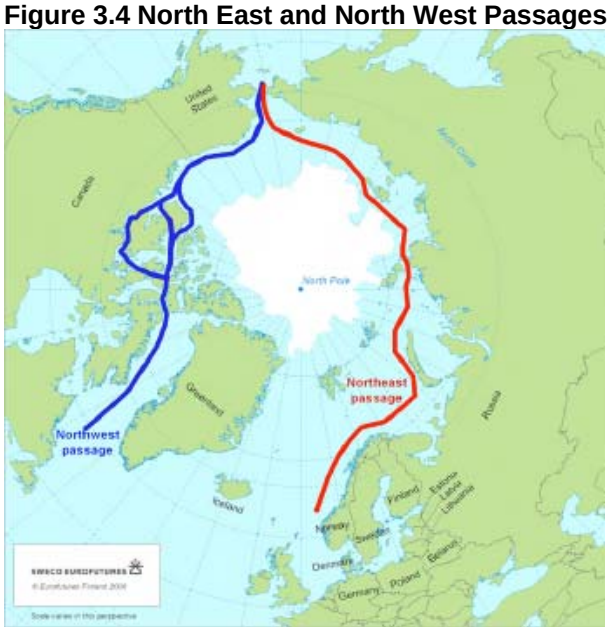
- Growth in passenger mobility, especially in all kind of international tourism
- Growth in freight transport, especially in containers coming from overseas
- New generations of more specialized vehicles (urban/interurban, private/shared, smaller, cleaner and more intelligent)
- Road as the continuous dominant transport mode, with online pricing and intelligent management systems in place
- New rail freight services on dedicated lines linking major ports and logistics areas
- Increasing volumes of freight from overseas markets
- Increasing air trips in an increasingly dense network of airports
- Stable in energy consumption, substituting fossil fuels with renewal sources, while nuclear will increase slightly
- Reducing CO_2 emissions, after a period of stabilization where the improvement of current technologies and traffic management may compensate traffic increases

- High volatility & declining profitability of shipping industry
- Environmental safety & standards for international shipping
- US terrorism act & implications for shipping
- Economic recessions and shifting of global trade patterns

More specific development trends in the Baltic Sea, for navigation:

- Maritime traffic is increasing in the Baltic Sea
- Oil transportation will grow significantly especially on the main route from the Gulf of Finland to the North Sea north of Skaw,
- New risk control options are scheduled in the near future
- Increased risks for collisions and groundings in the Baltic Sea
- Winter navigation may encounter problems in severe winters
- An ice free Northwest Passage. The Northeast Passage may be open in 15– 20 years time, depending on the climate development (Figure 3.4). The North East passage is further discussed under wild cards

Figure 3.4 North East and North West Passages (SWECO Eurofutures, 2008)



The opening up of the North-East passage poses a number of questions, among others

How will an available Northeast passage affect the flows of goods between Europe and East Asia/the US west coast?

How will an available Northeast passage affect security interests and cooperation in Europe?

3.2.3 Main Wild cards: Events with potentially large impacts

Wild cards (or Black Swan) refer to unlikely events that may have potentially large impacts.

Technology (the development of alternative energy sources, new ICT and transport vehicles, nanotechnologies and bioengineering) and Environment (the impact of Global warming, Oil-peak…) are well-known.

In the case of the Baltic region, the political evolution of Russia and former USSR republics, and the enlargement processes of Europe are also of extreme importance.

The Green House Gas (GHG) emissions will affect the climate, and the Baltic Sea Region is expected to be affected by the melting of the polar ice cap, making the Northwest and the Northeast passages passable for a larger part of the year. This opens up new commercial shipping routes between Europe and the Far East as already indicated above. However, a wild card in the climate development could be the cease of the sea current bringing warm water along the Norwegian coast up to the Murmansk region. If this sea current ceases, winter navigation will be a general problem in the Baltic Sea Region, including the South Baltic Sea and the North Sea.

How will an accelerated melting down of the polar ice caps affect the Baltic Sea Region, particularly the low lying areas of Denmark and Northern Germany?. St. Petersburg is also located in a riverbed.

How will a cease of the warm sea current affect the Baltic Sea Region and its relation with other parts of the world?

3.3 European scenarios

In the last 3 years a considerable amount of foresights and scenarios have been produced in both EU institutions as well as in national government offices. This reflects the high uncertainty related to the future, and also points to the fact that robust decisions on future development projects are required.

ESPON carried out a major scenario analysis in 2007, and made an update in 2009. The EU Directorate General for Energy and Transport (DG-TREN) has initiated a major project aimed at revision of the common EU transport policy. In this Futures of Transport

project, foresight analyses were carried out on a number of different scenarios depicting possible European futures in 2030 and 2050.

The scenarios developed for DG TREN was aiming at analysing policies towards reducing the CO2 emissions from the transport sector outside the Emission Trading Schemes (air transport). Therefore, the foresight analysis focused on aspects of relevance for this particular topic. The scenarios for ESPON have focused on territorial cohesion, and evidently, location planning aspects have a higher focus in these analyses than in the DG TREN analyses. This underlines the fact that transport consequences of future developments need to be analysed in the context of the overall foresight study.

The European scenarios mentioned in this chapter are further elaborated and detailed in the annex. The chapter summarises the three studies: ESPON 3.2: Scenarios for Europe (2007), TRANSvisions (2009), and TIPTAP (2009).

3.3.1 ESPON 3.2

The ESPON 3.2 scenarios for Europe are summarised in Figure 3.5. The figure provides a comparative view of the distribution of activities in Europe in a cohesion-oriented scenario and in a competitive oriented scenario. While in the Competitive-oriented scenario the Blue Banana can still be recognised, with some connections to the Öresund region and Vienna, in the Cohesion-oriented scenario new zones of integration are represented (e.g. the Baltic Sea area) and the integrated core of Europe reaches up to the Nordic Triangle.

Figure 3.5 Cohesion and Competitiveness scenarios. Synthetic representations

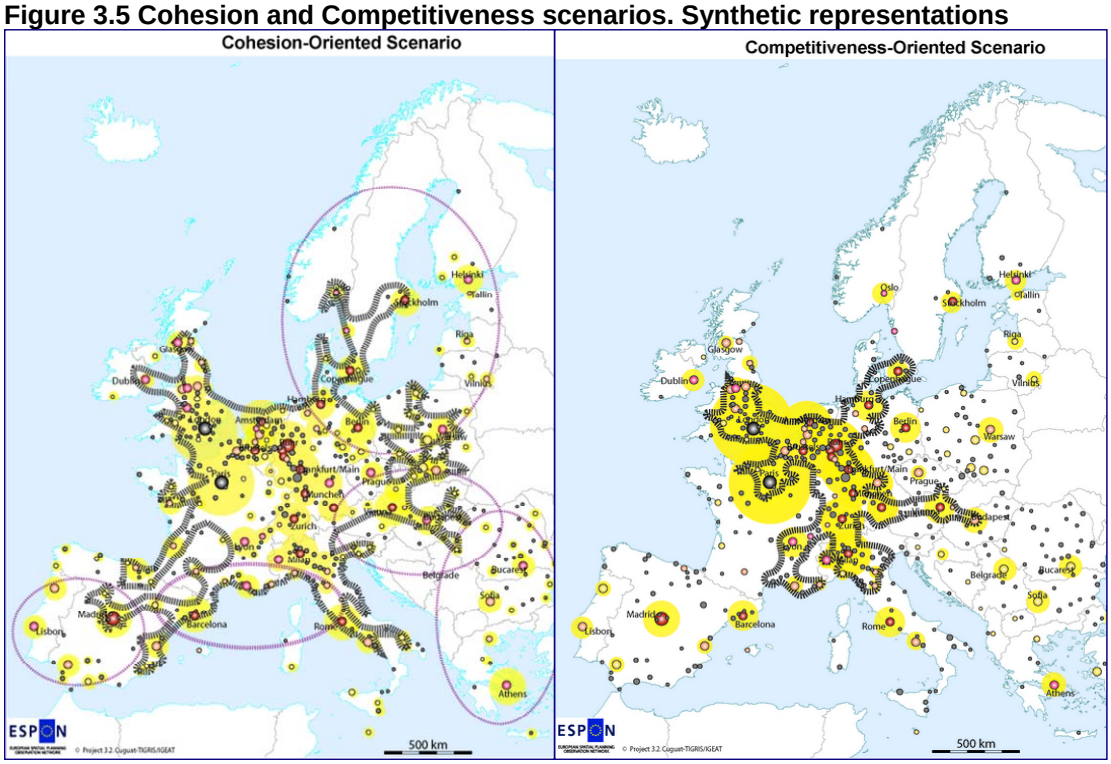
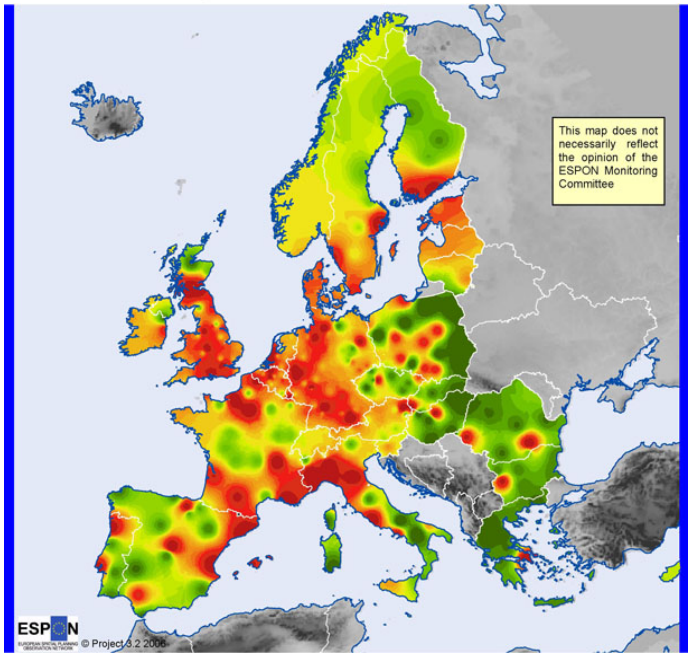


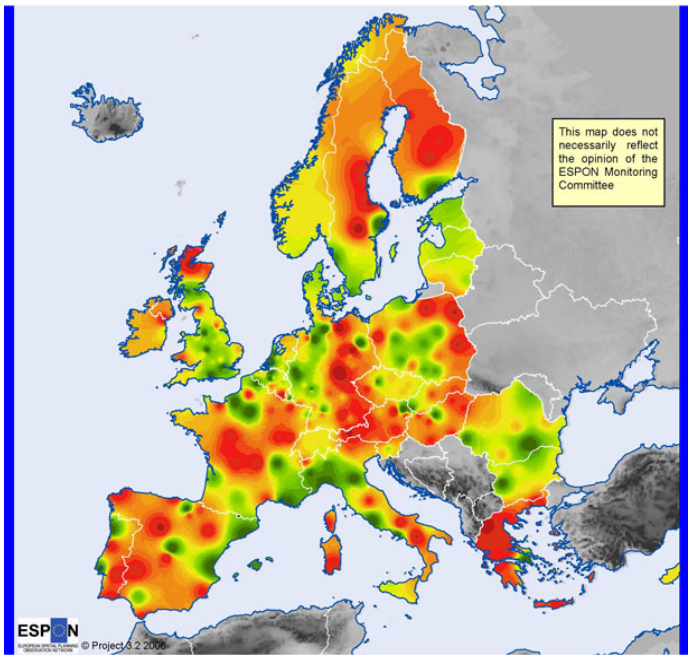
Figure shows the economic evolution of the Baltic area for the cohesion oriented and the competitive oriented scenarios relative to the Baseline scenario. The results show that the Baltic Sea area seems to perform relatively better than the other regions in a competitive scenario (like most developed areas in Europe). This result will deserve a further in-depth investigation.

Figure 3.6. Difference between GDP in the Baseline and the Competitiveness and Cohesion scenarios (ESPON 3.2, DGREGIO)

GDP . Baseline-Competitive 2030



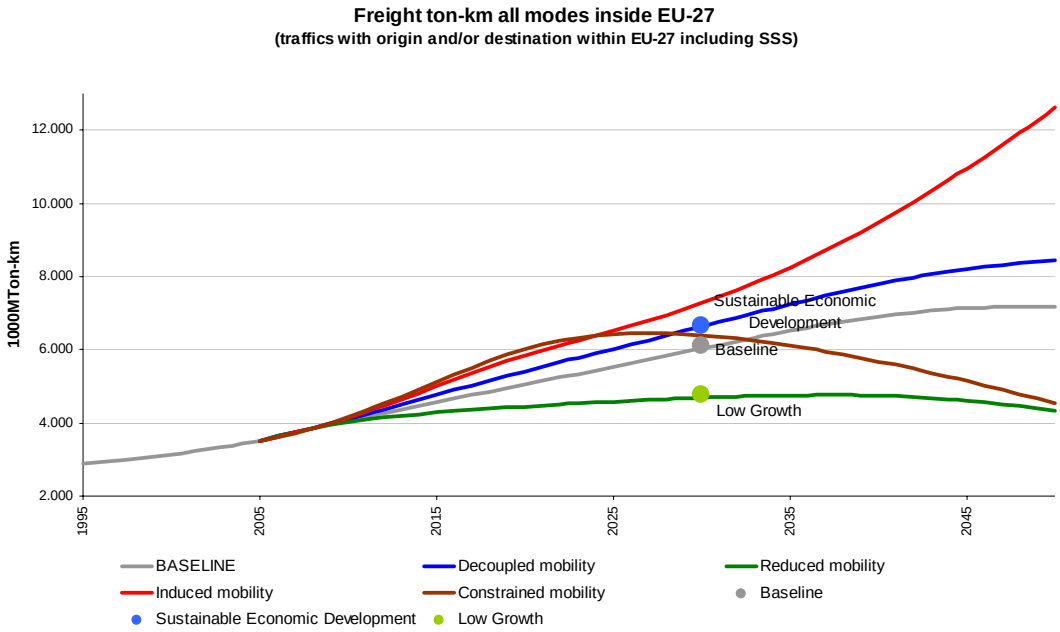
GDP . Baseline-Cohesive 2030



3.3.2 TRANSvisions

The TRANSvisions scenarios have been developed for 2030 and 2050. 4 different visions for 2050 have been presented, shortly described as: “Moving alone” or “Induced Mobility” (with traits similar to the competitive oriented scenario from ESPON), “Moving together” or “Decoupled Mobility” (with traits similar to the cohesion oriented scenario from ESPON), “Moving Less” or “Reduced Mobility” (an environmental scenario assuming more consciousness concerning mobility and transport) and a collapse scenario “Stop moving” or “Constrained Mobility”, where harsh measures are taken in order to curb the emission of carbon dioxides.

Figure 3.7: Evolution of freight transport in b. ton-km inside the EU27 until 2050 (DG TREN; TRANSvisions 2009)



The TRANSvisions project has produced quantitative estimates concerning the transport and mobility development in EU27 for both 2030 and also 2050.

Some of the major findings of the TRANSvisions project mainly based on analysis of the 2030 results are reported below:

If only the transport development within EU is considered, the analyses showed that a certain decoupling between economic development and passenger and freight transport respectively could be expected. The most significant decoupling effect would appear for the passenger transport.

However, the analyses also indicated that the long distance transport would grow more than short distance transport, and in the Baltic Sea Region a higher transport growth would be anticipated. The trend was expected for both passenger and freight transport.

The analyses indicated that transport development for extra-EU transport would be faster than the economic development in EU. The decoupling which was indicated for the intra-EU transports could not be replicated in the extra-EU transports. This is not surprising, due to the fact that EU trades with major partners who all have economic development higher than expected in the EU in the next decades. The trend indicates that globalisation spurs both passenger transport as well as freight transport. However, one of the conclusions of the analysis was that a long-term sustainable transport development is only possible if a global perspective is taken into account in formulation of the EU transport policy, and subsequently also in formulation of national and regional transport policies.

An analysis was carried out on market shares for the different transport modes. In the intra-EU transport road transport would continue to be dominant, both for passengers and freight. However, the fastest growing market share was that of rail transport. It was found that the number of passengers in intra-European air transport would also increase but not with the same speed as seen in the period up to 2005 where introduction of new business models, e.g. low fare air transport, made air transport extremely competitive.

Feeder transport and transport of general cargo are expected to increase, thus putting more emphasis on terminals. Multimodal freight terminals will be important in the future in order to ensure easy and cost efficient transfer between transport modes, and ensure that efficient logistics alternatives exist for consolidation and distribution. Important passenger terminals for rail and air transport will also gain importance in the future, and it is of importance to ensure that access from underlying networks to these prime terminals is easy and without any hindrances.

Looking more specifically at passenger travel it is expected that commuting will remain almost constant or even reduces due to the demographic development in Europe. It is expected that the segment of the population in the age from 20 – 64 remains constant over the next two decades. A slight increase in urbanisation is expected in EU, which could result in increasing urban sprawl and thus longer commuter trips.

The segment of population above 64 will increase with 50%, and this coupled with an expected growth in disposable income will result in more leisure and vacation trips. Due to globalisation, an increase in business trip kilometres is also expected.

Long international trips are expected to grow considerable, whereas border crossing traffic defined as short trips across national borders is expected to grow only slightly.

The results of the analyses were applied for analysing the challenges a new transport policy should address. TRANSvisions proposed a clear distinction between aims, objectives and actions, and a policy development based on these three fundamentals. The analysis also indicated that social sustainability did not have the same priority in transport policy as have economic and environmental sustainability. Therefore, the following aim for the transport policy in EU was proposed:

The transport policy of EU shall fulfil the economic, social and environmental needs of the society while minimising the negative consequences of transport. Transport policy shall ensure that the transport system is sufficiently dynamic in order to handle possible future challenges related to an uncertain world.

Based on the aim above transport policy shall assist in promoting economic, environmental and social sustainability. In order to improve economic sustainability transport policy shall assist in generate economic growth, job creation and avoid or reduce congestion.

In order to promote environmental sustainability, transport policy shall contribute to a reduction of greenhouse gases and emission of other harmful and noxious substances, contribute to a reduction of transport related noise and aim at protecting environmental sensitive areas against the effect of transport development.

In order to promote social sustainability, transport policy shall contribute to a reduction of traffic related accidents, promote access to opportunities and offers (within education, business and leisure) and services, promote social cohesion, promote the European citizens' involvement i the transport planning process, promote the right to good transport quality, and support a high quality related to employment in the transport sector.

The transport policy necessary to obtain the described objectives is formulated in a number of actions or policy pillars. On an overall level actions can be divided in pull actions (open markets, more and improved infrastructure, more funds for research and development) and push actions (regulation, road pricing, taxes, standards). Based on this division TRANSvisions proposed a number of different actions related to the infrastructure and aiming at fulfilling the objectives set forth above. Among the actions were:

- Better utilisation of existing infrastructure (e.g. congestion charging, Intelligent Traffic Systems, interoperability)
- Development of a specific infrastructure for rail freight transport
- Efficient terminals for air transport and high speed trains

The results of the TRANSvisions project have been part of the background material for establishing the transport policy for the EU for the period 2011 – 2020. The white paper on the transport policy is expected to be published late 2010.

Seen in a Baltic Sea Region context the increased focus on climate change as part of the future transport policy coincides well with protecting the nature resources in the BSR. The focus on climate change also leads to an increased focus on greening the transport and subsequently developing green corridors, where the use of fossil fuel is reduced to a minimum, where transport's effect on the environment is reduced and where social sustainability is promoted in terms of fewer accidents and high quality jobs in the transport sector.

The TRANSvisions results cover the complete EU, but the BSR has challenges different from e.g. the core of EU. These territorial differences should not be neglected, and should be addressed in order to create a transport policy in the BSR in line with the policy formulation from EU but with more emphasis on the territorial cohesion in terms of increased

accessibility in a sustainable way, creation of opportunities and services also for the most distant and sparsely populated parts of the BSR and taking the Baltic Sea motorway as one of the most important axes in the region for developing green transport solutions.

3.3.3 The TIPTAP project

The TIPTAP project (ESPON 2009) carried out a further investigation of some of the scenarios defined and calculated in TRANSvisions for 2030. The analysed scenarios were defined as baseline, high economic growth, including a considerable investment in infrastructure and finally, a low growth scenario, where investment levels for infrastructure are low, and regulation is the method for creating sustainable mobility and transport.

3.4 Baltic scenarios

In this chapter a first broad outline concerning Baltic scenarios is introduced. The different aspects focused on in the foresight studies for ESPON and DG TREN serve as a base for scenario definition for the Baltic Sea. But the foresight studies carried out in the region itself is also considered in the final definition.

3.4.1 Geographic invariants

Some of the characteristics of the Baltic Sea Region are summarised as follows:

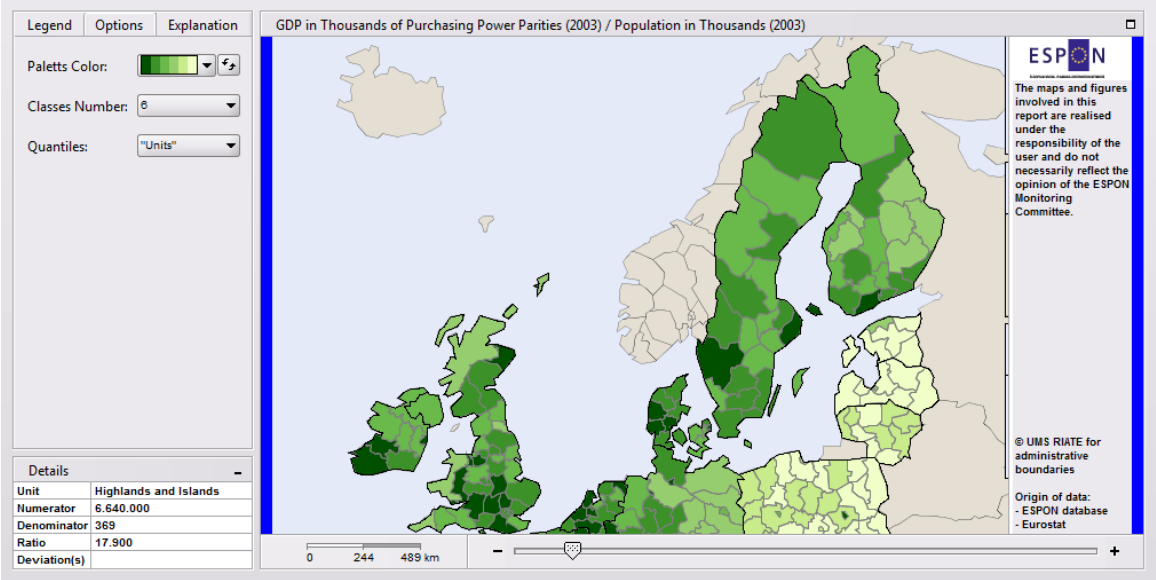
Low population density, but with higher densities in the southern part than in the northern part. In general the coastal regions have higher densities than the inland country side. However, there are obvious exceptions among the southern countries in BSR, e.g. population density in south and central Poland is far higher than in the northern and coastal provinces, and in Lithuania are the biggest cities located inland along the river Neris.

Long distances between urban regions. The main urban regions in the Northern countries are all located at the coast. In the German part of BSR are the main cities located along the North Sea coast except the biggest urban area, Berlin, located in the Centre of Berlin-Brandenburg about 200 km from the coast. In Poland are the main urban areas located inland in Warsaw, Krakow, Katowice, Poznan. Lodz and Wroclaw. On the coast are two main urban areas, the three city area (Gdansk – Sopot – Gdynia) and the Szczecin area. As mentioned above in Lithuania the main cities are located along the river Neris quite far from the coast.

Numerous inland regions with small populations and low accessibility. Also many island regions with difficult accessibility.

Well developed knowledge based economies in the western and northern parts of the region, and more vulnerable economies in the eastern and south eastern part of the BSR. This is illustrated in Figure 3.8.

Figure 3.8. GDP in PPP per 1000 inhabitants (2003), The darker the higher GDP per inhabitant.



The Baltic Sea Region is hardly a functional region in economic terms.

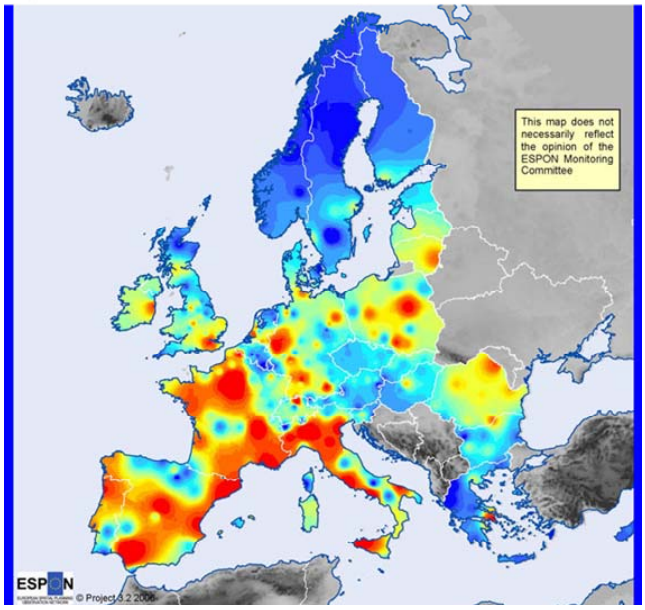
The trade and economy is dominated by Germany and Russia. The development potential in the Russian economy could be very high seen in a long-term perspective. This could have a profound impact on the Baltic States and Finland in the first place but also on all other nations in Baltic Sea Region.

Strong density of trans-national public and NGO co-operation network

The following figures (Figure 3.9, Figure 3.10, Figure 3.11) illustrate these characteristics:

Figure 3.9. Population density and Multi-modal transport costs in Europe, 2030

Population Baseline 2030



Multimodal accessibility 2030 baseline as mean travel cost

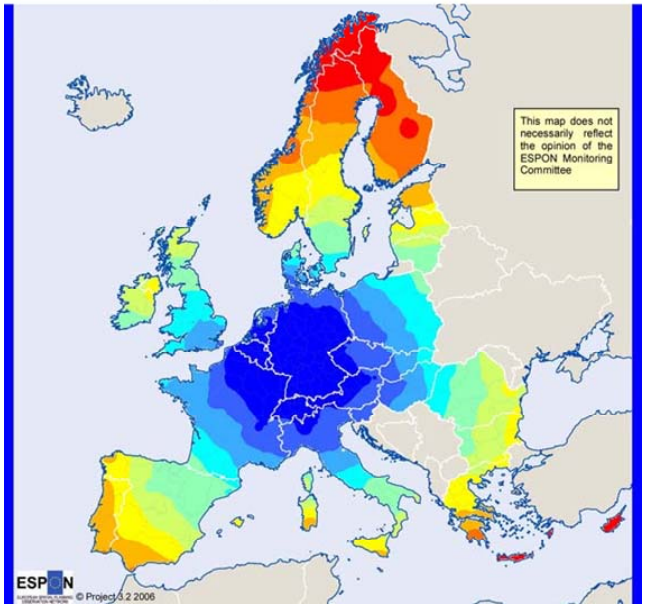


Figure 3.10 Density of Population (from Nordregio)

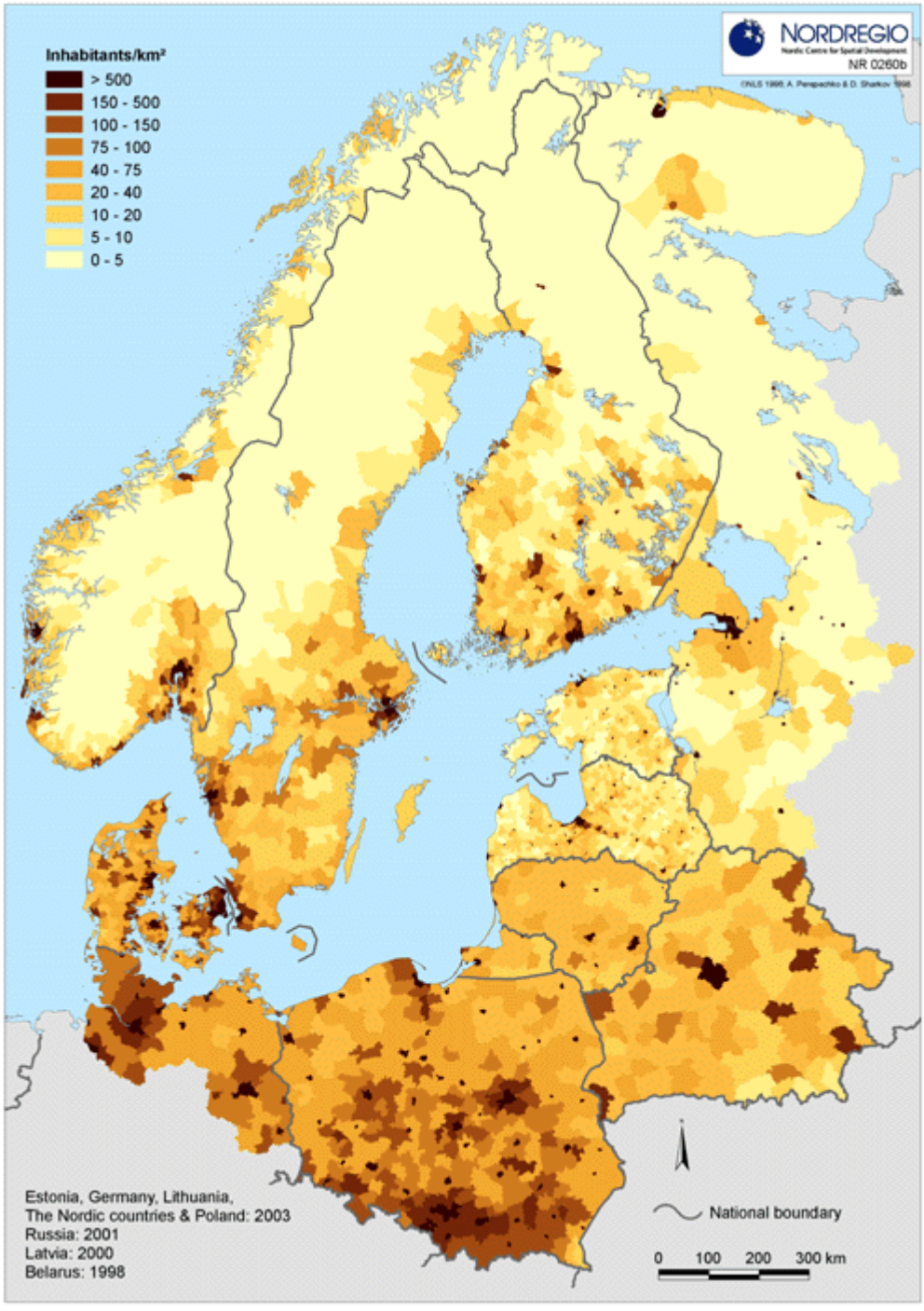
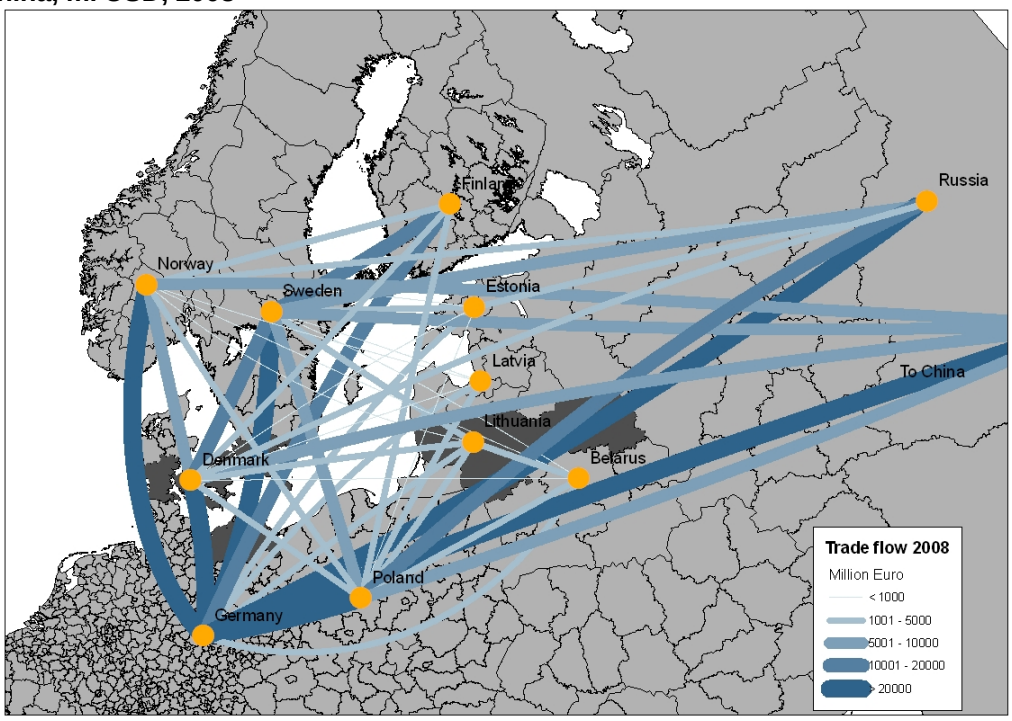


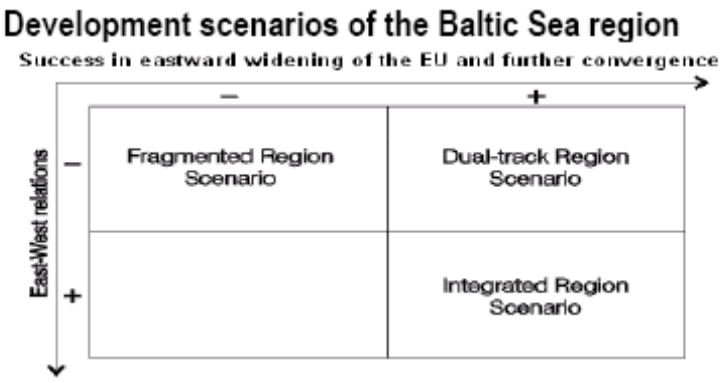
Figure 3.11. Trade between the BSR countries and between BSR and Belarus and China, m. USD, 2008



3.4.2 Specific macro-regional trends

The development of the first scenarios for the Baltic Sea Region by Erik Terk and Garri Raagmaa in 1998, was based on the assumptions that the development of a common region of cooperation will depend on the success, manner and rate of the EU expansion to the eastern Baltic rim (the accession of Estonia, Latvia, Lithuania and Poland) as well as the context and dynamics of the EU-Russian relations. It was presumed at that time that these two factors were interconnected (Figure 3.12).

Figure 3.12. Development scenarios for the Baltic Economic Space (Erik Terk, 2006)



According to Christian Ketels (The Role of Regional Collaboration in the Baltic Sea Region of the Future, 2009):

- Baltic Sea Region will continue to outperform the rest of the EU but likely loose global economic weight
- Convergence of Baltic countries, Poland, and (with some more uncertainty) Russia to the Nordic levels of prosperity is likely to continue
- Relative increase in the economic importance of Russia, Poland, and the Baltic States; Nordic and German share of GDP dropping moderately
- Over the next 15 years, demographics (increase in active population) benefit the GDP per capita level in the eastern part of the BSR but then the trend shifts (ageing is increasing)
- Moderately positive outlook for the economic prospects of the region
- Regional collaboration can become the 'turbo' of regional growth, if developments in the EU and/or Russia create the right conditions
- The future of the European integration process is the most critical driver of how important Baltic Sea cooperation will develop in the future
- The most benefits will occur, if the region moves towards a new model of collaboration, more in-line with the changing external conditions

Christian Ketels has summarised his view in the next three synthetic diagrams (Figure 3.13):

Figure 3.13. Scenarios for the Baltic region by Christian Ketels (2009)

Worst Case Scenario

These trends are used for the further development of the scenarios. The outset for this development is the following three scenarios:

- *Baseline scenario* – projecting the situation when all major transport infrastructure projects included in the medium- and long-term national investment plans of the BSR countries (and optionally – China, India, Ukraine and Central Asian republics) are completed;

- *Gateway scenario including Arctic passage scenario* - projecting the situation with BSR as gateway for trade between Europe and Eastern Asia/Russia and when the ice-free waters of the Arctic Sea enable summer season navigation and thereby establishing a competitive route to the shipping route via the Suez;

- *Green transport scenario* - projecting the situation when the EU regulations and rules of the EU neighbouring countries lay ground for developing a network of green multimodal transport corridors as a priority network in the BSR (correspondent to present TEN-T network).

These three scenarios have created the basis for the debates on the future of the Baltic Sea transport system.

4 Moderating debates

The foresight process in task 3.3 was organized by means of 5 participatory debates, where stakeholders from different areas were invited to take active part in the discussions about the future of the freight transports in the TransBaltic area. Region Västerbotten prepared and organised the debates, selected the invitees and ensured their participation. The consultant moderated the debates and participated in the interactive discussions about the scenarios.

The debates were arranged in an even distribution across the Baltic Sea Region, with the inaugurating debate held in mid-March Malmö, Sweden in connection with the TransBaltic Conference 2010.

The outcome of the debates was different scenarios for 2030, which the stakeholders in general could agree to. Following each of the debates, a short summary on the outcome of the debates was produced, which then was taken forward to the next debate and presented there.

4.1 Introduction to the Gateway Scenario

The Gateway Scenario places BSR as a vital link in the European trade with Russia and Asia, and hereby strengthens the BSR role as the gateway to and from Europe for Russia and the countries in East Asia. Further the BSR is also the gateway between all parts of the Baltic Sea Region and the rest of Europe. The trade development within the BSR is also a vital part of this scenario, whereas the gateway function serves as the base for connection of all parts of the Baltic Sea Region.

There are a number of hubs in the BSR with excellent hinterland connections both rail and road, in order to handle the large transport volumes expected. Further the Motorways of the Sea are developed in order to create a network across the Baltic Sea, connecting the different parts of the whole Baltic Sea Region and thereby offering the Gateway function.

The scenario does not take into account the sustainability of the whole transport system in the region, as it is more focussed on the growth in trade between Russian and Europe as well as between East Asia and Europe, via the BSR Gateway. Some parts of the system will be sustainable, whereas others, mainly on the Eastern parts of the region, will not have reached a very high level of sustainability in the system. Here the focus is more on attaining better infrastructure conditions on rail, road and inland waterways, as well as on issues as safety and security in the transport chain.

Through different landbridge connections the BSR is the connecting node for large traffic volumes. The landbridge connections are mainly rail and road corridors between East Asia and BSR, in order to facilitate the trade development by offering the shorter routes on land as competitive alternatives to the long sea route.

Further the Gateway Scenario includes the Arctic sub-scenario, where it is also expected that the North Sea Route in the future will be available for traffic during a longer navigable season compared with today, and thereby shortening the sea route between East Asia and Europe considerably. This is further described below. This also means that sustainability is not as much in focus, as the main reason for longer navigability is climate change.

As an introduction to the debate about the Gateway Scenario, Wang Peng who works in the R&D department of the Chinese shipping company COSCO elaborated on the land-bridge between Asia and Europe at the TransBaltic Conference 2010. The Trans Siberian railway from Vostochny to the border of Finland, takes 11 days, and the transport rates are high (2-3 times of the cost compared to sea way) and the infrastructure is busy. COSCO sent their first container train started from Lianyungang in October 2007 and it arrived in Moscow 15 days later. The Lianyungang-Moscow international container train uses the 8,301 km route via Kazakhstan and the trip takes 16 days, which is 20 days less than the sea way and 10 days less than via the Trans Siberian railway.

Some obstacles for the Europe-Asia Continental Land Bridge:

- High cost (2-3 times of the cost compared to sea way)
- Longer transport time due to customs procedures etc.
- Imbalance of the cargo (cost of unnecessary empty return of containers)
- Safety of the cargo
- Shortage of cargo tracing information service

Therefore it necessary to create smooth transport systems on the Asia-Europe Continental corridor by:

- Efficient customs procedures based on ITS
- Coordinated inspection systems, based on risk, taking into account companies with good records
- Acceptable level of congestion on roads
- Attractive international train paths
- No congestion at intermodal nodes

Kirsi-Maarit Poljatschenko, General Manager of the shipping line Hyundai Merchant Marine Ltd talked about Container Shipping Today at the TransBaltic Conference 2010. As much as 70% of Russia's incoming cargo arrives at Baltic ports. The global shipping lines

are planning for the future and the global order book for new capacity reads 732 vessels and 4.5 million TEU capacities (which is comparable to some 35% of the existing total fleet). The order book contains different vessel sizes, but 242 vessels in the pipeline are >7,500 TEU each (with 2.5 million TEU capacities).

In 2009 a total of 400,000 TEU of vessel capacity was scrapped. The key word is still uncertainty – in 2009 basically no new vessel orders were placed and many of existing orders were deferred. Another interesting fact is that between October 2009 and February 2010 container freight rates increased by 38% (source: Clarkson). What will we see in the future - larger vessels, less frequency, slow steaming and other efforts to reduce costs, maybe further mergers of shipping lines? Another idea would be joint hub arrangements in order to reduce sub optimisation in the separate organisations.

Gateway & National Competition: ports versus ports are not only about geography, it is also about politics. Some ports are natural gateways – some can be made into gateway hubs. Russia will set the speed on which gateways and hubs that will be important for Russia in the future and the Russian middle class will set the volume by their selection of products.

Who decides which gateway to use? – The hierarchy in logistics decision making is complex.

Domestic Competition: ports versus ports are also about politics, not only geography. Port organizations are looking for means for efficiency and this means survival of the fittest. Where to do sales work and whom to promote port services? There will probably be collaboration across the country borders in the BSR and the tendency towards this can already be seen, in order to promote different Motorways of the Sea etc.

Signals, trends and wild cards towards more Green Shipping, and the environmental aspect is being utilized for better economy, but also for investor relations and PR. Environmental actions and plans of companies must be manifested in a standardized way and this cannot be overlooked by any global player in the Shipping business in the future. One mean for greener shipping in slow steaming for reducing the fuel cost, but also for reducing the emissions. Will the consumers' 'learning curve' change and how selective will they be in the future? What about the professional buyers' selection criteria? The social media such as facebook has something to say, and can be a powerful force for the future generations.

4.1.1 The Arctic sub-scenario

As an introduction to the debate about the Arctic scenario, some researchers and experts informed about their findings within the TransBaltic Conference 2010. Vladimir Semenov from the A. M. Obukov Institute of Atmospheric Physics, Russian Academy of Science in Moscow, Russia presented his findings after simulation of the arctic sea ice, following satellite data observations over the past 30 years and using different models in order to simulate the estimated navigation season length along the Northern Sea Route (NSR) for the 21st century.

Navigation season length was defined as the number of days with free passage through the whole route. They analyzed 30% and 50% sea ice concentration as threshold for the

potential navigation. Simulations show prolongation of the NSR navigation season with about 4-5 months of free passage by the end of the 21st century. The navigation season was in 1985 some 30 days and is presently some 45 days. In the summer of 2007, the Northwest Passage was ice-free and navigable over its entire length for the first time during the whole period of satellite observations.

Development of the Arctic marine navigation in the coming decades will be mainly driven by exploration of oil and gas fields in the Arctic Shelf. Melting Arctic ice will make easier transit traffic through the Northern Passages. The increase of marine navigation season may significantly reduce expenses for icebreaker escort and ice reinforcement for cargo ships, shorten mean shipping time and diminish the risks. This will result in increased reliability and decreased transit traffic cost which may significantly raise a commercial attraction of the Arctic transportation compared to the Suez or Panama Canals. Besides, given the current growth of world marine transportation (6% per year), capacity limits for both the Suez and Panama Canals may be reached by the middle of the century.

- Simulations show prolongation of the NSR navigation season with about 4-5 months of free passage by the end of 21st century according to A1B scenario.
- Economical benefit from the Arctic transportation may become competitive to the traditional Europe-Asia routes through the Suez or Panama Canals by the middle of the 21st century
- According to the model estimates, the year-round transit cost from Western Europe to the Far East through the NSR may be 15% lower, in comparison with transit through the Suez Canal, by the end of the 21st century.
- To make use of the NSR potential, however, a considerable modernization of the Arctic transport system and construction of new ice reinforced container ships is required.

Another interesting presentation was made by Jerome Verny, Associate Professor (transport/logistics), Rouen Business School in France. He won the International young researcher award from International Transport Forum – ITF in 2009. He elaborated around container shipping on the Northern Sea Route.

Containerized freight transported on shipping lanes Asia – Europe reached 21.6 million TEU in 2008 (30% of globally shipped containers) and Hamburg Institute of International Economics (HWWI) estimates:

- Annual growth rate of 5-6 % between 2008 and 2015
- Annual growth rate of 2-4 % between 2015 and 2030

The Northern Sea Route is 7,700 nautical miles and this takes 18-20 days. The Royal Route via the Suez Canal is 10,200 nautical miles and takes 28-30 days.

At the same time the European economic centre of gravity is moving towards the Eastern European countries and this could lead to a large potential for the Baltic Sea region in connecting the Northern Sea Route via the large Russian Arctic ports. Hereby the BSR could serve both internal and intercontinental flows.

Mårten Edberg from Region Västerbotten in Sweden presented some interesting facts about the Barents Region throughout the series of debates. The Barents region includes the following regions:

- Norway: Nordland, Troms and Finnmark
- Sweden: Västerbotten and Norrbotten
- Finland: Kainuu, Oulu and Lapland
- Russia: Murmansk, Karelia, Archangelsk, Komi and Nenets

There are some 5 million people living in the region and the population density is 3.2 per km^2. The largest cities are situated in North-western Russia, namely Archangelsk with 348,000 inhabitants; Murmansk with 311,000; Petrozavodsk with 271,000; Syktyvkar with 233,000; and Severodvinsk with 189,000 inhabitants.

The Barents region has vast resources and a large number of the mines in Europe are situated in the region. Sweden and Finland together account for 88% of the production of iron ore in Europe – 28 million tons annually. Another interesting fact is that Sweden and Finland account for 52% of the gold production in the EU, with some 22 tons per year. There are also large findings of Copper, Zinc, Lead and Silver.

The raw materials need to be transported towards the processing industry and then onto the largest markets, mainly in Western Europe, whereas the markets in the Eastern Europe are growing. This means that the North-South landbridge connections between the Barents Area and the Central parts of Europe are vital to support the industry in Europe.

The East-West landbridge connections are also vital in order to support the growing trade with Russia and beyond and here BSR can play a vital role as Gateway for Europe. Some 70% of the Russian import is transported via Baltic ports and also large parts of the export.

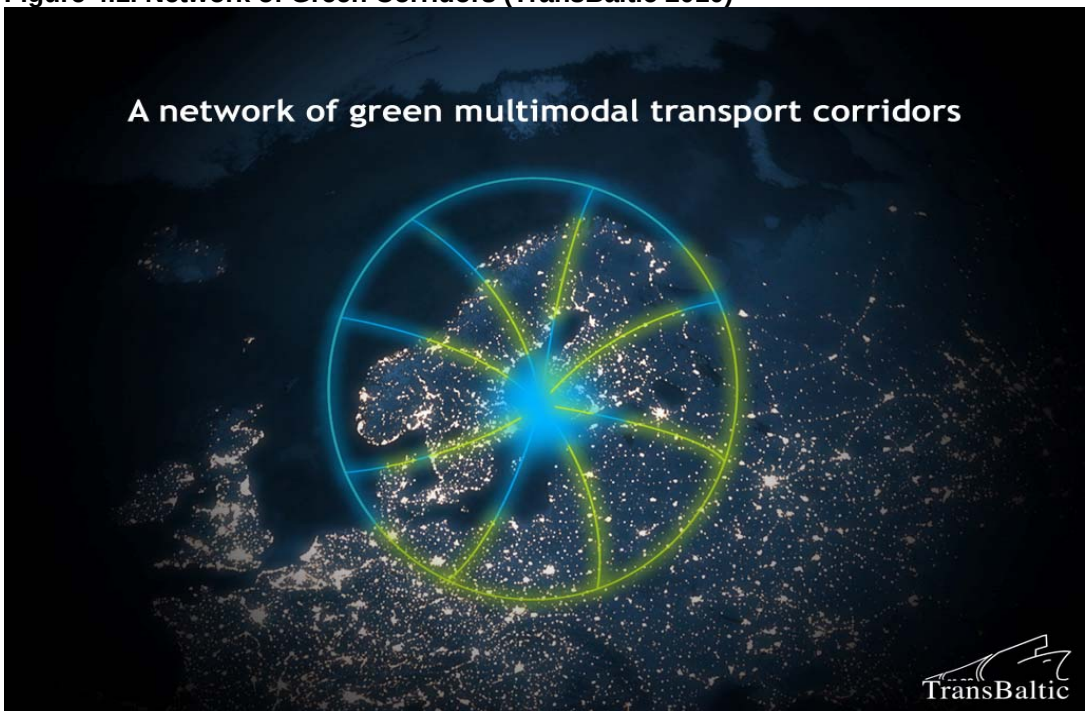
4.2 Introduction to the Green Scenario

The Green Scenario has sustainability of the transport system in focus and this means in all aspects of sustainability, namely economical, environmental and societal. In order to meet the different targets set as regards the reduction of Green House Gas emissions, where the transport system has a large share of the emissions, it is vital to have sustainability as the leading star for the development of the future transport system. The EU goal

of 20-20-20, and the further goal of 80% reduction in GHG emissions of developed countries by 2050 calls for action already now.

The EU regulations and rules of the EU neighbouring countries lay ground for developing a network of green multimodal transport corridors as a priority network in the BSR (corresponding to present TEN-T network).

Figure 4.1. Network of Green Corridors (TransBaltic 2010)



Green means that the system should strive for being climate neutral. Green Corridors are developed, as base for the Green Scenario and these corridors are based on:

- Sustainable logistic solutions
- Co-modality
- Harmonised system of rules
- Concentration of freight flows
- Efficient transhipment points
- Platform for innovation

Menno M. Menist, Managing Director NEA Transport research and training in The Netherlands elaborated on Green Corridors during the TransBaltic Conference 2010. Some of the main features of a green corridor are safety standards; green and safe should go hand in hand. The green corridor should emphasis a continuous improvement program on the corridor reducing accidents and casualties, whereby accidents are monitored for each mode. There is a need for good infrastructure as well as requirements on vehicles and staff. Standardisation is important as well as reducing language barriers. There should be sufficient resting facilities along the corridor.

What makes a corridor a green corridor is the use of green alternatives and green techniques within the different modes. Further it is vital with efficient transport within the modes: efficiency and sustainability are not opposing objectives. The corridor should have high safety standards and reliable transport times.

Green alternatives are supporting co-modality. It is also important to de-rush transport needs and as an example can be mentioned, the use of sensors to plan the need for deliveries at an early stage. There should also be a supporting policy in pricing, as internalisation of externalities. Another important issue are agreements once deciding for new investments.

Menno Menist concluded that transport will continue to grow and should - for economic reasons - be facilitated. It is a challenge to separate transport from its external effects and Green corridors are the right answer to this challenge. Each modality has its own role in the green corridor.

4.3 TransBaltic Conference 2010 Foresight Debate 17-18/03/2010

The TransBaltic Conference 2010 took place in Malmö on 17th and 18th of March 2010, and as a part of the agenda, the first set of foresight debates took place. The headlines of the discussions were the Green Scenario and the Arctic Scenario and some 50 people participated in the debates.

4.3.1 Comments on the Green Scenario

The population will probably not increase in the BSR, but there will be a decrease in the West, whereas there will be an increase in the eastern parts of the BSR. Migration towards urban areas will continue, thereby challenging the large rural areas in the region. The inhabitants in the BSR will all be more environmentally aware and therefore easier to persuade to think about and demand greening of transport. Consumer awareness will make a difference in the future.

A spatially balanced development is therefore needed. The infrastructure investments should mainly focus on the eastern parts where there is a much larger need for upgrading as well as investing in new infrastructure, in order to ensure an equal standard as in the Western parts.

The green scenario calls for green multimodal transport corridors in a priority network in the region.

A green scenario will require a spatially balanced development. Administrative obstacles are gone on border crossings. The main North - South corridors are completed. Multimodal hubs will be really important and are running efficiently. Administrative obstacles are removed, procedures are harmonized. There is increased transparency in logistics chains. The modal shares of rail, IWW and SSS have increased. GHG emissions have been reduced. The logistic chains are operating more efficiently.

4.3.2 Comments on the Arctic Scenario

The Arctic Scenario discussions resulted in only a few believers that the North East Passage really could make a difference in the somewhat near future of 2030, as it would call for large investments and still not be open for more than a small part of the year. The northern route is more likely to be used for the raw material markets in the Barents region.

The use of the Northern Sea Route is dependent on the flexibility of shipping companies. Russian politics will be a main factor. The North-West passage can be part of a solution, but there is a stronger belief that this will emerge around 2050 as 2030 is quite close. Investments and competing structures are important. The NSR is an additional solution for BSR.

The lack of capacity on the Transsiberian railway could lead to an earlier investment in the NSR. The Arctic passage will lead to larger concentration of cargo in Baltic ports, and this calls for larger investments in the ports and the hinterland connections. Legal status of the passage will have to be established.

The usability of the Northern passage depends on the pace of climate change in the years to come. Perhaps that doesn't come until the end of this century. In order for the Arctic Passage to be feasible, there is a need for expensive transport infrastructure on the route and legal status should be settled.

As a result of this debate, is was decided to shift to a Gateway Scenario, including the Arctic as a sub-scenario, in the following debates.

4.4 South Baltic Foresight Debate 30/03/2010

The focus of the participants of the Southeast foresight debate was mainly in their own part of the BSR and issues as border crossing with non-EU countries were high on the agenda. Unified political action was called for, especially between Russia and EU, in order to suppress the border problematic. The infrastructural and administrative bottlenecks need to be solved. The middleclass in Russia is getting richer and this will lead to increased consumption and thereby also larger transport volumes to be handled. These consumers will drive the economy.

There is a need to develop intermodal transports and this means both ports and the hinterland connections. In Lithuania public logistics centres are created for international transports and trade. These will have open access and private companies will be invited to build their own warehouses within the centre. In these centres the transit traffic will also be consolidated and value-added services will be created in order to gain market shares.

Good connections with neighbouring countries are necessary for the development and Rail Baltica is a project to support this. There were, however, comments that there are no large transport flows in the north-south direction in the Baltic countries, so it will mainly be used for passenger transport.

4.4.1 Comments on the Green Scenario

There are 3 solutions for the green scenario – investments, harmonisation and business concepts (some incentives needed).

We need to go for the next practice and be a real forerunner, taking the lead towards the Green Scenario. In 2030 network of Green Corridors has been established and there will be new commercial concepts for rail on Rail Baltica. There is a need to develop intermodal transports with open access logistic centres. In Southern Baltic, the aim should be to concentrate on developing the ports and the hinterland connections. However, the sulphur directive will possibly counteract good development of ports and increase lorry traffic. The future foresees less competition and more cooperation, higher environmental awareness, yet slow progress. The decision making processes will be more efficient in the future.

Bottlenecks can be of infrastructure character or administrative and must be solved. The soft barriers dominate the picture. Border crossing problems, unification of political acts between the countries - Russia and EU Member States - must be prioritised. The cooperation with Eastern partners will increase, as the border barriers will cease. BSR must be well-connected with the neighbouring countries for the development.

Transit will be green, fast and cheap. This will be done through limitation from the government - or steering mechanisms to use green transports. For example discount on taxes for green transports. The trade with the Northern part of Russia will increase and so will the use the Viking train to Odessa and onwards to Turkey. There is a strong believe in finding more cargo in the Nordic countries that can use this route, via Klaipeda and Viking.

Rich people are driving the economy - the population will be wealthier and the demand for transport will increase. The increase of consumption in Russia will have major impact on transport and there is a need to increase access to the global market and global logistics chains. There will be more Chinese investments in Europe and between China and Europe.

4.4.2 Comments on the Gateway Scenario

St. Petersburg will play a key role in the Southern Baltic. The cargo owners create demand and supply. Russia will still keep a very strong position in sea and rail transport. More hubs are anticipated determined by decisions of global investors (e.g. case of Gdansk DHT container terminal with Australian capital). Gdansk and Gdynia ports are

investing in infrastructure to increase cargo flow with Asia. The ports that can attract operators, and have a good strategic location in connection to the market, and have good hinterland connection, will be the winners.

Russia will still be in the focus as a rich source of raw materials and they will be focused on their priorities and security. The centralisation in Russia will still be strong and controlled by Moscow. The road system in Russia is quite week and there are safety issues. Archangelsk will be developed very strongly because it is better connected, also than St. Petersburg. Kaliningrad has problems with transit. Today's situation in Kaliningrad is complicated due to political matters.

All Russian cargo flows will go though Russian ports and Kaliningrad will more be used for the local market. The importance of Odessa will increase. The growing middle class in Russia and China will be drivers for transport flows – but which routes will be used? The future routing (Arctic Sea, oceanic shipping and landbridge) is depending on the price differences and scale of restrictions but the first actor will have strong influence on the future developments.

4.5 North West Russia Foresight Debate 29/04/2010

The third foresight debate took place in St. Petersburg on 29 April with more than 50 participants; where of the majority were Russian. The debates were very lively and there were many interesting facts presented by the participants during the day. In the North-Western parts of Russia the main focus is on better infrastructure both on rail and road, as well as safety and security issues. Green transport is not yet on the agenda.

The Russian youth is looking at their European equivalent and wish for mobility, and that is something that is harder to come by in Russia. The middleclass is increasing heavily and this means that they will be in the lead on decision making, by choosing what they want to buy in the future. This calls for further import of a variety of goods and here the border issues are vital to solve. Harmonisation of national transport legislation, and improvement and unification of border-crossing procedures and rules are therefore a very important goal, in order to ease the way for the future trade volumes.

4.5.1 Comments from the Scenario debates

Green corridors are quite sophisticated and complex (not one component only). In North-West Russia many important minerals and materials are being produced. Green corridors are more than CO2 and other emissions – also safety, security need to be considered. Problems with piracy and terrorism must be taken into consideration. ITS/ICT systems must be harmonized and so must legislation – all with the aim of a sustainable Baltic Sea Region. Transport safety is getting more and more important after terrorist attacks and similar activities. It is necessary to have an intact logistics chain and a common safety standard. A standard doesn't guarantee full protection against threats – there are no guarantees of safety. Is it as simple as implementing the same standards in all countries?

The transport system is a question of supply and demand. A corridor should be stable and sustainable, no matter the economical fluctuations. Global corridor/vessel capacities are overloaded. There is not one single hub in the North Sea in the moment – all in the

Mediterranean Sea so why should there be many hubs in the Baltic Sea? Corridors promote speedy transports and logistics. Mental barriers must be removed. Chinese shipping companies will survive the crisis.

St Petersburg will never be a hub according to the business/private sector, although there have been trials with ocean-line service South-America – St Petersburg without going through other ports.

Where are the bottlenecks today and can they be removed? Custom procedures are bottlenecks, no question about it. More focus on the consumer instead of the producer. The business companies prefer a free market to a market restricted by administrative obstacles.

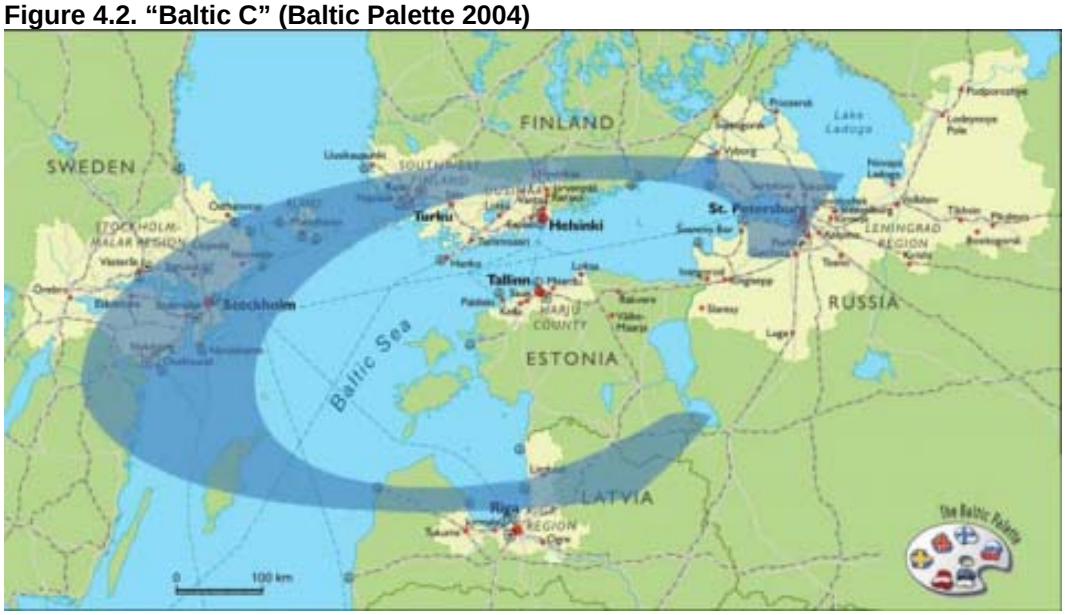
4.6 Central Baltic Foresight Debate 18/05/2010

The Central Baltic area is dominated by metropolitan areas and capitals and this brings complexity and requires local and regional institutional frameworks for interregional and EU-related cooperation. In Sweden there is a new institutional framework as from April 2010, with the Swedish Transport Administration (Trafikverket). The Stockholm-Mälarregion is not a self-governing region as for example Skåne Region and Västra Götaland Region and recently transport issues were transferred from the regional planning office to the public transport department in the Stockholm Region, SL.

With the above as background, the foresight debate in the Central Baltic Region was not as well-visited as anticipated, when looking at the number of inhabitants in this part of the BSR.

Olli Keinänen, Deputy Head of International Relation of the City of Helsinki presented the findings of the projects Baltic Palette I (1999-2000) and II (2001-2004). During the projects the maritime and road transports were priorities and the metropolitan scale dominated.

Figure 4.2. "Baltic C" (Baltic Palette 2004)



The Baltic Palette region was commonly known as the "Baltic C" (Figure 4.2), referring to the shape of the unified region, its location around the Baltic Sea and its reputation as a region of connectivity, creativity, contacts and competence. The Baltic Palette resulted in agreement of cooperation with dynamic relationships and a permanent joint committee and secretariat, but unfortunately this has not been developed thereafter.

4.6.1 Comments on the Green Scenario

One trend is that there will be fewer corridors with more and more traffic, logistic centres will move closer to the market. There will be a need for more hubs, connecting rail/sea links/routes to road transport for last mile transportation. Bigger, multifunctional ports will be seen.

The transport will not only be market driven but also consumer driven. Concentration of flows (and economical activity) will support the thoughts on transport corridors. Centralisation, concentration and development of corridors go hand in hand. The internalisation of external costs will be an important driver.

More transport and greener transport at the same time – that is the challenge. But the challenge could be solved with clear regulations. The market adjusts to regulations as long as the market knows what is expected - level playing field that is the same over time. The problem with this solution is the present weak leadership. There is a need for management and leadership at EU, national and regional level, with market driven solutions.

Another important matter is the need for education measures towards green solutions. For example, disseminate the success story of the Port of Gothenburg in development of rail freight services to connect to the hinterland.

Another important issue is to develop good terminals with open access to all actors. There will also be certification and product labelling of terminals and other services.

4.6.2 Comments on the Gateway Scenario

St Petersburg's port will be the port for intercontinental flows. Russia sets the rules for intercontinental landbridge flows. Asia will soon "discover" the environmental crisis and there will be stronger growth in India than in China, as the latter is entering the manufacturing phase.

The future of hubs is depending of the foreign policies of the Baltic States and Russia (political matters), while in the Western parts of the BSR the market decides. New capacities in the Baltic States are purchased by Russian companies (quays, terminals etc.), as Russia does not have enough capacity for serving cargo through domestic ports. The trend is that there will be a division, so that domestic Russian cargo will go through domestic ports, while transit cargo will go through Baltic States' ports.

The Transsiberian Railway and the railway link from Western China via Kazakhstan will complement each other; especially as the Eastern part of the Transsib is heavily loaded with Chinese-Russian cargo. The highly competitive situation will prevail and Central Baltic ports will be in fierce competition, but may not be winners in fight for new intercontinental flows. Central Baltic ports will have to find niches and develop hinterland connections, and at the same time there are reasons to cooperate, e.g. harmonization of regulatory framework to develop the transport market as a whole or in order to create same service standards to offer to the market. Private investments are needed.

4.7 North Baltic Foresight Debate 31/05/2010

The fifth and concluding debate was held in Norwegian Bodø and there the focus was much more on the Barents region and the activities to enhance the northern part of the BSR. This part of the region is very rich on minerals and actually accounts for large parts of the total raw material market in Europe. There was also a larger interest in the Arctic Scenario.

The Northern Sea Route will not be viable for all kinds of goods, some important cargo types will prevail. It is mostly a question of building slighter stronger ships – and that is not rocket science. The ports in northern Russia could also be interesting – Murmansk and Archangelsk, but there is a need for new port infrastructure. There aren't too many ports in the BSR, but there is large competition between them.

The future freight corridors are also depending on politics – and the political agenda in China, Kazakhstan and Russia will set the rules. Eastern Europe will continue to grow and thereby consume and produce more. The flows will depend on the market.

With the large amount of raw material in the north, the processing industry should move closer and thereby reducing the vast transports of raw material through the congested areas in Europe. But, there is one important shortcoming for this, the lack of qualified labour in the very thinly populated areas of the northern BSR.

The East-West corridors are very interesting and have many opportunities, but there is a need for a common strategy on this. Environmental factors need to enter in reality and

steering by taxes and fees are important to overcome this. Certification and continuous standards are also important, in order to get better functionality out of the system.

4.8 Conclusions on the Foresight Debates

The 5 foresight debates brought forward a lot of interesting ideas for the development of the transport system in the Baltic Sea Region in the coming 20 years. The stakeholders in the different parts of the BSR were very active in the discussions. It became obvious, that the stakeholders were mainly occupied with issues concerning their own part of the Baltic Sea Region and therefore there were different opinions on what would be vital for the future, depending on whether you are e.g. in the northern parts or the south-eastern parts of the BSR.

The different parts of the BSR should come closer together in the sense of the regions working as one BSR, similar to one nation and the regional authorities working together as in one nation. Here the future could for example bring BSR as a single economic zone. The social structure and services will change over the near future in the whole BSR and here the eastern parts will achieve a higher development. This development will facilitate transport development and development of different transport services.

There are several bottlenecks, administrative, infrastructural and technical, in order to achieve smooth transport chains throughout the Baltic Sea Area. This especially applies to transports between the non-EU countries and the EU member states. Harmonisation and common understanding as regards e.g. customs issues is vital in order to develop the BSR.

The borders between the EU and the neighbouring countries in the East are seen as obstacles for smooth freight transports. The work is on-going, but there is still work to be done, in order to reduce the time spent with administrational issues at borders as well as the long waiting times especially for trucks. The railway sector seem to have come further as regards to solving these issues at some border stations already, but there is still room for improvement, in order to smoothen the border-crossing at EU/non-EU borders. I

Transport safety is getting more and more important after terrorist attacks and similar activities and this especially applies for Russia. It is therefore necessary to have an intact chain of logistics and a common safety standard. Here is work to be done within the EU, but not the least in cooperation with the concerned authorities in Russia and other neighbouring countries.

The main findings in the foresight debates are concluded in the following, split up per scenario.

4.8.1 Conclusions on the Green Scenario

There is a large belief in the Green Scenario as the environmental awareness is winning not only on the Western parts of the BSR, but also is coming on the Eastern parts. Russia is not yet that far, as here issues as better infrastructure, safety and security are the lead-

ing stars. Consumer awareness is also growing and this is expected to make a large difference in the future on how the transports will be organised.

The future development should be spatially balanced and there is a larger need for infrastructure investments in the eastern parts of the BSR, in order to obtain an equal standard as in the Western parts. Bottlenecks of different kinds, e.g. customs issues at border stations with non-EU countries, should be eliminated. Harmonisation of standards, rules and regulations with non-EU countries will be a pre-requisite for a sustainable transport system.

A priority network of green multimodal corridors should be established in close cooperation between the different stakeholders. Very efficient multimodal hubs, ports and terminals play a vital role in making the modal shifts feasible in all possible manners, e.g. as regards time consumption as well as cost reductions. Hereby the intermodal transports can be developed under the co-modality concept, whereby each transport mode is utilised at its best performance. Good road and rail connections with non-EU countries are important in order to enhance the expected growth in volumes especially on Russia.

Pull and push measures, as well as clear and harmonised regulations will be needed in order to manage the development towards the projected direction, and management and leadership at all political levels are necessary. Internalisation of external costs will be an important driver.

4.8.2 Conclusions on the Gateway Scenario

In order to develop the Baltic Sea Region as a gateway fro traffic between Asia and Russia on the one hand and Europe on the other hand, it is vital to develop the present transport network in the BSR and the links to the neighbouring countries. The network is in different states in the different parts of the region and in the neighbouring countries and this call for special attention to reduce the bottlenecks and develop the vital parts of the network into an agreeable standard that can handle the future transport volumes in a satisfactory manner.

Support from all levels is needed – trans-national, national, regional and local level in order to ensure that the development goes in the set direction of establishing an efficient and well-function network of infrastructure, whereby all modes of transport are utilised at each their best capacity.

The Gateway Scenario calls for a network of Motorways of the Sea in the Baltic Sea Region to serve as the centre of the Gateway function and to be the middle backbone and basis of the network. Interconnection as well as further development of the infrastructure links will be needed to connect the eastern and western shores of the Baltic Sea with the surrounding countries also to the north and south.

Further development of multimodal hubs, with excellent hinterland connections on rail, road and inland waterways, is also vital for the development of BSR as the gateway for global trade. With interesting hubs, further cargo can be attracted to the region and this is a vital part of the gateway function, in order for the BSR to serve as the connection point between both Asia and Europe, and Russia and Europe in the future.

Hub ports should deliver excellent connections between all modes on a regular basis and that means also feeder services with other ports in the area as well as good connections with overseas ports. This is necessary in order to attract the large shipping companies to enter into the hub port.

Russia will keep an important position especially as regards sea and rail transport and Russian cargo will mainly use Russian ports. Therefore it is also vital to establish good connections with the Russian ports throughout the BSR.

The Arctic sub-scenario is by many stakeholders not seen as vital in the time perspective towards 2030. The limited number of ice-free days will make this route available only for a short period of the year, and therefore the investments in special ships etc. is not probable, even if the North-East Passage means saving a lot of days on the route from Asia to Europe.

There are however a few believers that argue that there is no need for heavy investments, although investments in port facilities especially in North-Western Russia will be necessary. There is a stronger belief that towards 2050 the Northern Sea Route will play a more vital role.