

BARENTS LINK CORRIDOR – A MULTIMODAL COLLECTOR to TRANSNATIONAL NORTHERN AXIS of EU 2007



Joint Authority of Kainuu Region



European Union ERDF Interreg III C
West



Pöyry Infra Oy

Barents Link Corridor

Joint Authority of Kainuu Region
2007

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ESIPUHE

Barents Link liikennekäytävä -raportti kartoittaa Luoteis-Venäjän liikenteen nykytilaa ja tulevaisuuden näkymiä. Raportti tarkastelee eri liikennemuotoja Barentsin alueen poikittaisten liikenneyhteyksien parantamisen näkökulmasta. Pääliikennemuodon – rautatieliikenteen - kehitysnäkymiä kartoitetaan raja-asemien Vartius-Kivijärvi kautta. Raportissa on arvioitu myös eri liikennemuotojen investointitarpeita vuoteen 2035 saakka.

Raportti on jatkoa vuosina 1995 ja 2000 laadituille selvityksille. Tuolloin uudesta liikenneyhteydestä käytettiin nimeä Oulu-Karjala-Arkangel-Komi-korridor. Barents Link tarkoittaa laajempaa rautatieyhteyttä, joka alkaa Norjan Narvikista ja kulkee Ruotsin Haaparannan kautta Ouluun ja edelleen Kainuun läpi Kuhmon Vartiukseen, josta rautatie jatkuu Venäjän puolella Kostamuksen ja Lietmajärvi-Kotshkoma -radan kautta Arkangeliin, josta Belkomur-rataa pitkin Komin Syktyvkariin ja edelleen Permiin. Permistä on yhteys Trans-Siperian radalle ja aina Kauko-Itään asti. Barents Linkin kokonaispituus on 3075 km, josta Venäjän puolella on 2085 km

Lietmajärvi-Kotshkoma-rata on sähköistämistä ja liikenteen valvontalaitteita vaille valmis.

Komin tasavallan alueella sijaitsevan Belkomur-radon rakentaminen on Venäjän hallituksen keskustelussa nostettu uudelleen esille, ja sitä on jo ryhdytty rakentamaan välillä Karpogory -Vendinga. Barents Link on myös osa kansainvälisen rautatieunionin N.E.W-hanketta, jolla edistetään Kauko-idän ja Yhdysvaltojen välistä tavaraliikennettä.

EU:n komissio julkisti tammikuussa 2007 tiedonannon EU:n ja sen uusien naapurimaiden välisistä liikennekäytävistä. Ensimmäistä kertaa pohjoinen itä-länsi liikennekäytävä, Barents Link, on mukana kartalla. Merkittävää edistystä on myös pohjoisen ulottuvuuden liikenne- ja logistiikkakumppanuuden perustaminen lähitulevaisuudessa. Periaatepäätös asiasta tehtiin Helsingin huippukokouksessa marraskuussa 2006. Venäjän federaatio on esittänyt Barents Linkin sisällyttämistä pohjoisen ulottuvuuden liikenne- ja logistiikkakumppanuuden hankelistalle.

Raportti nojaa Venäjällä kerättyyn tietoon ja käyttää lähteinään Luoteis-Venäjän alueiden viranomaisilta saatua kirjallista aineistoa ja suullista informaatiota. Raportin on laatinut Pöyry Infra Oy:n Arkangelin toimisto. Raportin tilaajana on Kainuun maakunta – kuntayhtymä. Hanketta on tukenut EU:n ERDF Interreg III C West.

Kajaanissa 23. heinäkuuta 2007

Kainuun maakunta –kuntayhtymä

Hannu Leskinen
maakuntajohtaja

Paavo Keränen
projektijohtaja

1. FOREWORDS, EXECUTIVE SUMMARY

Forewords

The main precondition to economic development in the Northern Europe is evident: its favourable geographic location. But it is not enough - it depends on the territories themselves, how much they can benefit from the promising geopolitical situation. If we look back on history, the most prosperous and developed states and cities, they have always located by international trade routes. This is a result of continuous movement of goods and people - carriers of knowledge, technology and information in all fields of human activity. It is essential to develop a trade route between the West and the East in the northern part of Europe (East may include Asia and West the Northern America) to take advantage of positive tendencies, which have taken place in the northern periphery of the continent during the last decade. In the modern world the requirements for an international trade route are very high. They should be provided with multi-modal transport infrastructure and routes should provide combined transportation of people and goods supported by developed telecommunications and other services. The aim of this is to minimise transport costs and time, with maximum safety, security, user comfort and reliability.

Intend of this report is similar to intends of EU Green Papers – to open discussions between stakeholders to come to mutual understanding on issues of common importance. This report is the third issue concerning corridor development in the surrounding of the regions of Oulu, Kainuu, Karelia, Arkhangelsk and Komi. The first issue was published in 1995 following the decision between the Finnish Provincial State Office of Oulu and the Russian territories; the Republic of Karelia, the Arkhangelsk Region, and the Republic of Komi to co-ordinate efforts in order to develop the multi-modal transport route. The first update in 2000 conducted by the Oulu Road Administration contained the results territories had achieved during 1995-2000 to improve their transport networks and integrating themselves to establish interregional transit traffic. The 2000 report concentrated also on the territories along the corridor and informed about tendencies in the areas both West and East, where the corridor extension was likely to occur.

We hope that the report will help to unite positive regional tendencies under the corridor concept, acting like an umbrella providing support for each individual project. A good example is the Kostamuksha -phenomena of a trans-border industrial cluster between Kainuu (Finland) and Kostamuksha (Russia). In few years it has created 2000 new jobs in Kostamuksha in subcontracting industry.

The infrastructure will facilitate integration process in the remote northern regions, providing opportunities to utilise industrial, scientific and human potential as well as resources to benefit local population. The objective is to raise and equalise the living

standards in the regions along the corridor by developed transport infrastructure integrated into regional, national and international transport systems. The corridor concept helps to obtain a wider perspective beyond the administrative borders and better strategic understanding of common interest to implement projects that form the zone infrastructure. The common interest is able to provide stronger support to projects enhancing them from territorial level to interregional or even international level of importance. It will significantly improve chances to accelerate project implementation due to financial support attracted from national and international sources additionally to local funds.

We hope the report will make an input to spread the concept idea and provide co-ordinated and harmonised strategies for different transport modes in the territories along the corridor. Co-ordination is the base needed today to realise the multi-modal transport system in the future. The intention of the report is to attract attention of politicians, decision makers, transport planners and operators, consignors, transport based businesses, potential partners, investors and individual users to the opportunities created by the corridor both in Russia and the EU.

The work has been partly financed by Interreg III C West programme. Along with this short English report, a Russian language full working report has been compiled and issued. It represents the full update of the Oulu-Karelia-Arkhangelsk-Komi Development and Transport -report from the year 2000.

The first part of the new name, Barents Link Corridor, has been taken from the Barents Link, which is a given name to a rail freight corridor in the Barents region as part of world scale intermodal N.E.W. -ship and rail freight corridor. When this report adds "Corridor" to the name Barents Link, it increases all other modes of transport making the concept multimodal. In Russian side, the name used is "Northern Transport Corridor" (Severnii Transportnii Corridor), as the name has lived there successfully for more than 10 years.

As there has been and still is lack of analyzed information from the Russian side, this report concentrates to meet that request and leaves Western side of Barents region for minor. Although the statistics in the Russian side has been obtained from the authorities responsible for regional development, most of the analytic information to this report has been adopted from professional magazines published in Russia.

Archangelsk, February 2007:
Joint Authority of Kainuu region, client
Pöyry Infra Oy, consultant

"THE MOST CRITICAL ECONOMIC RESOURCES OF A REGION IN OUR GLOBAL WORLD ARE GEOGRAPHICAL LOCATION AND PEOPLE"

Executive Summary

The Barents Link Corridor environment around the Barents region and its surrounding has changed since 2000, when the previous report on the theme was updated the last time. After that, two main initiatives were made. Firstly, the International Union of Railways (UIC) proposed N.E.W. - ship/rail freight corridor through the Barents region. Secondly, the High Level Group established by the EU with participation of all EU and neighbouring countries, initiated the European Axes. Out of 4 Axes and Motorways of Seas, the Northern Axis is influencing mostly to the Barents region.

In the Russian side, the corridor discussion has been active during the last 10 years. However, all modes have their own understanding of the corridors, though some multimodal corridors have been agreed. Russia got its transport strategy on 2005 and some sub-programmes guiding the actions. Russia has developed a road corridor schema in the Barents Region called the Northern Road Corridor. It has history of more than 10 years. Some of the Russian corridor side territorial road investments made by federal funds have been justified by their belonging to the Northern Road Corridor. In the rails, the North-South Corridor has been the most influential in the Barents region. The Murmansk - St. Petersburg rail improvements have been included under that concept.

In the roads of Russian Barents region, some improvements in accessibility have been made in Karelian/Arkhangelsk and Arkhangelsk/Komi border area road network. In the rails, the most important missing link, Ledmozero-Kotskoma, has been built, but still electrification and signalisation works worth 25 million euros are to be completed by 2008 or 2009. So called "working traffic" is already running with 6 train pairs per day. Serious investments in electrification and other rail infrastructure improvement have been carried out in the Russian side, mostly in the north-south direction of October and Northern Railways. In the Finnish side, the whole Oulu-Vartius rail section (300 million euros) has been electrified. In the ports, serious new development has been only in the ones serving the oil industry.

In the last 5-6 years, Russian Barents Region has reached a bit the living standard when compared to Western part. However, the most important indicator, life expectancy, remains 17 years shorter (in Russia 62.9 and the Western part 79.6 years).

If looking at the future improvement plans of the modes in the Barents region, one may conclude that concerning:

- Rails, the Barents Link rail freight connection (representing the N.E.W. corridor in the Barents Region) between Northern America, Narvik and Asia through Sweden, Finland and Russia has a good potential of intercontinental intermodal container transport. This requires marketing and piloting efforts as well as improvements in Haparanda/Tornio border crossing (gauge changing rolling stock

or reloading) and Vartius/Lytta border crossing (development of border procedures and facilities). The most important is the opening of the Ledmozero-Kotskoma rail to international transport and completion of the section (126 km, electrification and signalisation) to meet the requirements of increasing traffic. The second, much bigger effort is the BELKOMUR- rail project, which forms an alternative rail route between the Barents region and Transsib. BELKOMUR has two missing links (Karpogory-Vendinga, 215km and Komi-Perm, about 600km).

- Roads, the most essential improvements are required on Russian side of Barents Region on Barents Link Corridor connections in Karelia, Arkhangelsk and Komi. In Russian federal level has been made important initiatives to take most of the Corridor roads into federal road network (e.g. Vartius-Kotskoma road and all current and planned east-west roads belonging to the Corridor in Karelia, Arkhangelsk, Komi and Perm connecting the Corridor to Siberia by federal roads).
- Ports and internal waterways in the Barents Region, the Barents Port Forum has been established. It should be developed to facilitate a port cluster – Barents Port Cluster as a part of Barents Logistic Platform.
- Border crossings, there are needs to develop border procedures and agreements in EU/Russia road and rail borders and gauge changing and reloading technologies in Swedish/Finnish rail border.
- Air transport, important is to develop and add east-west air routes.
- Telecommunication, permission of Vartius-Kostamuksha fibre-optic cable should be received from Russian government.

This report includes four main initiatives:

1. The name "Barents Link Corridor" for a multimodal collector integrating the Barents region into the artery – the Northern Trans-national Transport Axis.
2. A proposal to include an alternative rail route to the Northern Trans-national Transport Axis linking Barents region and Transsib rail. This route goes through existing rail link Ledmozero-Kotskoma and new rail link BELKOMUR (Arkhangelsk-Komi-Perm). This initiative is reflected by the strong view of Barents region.
3. A proposal to include an alternative road route to the Northern Trans-national Transport Axis linking Barents region to Russian Northern Road Corridor. This can be made by accepting a Russian draft proposal of federal road network 2025 as a basic road network in the Northern Axis.
4. A proposal for Barents Region Transport Sector Program framework. Transport Sector Program facilitates all other 5 sector programmes (mining and minerals, forestry, oil and gas, tourism, ITC). As well, it stresses on traffic safety and rules and legislation harmonisation and Barents Port Cluster establishment in the Barents region. Sector Programme framework supports the establishment of the Barents Logistic Platform and Northern Dimension's Partnership on Transport and Logistics.

Content

| | |
|---|----|
| Front Cover Page | 1 |
| 1. Forewords, Executive Summary | 2 |
| 2. Understanding of a transport corridor | 4 |
| 3. The Barents Link Corridor | 5 |
| 4. Views of different scales of interrelations to transport systems | 11 |
| 5. Transit potential of the Corridor | 14 |
| 6. Transport safety | 31 |
| 7. Strategic development of the corridor infrastructure | 33 |
| 8. Potentials, legislation development | 35 |
| Special thanks | 36 |
| Sources used | 36 |
| Annex 1, Proposal for Barents Link transport sector program framework | 37 |
| Annex 2, Traffic forecast in Vartius-Lytta and rail dev. needs | 38 |
| Back Cover Page, current status of modes in Barents Link Corridor | 40 |

2. UNDERSTANDING OF A TRANSPORT CORRIDOR

Impacts of Transport Corridor development on community

A developed transport system is a precondition for a developed economy of any community (territory, state or union of states). A general positive effect to a community resulting from the transport system development is formed by a summarised impact of three types:

- Direct impact in a form of better transport conditions;
- Stimulating impact to all sectors of the economy due to reliable transport infrastructure;
- Catalyst impact to all spheres of the community improving the general quality of life on the macro-economic level.

All impacts create both positive and negative changes affecting the three important spheres of the community life; economy, social sphere and environment.

The influence resulting from the changes spread into:

4

- Space (from a local scale to national and further to international and finally, the spreading acquires a global scale);
- Time (short term, mid-term, and long term influence);
- Different sectors of economy and social classes.

Results from corridors and other transport development projects spread in time by:

- The direct impact appears just after implementation of a project (for example, a bridge is built) in a form of decreased transport costs for transport-related businesses (e.g., trade, tourism);
- The stimulating impact appears after the following 5 years in a form of improved competitiveness of local producers, development of local economy, new jobs, increased budget income and social funds, and better living standard;
- The catalyst impact appears after 5-30 years as a result of improved transport infrastructure due to this particular transport project and other co-ordinated project implementations. The result is reflected with GDP growth and the eve of economic development of regions served by improved transport network or zone.

The experience of the most developed countries shows that if a state has limited resources and a firm intention to improve living standard of its population, the best investment of the resources providing benefits to everyone in the community is to develop transport infrastructure. Transport, along with other two strategic sectors – energy and agriculture (depending from transport as well) – are forming sound foundation for competitive economy, social progress and high living standard.

Barents Link Corridor forms a logistics platform of the future development of Barents Region.

The New World Economic Doctrine

In the global world national economies are transforming into a system of “communicating vessels” and efficiency of every one of them is referencing against an average world indicators. Strong demands of levelling of economic potentials are required, first of all, by the Asian economies. It causes development of following directions of economic activities, which will be basic ones for the coming wave of economic development:

- Demand for resource saving technologies
- Attempts of the growing Asian economies to find assesses to resources
- Forming transport, trade and information infrastructure of transcontinental scales
- Demands for improving safety on all fields based on new principles and technologies

3. THE BARENTS LINK CORRIDOR

3.1 History facts of the Barents Link Corridor

The history of the Barents Link Corridor is almost 12 years of coordinated activity on development of its infrastructure. A good amount of new elements of the Corridor infrastructure has put in operation during last years. It is the best confirmation of Corridor idea viability and its benefit for local economies and population of the Barents Region. The most active promoter of the Corridor development was road sector. The first issue was published in 1995 following the decision between the Finnish Provincial State Office of Oulu and the Russian territories; the Republic of Karelia, the Arkhangelsk Region, and the Republic of Komi to coordinate efforts in order to develop the multi-modal transport route.

Russia needs to set a national task as follows: Elimination of the current economical gap and returning into the world economy in 2010-2020 as a strong player in the new world economy and participant of the following processes:

- Levelling of the economic potentials of the macro regions of Europe and Asia (the main direction – supply of resources from Russia to Asia)
- Preservation and qualitative development of the western industrial culture (the main direction – technological transfer from Western Europe to Russia).

The critical precondition to support the processes of levelling, supplying and transferring is transport infrastructure. Barents Link Corridor facilitates and supports these processes in the Barents region.

Globalization of transport activity

Toughening competition in the world trade forces consignors to look for ways of minimizing the transport cost. Taking into account the world tendencies, it is possible to predict the following directions to decrease transport costs:

- Sustainable growth of demand on container transportations
- Growth of container flows on all transport modes in multimodal transport chains
- Integration of transport networks to optimize routes and improve fluency of container flows in order to cut costs along full transport routes from door to door
- Cooperation between territories located along transit transport corridors and between transport modes.

Barents Link Corridor facilitates future containerisation of the Barents Region.

Consensus of concepts “Transport Corridors” and “Transport Axes”

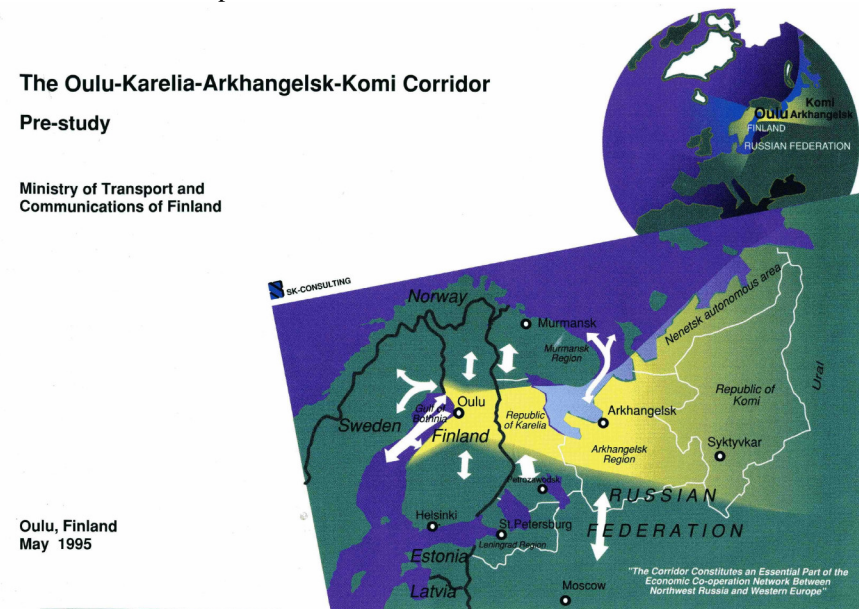
The concept of Trans-national Transport Axes introduced by the EU and the traditional concept of Transport Corridors are not in conflict. Moreover, they are complementing each other because of their different scales. The considered Barents Link Corridor is a forming collector flowing and joining into the artery – the Northern Trans-national Transport Axis. Moreover, what will be included in the Transport Axes and how this all will be administrated (in EU and in the neighbouring Countries) is now under alive discussion with some intermediate result to be anticipated in 2008.

This Barents Link Corridor report is one form of discussion inside the Barents region and between its regions and the EU.

The Oulu-Karelia-Arkhangelsk-Komi Corridor

Pre-study

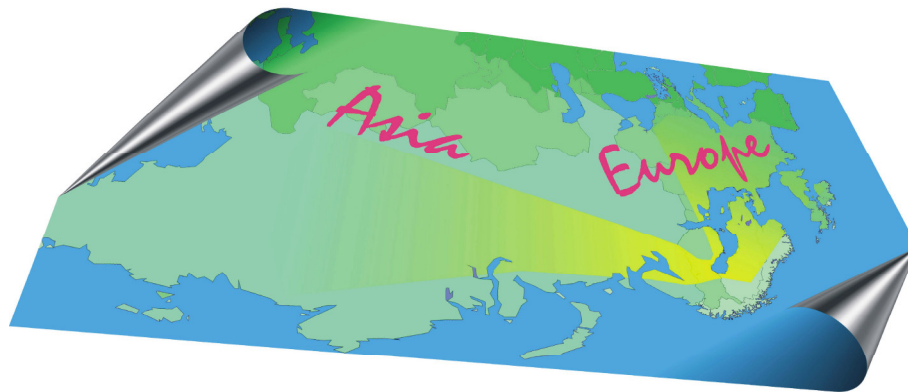
Ministry of Transport and Communications of Finland



Cover page of the 1995 Corridor report

The first update in 2000 conducted by the Oulu Road Administration contained the results territories had achieved during 1995-2000 to improve their transport networks and integrating themselves to establish interregional transit traffic. The 2000 report concentrated also on the territories along the corridor and informed about tendencies in the areas both West and East, where the corridor extension was likely to occur.

- How to incorporate “horizontal” measures (e.g. border crossings) in cooperation?
- How to strengthen the axis cooperation and monitoring?



Cover page of the 2000 Corridor report

Currently, the actuality of the east-west transport links are growing, because they meet both strategies of the EU and Russia aiming to transit development between Europe and Asia.

Barents Link Corridor continues the rich heritage of Barents region east-west multi-modal corridors enlarging it into world scale context.

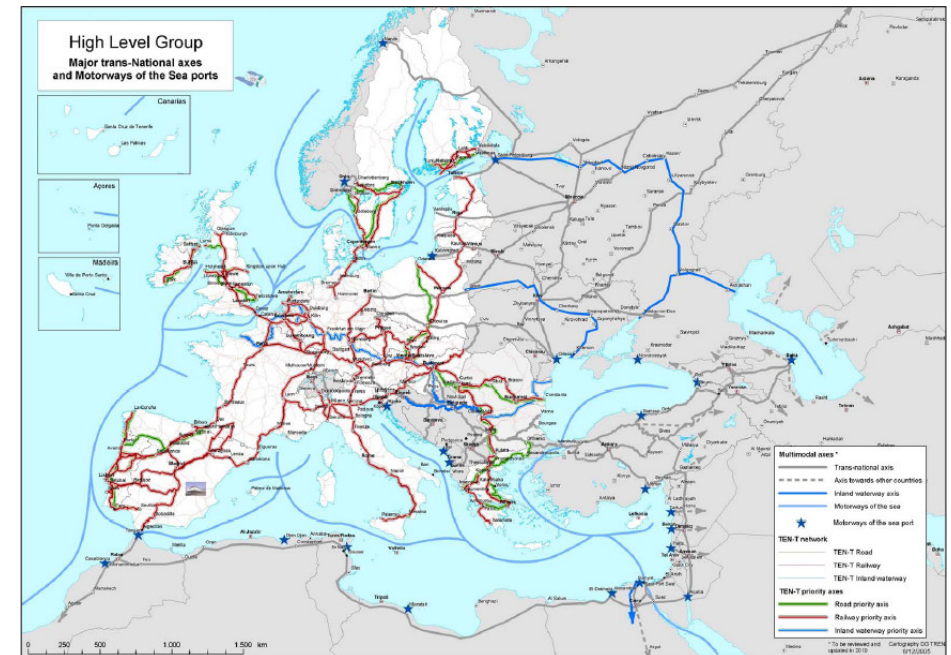
Concepts and projects influencing to Barents Link Corridor

N.E.W. Corridor is an intermodal rail freight transportation concept where several routes can be developed between USA East Coast and Asia (Russia, China). Corridor concept has been initiated by International Union of Railways. In the Northern Countries it represents container rail transport between Narvik and Asia through the Barents region railway network. The N.E.W. is one part of Northern Axis in the Barents region. Recently, a company has been established to implement the concept.

Barents Link Corridor is facilitating N.E.W. Corridor in the Barents Region.

European Axes are proposed by the High Level Group, November 2005. The Group was presented by all EU members and applicants as well as all neighbouring countries all together 52 states. Russian Mintrans represented the Russian Federation. The proposed Motorways of the Seas and 4 Axes are now supplementing the old Pan-European Corridors and Transport Areas. One of the axes is the Northern Axis combining Norway to Asia through the Barents region rail network. Continuation work is going on by DG TREN. It consist e.g. the following questions:

- How to organise the work in the internal corridors of the EU, on one hand, and in the external corridors on the other?
- Geographic extent of the axes/corridors?



Major trans-national Axes and Motorways of the Seas introduced by HLG

Further in this report has been made two proposals concerning:

- to include an alternative rail route to the Northern Trans-national Transport Axis linking Barents region and Trassib rail. This route goes through existing rail link Ledmozero-Kotskoma and new rail link BELKOMUR (Arkhangelk-Komi-Perm).
- to include an alternative road route to the Northern Trans-national Transport Axis linking Barents region to Russian Northern Road Corridor. This can be made by accepting a Russian draft proposal of federal road network 2025 as a basic road network in the Northern Axis.

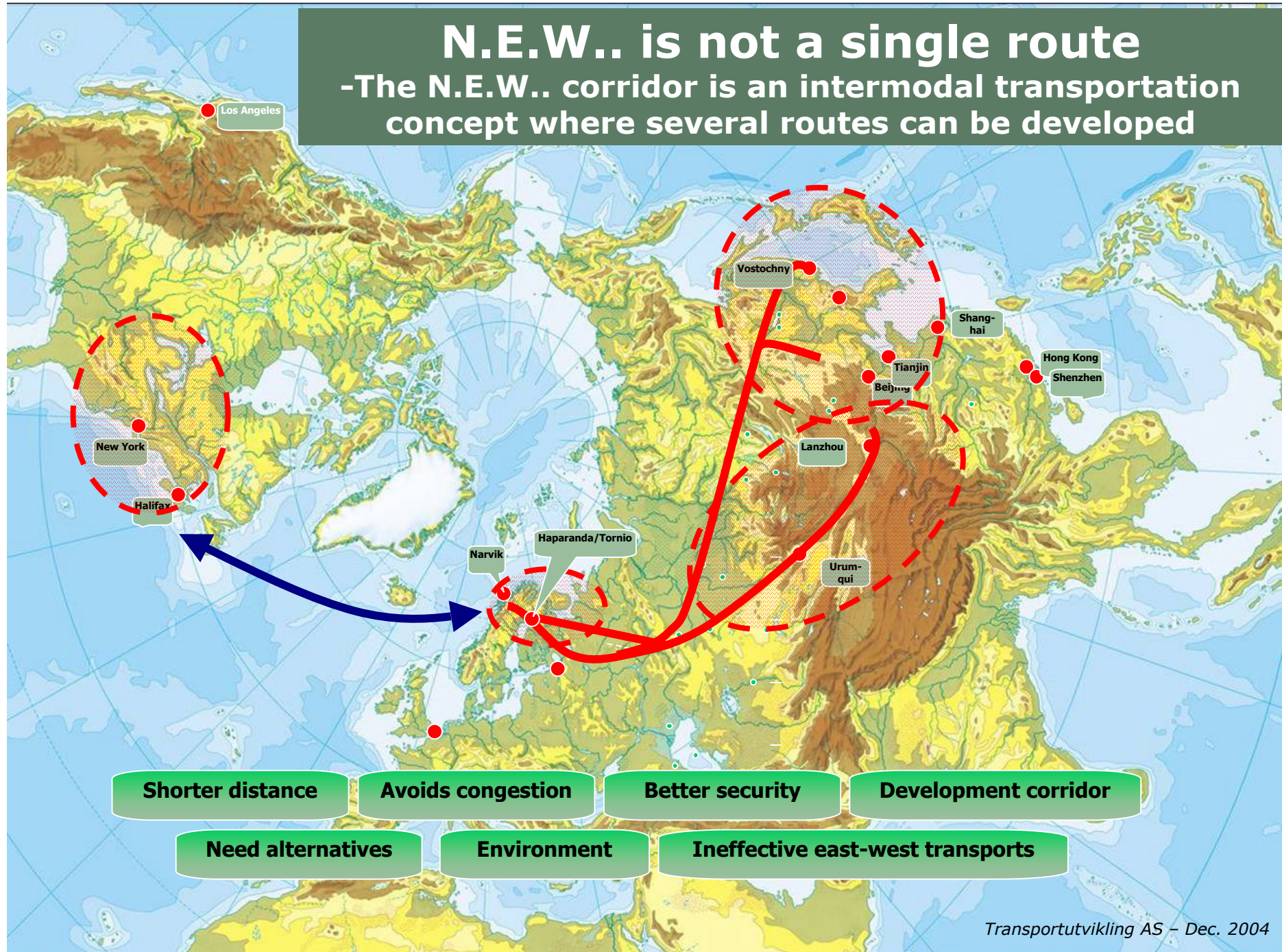
These initiatives are reflected by the strong view of Barents region.

Picture in the next page: N.E.W. rail freight corridor

(source: Transportutvikling AS –Dec. 2004)

N.E.W.. is not a single route

-The N.E.W.. corridor is an intermodal transportation concept where several routes can be developed



STBR (Sustainable Transport in the Barents Region I and II) is a project financed by 27 partners and INTERREG III B to be completed by January 2008. General objectives of the project are to strengthen transport planning co-operation in the Barents Region, to increase the common understanding of transport problems in the region, to help decision makers, planners, authorities and companies to see the region as a single transport area, and to promote sustainable development in the region. The project aims to:

- Improve general accessibility within the Barents region.
 - Improve connectivity across the borders so that travel times and costs are reduced
 - Strengthen transport co-operation, particularly with Nordic Countries and Russia
 - Ensure sustainable transport
- in regional aviation, maritime transport, railway transport and in road transport.

STBR sub-projects are facilitating the Barents Link Corridor.

The **Northern Dimension** concept was adopted as a EU policy by the Council (December 1998). The action plan of the Northern Dimension was approved in Feira summit in June 2000. The initiative of the concept came from Finland. The Northern Dimension comprises all the actions for development of the northern regions. The concept is aimed to increase stability and social and economic development in the EU's northern areas as well as neighbouring regions of the Baltic State and Russia. The emphasis is put on transport, energy and environmental issues. The special features of the northern regions such as cold climate, vulnerable environment, sparse population etc. are taken into account. Therefore, the specific transport conditions that differ from the central parts of the EU require different solutions. For example, some transport projects in the very remote areas may also be justified on others than purely economic considerations.

In meeting held in Helsinki 24.11.2006, Northern Dimension strengthen its position and become a common policy of EU and its partners Russia, Norway and Island. Possibilities are examined to agree upon Northern Dimension Partnership on Transport and Logistics. Barents Link Corridor is an essential part of Northern Dimension.

3.2 The Barents Link Corridor route

Historical heritage and demands of present and future in Barents Link Corridor

The beginning of the Barents Link Corridor is generated by the sea ports of the Barents Region. The land transport infrastructure, which has to serve the freight flows brought by sea transport, is not sufficient to meet growing transport demands. The better transport infrastructure will meet growing requirements of consignors - the more attractive the Corridor will be for international transit.

The historical heritage is orientation of trunk transport links in North-South direction and disintegration of territorial transport infrastructures. The main demands of the present and future are integration of the territorial transport infrastructures and orientation trunk links into direction of East-West.

Growth of transport activity caused by oil exploration and recovery of the Russian economy during last years caused related growth of freight flows on railways. Congestion has appeared on several sections of the Russian railways, which along with growth of railway tariffs diverted some part of freight flows (which goes to shorter distances), from railways to roads and internal waterways.

Nevertheless, it is evident that the Russian distances, insufficiency of roads and post crisis state of the internal waterway infrastructure means that comparative advantages belong to railways in foreseeable future. At the same time, it is evident that a growing need in multimodal development of transport infrastructure of the Barents Link Corridor will occur.

3.3 The area of Barents Link Corridor influence

The main potential users of transport services of the Corridor are the industries – exporters of the territories located in the area of the Corridor influence with the following impacts:

- Growth of transport flows will stimulate quantitative and qualitative development of transit services. Benefit of the growth will be the most significant for business in the Barents Region.
- The new trans-continental continuation of the route of the Corridor will open an access to the markets of Europe and America (through the Northern ports of the Barents and White seas and the Gulf of Bothnia in the Baltic Sea) for inland territories of the Eurasia continent. The Corridor is an issue of importance for economies of the Urals and Siberia and Central Asia (Kazakhstan). Additional alternative route will allow improve logistics and cut transport costs for industries, and relatively, improve their competitiveness in the world market.
- Large scale plans on development of transport infrastructure means demands in relatively large scale investments. Creation of trans-national transit infrastructure requires attracting of external investments.

3.4 Investment climate in Russian side of the Barents Link Corridor area

Results of Russian investment rating and claims of Russian business to the State

The elevation of Russia up in investment ratings finds out a dangerous tendency: Objective preconditions of economic development and efforts of the Russian lead to improve investment attractiveness of Russia, but actions of state organizations, vice

versa, bring down the attractiveness for long term investors. A contradiction is evident between relatively developed and rapidly developing market and braking state sector. The gap is growing.

Different types of national ratings are related between each other. CalPERS success decision to invest into the Russian stocks only after other rating agencies have analyzed the Russian investment climate in their investment rating. The most important rating CalPERS is assessing attractiveness of Russia for large scale investments. This rating set for Russia during last years the level less than '2'. The attractive economy for investment has to have the level '3'. Thus, currently Russia has too high risks for long term and large scale investments from outside.

In order to improve general investment attractiveness of Russia it is necessary to pay prioritized attention to effectiveness of state structures. Ineffectiveness of the state organizations is the main obstacle to attract foreign investments into the Russian economy in general and into the transport sector in particular.

There is a contradiction between the rapidly developing business and State structures, which are not in time with dynamic of market economy development. It creates tensions and braking effect for development. The authorities have no economic policy. They use policy to answer to problems without thinking of developing the national economy as a whole. The main task for them currently is to control inflation with stabilizing fund. The fund in its form is not a working instrument, because:

1. It is too small (\$5 billion) to compare with national investment demands.
2. Co-financing in the infrastructure projects was suggested with business, which means that the state contributes 5 billion only and all other demands shall be covered by business. Practically, the state pushes its infrastructure duties to business.
3. The payback of the project according to the investment strategy of the fund shall not be more than 6 years.
4. The allocation of the resources is not supported with system of financial control.

The opinion of business is that continuation accumulating resources in the fund is out of sound sense. Logic requires invest more into infrastructures (transport, energy, engineering systems). Resources allocated into infrastructure do not make any contribution to inflation process, but vice versa, stimulate industrial development.

Business in Russia hopes the state would contribute in business with:

1. Stimulating tax, customs and tariff policies (stimulates production and modernization)
2. Access to capitals. This means national financial policy, stimulating investment process setting of priorities, antimonopoly regulation, stimulation of desired processes, for example:

- Foreign capital and new technologies
 - Import of equipment rather than import of goods
 - Blocking customs fees
 - Attracting investments into industries.
3. Infrastructure development (Prioritized directions of national economic policy like: energy, transport, development of Eastern Siberia and Far East, development of new resources and processing, machine building).

There is an evident contradiction between developing business and the state authorities, which cannot keep pace with dynamic market economy development creating breaking effect.

We may conclude that investments in infrastructure on the Russian side of the Barents Link Corridor in recent state policy will be mainly done by Russian federal of territorial authorities without significant partnership of foreign capital.

3.5 Current specific of the Russian economy (aspects making influence on transport sector)

The main characteristics of the Russian economy making influence to transport environment are the following:

- Raw material orientation of the Russian economy
- Deficiency of electric energy
- Investment stagnation in non-raw-material sectors of the economy simultaneously with huge income of money to Russia

Raw material orientation of the Russian economy

The Russian Economy consists of two sectors of different nature:

- 1 The sector of traditional industry. The most of Western European countries have this type of industry only
- 2 Export raw material sector of rent type. Some countries have this type of industry (for instance Saudi Arabia)

Sector of raw-material export provides more than 2/3 of trade goods coming to the world market from Russia. The sector concentrates capitals and till 2005 the export was growing by 9-11% annually. It made strong influence on the economic growth of Russia and its transport sector.

Russian economy's dependence from raw-material export means that obligations of national budget can be fulfilled only with preconditions of high oil prices. Decrease of oil prices would mean economic crisis. The current critical level for the Russian economy is \$24 barrel, though several years ago the critical level was \$15-16.

The growth based on raw material means serious risks for the economy. The most urgent need in Russia today is change in the national economy policy aimed to eliminate dependence on raw-material sector.

In general, the two factors can be named forming a future scenario in Russia:

1. World price on raw-materials produced in Russia
2. Internal competitiveness of Russia.

If annual growth of GDP is more than 4-5% (now 7%), the socially orientated budgets are possible to be maintained. If, GDP drops down to 4-5%, the variants of continuing current budget policy are: hope of increasing of raw-material prices or significant increase of raw-material export. Otherwise the result is unavoidably increasing crisis in social sector (education and health care), which will come to peak at the end of current decade – beginning the next (2010-2020). The crisis in social sector will put into threat the Russian opportunities to eliminate the economical and social gap and return to the world economy in the next economic cycle of the world economy development. The crisis of education will not allow improving the quality of the critical national resource – people.

Natural resources, which create the foundation of the Russian export, will come to an end at some point. Raw material orientation of a national economy excludes long term development of a state. The world processes will leave less and less opportunities for self-development of such economies. In the current economy about 80% of product costs are related to its non-material component. That's why the human resource and its level of competence is the main source of production.

Russia has one inexhaustible resource – its geographical location. The process of globalization sets a task – with using this resource to become an active player in the world economy. Using the resource demands innovative approach and mobility, i.e. transport infrastructure. Low transport mobility means low mobility of capital, technologies, goods, and people. This means low dynamic of development.

Transport corridors indicate directions of geopolitical interests and it is evident that the main strategy direction for EU, Russia and China is the same – West-East. That means: the obstacles of Russia to open its potential transit resource created obstacles for EU and China to benefit from decreased transport costs.

Growth of investment demands in non-raw-material sectors indicates of structural changes. In the beginning of the decade the main locomotive of investment demands was oil sector. Currently new players, representing infrastructures, are coming:

- pipe transport (Gasprom, Transneft)
- railway transport (RZD, private operators)
- energy (RAO EES, other related participants of energy sector)

The development of the tendency is logical, because infrastructure is a “bottleneck” for the economy development, relatively braking developments of all sectors. Increasing perception of critical importance of infrastructure creates hopes to implement structural changes in transport sector.

Non evitable changes of Russian industry from raw material orientation into traditional industry and huge future demands of east west transit will create needs for Barents Link Corridor development.

Deficiency of electric energy

The Russian economy has signs of electricity deficiency as a result of package of internal problems, such as:

1. Deficiency of generating facilities
2. Low energy output of existing facilities of electricity generation
3. Deficiency of facilities of energy generating machine building
4. Deficiency of energy machines of new generation with better output when produce electricity
5. Decreasing oil exploration and deficiency of energy carriers
6. Deficiency of new discovered oil fields and low geology activity
7. Low energy efficiency of economy
8. Absence of a state policy to support energy saving
9. Low usage of small and alternative energy production potentials

There is a risk that the condition of Russian energy will break transport infrastructure developing. Current demands and capacity and dynamic of changes are different in the territories along the route of the Nordic Corridor. Deficiency of energy in some territories along the Corridor can make delays with implementing transport projects creating bottlenecks. At the same time diverting the local economies from raw-material orientation to transit and logistics services will improve their energy efficiency.

Transport infrastructure development will create favourable conditions to develop small energy sources because of lower transport costs (peat, waste products of wood processing and forestry).

Critical demand is – trained staff. Involving of training institutions is needed to promote energy efficiency to regions, creating common scientific and educational information space to facilitate know-how transfer to the Barents Region territories from the countries of the Northern Europe, where we can find the world leaders in energy efficiency. Barents Link Corridor co-operation facilitates these issues.

Investment stagnation in non-raw-material sectors of the economy simultaneously with huge income of money to Russia in 2005-2006

Simple growth of monetization of economy does not lead automatically to economic growth. The only way to economic growth goes through investments into production sectors.

Currently process of investing growth in Russia is provided through process of enlargement of players in different industries, which increase the investment possibilities of industries. Smaller companies cannot invest significantly in conditions of weak banking system and absence of financial institutions supporting long term investments. Some trends indicating investments into transport costs control appeared in transport sector.

Growing number of transport infrastructure projects will demand an economic strategy. The starting point of the strategy is a vision of the Russian economy in the prospect with horizon as a minimum 30 years: what shall be developed, where, in what time terms and with what resources. Currently, there are no answers. The critical issues for transport sector in Russia are now:

- What infrastructure bottlenecks shall be eliminated?
- What missing links shall optimize transport routes and cut transport costs?

In order to manage with public investments it is possible to attract international experience of public corporations. The first experience of such corporation in transport sector of Russia is OAO RZD, which goes through period of reorganization now. Along with trends to attract investments into transport sector through PPP, there are also several indicators allowing predict investments into the Russian economy in general and transport sector in particular.

Using new schemes of investments (PPP inside Russia) it is possible to find solutions in some railroad project investments (e.g. BELKOMUR- project) in Barents Link Corridor.

4. VIEWS OF DIFFERENT SCALES TO INTERRELATION OF TRANSPORT SYSTEMS

4.1 Europe and Asia

Russia is located between the transport system of Europe and Asia. It is an opportunity to be a geopolitical bridge to serve trade between Europe and Asia. The strong geopolitical factors include:

- Location both in Europe and Asia
- Vast territory and availability of sea ports

- Availability of trunk railway of West –East direction
- Availability of system of global space navigation

The main geopolitical weakness in Russian is lack of human resources. If compared to macro markets of Europe (about 500 million people), Russia (143 million people reducing 1 % annually) and China (about 1300 million people increasing 0,6 % annually) can be observed that the main threatening geopolitical factor is a strong pressure to the sparsely populated Russian territories from the side of the overpopulated China.

Serving the trans-national transit is a warranty to Russia to participate in the international integration in the global processes. Nevertheless, implementing of available theoretical opportunities needs significant practical steps. The risks are related to failure to make the practical steps to facilitate transit. Barents Link Corridor improvements in the Russian side give positive effects Russian international integration.

4.2 European Union and Russia

Integration of transport systems of the EU and Russia is sustainable based on documents, which take into consideration global tendencies of the world trade.

The Russian transport strategy is an important document, which creates a foundation for long term coordinated development of the Russian transport system. The Strategy has even more critical importance if to take into consideration absence of general strategy for development the Russian economy. In this sense the transport sector is in more favourable situation than other sectors.

The Strategy supports to regional initiatives corresponding to the national interests of Russia. In relation to transit the Strategy responds to the interests of the EU. The Strategy encourages participation of the Russian territories to transit corridors development projects complementing the basic international transport corridor.

Activities of the Barents territories to develop the Barents Link Corridor, responds to the Russian Transport Strategy.

4.3 The Nordic Countries and the North-West Federal District of Russia (NWFD)

There is good availability of different programs of border territories both sides of the EU/RF border. The programs create possibility to facilitate integration process on transport.

Resources and characteristics of the Nordic Countries and NWFD

The list of characteristics influencing cooperation between the Nordic Countries and Russia includes more advantages to cooperate than obstacles. Because of historical and geographical reasons, the Russian economy and economy of the NWFD territories neighbouring the Russian/Finnish border will be affected strongly to the Finnish economy. The precondition to benefit from the cooperation with the Nordic Countries is – transition of the economies on the Russian side from raw-material orientation to development of high value-added products. Among all the advantages of the NWFD territories the most important for development is their location close to the Nordic Countries. The most serious disadvantage is their poor infrastructures and transport in that as well non-developed border operations.

The Russian Transport Strategy includes priorities for the NWFD, such as modernization and building port facilities on the Baltic, White and Barents seas with simultaneous developing rail, road and pipe accesses to them. Integration of transport infrastructures eliminates negative impacts of “border effect”, cut costs of export/import relations, improves business environment, attracts investments, extends opportunities for business, creates basic for trans-border cluster of activity, which contributes to living standard of population of the territories involved.

Neighbouring to Russia, the Nordic countries are oriented to the tendencies of new wave of economic development (look clause “The world economic doctrine”), where the main direction is implementing of resource saving technologies. That means: learning the Finnish resource-saving know-how will assist to solve the main task of Russia – in the NWFD - elimination of the gap and returning into the world economy in 2010-2020 along the main trends of coming economic wave:

1. Levelling the economic potential of the macro regions (the Nordic Countries and NWFD) because of new resource saving technological base in the NWFD
2. Preservation and qualitative development of the European industrial culture (through transfer of Nordic technologies to Russia).

The process is related to the transport sector in the first turn. Currently the potential of cooperation between Nordic and Russian companies is not used fully. The Nordic countries (and Finland in particular) armed with enhanced competitive technologies are more important for the companies from NWFD than the Russian companies for the Nordic countries. The prospects to develop the trans-border clusters are defined with activity of inter-complementing cooperation of the neighbouring territories – the Nordic Countries and territories of the NWFD. The effectiveness of cooperation is depending of:

1. Industrial policies, horizontal coordination of the policies within common spatial regional planning on the territorial, regional levels, as well as vertical coordination between territorial, national and international levels.
2. Investment climate on the Russian side.

3. Availability of trained staff and education developing in the NWFD to facilitate foundation for know-how and advanced technologies transfer.
4. Availability and developing transport, energy, telecommunication infrastructures in the NWFD.

A good example of a trans-border cluster of inter-complementing cooperation between the neighbouring territories is Kostamuksha. Its labour has been employed by Finnish-Russian co-operation companies in assembling (mostly ITC) industry. Over 2000 new jobs have been created and employment rate is near 0, lack of work power has already occurred in Kostamuksha. Kostamuksha is so far the only good example of clustering in Barents Link Corridor. The Corridor aims to facilitate more of those in the corridor area.

The budget situation in the NWED regions belonging to the Barents region

Orientation to social problems does not allow to the territories to stimulate economic growth and support their infrastructures. Capital costs in the territories are limited with budget organizations supporting and some road repair activity. Other capital public investments, despite their viable importance for economic development of the territories, as a rule, are not provided. This policy is resulting high costs of electricity, heating and transportation. The costs make the territorial economies non-competitive. The territorial authorities relate all hopes to support and develop poor infrastructures to the federal budget and non-budget sources.

The policies conducted by the territorial administrations to prioritize social objectives rather than objectives of economy development – put into jeopardy prospect growth and strengthening of the territorial economies – the only sound foundation for social prosperity of the population. Russian side investments in the Barents Link Corridor would divert a bit the common jeopardised budget policy in the Russian side.

4.4 Barents Region

A uniting framework for the territories belonging to the Barents Region is formed with: peripheral and remote locations, climatic and natural conditions, sensitive arctic and sub-arctic eco-systems, less develop infrastructures and a number of common social characteristics.

The strategy of the Barents Region till 2010 set the main task – to overcome difficulties caused by existing and future differences in strategic approaches of the territories, states and stakeholders. Multilateral strategy demands discussions between different stakeholders in order to achieve consensus on wide rank of issues taking into consideration:

- Differences in base values, attitudes, technical standards, political and legislative systems,

- Missing links of East-West direction,
- Conflicting interests in usage of resources, in financial decisions.

The Strategy of the Barents Region meets trends of the new wave of the world economic development, where the main direction of economic success and competitiveness will be rational resource usage and developing of transit transport services. Barents Link Corridor is facilitating the Barents Region Strategy.

The characteristics of the territories of the Barents region located along the Barents Link Corridor and territories of the Urals are introduced in the following table.

| Region | Inhabitants 1000 | Potential rank | Infrastructure pot. | Risk rank- ing | Natural resource pot. | Labour pot. | Tourist pot. | Industrial pot. |
|------------------|---------------------|-------------------|------------------------|----------------------|-----------------------------|----------------|-----------------|--------------------|
| Murmansk reg. | 865 | 33 | 33 | 37 | 13 | 53 | 71 | 41 |
| Karelia rep. | 697 | 57 | 40 | 66 | 37 | 64 | 15 | 52 |
| Archangelsk reg. | 1291 | 42 | 67 | 45 | 19 | 41 | 41 | 46 |
| Komi rep. | 985 | 39 | 80 | 39 | 23 | 58 | 57 | 37 |
| Perm krai | 2748 | 7 | 59 | 19 | 5 | 21 | 9 | 13 |
| Sverdlovsk reg. | 4410 | 5 | 49 | 48 | 8 | 7 | 8 | 4 |
| Tjumen reg. | 3323 | 34 | 60 | 31 | 54 | 56 | 42 | 20 |
| Omsk reg. | 2035 | 25 | 55 | 28 | 42 | 23 | 51 | 17 |
| Novosibirsk reg. | 2650 | 19 | 50 | 41 | 35 | 15 | 36 | 19 |
| Kemerovsk reg. | 2838 | 12 | 58 | 25 | 4 | 14 | 28 | 12 |
| Kransojarsk krai | 2906 | 8 | 78 | 65 | 3 | 16 | 18 | 15 |
| Irkutsk reg. | 2527 | 17 | 75 | 62 | 6 | 18 | 32 | 22 |
| Burjatia rep. | 963 | 53 | 79 | 49 | 15 | 43 | 45 | 63 |
| Csitinski reg. | 1128 | 45 | 68 | 73 | 10 | 63 | 58 | 68 |
| Amurskii reg. | 881 | 49 | 65 | 64 | 12 | 67 | 68 | 60 |
| Habarovsk krai | 1412 | 28 | 57 | 47 | 11 | 25 | 59 | 35 |
| Primorski krai | 2019 | 22 | 43 | 54 | 17 | 22 | 27 | 34 |

Ranking of potential and risk: the smaller figure the better

4.5 Territories along the Northern Transport Axis

Summarized investments in the East of Russia are \$2-3 bln annually (12 bln rub in Siberia and 8.3 bln rub in the Far East). Despite the average growth of investments in the East of Russia in 2000-2005 was more than average Russian level (by 13.1-14.4% annually against 10.7%) the stable tendency of depopulation is signalling of serious problems: decreasing the number of population up 0.5% annually. At the same time the population of China grows by 0.6% annually. That is the main concern making

influence to decisions on the federal level because the situation means high risk of losing economical and then political sovereignty of the Eastern Russia.

It is evident that to change the situation a number of large scale projects are needed in Siberia and Far East. It means mobilization of all the resources available and first of all investment potential of the biggest national companies (Gazprom, Rosneft, Transneft). Business has plans to start several big projects in the East in the nearest decades (\$200-230 bln) in traditional sectors of the Russian economy (mostly in raw-material resource sector).

The second main problem of Siberia and Far East is poor transport infrastructure. It is evident when looking at map that Russia falls into two parts: developed and inhabited space to the west from the Urals and practically undeveloped and unpopulated – to the east from the Urals. At the same time the resource potential of the Eastern part is higher. The eastern resources of oil and gas are huge – 17.5 billion t of oil and 60 trillion m³ of gas, which is one fourth of the Russian resources. Creating the new Eastern centre of extraction has strategic importance from two reasons:

1. to bring resources to the Asian growing economies
2. to prevent physical decrease in resource export because of emptying of the current oil fields.

The investment precondition from business is that the state invests into development of transport infrastructures.

In case of agreement between business and state the share of Siberia will grow from 11% up to 18% and Far East from 5 up to 11% of GDP. It means industrialization of the East of Russia, attracting population and better balance of national development, consolidation of the Russian territories and its sustainability in the geopolitical context. The State has no choice and it will allocate the public investment resources into the Eastern projects.

According to assessments – serving the investment projects of business of \$230 bln will require contribution from the state about \$ 80 bln. The proportion of partnership is 2.9:1. The average Russian rate is 4:1. The comparison indicates that East of Russia requires more investments into infrastructures than West of Russia.

The geopolitical threads caused by situation in the East of Russia will impact investment activity in the West of Russia. In short term it can make postponement for infrastructure projects in the European part of Russia and the transport projects in the sparsely populated areas of the Barents Region are in the most risky situation. In the long run, the development of economy in the Eastern part of transport infrastructure will increase transit flows in the Northern Trans-national Transport Axis. The Barents Link Corridor aims to meet this need.

4.6 Territories of the Asian and Pacific Ocean Region and prospects of their transport integration with Russia

Developments of the Russian territories and the neighbouring counties of Asian and Pacific Ocean Region (APR) are very different:

- Annual investments in the APR countries is \$1.7 trillion (800 billion belongs to China) with annual growth of 10%.
- During last decade consumption of oil in China rise from 3.4 to 7.5 million barrels per day.

From 2003, China has been the second biggest after USA importer of oil. According to forecast the Chinese consumption will grow to 2025 up to 14.2 million barrels per day from which 10.9 million barrels will be imported. The share of China in the world consuming will grow in the nearest 20 years from current 8 up to 12-13%. China makes huge impact on oil price. The main tendency is that China is looking for ways to diversify its oil import. Currently more than a half of Chinese oil import comes from Middle East. China's concern is instability in the Region, which forces China to look for more reliable alternatives. They consider several alternatives: Caspian, Russia (China wait for large scale oil supplies from Russia by the Eastern pipe), Countries of Africa and Countries of South-Eastern Asia.

The Chinese decision of oil transportation will make impacts on the world transport schemas. China is the biggest world generator of freight flows. The main destinations are countries of Europe and USA. The Russian railways are considered by China to serve the Chinese trade with Europe, because the Transsib is the shortest way between China and Europe in case of competitive services with the alternatives. Cooperation between China and Russian aimed mostly on prioritized growth of container transportations and transit services. The important steps made by China and Russia:

- Agreement of common usage of large capacity containers when export/import operations;
- Agreement of electronic data interchange when international transportation (specifications of electronic communication IFTMIN, APERAK, CONTRL, systems of classification and coding of standard UN/EDIFACT).
- Process to agree approaches of tariff policies, optimization of transport process, joint ventures – logistic operators, service centres, implementation of common investment projects in the sphere of railway infrastructure

The objective is to improve competitiveness of railway transport when transit transportation and attract additional freight flows.

The common opinion of the Chinese and Russian side is that the best prospects of transit developing are related to:

- 1 Containerization. Currently in containers between China and Russia is transported of 1 million export/import cargoes. Potential is assessed as 3 – 3.5 million tonne cargoes suitable to transport in containers.
- 2 Organization of container trains traffic between European countries and China.

The Barents Link Corridor facilitates the huge containerization increase between Asia and EU/USA and forecast for Russian export and import transport containerization.

5. TRANSIT POTENTIAL OF THE CORRIDOR

5.1 Problems and obstacles

The following table indicates the problems of federal level, preventing implementing logistics services in Russia:

| Problems | Directions |
|--|---|
| 1. Missing of an integrated logistics service | Volume of transit in 2005 was 17.4 mln t and from them about a half – raw material freights. Amount of containers is – 184 th containers. This transit might be transported along Transsib from western border to Pacific ports by a container train during 11 days with 1000 km per a day. But it cannot be done because an integrated service is missing from door to door, particularly from one door in China and another door in the Western Europe. |
| 2. Missing of sufficient legislative framework | The participants of freight market need: <ul style="list-style-type: none"> ▪ Federal law of transit, which will establish of interaction between modes ▪ Coordinating body in Mintrans. |
| 3. Tariff policy | Balance of interests of railways, exporters and the economy in a whole. The transit tariff shall include an infrastructure component. |
| 4. Missing coordination in transport sector | The most critical is problem of intermodal disagreement between sea ports and railways. This coordination needs involvements of ports, railways and consignors. |
| 5. Absence of logistics agency network | Absence of the network prevents to apply through tariff and to cut empty mileage of rolling stocks and containers |
| 6. Missing of state policy to attract transit | The policy is needed to develop transit infrastructure and transit services with involve all modes. |

From the table one may conclude that in the market economy logistics shall dictate transport decisions. The following table indicates the obstacles to attract transit flows to the Northern Trans-national Axis (Europe-Asia) via Russia:

| Problem | Description | Ways to solve the Problem inside Russia |
|---|--|---|
| Modes of transport in Russia are not integrated into a Transport System | <p>The flow between China and USA is about 18 million containers annually. The land way between China and USA via Russia is 6.5 thousand km shorter than the way by sea via the Pacific. The flow of 4 million containers going to the Eastern coast of the USA is ready to go via Russia.</p> <p>The Russian railway can manage with the container flow, but a Russian port is needed to handle the containers. But the port is missing. The Northern Russia has no port facilities able to process the container flow. The biggest port of S-Petersburg is able to process 1 million containers per year. The ports of Finland are needed.</p> | <p>To facilitate transit flows via the Russian territories there are needs in:</p> <ol style="list-style-type: none"> 1. a transit development program to apply system approach for transit issues. 2. introducing methods of economic assessments 3. looking for sources of financing 4. attracting trans-national transport operators as an investors 5. improving investment attractiveness in transport sector 6. introducing concessions 7. development of procedures of land allotments for building of transport infrastructure facilities 8. tax situation improving, rent payments, rates of railway and port tariffs in relation Russia and WTO 9. development of logistics centres in big ports to improve efficiency of transport operations and cut time of cargo handling <p>Russia has huge reserve of intensification. It can take time of 35 days to process cargo in the Russian ports, in Rotterdam it takes 1 day.</p> |

Requirements to be fulfilled by all sides interested to develop trans-national transit between EU and China:

- 1 Development of legislative frameworks, harmonization of national legislations, simplifying and harmonization of customs procedures, unification of documents with both EU and China
- 2 More strict requirements to quality of transport services (cutting time, costs, risks, optimization of tariffs) on the base of transport logistics, which demands multimodality of transport system
- 3 Investments into transport, modernization of existing systems, elimination of bottlenecks and missing links
- 4 Strengthening the state participation to attract investors and contractors creating favourable condition to implement business projects
- 5 Attracting financial resources of international financial institutions
- 6 Improvement of transport process management in the scale of vast geographic spaces with telematics, systems of global navigations
- 7 Improved training of staff for transport (logistics, analysis, management)
- 8 Organisation of insurance (cargo, vehicles, responsibilities of operators) and reinsurance in relation to increasing values of cargoes and vehicles.
- 9 Issues of environment protection and elimination of environmental stress because of transport activity, promoting environmentally friendly modes of transport and environmental standards toughening.

Barents Link Corridor will in own part complement requirements develop trans-national transit between EU and China.

5.2 Modes of transport of the Nordic Transport Corridor

5.2.1 Seaports

Sea transport in Russia

The structure of cargo flow through the Russian sea ports is; export of 80%, import 15% and transit 5%.

The ports of the Barents, White and Baltic seas (the Gulf of Bothnia) and accesses to them, being integrated with a common strategy, can establish the Barents Logistics Platform to transit flows moving via the infrastructures of the Barents Link Corridor and Northern Transport Axis in West-East direction. The prospects to improve competitiveness of the ports depend from regional and global factors:

1. Tendencies on sea transportation market (carbohydrates, containers)
2. Tendencies of world shipping and shipbuilding
3. Strategy of port development and flexibility of management
4. Quality of logistics services and functioning of port border posts
5. Extend of coordination between ports and adjacent transport modes
6. Positions of authorities and business

1. Tendencies on market of sea transportation: growing demands in transportation of liquefied gas (replacing oil in energy) and containers are the main factors in the world shipping.

2. Tendencies of world shipping and shipbuilding: building of big tankers for liquefied gas and containers with stress on ice reinforcement. Recommendations to recover the Russian fleet and shipbuilding industry, situation on the Northern Sea Passage, a coming “ice pause” related to deficiency of icebreakers.

3. Strategy of port development and flexibility of management: growth of cargo processing registered in the Russian ports (17.9%), but there are serious signs of their low competitiveness comparing with ports of the Baltic States (growth is 2.6%). The Russian business invested into terminals in the Baltic ports. The lessons learnt from protectionism – discounted railway tariffs to transportation to the Russian ports brought losses to RZD, but not improved competitiveness of the Russian Northern ports. The Far East ports cooperate with Chinese and Korean ports. Proposals to use experience of Eastern and Baltic ports for ports of the Barents Region – establishment of trans-border clusters based on ports as points of increase.

4. Quality of logistics services and functioning of port border posts: trade changes from centralization to decentralization, business is coming to regions and this change transport schemas significantly. The dramatic needs are in terminals of high standards and logistics services. Terminal construction boom is forecasted in regions. Practice of logistics outsourcing is not developed currently. A new Federal Border Post Agency is established under the Ministry of Economic development and trade. A process of border posts inventory is started. The expected result of the inventory is their assessment in order to study demands in technical and legislative developments. Currently, 29 Russian sea ports have border posts and only 6 of them were accepted as sufficient.

5. Extend of coordination between ports and adjacent transport modes: coordination between ports and railway is the most critical problem interrupting transit traffic. The most difficult period is winter, when port terminals process are two times slower for coal railway cars or black oil tanks, because of low temperatures and more time consuming technologies of re-loading the cargos to vessels. The delays are faults of three sides: ports, railways and cargo owners. Coordinating actions of the state are needed to eliminate the bottlenecks, which result paralyzing of transit railway traffic for days. Road traffic jams are caused with low capacity of road accesses.

6. Positions of authorities and business: the common opinion that the Russian port sector has no uniting policy and concept to optimize interaction of all modes of trans-

port involved. The basic tendencies are the following: the regional authorities prefer new port projects instead to improve efficiency of existing port facilities and to integrate them with accesses. The only sound way to allocate public investments is to improve accesses. Business is ready to participate in developing port terminals. The main actions of business are aimed to control as many logistics elements as possible in order to cut transport costs and risks. The companies-exporters try to have in their own port terminals, vessels, railway operator, and road operator to control logistics costs along full transportation chains. This is a negative tendency because such controlled port can be inaccessible to competitors of the port owner. No players of port business have clear vision of future, neither the state authorities.

Sea transport in the Barents Region

Transport demands of the main sectors of economies in the Barents Region are served by sea transport in a significant extent. The table below includes the list of commercial seaports, which are the main freight flows generators in the area. Seaports almost always require services of other transport modes. The transport links between the seaports and main inland centres of economic activity represent the routes for transit transport. The existing and future demands of transit traffic services determine the need of interregional transport networks development.

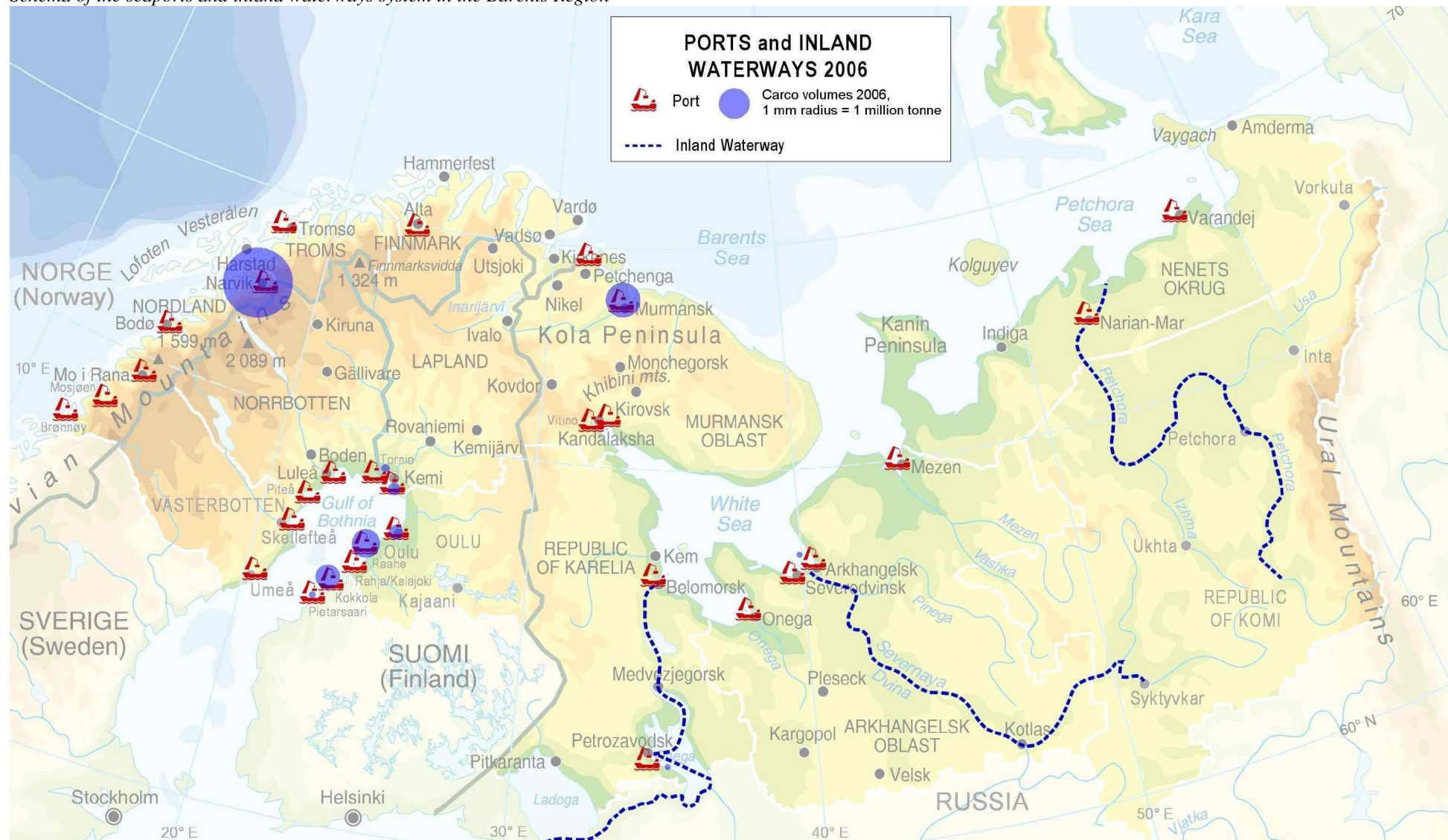
The ports have one similarity: they operate under the severe northern climate. Almost all of them (excluding Murmansk and Narvik due to the Gulf Stream) have to deal with difficult ice conditions, which in some ports lead to restrictions of navigation period. Small ports, like Belomorsk or Onega, stop operating for winter. Other ports have to use icebreakers in order to provide non-stop services for freight flows throughout the year. It brings additional costs for customers of those northern seaports. Ports of the Gulf of Bothnia have been open year round over 30 years without additional costs due to icebreaking. There are state policies to support the activity of the seaports and different development strategies of the ports themselves.

The table in the following page shows that the seaports of Barents region located in Barents Link Corridor influence are specialised to handle certain types of cargoes and mainly, the specialisation is determined with the industries located nearby. To intensify co-operation between the ports in the Barents Region, the Barents Port Forum has been established. It should be developed to facilitate a port cluster – Barents Port Cluster as a part of Barents Logistic Platform.

Seaports forming the Barents logistics platform served with the Barents Link Corridor

| № | Ports and their location | Max. capacity, million tons/year | Volume in 2006, million tons | Depths of the fairway, m | Specialisation of ports | Season restrictions |
|------------------------------------|--------------------------|----------------------------------|------------------------------|--------------------------|--|--|
| Baltic Sea, Gulf of Bothnia | | | | | | |
| 1 | Tornio | 2.0 | 1.9 | 8,0 | Unloading of LPG, iron, steel, ore and minerals, loading and unloading of scrap-metal. Scheduled traffic: Antwerpen (B), Terneuzen (NL) | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 2 | Kemi | 13.0 | 2.7 | 10.0 | Ro-Ro vessels, paper and cellulose, logs, sawn timber, oil products, chemicals. Scheduled traffic: Antwerpen (B), Lübeck (D), London (GB), Bilbao and Gandia (E), Philadelphia (US) | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 3 | Oulu | 14.0 | 3,0 | 10.0 | Chemicals, oil, bulk, containers, logs, sawn timber, paper, cellulose. Scheduled traffic: Lübeck (D), Hamburg (D), Bremerhaven (D), Göteborg (SE) -> Antwerp (B), Zeebrugge (D), Tilbury (GB), Immingham (GB) | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 4 | Raahe | 12.0 | 6.1 | 8.0 | Ore, minerals, steel, logs, sawn timber, containers, bulk. Scheduled traffic: Antwerpen (B), Immingham and Shoreham (GB), Vejle and Aarhus (DK), Gdyna (PL), Hamburg (D), Rotterdam, Terneuzen and Zaandam (NL), Bilbao (E), Aveiro (P), Drogheda (IR), Jeddah-Yambu (EG), Ravenna (I). | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 5 | Kokkola | 15.4 | 5.3 | 13.0 | Dry bulk, containers, sawn timber. Scheduled traffic: Immingham (GB), Antwerpen (B), Rotterdam (NL), Hamburg (D) | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 6 | Pietarsaari | 6.2 | 1.5 | 9.0 | Cellulose, paper, sawn timber, oil, chemicals. Scheduled traffic: Emden and Horsens (D), Gull (GB), Bologna and Livorno (I), Bordo (F), Pireas (GR), Sousse (TUN), Haifa (ISR) | Port and the fairways are kept open by icebreakers between January and April. There is no additional charge for icebreaking. |
| 7 | Kalajoki | 0.55 | 0.3 | 8.5 | Sawn timber, paper, logs, grain, and magnesium sulphate. Scheduled traffic: Gull and Shoreham (GB), Fredrikshavn (DK), Alexandria (EG), Haifa (ISR), Sousse (TUN), La Coruna (E) | Icebreaking is provided if there are available resources but is not guaranteed. There is no addition charge for icebreaking. |
| Barents Sea | | | | | | |
| 8 | Murmansk | 9,0 | 7.5 | 11.5-16.0 | Handling areas 1 and 2 - general and bulk: non-ferrous metals and alloys in packages, steel in rolls and packages, aluminium in bulk, scrap-metal, iron, ore in bulk, chemicals, construction materials, food, equipment, containers. Handling area 3: unloading of apatite concentrate. | Non-freezing port. Open all year. |
| White Sea | | | | | | |
| 9 | Kandalaksha | 1.5 | 0.37 | 9.0 | Dry bulk | Icebreaking not provided. Open for navigation 15.05-15.11 |
| 10 | Belomorsk | 0.80 | 0.03 | 3.6 (low tide) | Sawn timber | Icebreaking not provided. Open for navigation 15.05-15.11 |
| 11 | Onega | 0.20 | 0.013 | 5.0 | Sawn timber | Icebreaking not provided. Open for navigation 15.05-15.11 |
| 12 | Arkhangelsk | 5.0 | 1.14 | 9.0 | 3 handling areas: logs, sawn timber, cellulose, paper, board, coal, ferrous and non-ferrous metals, fertilisers, heavy equipment, dry bulk, liquids, containers. Container capacity 75,000 per year, store facilities for 5,700 containers. Scheduled traffic: Bremen (D), Hamburg (D), Antwerpen (B). | Port and the fairways are kept open by icebreakers between January and April. |
| | Neftebasa | 3.0 | 0.14 | 9.2 | Oil products, tankers for storing 240,000 tons of oil products. | |
| Lake Onega | | | | | | |
| 13 | Petrozavodsk | 2.8 | 1.3 | 4.0 | Logs, sawn timber, dry bulk, containers, scrap-metal. | Icebreaking not provided. Open for navigation 15.05-15.11. Connection to the White and Baltic Sea via the Belomorsko-Baltiyskiy Canal. |
| North Sea | | | | | | |
| 14 | Narvik | | | 13 - 26 | Bulk, containers | Non-freezing port. Open all year. |

Schema of the seaports and inland waterways system in the Barents Region



5.2.2 Rail transport

5.2.2.1 Russian railways specifics

Rail Russian Railway Transport

The growth of railway transportation in Russia was slower in 2005 than in the previous period of 2003-2004. The main reasons are stabilizing physical volumes of main freights (coal, oil, metals, and fertilizers) and physical restrictions of infrastructure capacity and rolling stock performances. A share of foreign transportation was 32,8% of total freight turnover of 2005, in that export (+ 3,6%), import (+ 0,8%), transit (+5,4%). Transit dropped down after tariffs increase in the beginning of 2006.

The Russian Railways Reforming

The reforming started in 2001. The main objectives was efficiency increasing through separation of competitive activities from functions of the natural monopoly. Intention to develop competition in railway transport is conflicting with formation of the gigantic state corporation OAO RZD, because:

- From one hand, the corporation is interested in profit and the monopoly position can provide the biggest profit.
- From other hand, RZD as a state organization has to be managed with national interests and create real market.

It is necessary to take into consideration the following:

- The state made the RZD responsible for social services without any cost compensation. The situation can not be changed before 2009 when the government will subsidy the passenger transportation.
- Inflexible tariff mechanism does not allow answering changes.
- RZD is the only operator simultaneously managing the entire infrastructure and fulfilling demands of the army and penitentiary system.
- Support of infrastructure, rolling stock and haulage park require huge investments and this cannot be provided with incomes from transport services only.

The current reforming results are shown on the following table:

| 1 st stage (2001-2002) | 2 nd stage (2002-2005) | 3 rd stage (2006 – 2010) |
|---|--|---|
| Legislative preparation to separate state and market functions and establishing OAO RZD with 100% public capital | Establishing of daughter companies in support fields (repair, building), separation of passenger component, decrease of cross subsidizing of passenger transportation and transition to market pricing in competitive sectors. | <ul style="list-style-type: none"> • Partial privatization of the daughter companies of the RZD. • Creation of railway transportation market. • It is planned to establish about 40 companies and joint ventures to 2007. • It is declared that RZD has to be turned into the biggest in the world railway corporation competitive in the world market, which provides maintenance and development of railway infrastructure as well as transport services. |
| Results of the stages 1, 2: | | Characteristics of stage 3: |
| 1. The separation of state and market functions has been done. But on practice the monopoly continues to set rules its own rules of the game. 2. The task of economic transparency in favour of investment attractiveness is not fulfilled yet. The only real result of reforming is appearance of independent operators, but it results actions of business because the monopoly was not able to meet needs of the growing economy. The monopoly still controls competitive segments of railway activity and infrastructure (access to railways) | | It is evident that OAO RZD is going to control its daughter structures, which are provided with elements of infrastructure (terminals). The independent operators are discriminated with restricted access to infrastructure. The operators are sure that RZD will force them from the market. Coordination between different associations of operators is missing and they cannot stand against the monopoly to defence the new market. The monopoly is active to make proposals to the state authorities, but business does not provide them with any alternatives. Conclusion: Separation of activities within corporation will not create market. |

Condition of OAO RZD rolling stock and infra

Dynamic of last years was achieved with more intensive usage of rolling stock. The reserve is over. Depreciation of freight cars is 86%, electric locomotives – 73% and diesel locomotives – 85%. Replacing the park requires about \$35 billion. It means necessity to attract investment from outside the RZD. The average age of permanent way and track, signalling, communication, electrification is over 40 years. According to RZD the investment necessity for infrastructure is about \$ 93 billion till 2016 for needs of maintenance, development, increasing capacity and new links opening.

Other needs are related to: develop technical systems to serve trains, improve efficiency of repair, and modernize traffic safety systems. RZD has not that huge own resources. Average speed of trains in Russia is not more than 50 km/h because of sections with limited capacities, lack of fly over junctions and absence of second tracks along main routes.

Railway projects implemented between 1995 and 2006 in the Barents Link Corridor rail network has been introduced in chapter 7.

Prospects of Russian railways

OAo RZD proposes to establish a 100% daughter company “Freight company RZD” on the base of the monopoly to work in conditions similar to private operators. RZD management expects profitability of the company, which will allow attract private investments. RZD is ready to provide the daughter with more than 500 thousand rail cars from 600 thousand available. Being free from social duties and tariff restrictions the company would be competitive and in some time it can be transformed into market capitalization to sell 49% of its shares in the Russian stock market, which would attract investments into infrastructure development. One may conclude that OAo RZD is moving to an infrastructure company decreasing step by step its presence on the transportation market.

According to RZD, its current development is restricted with the following obstacles: Tariff regulation, competition from the side of independent operators with rolling stock in its own, and cross-subsidy of social duties. The fact that RZD management considers the competition as an obstacle to development makes doubts concerning possibility to achieve the objective of the reforming – competitive railway market.

Railway machine building in Russia

The Russian railway machine building industry is sufficient to meet needs of the railway transport in quantity, but not in quality. The demands are higher. The produced cars satisfy technical requirements of 1940-50s. The machine building enterprises tries to modernize their facilities because they expect competition from the side of foreign rail car producers and rely on high entering barriers to the market. Volumes of transportation provided by RZD are increasing in 2004 by 8%. In the same year the Russian export increased by 35% and the difference indicate of good potential. The railway transport cannot keep on pace with growth of industries, mainly mining and metallurgy. During the nearest years the main problem of RZD expected is lack of rolling stock.

Containerization on sector of Russian railway transportation

The share of containerized freight flow in Russia is 2% (2004), which is less than in average in the world (10-60%). The reasons of low level of containerization of railway transportation are the following

- Raw material orientation of economy and export
- Deficiency of fitting platforms and container stock
- Tariff regulation
- Intermodal disintegration and lack of logistic services
- Poor infrastructure of container processing
- Reputation of railways

It is expected that reforming of railway transport will facilitate development of container transportation. In order to achieve the purpose OAo RZD has created a daughter

company “TransContainer” and all the containers and fitting platforms were handled to operative management. Additionally to transportation based on state tariffs the company provides forwarding services on the market prices. It causes negative reaction of private forwarders. They are afraid that the structure supported by RZD and provided with the main container assets will use its practically monopoly position to force out the market all competitors. The handing over the park of fitting platforms to the only forwarder is considered as indicator of monopolization the container transportation market, but not market development.

5.2.2.2 Barents region rail specifics

Though the Finnish railway system is connected to TEN rail network, one cannot consider the Finnish railway system fully integrated with the railway system of the EU. There is one historical reason hindering the integration: the width of the railway gauge of Finland (1524 mm) and the European standard (1435 mm) are different. On the point of connecting (Tornio and Haparanda stations on the Finnish/ Swedish border) a procedure to unload and reload takes 6-12 hours per train, causing delays and additional costs. Different gauge switch systems have been tested, where trains go over automatic devices. Systems require though special wagons. A freight train is expected to cross the system (and the border) in 35-40 minutes and a passenger train in 5 minutes. Test drives between Sweden, Finland and Russia are foreseen in STBR II -project.

Finnish railway network is better integrated into Russian railway network than in the EU network. Networks have the same railway gauge having been part of the railway system of the Russian Empire. Same wagons can use both railways, but there are some restrictions created by differences in:

- Speeds defined with condition of tracks and rolling stock
- Electrification systems which makes it necessary to use multi-system locomotives or to change locomotive on the border (interoperability hindrance).

Because of historical reasons, the railways have been constructed during decades to serve primarily the transport needs of north-south direction in the regions of Kainuu and Oulu. There has been economic need to rehabilitate the west-east links. That is why Oulu - Vartiuss section of Barents Link Corridor was totally electrified by 2006. Railway projects implemented 1995... 2006 in the Barents Link Corridor rail network has been introduced in chapter 7.

5.2.2.3 Cargo flows in current rail network

The following picture gives an overall view of the rail cargo flows in 90's. The unit is million netto tonnes in rail kilometer (blue lines). After publishing of this picture, a shortcut rail Ledmozero- Kotskoma has been opened for “working traffic”. It has changed some flows on the Russian side.



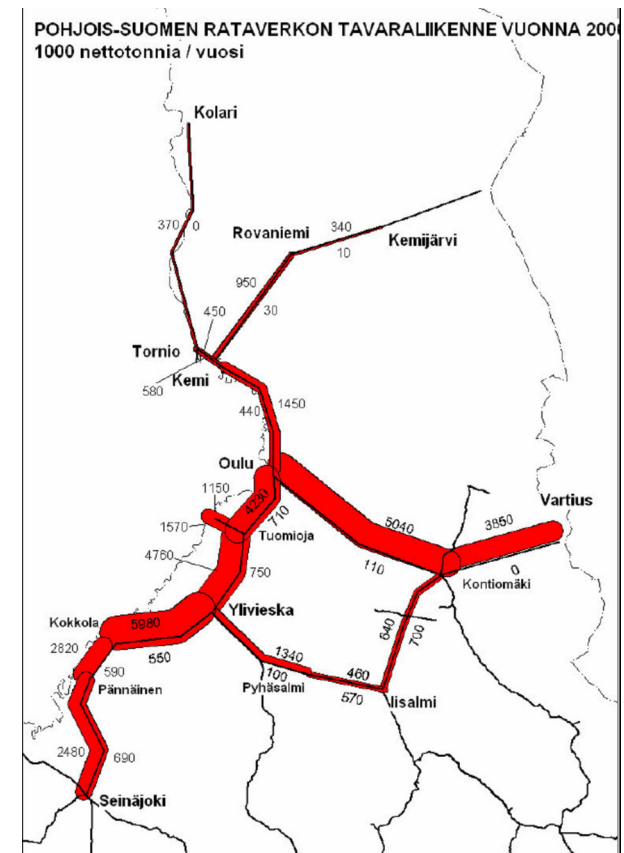
Rail cargo volumes in 90's (tonnekilometres, STBR Rail Study by Infraplan)

The current (2006) rail cargo flows in Finnish side of Barents Link Corridor have been shown in the picture in this page. The cargo flows in Russia are not open information. However, the current capacity is very near to current cargo flow, because Russian side rail network is loaded almost 100%. The picture on the next page shows the capacity situation in the Barents Region rails.

The following cargo flows were during last years or are currently going over the border on Vartius rail border crossing:

1. Rautaruukki Oy, Iron pellets from Kostamuksha (Karelia) to Rautaruukki steel factory
2. Kostamuksha Combine, Iron pellets to Kokkola port. (Finland, transit to Europe)
3. Northern Swedish forest industry, timber from Karelia to pulp and saw mills (partly by trucks, partly by trains)
4. UPM Kymmene Oy, test trains of timber from Karelia to Kajaani (permanent flow goes by trucks)
5. Test trains of timber from Leningrad Region to Northern Finland pulp mills

6. Thomesto Oy, timber from Karelia and Archangelsk to Kemi pulp and saw mills (on Russian side partly by trucks)



Current rail cargo flows in Northern Finland (draft from POSU 2007 by Finnish Rail Administration and Ramboll Finland Oy)

5.2.2.4 Future visions on the Region rail cargo flows

The following cargo flows have defined as short term future potential going over the border on Vartius rail border crossing (all have at least one common pre-condition, commercial opening of Ledmozero- Kotskoma rail connection):

7. Northern Norway and Northern Swedish forest industry, timber from Karelia and Archangelsk to pulp and saw mills

8. Diverting volumes of Russian export goods from Russian congested export infra (mainly ports) to Gulf Of Bothnian ports of Finland.
9. Thomesto Oy, increased volumes of timber from Karelia and Archangelsk to Kemi pulp, fine paper and saw mills
10. UPM Kymmene Oy, increasing volumes of timber from Karelia and Archangelsk to Kajaani and Pietarsaari fine paper mills
11. Northern Finnish and Swedish mining based industry, coal from Vorkuta (Komi)
12. Paper industry products transit from Karelia through Gulf Of Bothnian ports of Finland.

The following cargo flows have defined as long term future potential going over the border on Vartius rail border crossing (all have at least one common pre-condition, commercial opening of Ledmozero- Kotskoma rail connection):

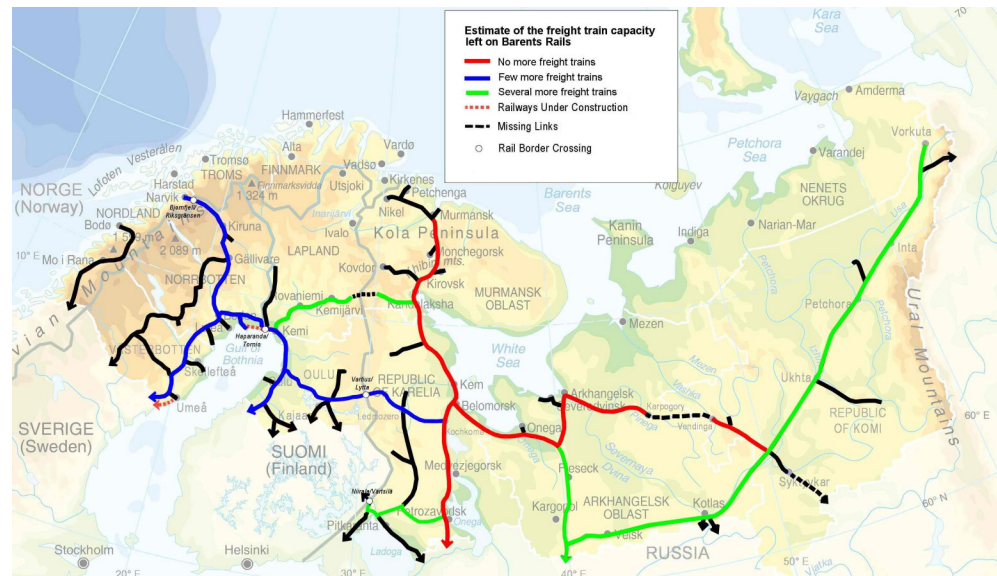
13. Container traffic on N.E.W corridor between Asia and USA through Europe.
14. Ruukki Oyj, Scrap metal from Kazakstan
15. Finnish and Swedish forest based industry, general timber from West of Urals
16. Forest based industry of Sor-Trondelag (Norway), timber from Russian Barents

The following cargo flows have defined as potentials of Salla-Kandalaksha missing rail link, using Vartius-Lytta border crossing as long as Salla missing link has been built:

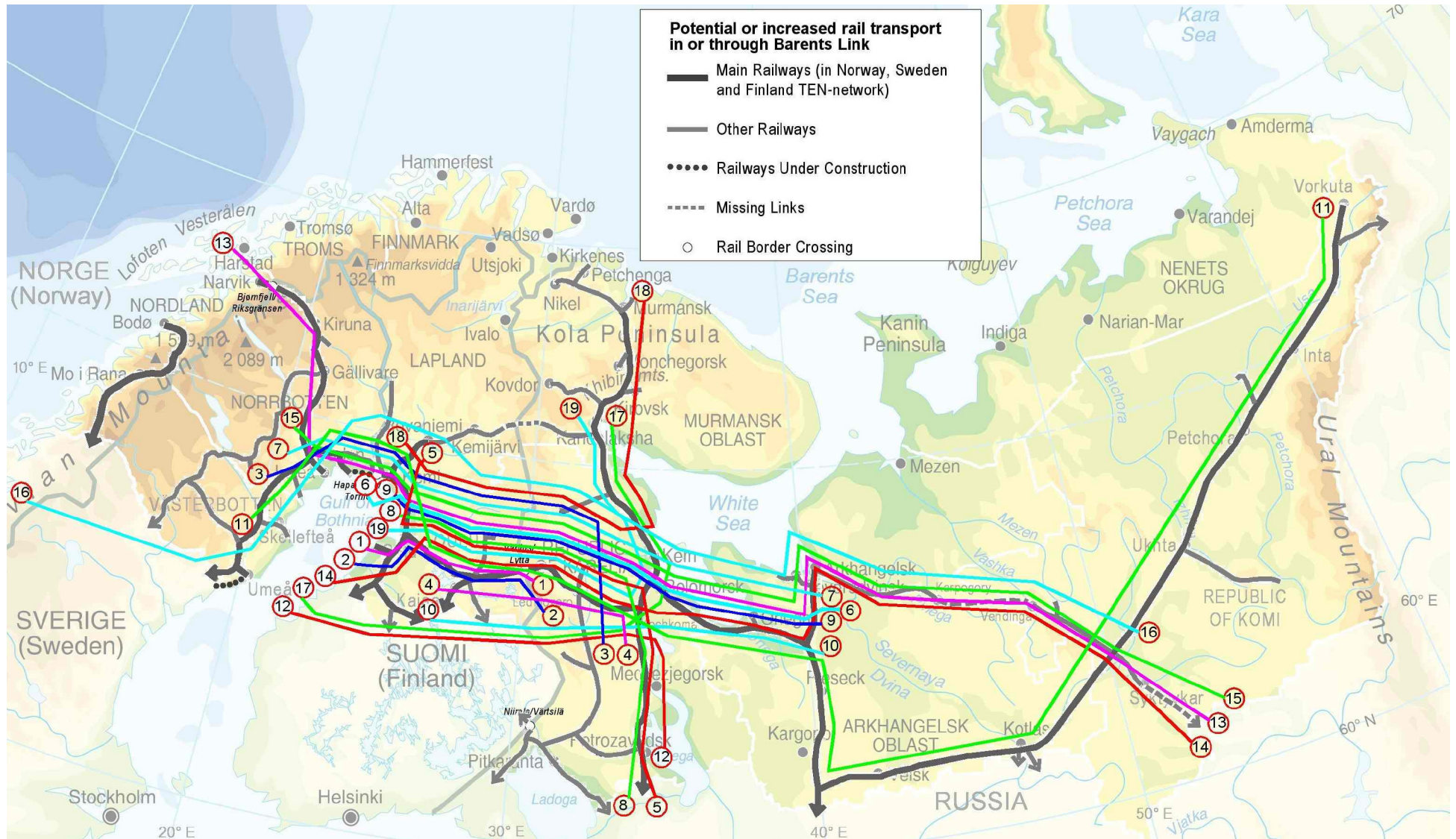
17. Kandalaksha Aluminium raw-materials and products between Kandalaksha and Europe.
18. Outokumpu Oyj, Scrap metal from Murmansk region to Tornio.
19. Forest based industry in Finland, timber from Murmansk region.

There are three main issues that are affecting to vision of future Barents Link Corridor rail cargo flows:

1. Completion and final opening for Ledmozero-Kotskoma rail connection. It is anticipated by 2008 after investment of 25 million Euros to electrification and signalization.
2. Opening container traffic in N.E.W. rail freight corridor between USA and Asia trough Barents Link Corridor and Trassib.
3. Implementation of BEKOMUR –rail project connecting the Barents Link Corridor with a shortcut to Transsib via Arkhangelsk, Komi and Perm.

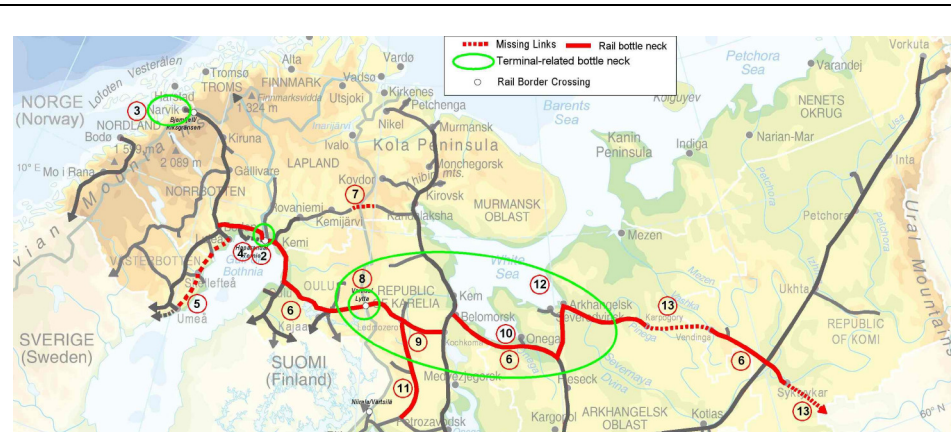


The picture on the capacity situation in the Barents Region rails (from STBR Rail Study, modified by Pöyry Infra Oy)



5.2.2.5 Needed efforts to develop rail transport in Barents Link

The following rail missing links and bottlenecks in Barents region have been identified in STBR project rail study:



1. Technical system differences (electric systems, signalization, rail gauge).
2. Gauge switch system and terminal upgrading needed.
3. Narvik port/terminal: More capacity needed. Low level of containerisation.
4. Missing triangle connection Ore Line - Haparanda line.
5. Coastal railway missing (Bothnia Line up to Umeå ready 2010).
6. Axle weight limit too low and partly non-electrified (many sections).
7. Salla - Alakurtti track missing. Alakurtti - Kandalaksha needs upgrading.
8. Kivijärvi terminal upgrading needed for increased transports and containers.
9. Ledmozero – Kochkoma (126km): signalisation and electrification missing.
10. Belomorsk - Obozerskaya section needs upgrading.
11. Suojärvi line needs upgrading.
12. Timber terminals and upgrading/construction of feeding roads needed.
13. Missing links Karpogory-Vendinga (215km) and Syktyvkar-Perm (600km) (BELKOMUR)

Rail traffic forecasts and development needs in Vartiuss-Lytta border crossing and adjacent railway network has been introduced in Annex 2 of this report.

5.2.2.6 Proposals to EU concerning Barents Link Corridor rail

There is a proposal for the EU Commission to be considered during the development and in case of more accurate definition of the Northern trans-national Axis. It concerns the location of the Barents Link Corridor in Russian side. The proposal includes an alternative rail route to the Northern Trans-national Transport Axis linking Barents region and Trassib rail. This route goes through existing rail link Ledmozero-

Kotiskoma and new rail link BELKOMUR (Arkhangelsk-Komi-Perm). This initiative is reflected by the strong view of Barents region.



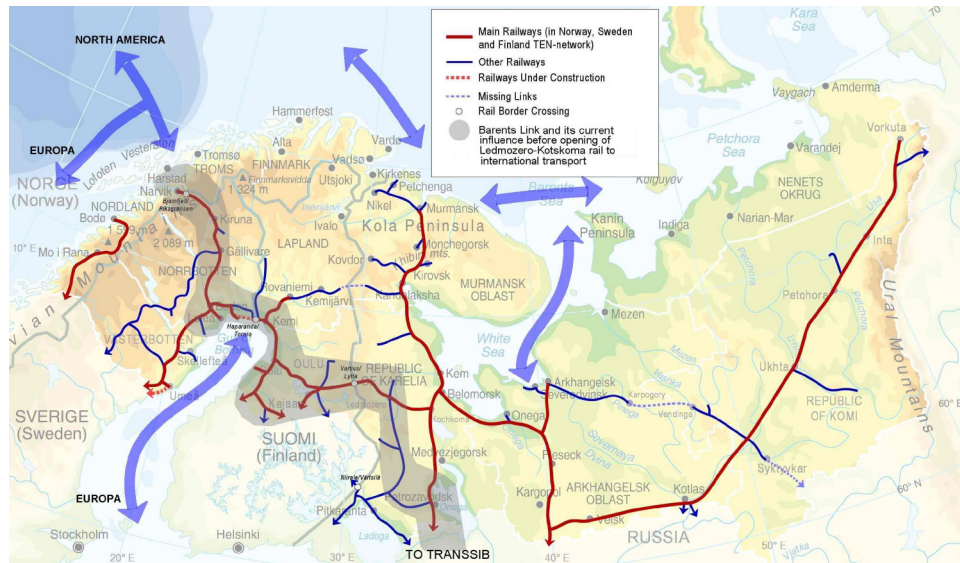
Proposal to EU Commission to include alternative route between the Barents Link Corridor and Transsib into the Northern trans-national Axis

Grounds for the proposal are that:

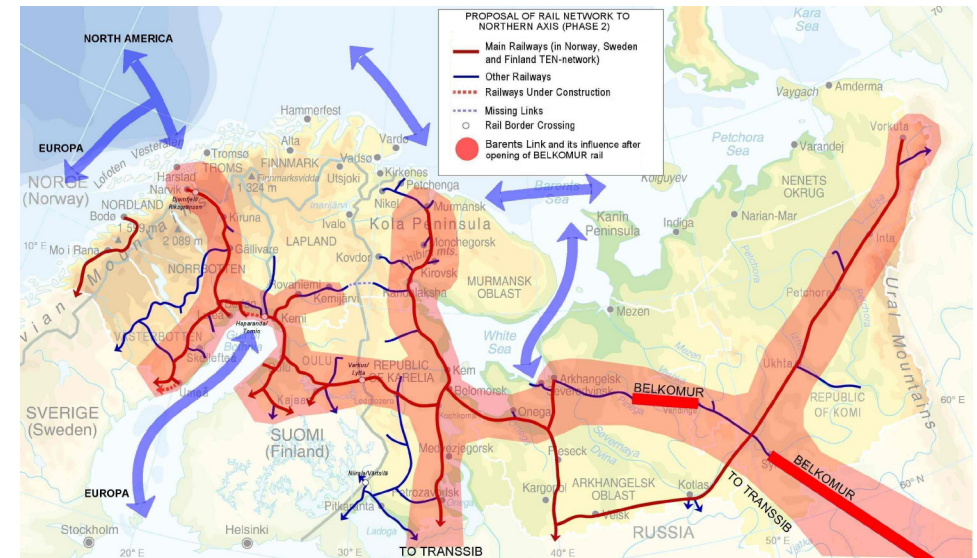
- Containerisation will be growing according to UN forecasts. Russian containerisation was in 2005 only 31% in import and 6% on export compared to 55% in globally. In 2015 containerisation index is anticipated reaching 70%.
- The N.E.W. rail freight corridor initiative and developed by UIC (World Railway Union). The corridor would give real benefit to transcontinental transit between Asia (China, Russia) and USA. As known, the sea route between China and Europe around Africa takes about 45 days and through Suez Canal about 35 days. N.E.W. corridor would shorten this time down to 12-14 days.
- Railway sections on Transsib near St Petersburg and rail St. Petersburg-Murmansk are overloaded.

5.2.2.7 Future visions on the Barents Link rail cargo flows

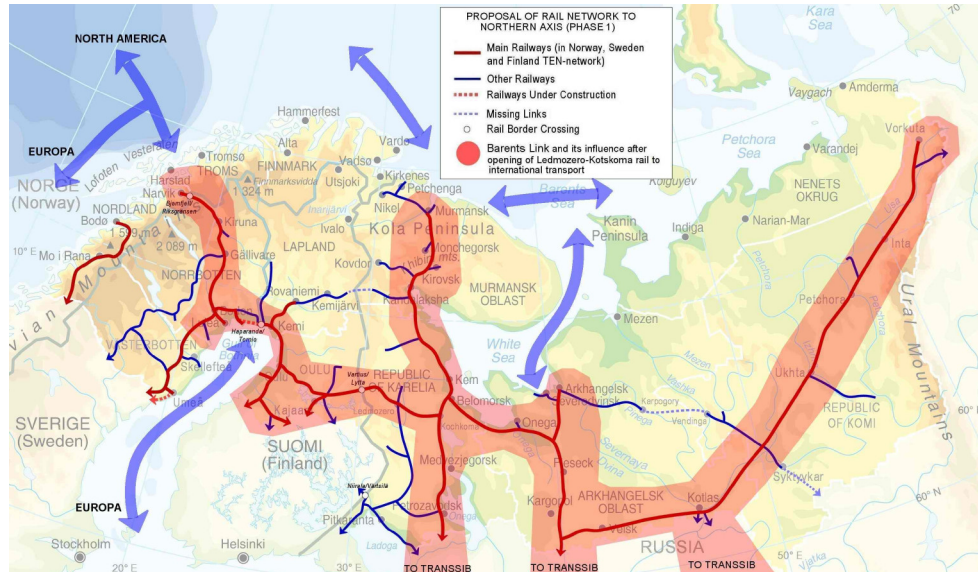
The following three pictures give a vision of Barents Link rail development and influence to Barents Region. Large areas of Russian side of Barents Region will benefit from co-operation inside the Barents Region and rail transit after opening of Ledmozero - Kotiskoma rail into international transport and after construction of BELKOMUR rail.



Barents Link and its current influence (before opening of Ledmozero- Kotskoma rail into international transport)



Barents Link and its influence after opening of BELKOMUR rail



Barents Link and its influence after opening of Ledmozero- Kotskoma rail into international transport)



Photos of the first steps of BELKOMUR rail construction



Schema of the rail system in the Barents Region

5.2.3. Road transport

5.2.3.1 Road specifics in Barents Link Corridor eastern side

Road component is the most flexible component in the multi-modal team. Importance of road transportation grows when trade and productive networking demand transportation just in time with small consignments. Development of road transportation as an element of a logistics platform is defined with a number of factors, for example:

1. Coordination of road development with other modes of transport
2. Development of road transport infrastructure within programs
3. Tendencies of fuel price growth
4. Tendencies of truck fleet development
5. Development of roads.

In order to eliminate obstacles for logistics development in Russian current market situation it is important to develop road freight transportation program covering the following aspects:

| Aspects to be included into the program | Tendencies and expected effect | Forecasted impacts |
|--|--|---|
| Enlargement of operators because of forwarders and transport operators integration Attraction of dealer centres of truck producers | Control of tariff growth, potential increasing | <ul style="list-style-type: none"> ▪ Acceleration of fleet increasing ▪ Improved quality of trucks, ▪ Quality of maintenance services ▪ Lower costs of logistics services |
| Development of service centres near the road routes Reservation and engineering provision of sites to develop terminals, dealer and service centres | Sufficient operation of rolling stocks Forwarders with their own trucks can offer better quality of services with stable tariffs. | <ul style="list-style-type: none"> ▪ Deficiency of territories for service centres. ▪ Necessity of regional development planning |
| Training of specialists | Deficiency of qualified specialists | <ul style="list-style-type: none"> ▪ Minimising risks of freight transportation due to qualified personnel |

A significant growth of fuel prices in Russia is forecasted, because of lack of petrol production plants, which were built in the Soviet time and not planned for currently growing needs of fuel. The oil production plants have low productivity. From one ton of oil they can extract 470 litres of light products, to compare with the average world outcome of 700 litres. Their low productivity is the main problem. The forecasted growth of fuel price can make influence on road transportation costs and relatively, competitiveness of road transport.

The most amounts of truck sold in Russia are registered in segments of:

- small tonnage (under 2t) 65%:
- heavy trucks (more than 8t) – 13%

In the segment of heavy trucks foreign producers are leaders occupying 50% of market. Tendency of sales are becoming similar to tendency of car sales (annual growth of 50-60%).

The tendency means that more and more trucks of 11,5 t per axle load drives along the roads built according to soviet standards with maximum of bearing capacity of 10 t of axle load. Overweight of vehicles in combination with weak grounds will be a reason of rapid road depreciation and poor performances of roads. This is the main obstacle for development of the Barents Link Corridor roads. The solution is to harmonise the EU and Russian road design standards at least along the main Barents Link Corridor route in Russian side of the Corridor.

The east-west roads in the Russian side of Barents Link Corridor are either in poor condition or do not exist. However, several Barents Link Corridor road section improvements in Russian side have been financed by the federal budget though they are territorial roads. This is due to the fact that these sections are part of Russian Northern Transport Road Corridor (see picture below). Roads implemented 1995- 2006 in the Barents Link Corridor road network has been introduced in chapter 7.



Northern Transport Corridor route by Uralgiprodormii

5.2.3.2 Road specifics in Barents Link Corridor western side

The co-ordination of activities to develop trans-European transport networks is required in the EU's legislative framework. The decision sets guidelines for all transport modes in all EU member states.

During the last decades the process of road network development has been going on (development 1995-2006 introduced in chapter 7). The existing infrastructure is still far from ideal. Nevertheless, high living standard of the Europeans and improved competitiveness of the European industries is a result of road network development and decreased transport costs affirming the viability of the concept.

The Corridors road route in regions of Kainuu and Oulu is connected with TEN-network by road Oulu – Vartius. The roads in the regions, both arterial and collectors, are in good or fair condition. Traffic volumes are shown in the next page schema. Congestion is a problem only in timely manner in the road network near city of Oulu.

5.2.3.3 Needed efforts to develop road transport in Barents Link Corridor

The Russian Federal Council has handled the situation of federal road network. The proposal to increase Russian federation road network 2025 introduced in that meeting is in the following picture. If implemented in the future, it will bring increase in status of some territorial road and create new federal roads in Russian side like:

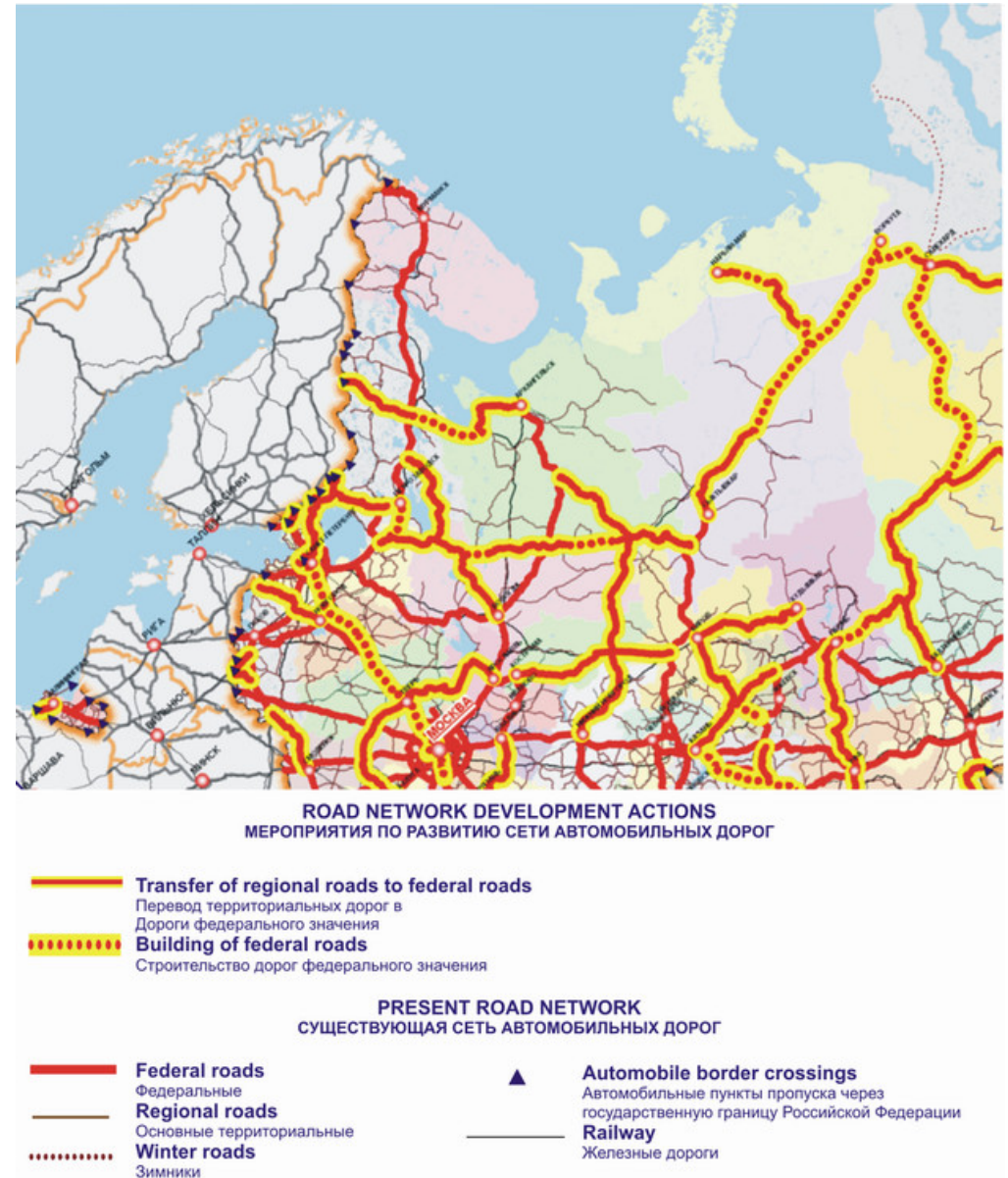
- Vartius - Kotskoma current territorial road into federal road
- Kotskoma- Onega new federal road
- Onega - Archangelsk current territorial road into federal road
- Medvezegorsk- Pudoz-Vologda current territorial road into federal road
- Pudoz - Syktyvkar – Nar-Mar (and Vorkuta continuing behind Urals to Siberia) as a new federal road connection
- Archangelsk – Syktyvkar – Perm as a new federal road connection.

These changes would give a very important push to economy of Russian side of Barents Region.

5.2.3.4 Proposals to EU concerning Barents Link Corridor road network

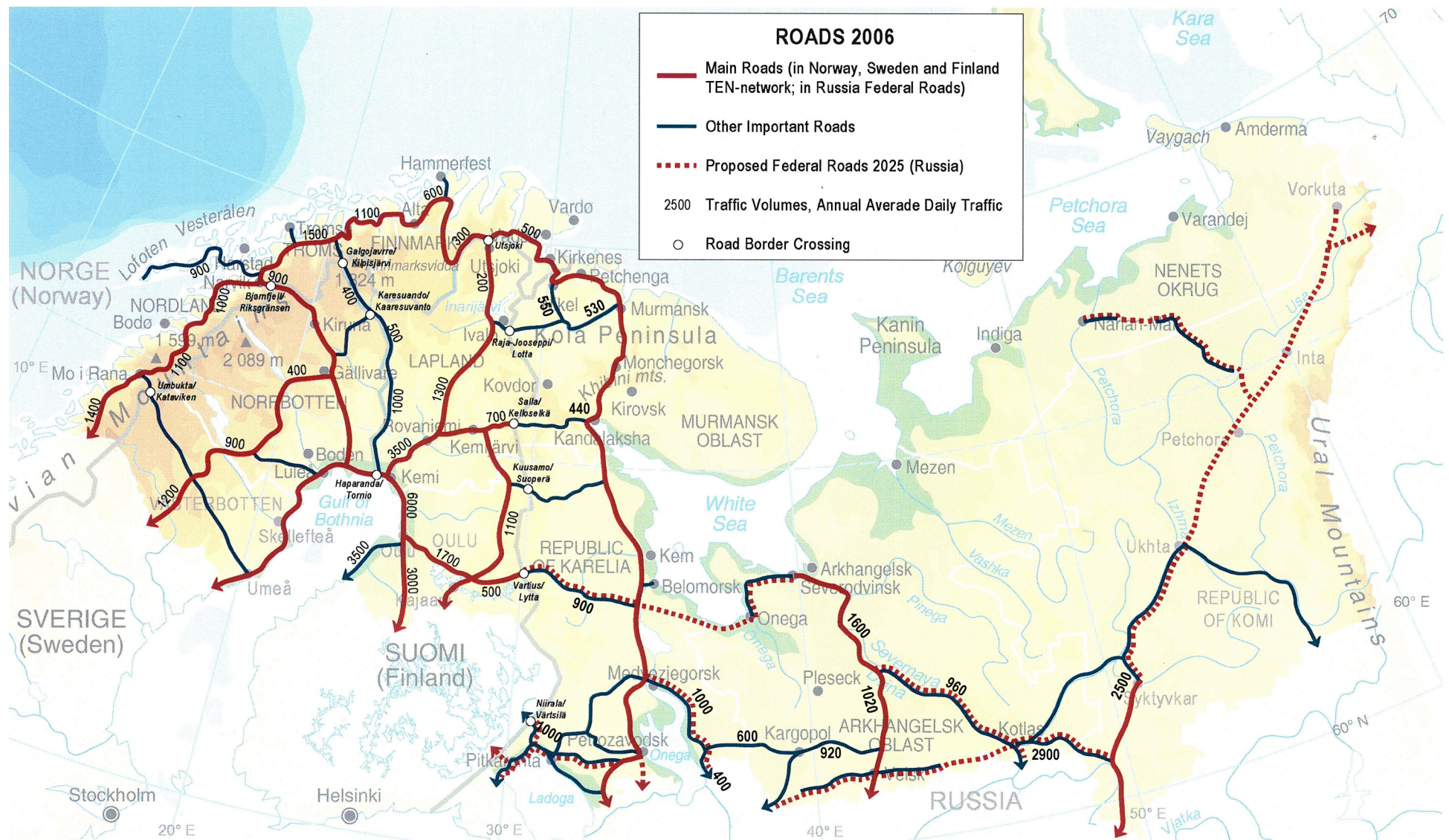
There is a proposal for the EU Commission to be considered during the development and in case of more accurate definition of the Northern trans-national Axis. It concerns the location of the Barents Link Corridor road sections in Russian side.

The proposal includes an alternative road route to the Northern Trans-national Transport Axis linking Barents region to Russian Northern Road Corridor. This can be made by accepting the Russian draft proposal of federal road network 2025 as a basic road network in the Northern Axis.



Russian proposal for the Russian federal road network 2025

(Source: Presentation in Russian Federal Council meeting 13.10.2006: "Federal road network situation and development, NIPi TRTI)



Schema of the road system in the Barents Region

5.2.4. Border crossings

Rail border crossings

On the **Russian rail** border crossings in general, one of the indicators of efficiency is the time rail cars are standing still in the border. According to normative the stand still time shall be limited with 4 hours. The norm is not fulfilled and in average, the duration of cars and containers standing under customs inspection is 3-5 days. The growth of increased standing time in 2006 is explained with the following:

- Control strengthening
- Discrepancy between number of personnel of customs and other border services and traffic volumes. The discrepancy is critical when daily and weekly traffic fluctuation is significant. In ideal the operations of railway and border post shall be harmonized. Border posts in many cases do not work during weekends and in holidays and border stations are overloaded with trains and containers. According to railway officials, the customs cannot use risk assessment as a modern tool in their work.
- Border stations have no sufficient equipping for inspections and first of all loaders, weights.
- Slow information exchange between border and internal customs when checking the rail cars. The procedure might take 5-6 days instead of 3 day limit.

Thus, the main directions to cut delays at railway border posts when border train border crossing are the following:

1. Equipping the border stations in accordance to modern requirements
2. Improving coordination between railway and border post services.

Currently, in the Russian side all the rail border crossing improvements has been carried out through the October Railways budget. An initiative has been made recently to include all four Russian-Finnish rail border crossings into Federal programme. If the initiative will be accepted in the federal level, the improvements can be financed in the future through federal budget.

On the rail border crossing **Vartius - Lytta** (Finland/Russia) will be needed 1.1 km long four-rail yard units for 55-wagon container trains length of about a kilometre. Because of rail transport changes into whole train units, special marshalling yards are not needed. However, the high forecast scenarios in Vartius - Lytta border crossing rail transport require reservation of double rail as there goes a significant future rail corridor. More profound evaluation of the needed improvements in Vartius - Lytta rail border crossing and adjacent rail sections is introduced in annex 2.

On the **Tornio-Haparanda** (Sweden/Finland) an obstacle of different rail gauge has to be won. There are two basic technical solutions to that. The first is either changing

the boogies or use modern rail car type with changing gauge width. The latter is now being tested in Finnish/Swedish border. Both require infrastructure and rolling stock investments. The second, traditional (already functioning) method is to reload the cargo between parallel standing trains. This is tedious for some types of cargo, but e.g. containers it is rather quick and inexpensive.

Road border crossings

On the **Vartius-Lytta** road border crossing forecasted truck transport is increasing. That is why both side of the border is needed a truck serving centre. It consists basically of:

- parking place for 100 heavy transport unit
- parking place for about 50 personal cars and vans
- vehicle service and gasoline station
- bank automat, shop, Truck-In restaurant
- small hotel
- WC-, shower and sauna facilities

This kind of serving centre needs space several hectares.

The new Finnish/Russian border crossing **Suoperä/Kortesalmi** has been recently opened with facilitation of EU funds to serve increasing tourism traffic between Kuusamo and Russian neighbouring areas. The amount of tourists in Kuusamo is now about a million a year.

5.2.5 Air transport

West –East air routes in the Barents region are undeveloped. There are no sustainable links between Petrozavodsk – Arkhangelsk - Syktyvkar. The only sustainable link of this direction is Arkhangelsk – Murmansk. From the year 2005 the situation became worse as the air route Arkhangelsk – Murmansk – Rovaniemi – Luleo was closed and the link between Sweden – Finland and Russia was broken. The only sustainable international link now inside Barents Region is Arkhangelsk - Murmansk – Tromsø. All other routes go through Oslo, Stockholm, Helsinki, St. Petersburg and Moscow.

5.2.6 Internal waterways

Internal waterways transport in **Russia** has evident advantages:

- It has traditional role in the Northern territories with many big rivers. E.g. river transport provides 75% of all freight transportations to the Arctic coastal settlements, which are non accessible with other modes of transport.
- Energy efficiency of inland water transport per ton is 1/6 of road and 1/2 of railway transport. Relatively, pollution and noise are lower, as well as risks of accidents or congestion.

Internal transportation demonstrated growth during 2003-2005, but currently it is only 40% of transportation in 1990. The internal waterways in Barents Region are shown in the scheme on page 18.

Internal waterways of Russia are in preparation to opening for international traffic. The preparation takes time because of poor condition of infrastructure both of ways, hydro technical facilities and river ports. It is a result of investment neglecting by the state during last decade. Currently, the task to restore waterway infrastructure includes necessities of: sufficient financing, legislative acts, improvements of navigation, communications, port infrastructure, training of personnel in accordance to international requirements as well support for shipbuilding.

There are no inland waterways in Kainuu and Oulu region. The Finnish inland waterway system is part of TEN and is open to international traffic.

5.2.7 Telecommunications

Telecommunications as a sector have gone or are going through serious changes in Russian side. It has become a real added value service to transport sector.

In mobile telephones, the NMT-450 has lost and GSM become the market leader. As well, normal competition has made services available and affordable for people.

In the future, Russian Glonass geographical positioning system is going to be opened to civil use. It brings good prospects to additional value services to all modes of transport.

In Finnish Russian border area is still one problem to be solved: Oulu and Kainuu regions do not have yet a direct optic fibre connection to Kostamuksha. They as all other connections between Finland and Murmansk, Karelia and Arkhangelsk are going through fibre optic connections between Southern Finland and St. Petersburg. Telecommunication companies are ready to construct the connection, but obstacles have appeared to get the border crossing approval from the Russian side. New cable would increase competition and most likely would made prices lower and add quality to services.

6. TRANSPORT SAFETY

Road traffic safety in Russia is in situation, where President Putin has stated it to be "a national tragedy". In 2006, occurred about 230.000 injury accidents. In those, 32.651 died and 285.000 got injured.

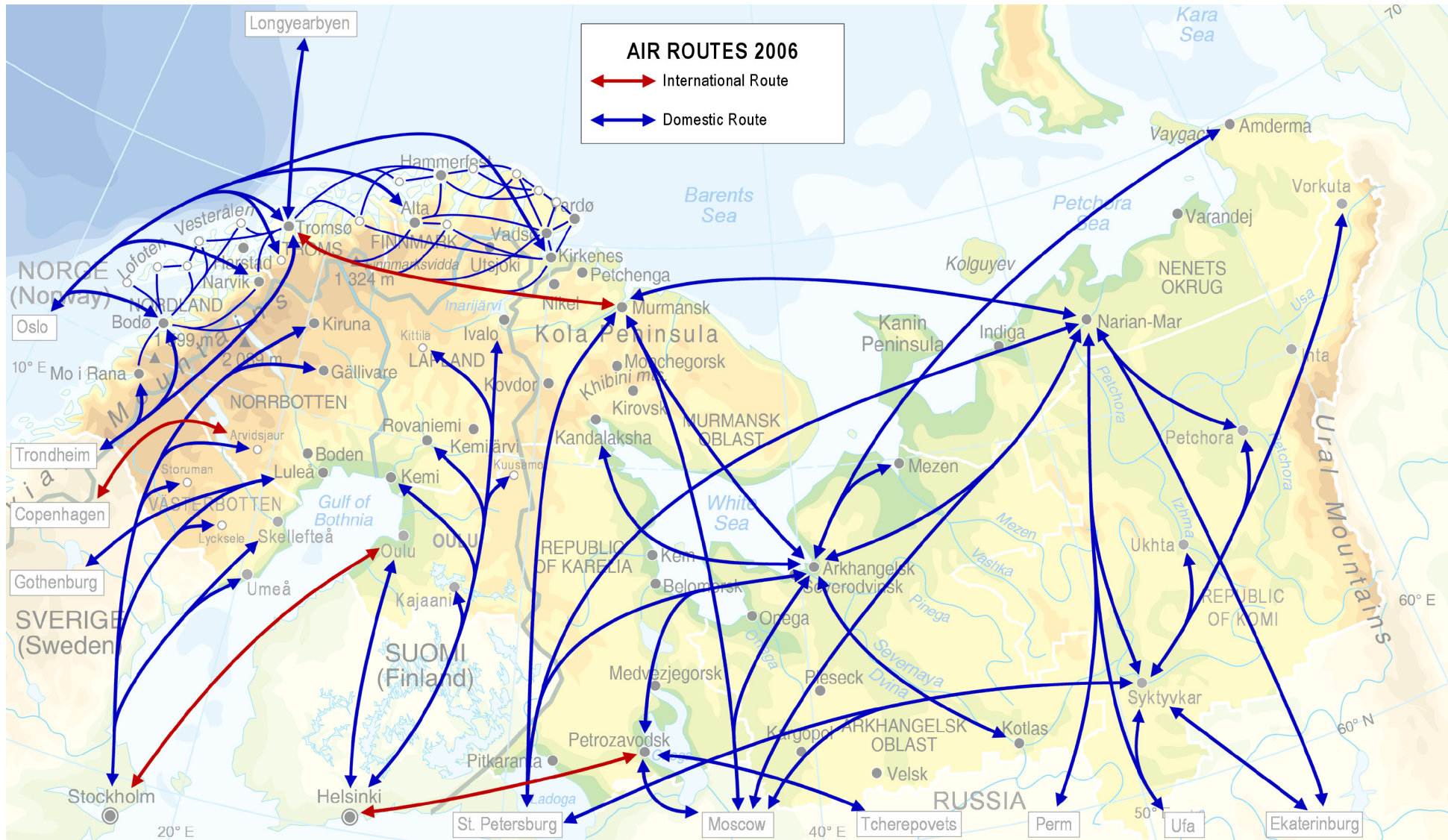
| Region | Inhabitants 1000 | No of fatalities per 100.000 population in the year 2000 | No of fatalities per 100.000 population in the year 2004 |
|--------------------|---------------------|---|---|
| Norway | 4640 | 6 | 7 |
| Sweden | 9046 | 5 | 7 |
| Finland | 5256 | 7 | 8 |
| Murmansk region | 865 | 10 | 12.2 |
| Karelia republic | 697 | 16.1 | 22.7 |
| Archangelsk region | 1291 | 15.8 | 20.5 |
| Komi republic | 985 | 14.9 | 18 |
| Perm krai | 2748 | 21.1 | 24.3 |
| Sverdlovsk region | 4410 | 19.5 | 25 |
| Tjumen region | 3323 | 23 | 24 |
| Omsk region | 2035 | 13.7 | 18.2 |
| Novosibirsk region | 2650 | 15.1 | 22.4 |
| Kemerovsk region | 2838 | 18.2 | 21 |
| Kransojarsk krai | 2906 | 21.4 | 26.5 |
| Irkutsk region | 2527 | 21.8 | 23.5 |
| Burjatia republic | 963 | 23.3 | 31.3 |
| Csitinski region | 1128 | 20.3 | 28.8 |
| Amurskii region | 881 | 16.7 | 22.8 |
| Habarovsk krai | 1412 | 19.8 | 22.9 |
| Primorski krai | 2019 | 24.5 | 29.4 |

Table of road fatalities compared to inhabitants

If compare fatality accidents to number of population, Russian roads seem to be about 3 times more dangerous than the road in the Nordic countries.

According to several studies where number of fatalities in Russian roads has been compared to million vehicles or million vehicle kilometres, the risk to get killed in the fatality accident is about 5... 7 times higher than in road of Nordic Countries.

The accident risk in rail transport is very low compared to road transport.



Schema of the air route system in the Barents Region

7. STRATEGIC DEVELOPMENT OF THE TRANSPORT INFRASTRUCTURE

7.1 Elements of the Corridor route 's infrastructure implemented in the period of 1995 - 2006

| Territories Transport modes | FINLAND | REPUBLIC OF KARELIA | MURMANSK RE- GION | ARKHANGELSK REGION | REPUBLIC OF KOMI | Extended Direction to East (Urals and Siberia) |
|--|---|---|--|--|---|--|
| SEAPORTS | Development of inter-modal terminals and technical facilities of the seaports: Oulu, Tornio, Kemi, Raahe, Kokkola Kalajoki, Pietarsaari | 1) Reorg. of port Petrozavodsk; 2)) Providing of inter-connection points of Vodla-river with timber handling facilities in warehouses and handling areas | 1) Murmansk port transport node modernization; 2) Creation of the joint-stock company 'Kandalaksha Sea Commercial Port' | 1) Modernization of oil terminal 'Rosneft' to 160 m vessels. 2) Designing of tankers of 28 and 70 th. tones boat load for shelf oil transportation | | |
| RAILWAYS | 1) Construction and testing projects of an automatic gauge exchange system on the border of Finland-Sweden (Tornio-Haparanda station); 2) Electrification of Kontiomäki-Vartius rail. 3) Kontiomäki-Vartius rail included into the Finnish trunk rail network. | 1) Electrification works; 2) Beginning of exploitation the 'Ledmozero – Kochkoma' rail 3) Beginning of regular passenger transportation via frontier point 'Wärtsilä' (after railway station reconstruction) 4) Improvements in Lytta rail border crossing | 1) Shifting the Murmansk-Loukhi (444.4km) and Kovdor-Kandalaksha (117km) section from continuous current to alternating current 2) Implementing rail traffic safety programme | 1) Electrification work of the section Konosha –Obozerskaia –Milenga; 2) Participation in the activity of interregional Company 'Belkomur' for the construction of section Karpogory - Vendinga; 3) Beginning of the construction of the section Karpogory – Vendinga (from Karpogory) | 1) Establishment of 'Belkomur' company with Arkhangelsk Region; 2) Development works for the construction of railway section Karpogory - Vendinga; 3) Beginning of the construction of the section Karpogory – Vendinga (from Vendinga) 4) Vashka-river bridge construction | 1) Participation in the 'Belkomur' company activity |
| ROADS | 1) Construction of Vartius border post on the Finnish-Karelian border; 2) Traffic safety improvements (traffic lights, junction arrangements). 3) Rehabilitation of road Törmäsen-vaara-Kortesalmi 46.7 km 4) Preparation of future financial plans for the development of Oulu-Kontiomäki-Vartius road between 2005 and 2015 5) Kontiomäki-Vartius 9 bridges rehabilitation 2005-2006. | 1) Construction and rehabilitation of the sections and bridges on the road to the Arkhangelsk Region; 2) Development of border crossing infrastructure in Lytta; 3) Preliminary passenger studies to open bus routes; 4) Putting into operation of the border post 'Suoperä' | 1) The whole section of the federal road M-18 «Kola» transferred to the federal body Road administration «Kola» (Petrozavodsk) by January the 1 st 2004 | 1) Construction and rehabilitation of the sections and bridges on the roads to Karelia and Vologda; 2) Implementation of Tacis project "Organising of road management for the Arkhangelsk Region". 3) Construction of the bridge over the Malaja Northern Dvina river near Kotlas; 4) Traffic safety improvement projects | 1) Construction of the road Syktyvkar –Kotlas –Arkhangelsk; 2) Construction and rehabilitation of the sections and bridges on the road to Uhta-Pechora 1, Syktyvkar –Kudymkar; 3) Construction of the road and railway bridge near Syktyvkar (km 58) | 1) Creation of corridors in the regions of Urals and Western Siberia. Interregional agreements to integrate the corridors with the Northern Corridor; 2) Construction of the bridge over Ob-river near Surgut city; 3) Permskiy Kray: construction of the bridge over Kama river (road S-Petersburg –Kirov – Perm –Ekaterinburg) |
| WATERWAYS | 1) Introduction of VTS (Vessel tracking system); 2) NAVI-2003, Navigation database management project | 1) Privatisation process in internal shipping | | 1) Privatisation process in internal shipping. 2) Rail and inland water transport logistics schemas combining transport to Belokamenka | Nenets Autonomous Area –provision of settlements along the Arctic shore of Komi. Financing to support shipping in the Pechora basins was provided from Komi budget and federal budget. | |
| AVIATION | 1) Modernization of the airports Oulu, Rovaniemi, Kajaani according to TEN classification | 1) Modernization of the airport of Petrozavodsk | Improving of security systems in the Murmansk airport | 1) Modernization of the airport «Talagi» and «Solovki» 2) Narian-Mar –Moscow –Narian-Mar every day flights by «Airoflot-Nord» company | 1) Modernization of the airport of Syktyvkar; 2) Development of avia service to the central regions of the Russia | |
| TELECOM-MUNICATIONS | 1) Facilitating of GSM- and NMT-450 standards; 2) Development of fibre-optic communications and new technologies; 3)) Development of ATM- and SDH-technologies | 1) Introducing automatic digital centres; 2) Fibre-optic comm.. 3) Market Internet serv.; 4) Market IP-technology; 5) Development of mobile communications of GSM- and NMT-450 standards 6) Introduction of tariff system for local calls | Implementing digital equipment. Bulding of fiber-optic cables. Developing mobile communication and internet services spreading. Implementation of time based payment of phone services | 1) Introducing digital and quasi-electronic aut. centres; 2) Fibre-optic cable Arkhangelsk-Severodvinsk; 3) Installation of NMT-450 base stations along the Arkhangelsk- Dolmatovo - Kargopol –Pudozh road; 4) Providing Internet services by ISDH; 5) Mobile communications of GSM and NMT-450 standards | 1) Mobile comm. GSM-900; 2) Construction GSM 1800-stations on the road Syktyvkar –Kirov; 3) Market Internet serv.; 4) Fibre-optic cable Syktyvkar -Ukhta –Pechora; 4) Mobile communication of AMPS-800 standard in all towns; 5) SOTEL cellular comm. Between the Republic and central Russia | 1) Internet services development; 2) Telecommunication services development |

7.2 Short term planning (2007-2010) - Elements of the Corridor route & infrastructure

| Territories Transport modes | FINLAND | REPUBLIC OF KARELIA | MURMANSK REGION | ARKHANGELSK REGION | REPUBLIC OF KOMI | Extended Direction to East (Urals and Siberia) |
|--------------------------------|---|---|---|---|---|---|
| SEAPORTS | Development of inter-modal terminals and technical facilities of the seaports: Oulu, Tornio, Kemi, Raahe, Kokkola Kalajoki, Pietarsaari | 1) Serving freight flows from the Severostal steel plant (Cherepovets) to the port of Arkhangelsk. | 1) Modernization of Murmansk port freight terminals (in the framework of Federal program. 2) "Norilskiy Nikel" port construction for cargo handling to Dudinka; 3) Designing of coast base near Lavna for oil storing and handling; 4) Designing of container terminal (ann. cap.500-700 th. TEU; 5) Modernization of Kandalaksha Sea Commercial Port | 1) Participation in the Northern Sea Route development; 2) Modernization of Rosneft oil terminal, capacity 6 mln. tones; 3) Modernization of the Arkhangelsk Sea Commercial port; 4) Design and construct of deep freight area in bay Suhoe More; 5) Creation of port area. 6)NAO: Modernization of Varandey oil terminal | | |
| RAILWAYS | Introduced in Annex 2 of this report | 1) Construction of combined, container and timber terminals at Kostomuksha and Ledmozero 2) Electrification and signalisation Lytta-Kotskoma rail 3) Launching of up-grading of Belomorsk- Obozerskaya rail | 1) Improving capacity of stations on the railway to the Murmansk port 2) Construction of second rail about 90 km from Idel to North. | 1)) Launching the construction works of the missing rail link Karpogory-Vendinga 2) Launching of up-grading of Belomorsk- Obozerskaya rail | 1) Launching the construction works of the missing rail link Karpogory-Vendinga (BELKOMUR) 2) Launching the construction works of the missing rail link Syktyvkar-Perm (BELKOMUR) | Krasnoarskiy Kray: 1) construction of the section Karabula – Boguchany 2) construction of the customs terminal Permskiy Kray: 1) organization of heavy trains transportation Sverdlovskaya Oblast: 1) construction of storage logistic centers along Transsib; 2) Modernization of Eburg-Perm-Moscow and Ekaterinburg-Kazan-Mow railways |
| ROADS | 1) Developing road Oulu - Kontiomäki-Vartius; 2) Developing road Petäjälahti- Kajaani (highway 22); | 1) Construction of the road Priazha-Lemetti, km 61-83; 2)Construction of the road Kochkoma-Tiksha-Ledmozero-Kostomuksha-frontier, km 64-70/78-86 | 1) Rehabilitation of the road Kola – Verhnetulomskiy – border post «Lotta», km 176-231; 2) Rehabilitation of the road Kandalaksha – Alakurtti – border post «Salla», km 100 –130; 3) Rehabilitation of the road Nikel – Prirechnyi – «Lotta», km 0 –20 | 1) Rehab. of the road Kotlas - Korizhma-Viled - Ilinsko-Podomscoe – border with Komi Rep., km 11 –25; 2) Rehab. of the road Ust-Vaga – Jadrha, km 200-215; 3) Rehab. of the road Arkhangelsk (from Brin-Navolok) –Kargopol - Vytegra (till Poroshkino), km 368-372 with bridges over Sianga and Lekshma rivers; 5) Rehab. of the road on stage Pleseck-Kargopol (18.8 km); 6) Constr. of the missing link Kotlas-Solvychevodsk - Jarinsk (28.8 km); 7)Construction of the road Arkhangelsk –Belogorskiy - Pinega-Kimzha - Mezen (38,5km) and Arkhangelsk – Onega (20,8 km) | 1) 2. stage of constr. and upgrade. border of the Arkhangelsk Region – Visindor, 58 km; -Visindor - the "Vyatka" road, 8 km; -Veselovka-Chetdino, 36 km; 2) Reconstr. of "Vyatka"road section included into the arterial road, 21 km; 3) Construction of the road Syktyvkar – Arkhangelsk; 4) Road construction: Syktyvkar - Uhta - Vuktyp – Pechora - Usinsk –Narian-Mar | 1) Connecting the Trans-Siberian road network to the European road network with the zone & arterial route and the road Perm-Kudymkar; Irkutskaya Oblast: 1) Rehabilitation of the road Taishet – Bratsk –Yst-Kut; 2) Construction of the all-year-round road Ust-Kut - Mirnyi (for the link between Irkutskaya Oblast and Yakutia); Krasnoarskiy Kray: 1) Construction Angara river bridge in Boguchanskiy district; 2) Rehabilitation of the sections Kansk – Aban – Karabula – Boguchany –Kodinsk; Permskiy Kray: 1) rehabilitation of the road Perm - Ekaterinburg; Sverdlovskaya Oblast: 1) Constr. of Perm –Serov –Hanty-Mansiysk – Surgut –Nizhnevartovsk –Tomsk road; 2) Rehabilitation of the federal road Ekaterinburg –Perm |
| WATERWAYS | 1) Feasibility of deepening the fairways to Oulu, Tornio, Kemi, Raahe, Kokkola Kalajoki, Pietarsaari | | Developing of tourist routes | 1) Rehabilitation of communications 2) Dredging 3) Modernization and fleet upgrade | | |
| AVIATION | 1) Establishment of cargo terminal "Rovaniemi –Gateway"; 2) Constr. of cargo terminal at the Oulu airport | 1) Developing passenger services; 2) Passenger flow studies via Petrozavodsk | | 1) Modern. of the passenger terminal; purchasing of 8 Boeings, extension of flight network. Route development. | 1) Construction of the passenger terminal at Syktyvkar | 1) Modernization of the airport "Irkutsk"; 2) Modernization of the airport "Krasnoyarsk" 3)Modernization of the airport "Koltsovo" (Sverdlovskaya Oblast) |
| TELECOM-MUNICATIONS | 1) Develop. telematics and introducing IN- and XDSL-technology | 1) Construction of fibre optic cable Vartius Lytta - Kostamuksha | | 1) Providing satellite communication services | 1) Providing mobile satellite communication services, IRIDIUM | |

7.3 Middle term (2010-2015) and long term (2015-2035) planning - Elements of the Corridor route's infrastructure

| Territories Transport modes | FINLAND | REPUBLIC OF KARELIA | MURMANSK RE- GION | ARKHANGELSK REGION | REPUBLIC OF KOMI | Extended Direction to East (Urals and Siberia) |
|--------------------------------|--|---|--|--|--|---|
| SEAPORTS | 1) Modernization of Oulu port and Raahe port | 1) Handling freight flows from inland territories to the seaports | 1) Kandalaksha port: construction of specialized terminal for coil, cokes and iron-ore concentrate with the capacity 4 mln.t per year | 1) Integration into the North -West transport scheme, preserving the traditional freight flows and creation of new ones; 2) Participation in the Arctic activity | | Krasnoyarskiy Kray: oil terminal construction on the territory of Taimyr for the development of the Northern Sea Route, 2015-2030: Krasnoyarskiy Kray: Connection of the main links (Transsib, Enisey, Northern Sea Route, arterial road and airport) enabling to create high-capacity logistics center in Siberia |
| RAILWAYS | 1) Activity within the TEN Introduced in Annex 2 of this report | 1) Establishment of joint logistics and traffic control centre in Petrozavodsk department of the October Railways 2) Completion of up-grad of Belomorsk- Obozerskaya rail | Developing capacity of railway access to the Murmansk port | 1) Reconstruction of the section Arkhangelsk-Karpogory 2015-2030: 1) Electrification of the section Obozerskaia - Arkhangelsk; 2) Additional tracks construction; 3) Stations rehabilitation. 4) Completion of up-grad of Belomorsk- Obozerskaya rail | 1) Construction of Syktyvkar –Perm railway | |
| ROADS | 1) Activity within the TEN | 1) Construction of the road Kochkoma – Tiksha –Ledmozero –Kostomuksha – frontier, 44-64 km; 2015-2030: 1) Construction of the road Kochkoma – Tiksha –Ledmozero –Kostomuksha –frontier, section 10-44 km; 2) Construction of the road Dolmatovo –Niandoma –Kargopol –Pudozh, sections 355-360/375-380 km | 1) Rehabilitation of the road Kola – Verhnetulomskiy, section 0-29 km; 2) Rehabilitation of the road Kandalaksha – Alakurtti –border post «Salla», section 130-145 km; 3) Rehabilitation of the road Nikel –Prirechnyi – «Lotta», section 20-45 km | 1) Rehabilitation of the section Ust-Vaga –Jadriha, 38-101 km»; 2) Rehabilitation of the road Kotlas –Koriazhma –Viled – Ilinsko-Podonskoe –border of Komi Republic, section 1-11 km»; 3) Rehabilitation of the road Kotlas –Koriazhma –Ilinsko-Podonskoe, section 0-41 km»; 4) Rehabilitation of the road Dolmatovo –Niandoma –Kargopol –Pudozh, sections 231 –268 km and 268 km –border of Karelia; 5) Monitoring of transport flows and upgrading of technical categories; 6) Traffic safety improvement projects 1) Bypasses construction; 2) Upgr. road sections from technical category IV to III; 3) Developing services for road users; | 1) Developing services for road users; 2) Northern collector roads building to N-Mar, Usinsk, and Salekhard; 3) Completing works of the Northern Route in the Republic | 1) Construction of road from Ivdel (Sverdlovsk Region) to Syktyvkar (Komi) |
| WATERWAYS | | 1) Handling freight flows between inland territories and the seaports | | 1) Handling freight and passenger flows between inland territories and seaports within multimodal schemas | | |
| AVIATION | | 1) Modernization of the airport of Petrozavodsk to international level; 2) Serving internat. passenger flows within multimodal schemas | | | | Krasnoyarskiy Kray: modernization of the airport “Emelianovo” into the hub |
| TELECOMMUNICATIONS | | GLONASS functioning | GLONASS functioning | GLONASS functioning | GLONASS functioning | GLONASS functioning |

8. POTENTIALS, LEGISLATIVE CHANGES

8.1 Assessment of potentials in Russian side

In the potential of **natural resources**, the following aspects are considered:

- World market demand on hydrocarbons
- Legislation concerning Agreement on product division

- Technologies of hydrocarbons deposit development and transportation.
Natural resources have low potential for development of the Barents territories. This potential might contribute only in case of favourable location to participate in logistics and qualified people. The best impact of the hydrocarbons resources are new training programs started in local universities to prepare personnel for shelf activity.

The Russian **educational potential** is low. The system of education needs modernization to become more innovative. Competitive education eliminates risk of leaving the Russian youth to other countries to get education, which is more and more demanded when growing competition on the labor market.

The **innovative potential** is low and one of reasons for breaking innovative process is a cultural gap between ways of scientist and entrepreneur thinking. This mental difference is the main obstacle preventing common actions to promote innovations into market. This is a problem for all countries but successful experience of elimination the problem shall be used by the Russian side from the Nordic countries to make economy innovative.

The **management potential** studies made in S-Petersburg indicate that:

- Positive tendencies of replacing the spasm management of previous years with more regular management. This includes interest of top managers in strategic management.

There is absence of understanding that innovative technologies and R&D create competitive advantages quicker and surer than costs elimination. It means that competition is not strict yet even in S-Petersburg.

The **financial potential** is increased. The potential of public private partnership (PPP) is discussed widely in Russia now as an alternative to finance infrastructure projects. The tendency is positive to compare with 2000, when the previous edition of the Corridor report was under preparation.

The **legislative potential** is increasing. The legislation concerning concessions is adopted in Russia in 2005.

Studies of social stratification in Russia indicate positive tendency of mid class formation. At the same time the **human potential** is critical because of unfavorable demography. The most critical is depopulation of some Russian territories and forecasts for territories of the Barents region are pessimistic. The average lifetime in Russia is 58 years for men and 69 years for women.

8.2 Anticipated legislative changes in Russian side

WTO (Future membership of the RF in the World Trade Organization)

Russian membership in WTO is a positive moment in long-term outlook. WTO membership brings better business atmosphere and legal regulation. It will mostly affect on the Russian legislative base: 20 000 statutory acts should be changed. Nowadays, Russian legal system is like a rag blanket: some laws are from the soviet

period, some laws are developed by the ignorant people. As a result we have a lot of barriers, restrictions, duplicative authorities that prevent free migration of capital and business and create useless costs and corruption atmosphere.

It is obvious that WTO membership will make Russian producers to pay more attention to labour productivity, capital productivity ratio, costs minimization, energy efficiency. It is very important that consumers will get all the benefits of the process.

SPECIAL THANKS TO

- The Administration of the Murmansk Region
- The Administration of the Arkhangelsk Region
- The Ministry of Economy of the Republic of Karelia
- The Ministry of Building of the Republic of Karelia
- The Arkhangelsk Regional Energy Efficient Centre
- The Tacis Local Support Offices of Petrozavodsk and Arkhangelsk
- Mobile Communication operators of Megafone and MTS
- The Road Police of Arkhangelsk
- The NGO ‘Green Wave’
- The Road Administration of the Arkhangelsk Region ‘Arkhangelskavtodor’
- The Road Administration of the Murmansk Region ‘Murmanskavtodor’
- The Road Committee of the Republic of Komi
- Scientific and Technical Centre ‘Razvitie’, Tumen
- The Agency of Road Information, Perm

SOURCES USED

- The magazine ‘Expert of North-West’, 54 issues 2002-2007
- The magazine ‘Expert’, 74 issues 2003-2007
- Other magazines, 9 issues 2001-2006
- Different newspapers: 5 issues 2004-2006
- WWW-sites, 25 sites
- Books and study reports : 9 publications 2001-2006
- Documents of RF and EU: 10 issues 2004-2006

The full list of 186 sources is annexed in the Russian language working report.

ANNEX 1 - Proposal for Barents Link Transport Sector Program framework – Barents Link Corridor

European Union's Northern Dimension policy has earlier concentrated in earlier in Northern Dimension Environmental Partnership and Northern Dimension Partnership of Public Health and Social Wellbeing. In 24.11.2006 political declaration the partners started to examine desirability of a Northern Dimension Partnership on Transport and Logistics.

Barents Link Transport Sector Program framework will acknowledge, that

- The future industry-, technology- and information (know-how) co-operation will be organised sustainable between Barents regions will be based on common understanding and agreements between Russia and the EU.
- The Russian and EU transport strategies are supporting transit traffic between Asia and EU as well as USA through Russia.
- If earlier the stress was in raw-material transport, the future stress is on transferring the know-how and co-operation in production through logistics platforms.

The measures in chapter 7 will on their part facilitate the Barents Link Transport Sector Program implementation. The goal is to increase living standard of people in the Barents region by

- Facilitating other five sectors' programme (mining and minerals, forestry, oil and gas, tourism and ICT) development
- Enabling efficient products' and passenger transport as well as communication inside, to and from the Barents region.

It is planned to utilise good image and marketing efforts of the N.E.W. -corridor, as the Barents Link Corridor facilitates N.E.W. -corridor in the Barents Region.

The agenda includes the following profile elements:

- Establishment of functioning, reliable east-west freight corridors by removing of bottlenecks on the rail network, increasing the efficiency of the terminal functions, removing or diminishing of the administrative problems and braking formalities, developing of Russian east-west direction infrastructure in the local and territorial level
- Establishment of fair competition between modes and actors. One action is removing double pricing in Russian rails' cargo (lower tariffs for rail cargo through Russian ports than via rail border crossings) along with Russian joining to WTO

- Establishment of functioning passenger connections especially in east-west air, road and rail transport in order to enhance business relations and facilitate tourism. In that context:
 - Proposal to Russia to establish a possibility to receive quick visa in Vartius and Kortesalmi border crossing enabling a Russian day-visits from Finnish side to Russia. In the Finnish side already 1.000.000 are visiting annually.
 - Proposal to Schengen -states (e.g. Finland) to consider opening of the consulate point in Archangelsk to enhance tourism between Russia and mostly the Nordic Countries.
- Establishment of high-speed information networks especially in the Russian side of the Barents region. This is essential for development of any functions and activities in the region and for quick and real-time information exchange enabling usage of state-of-the-art IT-solutions, business, R&D etc.
- Facilitation of better procedures in the border crossing allowing more fluent throughput to goods and people.
- Improvement of traffic safety in the Barents Region. This is currently facilitated e.g. by Barents Traffic Safety Forum's Interreg- and Tacis -projects and STBR II –project on Heavy Traffic Safety.
- Harmonisation of transport legislation and other related rules between the EU and Russia.
- Establishment of a Barents port cluster (Barents Port Platform) among all ports of the Barents region. This has been started by establishment of the Barents Port Forum in STBR II- project
- To attract all members and actors of Barents Link Corridor area to develop business to benefit of all parties. This has been started by launching the Barents Link Forum.

Organisation of the Barents Transport Sector Programme will be carried out in co-operation with the other sector programmes together with the actors from the EU, from local, territorial and federal administrations and business as well as education institutes and NGOs. Sector Programme framework supports the establishment of the Barents Logistic Platform and Northern Dimension's Partnership on Transport and Logistics. Common and sustainable transport system in the Barents region can be achieved (problems can be overruled) by development of technology and streamlining the administrations. One good example of a sustainable transport projects in the Barents region is STBR (Sustainable Transport in the Barents Region).

Development of **the Northern Sea Passage** may influence significantly to transport in the Barents region. The current vessel and navigation technology as well as changing of the climate together form conditions that may enable opening of the Northern passage into everyday all-year-round shipping in the next 10-15 years.

ANNEX 2 - Rail Traffic Forecasts and Development Needs in Vartius–Lyttä border crossing

Rail traffic and forecasts

Current rail cargo in Vartius rail was about 3... 4 million tonnes (iron pellets, wood, scrap metal etc.). Rail cargo traffic will increase in the Barents region primarily in three reasons:

1. Increase in wellbeing of people. The traffic volumes are increasing usually a bit faster than the economic growth, which can be measured by GDP. In Russia the growth of GDP is planned to be double in the next 10 years (about 7 % a year). In the Western countries, the growth is more modest.
2. More intensive exploitation of natural resources is being launched in the region. In these kind of cases, firstly comes a mobilisation phase, where infrastructure and industrial facilities will be created. Later, the increase will be levelling in exploitation phase and other everyday activities.
3. Transit traffic brought by opening of the Ledmozero-Kotskoma rail link for international traffic and successful development of N.E.W. Corridor concept.

Rough scenarios in next 10 years in Vartius-Lyttä may be indicated as follows (more profound forecasts would need forecast by cargo types):

- **Modest** scenario with characteristics: Russian GDP increase 1.6 times (5% annually). Preparations of exploitation in Barents Region oil and gas industry will remain modest in the next 10 years. N.E.W. Corridor concept will not yet be successfully launched, but opening of Ledmozero-Kotskoma rail link will bring additional transit cargo. In Vartius/Lyttä annual rail cargo forecast would be 6-7 million tonnes.
- **Normal** development scenario with characteristics: Russian GDP increase 1.8 times (6% annually). Preparation of exploitation of Barents Region oil and gas industry will run normally in the next 10 years. Opening of Ledmozero-Kotskoma rail link will bring additional transit cargo and N.E.W. Corridor concept will be launched but by modest (container cargo volumes forecast 600 containers a week, one container train a day). In Vartius/Lyttä annual rail cargo forecast would be 8-9 million tonnes (including 30.000 containers).
- **High** development scenario with characteristics: Russian GDP increase 2.0 times (7% annually). Exploitation of Barents Region oil and gas will be made and normal production phase has started in the next 10 years. Opening of Ledmozero-Kotskoma rail link will bring fair additional transit cargo and N.E.W. Corridor concept will be launched successfully (container cargo volumes forecast 2300 containers a week, 4 container trains a day). In Var-

tius/Lyttä annual rail cargo forecast would be 10-12 million tonnes (including 120.000 containers).

Rail development in the vicinity of Vartius-Lyttä BC

Vartius-Lyttä is the border crossing terminal complex in Barents Link Corridor having rail and road crossing facilities and intermodal terminals for mode change. To facilitate the development of the border crossing and the rail the following rail projects are being planned and implemented or has been planned:

The Russian side rail and Vartius-Lyttä border crossing

1. Definition of the status of Vartius–Lyttä international border crossing in Russian-Finnish connection and Border Traffic Agreement allowing general cargo and container traffic through Vartius-Lyttä.
2. Installation of data connections between the 4 stations of Ledmozero-Kotskoma rail 126km in the Russian side. After that the sections between stations work as access control system safety sections allowing several trains entering into the 126 km section simultaneously.
3. Opening Ledmozero-Kotskoma rail 126km in the Russian side for diesel train traffic and accepting official tariffs. Allows commercial traffic in market economy conditions.
4. Electrification and signalisation of the Lyttä-Kotskoma rail (115+126 km).
5. Facilitation of infrastructure needed to container transport at Kivijärvi station.

The Finnish side at Vartius-Lyttä border crossing

6. Construction of Vartius border crossing transport complex (cold storage and parking area on 2006 and warm premises (offices) on 2007-2008.
7. Modernisation of Vartius yard and construction of terminal rails.

The Finnish side rail between, Kontiomäki – Vartius

8. Changing of rail sleepers on 2007-2008 between Kontiomäki-Vartius and completion of electrification.
9. Construction of long train railway yard for Ypykkävaara and reconstruction of Kontiomäki yard and timber terminal to meet needs of rail transit flows.
10. Construction of new long meeting rail sections for passenger and freight trains on Puikkokoski between Arola and Kontiomäki.
11. Bearing capacity increase up to 25 tonnes.
12. Removing of at-grade crossings. Kontiomäki-Vartius rail has 21 at-grade crossings, all without signalisation.

The Finnish side rail between Oulu – Kontiomäki

13. Oulu triangle rail from East to South (timing together with Seinäjoki – Oulu rail rehabilitation) and completion of ATC.

14. Construction of two long meeting rail sections for long trains (Niska and Liminpuro).
15. Continuation of short meeting railway yards rails in Paltamo, Pikkarala and Utajärvi.
16. Bearing capacity increase up to 25 tonnes.
17. Removing of at-grade crossings Oulu-Kontiomäki rail has 87 at-grade crossings. 13 have signalisation and 74 are without.

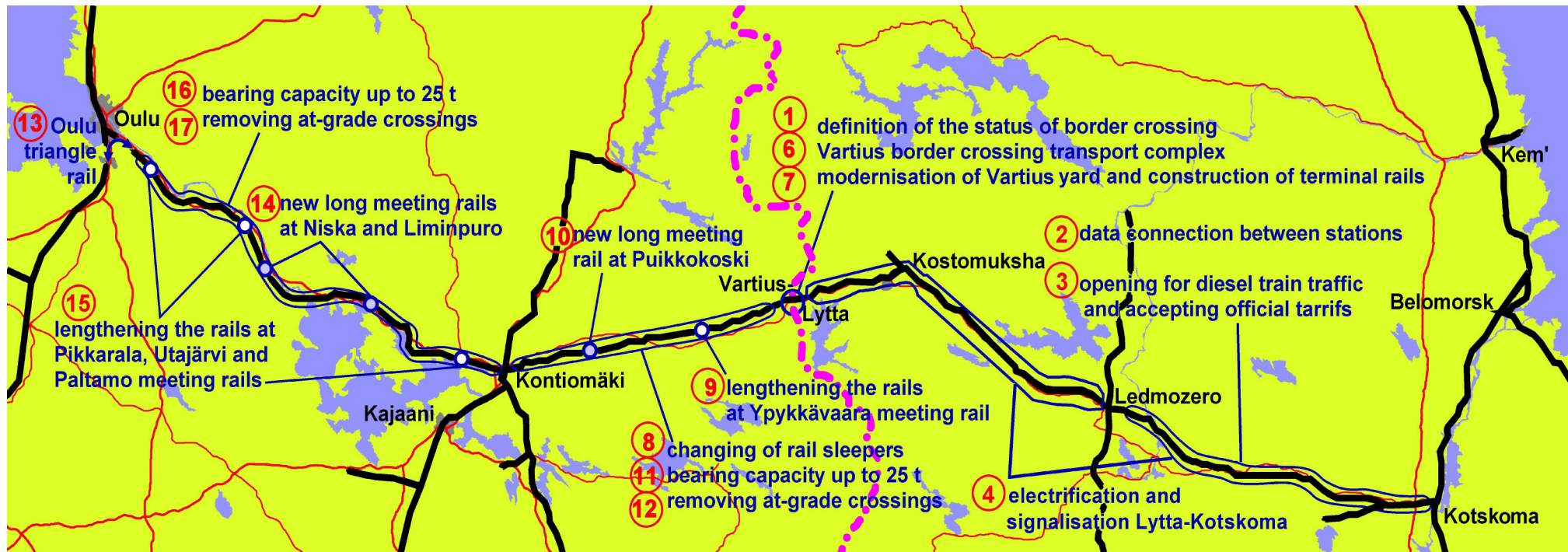
Transport efficiency in Vartius –Lytta border crossing

Economically, the most efficient investment in the region is the effort to open Ledmozero-Kotskama 126km rail link to international traffic. It shortens the trip between Vartius and the Russian main rail (St. Petersburg- Murmansk) for 600 km and travel time (on currently old rail 60 km/h, on new rail 100 km/h) for roughly 10 hours.

The Regions of Kainuu and Northern Karelia are participating on a European project called INTERREG III C - Regional Framework Operation (RFO) sub-theme-working

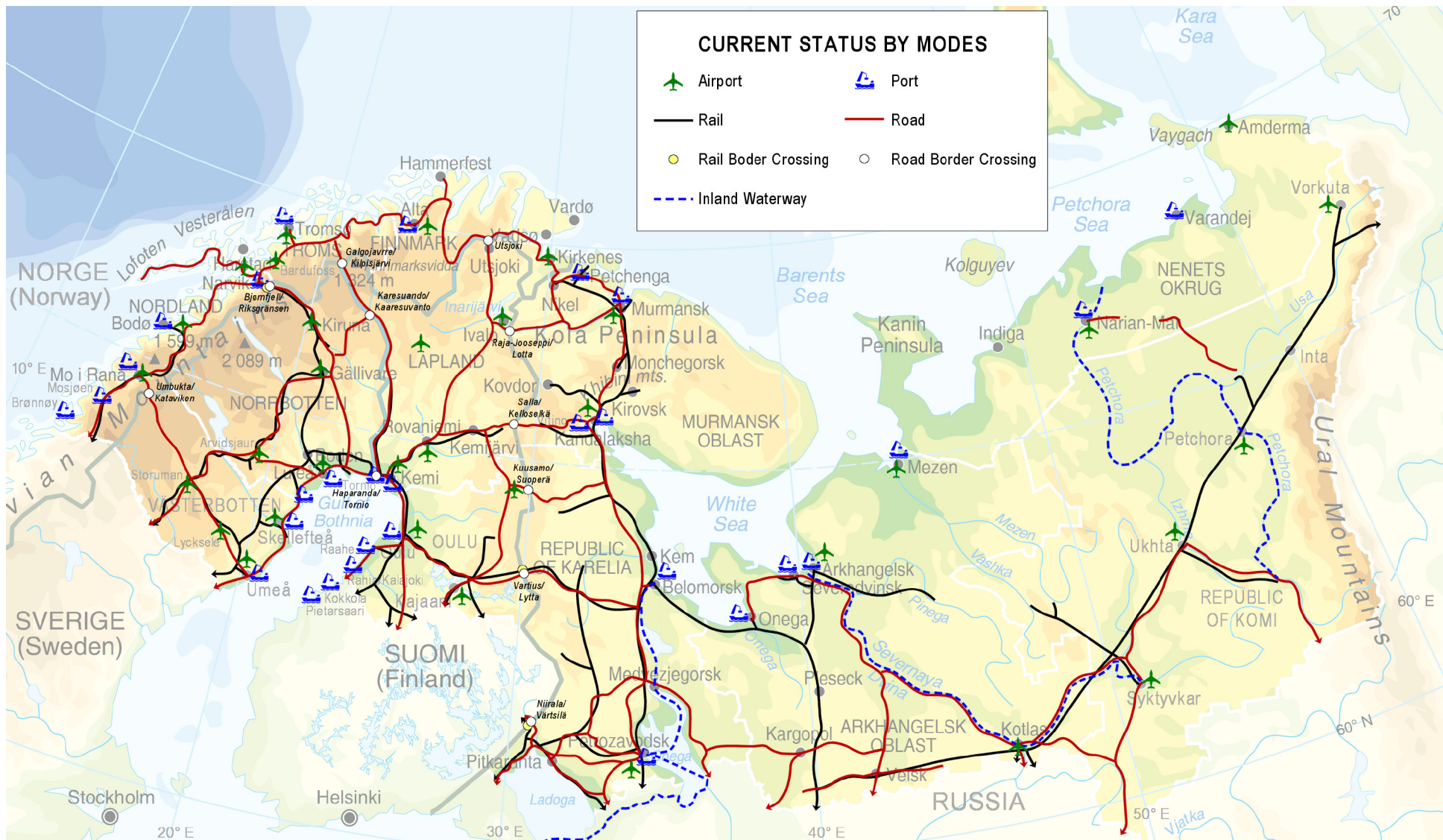
group (SWG) dealing with efficiency assessment of cross border transport infrastructure. The Regional Framework Operation “Change on Borders” is a programme-based approach that promotes interregional cooperation among 28 different border regions in the European Union and beyond. With “Change on Borders” for the first time such a large number of regions have committed themselves to working together in an RFO. The overall objective of the RFO “Change on Borders” is to dismantle borders and border-like barriers in Europe through a stimulation of new cooperation opportunities in different aspects of daily life. Partners are border regions from Germany, Poland, Czech, Belo-Russia, Ukraine, Finland and Russia.

From Finland the participants are the Joint Authority of Kainuu Region and the Regional Council of North Karelia. The project will be completed by October 2007 and the transport efficiency model will be tested in the Vartius-Lytta border crossing investments.



Schema of the improvements in the vicinity of Vartius-Lytta rail border crossing

Current status of the modes in the Barents Link Corridor



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KAINUUN MAAKUNTA –KUNTAYHTYMÄ JULKAISULUETTELO

Sarja A: virallisesti hyväksytyt julkaisut
Sarja B: selvitykset ja tutkimukset
Sarja C: hallinnolliset asiakirjat
Sarja D: monistesarja

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Sarja A

- A:1 Uusiutuva Kainuu
Kainuun maakuntasuunnitelma 2025
(2005)
- A:2 Kainuun maakuntaohjelman toteuttamis-
suunnitelma eli TOTSU 2006 – 2007
(2005)
- A:3 Kainuun maakuntaohjelma 2006 – 2010
(2006)
- A:4 Kainuun maakuntakaava 2020
Kaavaselostus 2006
(2006)
- A:5 Kainuun viestintäsuunnitelma 2006-2008
(2006)
- A:6 Kainuun kansalaisvaikuttamisen
ohjelma 2006 – 2012 (2007)

Sarja B

- B:1 Kainuun Venäjä-liiketoiminnan
Strategia 2005-2012 (2006)
- B:2 Sosiaalihuollon teknologian kehittäminen Kainuussa –hanke 1.4.2005 –
31.3.2007
Sähköisten asiointipalveluiden kehittäminen sosiaali- ja
terveydenhuollossa. Selvitysraportti 2007 (2007)

24.7.2007

- B:3 Sosiaalihuollon teknologian kehittäminen Kainuussa -hanke 1.4.2005 –
31.3.2007
Mielipidekysely sähköisten asiointi-
palveluiden kehittämisestä sosiaali- ja
terveydenhuollossa.
Tulosraportti 2006 (2007)
- B:4 Ikäihmisten palveluohjaus Kainuussa
-hanke 1.8.2004 – 31.12.2006
Palveluohjaus
- Tienviitta kainuulaiselle ikäihmiselle
Loppuraportti (2006)
- B:5 Kainuun tietoyhteiskuntastrategia
2007 – 2012 (2007)
- B:6 Kainuun maakunnallisesti merkittävät
muinaisjäännökset (2007)
- B:7 Luontomatkailun kehittäminen maakuntakaavoituksessa (2007)
- B:8 Barents Link Corridor
(2007)
- B:9 Pohjoinen liikennekäytävä - северный транспортный коридор
(2007)
- B:10 Kainuun luonnon virkistyskäytön ja luontomatkailun kehittäminen (2007)

Sarja C

- C:1 Talousarvio 2006 ja taloussuunnitelma
2006 – 2009 (2005)
- C:2 Vuosikertomus 2005
(2006)
- C:3 Kainuun maakuntaohjelman toteuttamis-
suunnitelma eli TOTSU 2007-2008
(2006)

C:4 Talousarvio 2007 ja taloussuunnitelma
2007 – 2010 (2006)

C:5 Vuosikertomus 2006
(2007)

Sarja D

D:1 "Uusiutuva Kainuu"
Kainuun tulevaisuudenkuvat v. 2025
(2006)

D:2 Tietotekniikan osaamiskartoituskyselyn
tuloraportti 1. Kainuun vanhus- ja perhepalveluhenkilöstö (2007)

D:3 Prosessien mallinnus Kainuun sosiaali-
huollossa 2005 – 2006 (2007)

D:4 Sosiaalihuollon teknologian kehittäminen Kainuussa –hanke. Loppuraportti
2007.
(2007)

D:5 Lähiruokaa Kainuusta 2007. Kainuulaisten elintarvikeyrityksien tuoteluettelo,
3 painos. (2007)

D:6 Kainuussa asuvien maahanmuuttajien koulutus ja työllistyminen (2007)



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