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Wismar Business School

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The East-West Transport Corridor and the Shuttle Train "VIKING"

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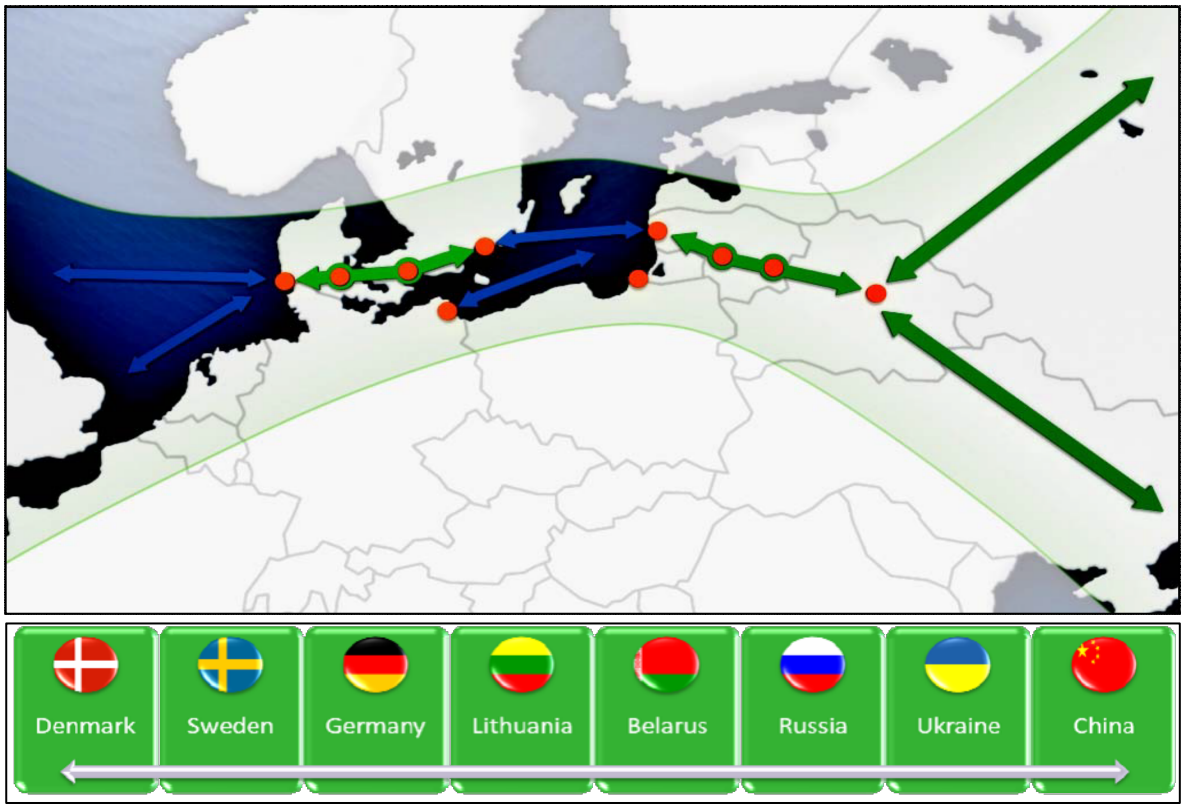
Preface

Logistics has been one of the most booming sectors in the Baltic Sea Region (BSR) till begin of the financial crisis so effective transportation systems are essential to Europe's prosperity, having significant impacts on economic growth, social development and the environment. The economies of the Baltic Sea Region are rapidly growing and forecasts show that this trend will continue and since 2010 the figures are showing a recovering in BSR logistics by finding back to the development started after the EU enlargement in 2004 so that the expectations for the future are still enthusiastic. Alongside this development, the transport volumes in an east-west axis are growing fast across the Baltic Sea Region.

Wismar University took part in several European projects with focus on BSR logistics. It started with the two important projects "LogOn Baltic" and "InterBaltic" in the frame of the BSR Interreg IIIB Programme. Within the Interreg IV Programme the most important projects are the Southern Baltic Sea Interreg IVA-project "Oversize Baltic", the Interreg IVB-initiative "East West Transport Corridor II" and the Interreg IVB project "Baltic.AirCargo.Net".

This paper will highlight as an awarded multi-modal best practice example the East-West Transportation Corridor "EWTC2" and its backbone, the container shuttle train "Viking" linking the Southern Baltic Sea Region and the Black Sea Region. The presented material is based on project and research results and the results developed in the Master's thesis "Project EWTC II – Cargo transport via container train "VIKING" Asia-Europe" of Thomas Kusch which appeared in 2011.

1. The East-West Transport Corridor



Forecasts are predicting a dramatically increasing East-West (Asia-Europe) transport flow, despite the temporary effect of the current global economic crisis. Transport systems should be prepared to accommodate the growing demand for transport and logistics. At the moment special focus is emerging towards the development of land transportation from EU and CIS countries to China and Asian countries. So increased transnational co-operation and coordination is necessary to deal with bottlenecks in the transport infrastructure. One example for good co-operation is the JOINT RAILWAY CONCEPT "VIKING", to minimize the existing bottlenecks in the transport infrastructure between the countries in the Baltic Sea Region, Europe and Asia.

This paper will concentrate on the East-West trade in the Baltic and Black Sea Region. The heavy and growing traffic in the East-West Transport Corridor and its potential to become an important East-West trade route between the EU, Russia and Far East requires attention. There is still a need for better interoperability between different infrastructures, standards and systems, as well as removal of physical and operational bottlenecks, especially on the borders. Special attention is paid to the topic rail of transport at this corridor.

The container train Viking as best practise case is one example how competitive rail transport can be if most of the problems regarding interoperability and border procedures are harmonized. The train connects the Baltic with the Black Sea. The route of the international container train Viking which shuttles

between Klaipeda and Illichevsk via Minsk and Kiev was considered. Due to the extension of the Viking train with the Transport Corridor Europe-Caucasus-Asia (TRACECA) via the Black Sea by ferries new freight flows can be attracted from Central Asia and China to Europe.

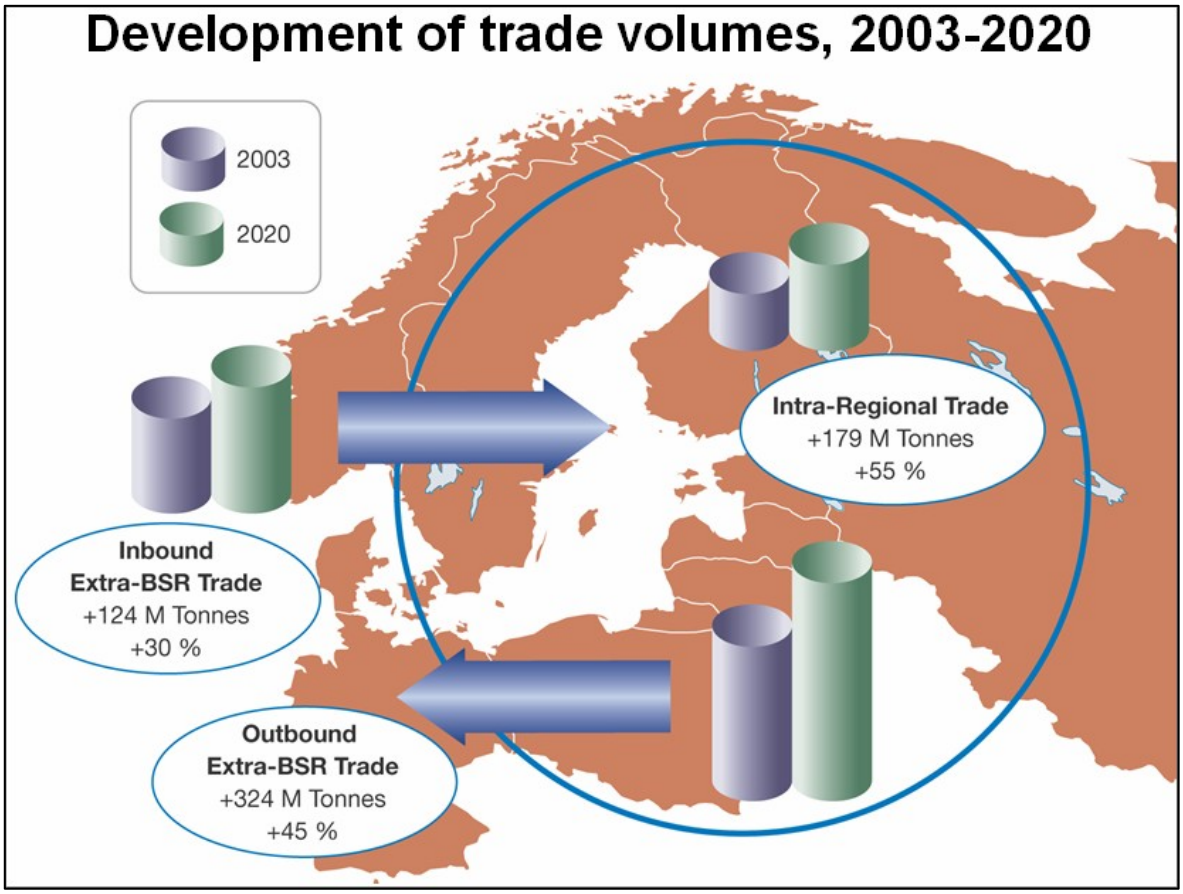
Freight flows for the rail transport are considered which show a changing trend from bulk goods to high value cargo. This development will be supported by the shorter transport duration by rail. The transport of goods from China to Western Europe by ship takes around 35 days and by rail only around 14 days. Because of these facts the future for rail traffic looks bright.

1.1. Freight flows in the Baltic Sea Region (BSR)

Increasing globalisation and European integration lead to new transport challenges. On-going European integration will lead to a rapid increase in the transport of goods and people in all directions across Europe. It is estimated that the total international trade volume in the BSR will grow by 55% between 2003 and 2020. In absolute terms, total intra-BSR trade is expected to increase from 327 million tons to 503 million tons between 2003 and 2020, and the total extra-BSR trade from 1,133 to 1,585 million tons.[1]

[1] Baltic Maritime Outlook 2006, Goods flows and maritime infrastructure in the Baltic Sea Region.

Figure 1: Development of trade volumes 2003 – 2020



Source: Baltic Maritime Outlook 2006.

For the future, a sustained growth of the East-West transport can be expected. Much of this increased transport volume will be handled on the European road network raising the question if the European road network will be able to absorb this growth in freight volume.

So the lack of capacity in many transport corridors is a threat to future growth and to European integration. Road congestion along the major routes in Europe indicates that many of the main transport corridors are already close to their capacity limits. This development will lead to a growing demand for reliable, efficient, fast and flexible door-to-door transport solutions. The growing transport flows will also bring an environmental change which becomes increasingly difficult to bear, especially when they are based on road transport. European Union has reacted to these logistics challenges with TEN-T, freight transport logistics action plan and other activities expressing the need to develop logistics alternatives and improvements.[2]

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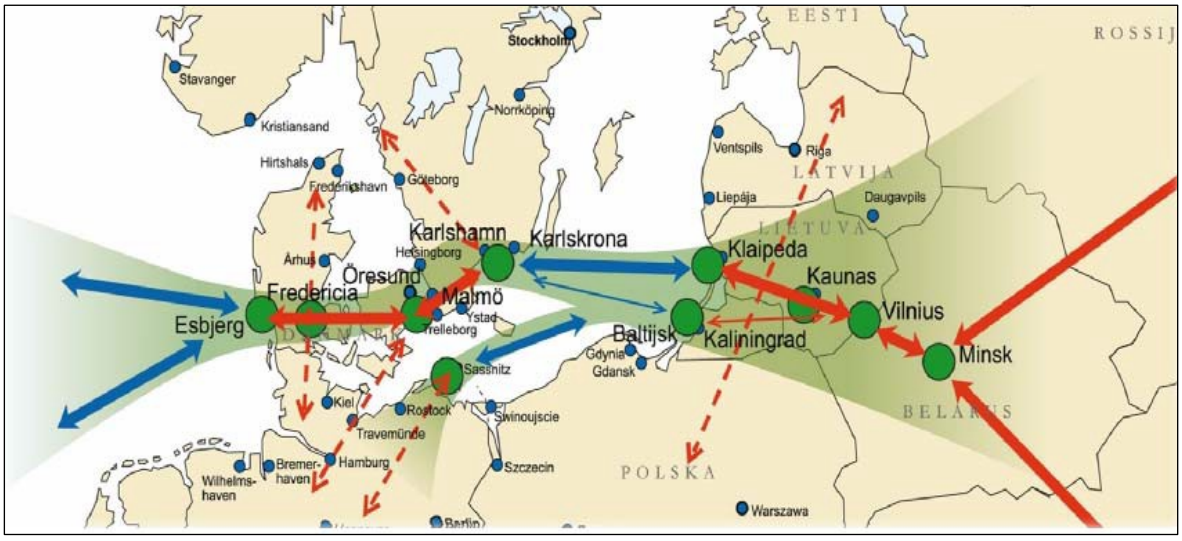
[2] EWTC I Final Report, 2007, www.ewtc2.eu; Freight Transport Logistics Action Plan, COM(2007) 607 final, Source: European Commission, Trans-European network: TEN-T priority axes and projects 2005, Luxembourg: Office for Official

The challenge then is to strengthen transport corridors which have the capacity to increase their services and can guarantee flexible, efficient and fast deliveries, and which can also be expanded within the context of relatively low environmental costs. Then it is necessary to explore the opportunities for transport corridors that combine sea and rail transport in order to supplement the overloaded road networks.

The East-West Transport Corridor is such a corridor, with a high potential for further development and the ability to contribute to more efficient trade and to transport solutions which are more environmentally friendly.

Figure 2: East West Transport Corridor



Source: Tautginas Sankauskas, Presentation: "MONGOLIAN VECTOR", 29.06.2010.

1.2. East-West Transport Corridor

EWTC is a geographically defined infrastructure linkage and intermodal transportation route between Asian countries (China, Kazakhstan….), Russia, Belarus, Ukraine, countries of Black Sea Region, Southern Baltic Sea Region countries (Lithuania, Kaliningrad district, Northern Germany, Denmark, Southern Sweden) and the markets of Central, Western and Northern Europe.

At the same time, the EWTC project is an attempt to form the effective transnational supply chain, providing a variety of transportation and logistics services. To achieve the synergy effect and enjoy the benefits, cooperation between different stakeholders within the global supply chain is needed. EWTC aimed to strengthen the transport development through infrastructure improvements, new solutions for business, logistics and co-operation between researchers.[3]

Publications of the European Communities, ISBN 92-894-9837-4.

[3] About EWTC, 18/06/2010, www.ewtc2.eu.

Furthermore, EWTC is a useful tool for governments to combine the efforts to facilitate needed improvements, for transport and logistics business to speak with governments and cooperate for gaining competitive advantage.

1.2.1. Green cooperation stimulate economic growth

In spite of recent drop of trade volumes due to the global financial crisis, the East-West trade in the Baltic Sea Region is expected to continue increasing. That causes problems like congestion and environmental damage. The EWTC II association is aware of this situation and intends to develop the hubs as growth centres, strengthen railway concepts, improve accesses to hubs, and increase human capabilities.[4]

The aim is also to develop an innovative testing ground for a green corridor concept, which could serve as a best practice case in the European perspective. It includes deployment of advanced Intelligent Transportation System (ITS) services as well as development and testing of an information broker system. This in combination with business development in the transport sector will stimulate the economic growth in the entire East West Transport Corridor.[5]

Three main focuses:

1) To make East West TC a good example of a Green Transport Corridor in line with EU's latest transport policies also meeting market demands for more efficient and environmentalal friendly transports.
2) To develop an innovative pilot testing ground where modern technology and information systems contribute to increased efficiency, traffic safety and security as well as reduced environment impact in the corridor.
3) Supporting economic growth within the corridor, particularly in ports and inland hubs, by stimulating new business models for e.g. railway transport.[6]

1.3. EWTC Association

On 29th of June 2010 in a constituting meeting the East-West Transport Corridor Association (EWTCA) with representatives from China, Denmark, France, Germany, Kazakhstan, Lithuania, Mongolia, Russia, Sweden, and Ukraine took place in Vilnius. The EWTCA will be responsible for the long-term management of the East-West Transportation Corridor even for the time after the end of the EWTC II project. The main tasks of EWTCA will be to maintain the economic and political dialogue between the states and partners in the corridor as well as in other regions and to work as a joint voice, representing its partners in the European Commission and international transport organizations.

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4 EWTC I Final Report, page 15.

5 EWTC II General Brochure, page 4.

6 EWTC II General Brochure, www.ewtc2.eu, page 4.

The East-West TC's international competitiveness will be maintained and improved through continued cooperation in the fields of transport development and innovation, especially by the following activities:[7]

- to strengthen the co-operation between transportation, logistics companies, intermodal terminal operators, shippers and consignees, national, regional and domestic authorities, science and research institutions along the EWTC;
- to develop the links and services between the EWTC and different Europe-Asia regions;
- to initiate the simplification of procedures and documentation;
- to initiate the removal of bottlenecks in the development of infrastructure and operations;
- to initiate and promote implementation of common Key Performance Indicators (KPI's) and services standards along EWTC (with focus on green transport);
- to promote co-operation between private and public sectors;
- to disseminate best practices and modern logistics solutions;
- to support IT networks development among EWTC partners;
- to represent the associated EWTC partners in the European Commission and international transportation organizations, as well as in national and regional authority institutions.

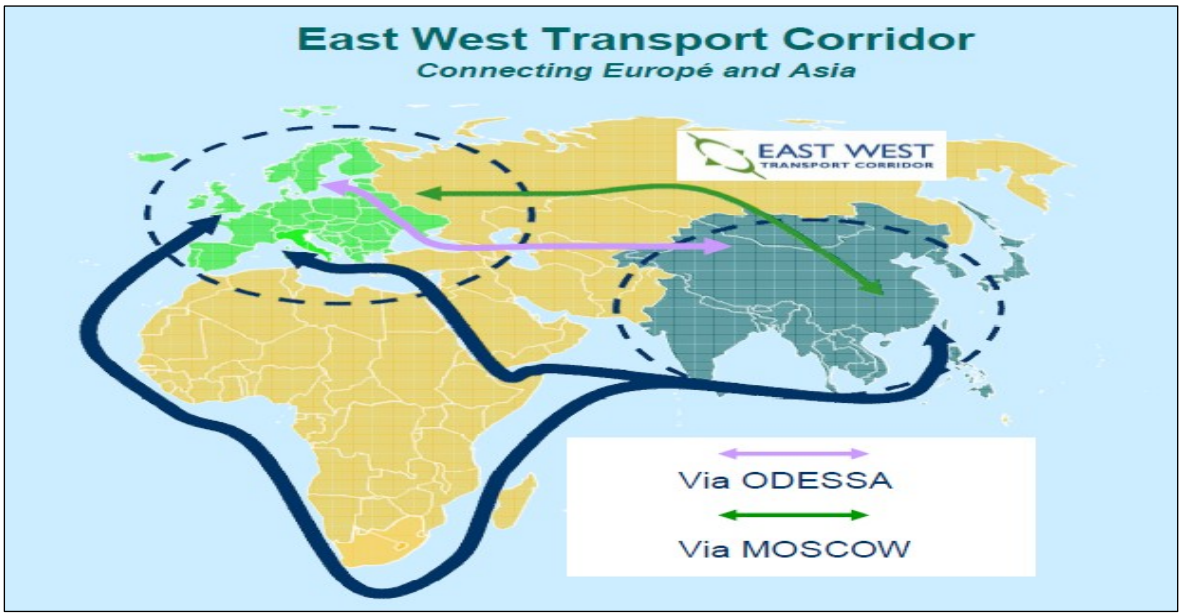
2. Opportunities and Challenges for joint railway policy along EWTC

[7] Dr. Algirdas Šakalys, EWTC Association - an effective instrument for EWTC collaboration and development, Presentation EWTC II Conference Vilnius 29/06/2010.

2.1. EWTC joint railway concept

Nowadays, the biggest cargo flows are transported by sea. Despite all benefits of such a transport mode, land transportation is almost 3 times faster. Although land transport corridor exists, only 5% of cargo flows are transported by rail or trucks. The reason for that development is that land corridors have not been fully exploited because of lack of common tariff policy, the absence of harmonized border control procedures, bureaucratic barriers, and the lack of infrastructure.[8]

Figure 3: Land transportation almost 3 times faster



Source: Dr. Algirdas Šakalys, Presentation: Development of the East-West Transport Corridor in European and global context.

From China to Western Europe:

1. By Sea via Suez (35 days) and around Africa (60 days, 24 000 km).
2. By Continental routes (11000 km, 14 days).

By implementing „East-West Transport Corridor II“ project it is planned to increase freight flows among Southern Baltic states through Lithuania, Belarus, Russia, Ukraine, Kuakas, Central Asia, China, and countries of Far East by using the advantages of intermodal transport. The project will be implemented within EU transport policy stressing importance of formatting “Green transport corridors” conception which is giving priority to railway transport as one of most ecological and economical transport means and to sustainable integration of all transport modes.

Due to high importance of railway transport a separate set of tasks has been created which is called “Development of railway transport business opportuni-

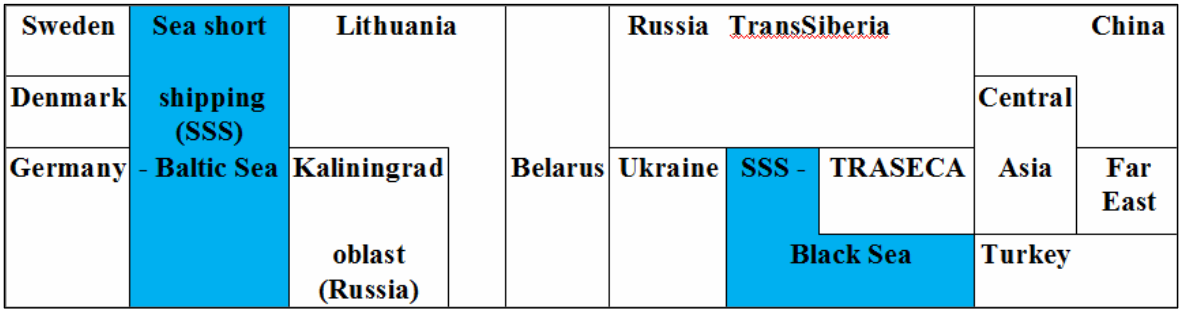
[8] Magazine EWTC Transporter ISSN 2029-4204, 06/2010 Edition No. 9, page 4.

ties".[9]

2.2. Challenges of the EWTC Joint railway concept

The development of the railway network in the East West transport corridor was country oriented. There are different standards, different services are being offered in regard to legal base of different countries and different IT systems are being installed on railway sector in each country. Consequently, there are different railway models in every country of East-West transport corridor.[10]

Figure 4: Country rail segments of the EWTC



Source: Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

To reach the goal to create a joint railway network it is important to identify the "bottlenecks" on the East-West Transport Corridor and to make an action plan to eliminate them.

Bottlenecks for the joint railway concept:

Bottlenecks concerned with differences in:

- Track infrastructure,
- Rolling stocks,
- Electric systems,
- Signal and security systems,
- IT systems.

Operational bottlenecks:

- Border crossing and customs procedures,
- Information exchange difficulties,
- Various operational instructions. Railway business environment bottlenecks:

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[9] Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

[10] Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

- Differences on railways business regulation legislation,
- Differences on tariffs policy,
- Different economic and political interests of the corridor countries.[11]

For the future development of the EWTC joint railway concept it is necessary to use a geo-economic approach. That means the EWTC association has to

- strengthen the cooperation of all stakeholders,
- assess new ideas,
- use collected experience of cooperation and interoperability on 1520 mm gauge railway network (e.g. Russia, Lithuania),
- use achievements of best practice cases (for example, shuttle train "VIKING").[12]

3. Shuttle train "VIKING"

3.1. Best practice case container train "VIKING"

One of the current tendencies in case of railway container transport between Europe and Asia is the powerful comeback of short and medium-distance transport. We find this traffic between neighboring countries, which usually have a long standing tradition in cross-border exchanges and that prefer to develop their local networks to investing in the construction of multi-national corridors.

Such an example is the joint railway project "VIKING", which was initiated

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[11] Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

[12] Ibidem.

by Lithuania, Belarus and Ukraine, port companies, Klaipeda, Odessa and Illichevsk port. According to intergovernmental agreement between Lithuania, Belarus and Ukraine, since 6th of February, 2003 regular operation of combined transport train Viking has started.[13]

The train connects port Klaipeda on the Baltic Sea with port Illichevsk on the Black Sea as well as three capitals – Vilnius, Minsk and Kiev.

The Viking train as a sea-rail-(road)-sea intermodal connection was designed as a Ro-Ro (Roll-on/Roll-off) and a Lo-Lo (Lift-on/Lift-off) transport solution. The train carries 20, 40 and 45-feet universal and special containers, trailers, trucks and semi trailers. On the Baltic Sea they are sent to Klaipeda port by sea transport from Scandinavia and Western Europe as well as via Mukran–Klaipeda ferry-line, and then carry on by Viking train to Belarus, Ukraine, the Near East, and Caucasus via Illichevsk and Odessa sea ports. The railcars with containers bound for Georgia and Armenia can travel via two different ferry lines: Illichevsk (Ukraine) – Poti or Batumi (Georgia). The ones going to Turkey can be transported via the Illichevsk (Ukraine) – Derince (Turkey) ferry line.[14]

The Viking trains will be operated by three companies.

- In Lithuania – "LG Ekspedicija";
- In Belarus – Nation-wide transport expedition enterprise "Belintertrans";
- In the Ukraine – Ukrainian State Transport Service Centre “Liski“.[15]

The price for transportation is one of the biggest advantages of the train. The tariffs for containers and trailer-trains are lower than those of truck companies.

The prices in the following table include the execution of carrying documents, transportation of one vehicle on a specialized railway platform, travel of the driver in the carriage, customs clearance in Ukraine, Byelorussia, Lithuania, guarding of vehicles during the whole route.

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13 Regular piggyback train "Viking", http://www.liski.com.ua/eng/index.php?thisPage=intmod_viking.

14 Antanas Zenonas Kaminskas, Presentation: Shuttle train VIKING - Success story of intermodality.

15 Regular piggyback train "Viking", http://www.liski.com.ua/eng/index.php?thisPage=intmod_viking.

Table 1: Prices for vehicles on Viking train[16]

From	To	Price
Illichevsk	Klaipeda	420$
Kiev	Klaipeda	360$
Klaipeda	Illichevsk	420$
Klaipeda	Kiev	360$

The rates in the following table are valid for cargo transportation in universal containers loaded up to their load-carrying capacity stipulated by the container's technical characteristics.

Table 2: Prices for container on Viking train

		20'		40'	
From	**To**	**Loaded**	**Empty**	**Loaded**	**Empty**
Odessa	Draugiste	453$	202$	710$	326$
Odessa	Kolyadichi	310$	160$	510$	240$
Kiev	Draugiste	353$	166$	539$	253$
Kiev	Kolyadichi	205$	97$	305$	142$

Source: Ukrainian State Center of Transport Service, http://www.liski.com.ua/eng/index.php?thisPage=intmod_viking, 12.05.2011.

3.2. Viking freight volumes

From the beginning of the operation of the Viking train on 6th of February 2003 up to 2007 the freight volume was rising sharply each year. In 2007 the train transported 40,066 TEU which is about 70% more than in 2006. In 2008 the trade was affected by the world crisis and the transportation rates reduced by 17%. In 2009 the railway administrations of Lithuania, Belarus and Ukraine decided to cut the Viking tariffs by 15% and bringing them down to last year's level. This has enabled the Viking project to retain its competitiveness in the period of crisis.[17] The result of this decision was a rising freight volume nearly to the level of 2007. The year 2010 confirmed the positive trend.

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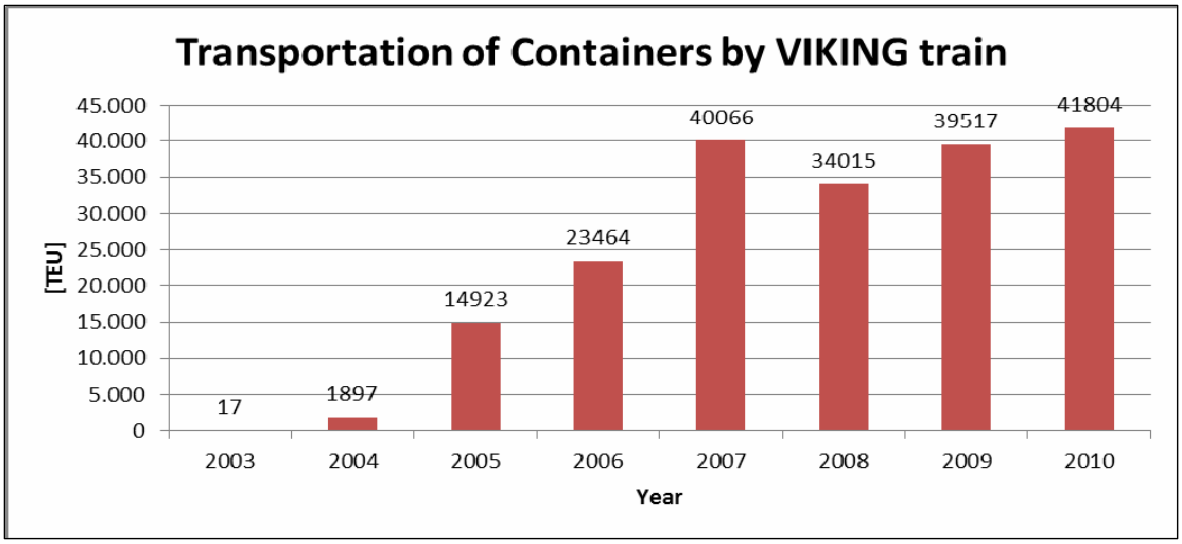
16 Ukrainian State Center of Transport Service, http://www.liski.com.ua/eng/index.php?thisPage=intmod_viking, 12.05.2011.

17 Priorities of Belintertrans, http://www.deliverjournal.com/en/journal/archive/section.php?ELEMENT_ID=2085.

Figure 5: Viking freight volumes



Source: Port of Klaipeda, http://www.portofklaipeda.lt/en.php/port_of_klaipeda/transportation_of_cargo/statistics/10771, 12.05.2011.

3.3. Innovations

During the development of the Viking project some obstacles had to be removed. Problems arose from:

- Technology (lack of platform for loading/unloading cars and trucks),
- Information (variety of standards of Integrated Transaction Control Systems (ITC) and documentation),
- Organization (variety of interests and action instructions),
- Law (different legislation in separate countries, link between EU/CIS (Commonwealth of Independent States)),
- Economy (different economic and transport policy in separate countries),
- Policy (lack of international agreements).[18]

By implementing the project, the following solutions have been implemented to solve the problems.

3.3.1. Border crossing procedure:

Kena border station is the link between the EU (Lithuania) and CIS (Belarus) countries, because of successful cooperation with customs and frontier authorities, and implementation of information systems the border crossing pro-

[18] Antanas Zenonas Kaminskas, Presentation: Shuttle train VIKING - Success story of intermodality.

cedure could be improved. Now, the Viking train needs 30 min for the crossing procedure in Kena border station. But not only the communication between the various parties has been improved in order to obtain this result. The modernisation of Kena border station has also contributed to it.

Kena border station was modernised in three stages. The first one was completed in 2004 (value of the investment 17 million Euro) and the second stage was completed in 2005 (value 20 million Euro). At the end of 2008 the third stage of reconstruction was completed as well. Also in the third stage 20 million Euro have been invested.[19]

During the day 68 trains pass Kena. Up to 2020 the number will increase to 76 trains per day and up to 2030 approximately 80 trains pass the border station. Because of the modernization Kena is well prepared for the increasing train traffic. To accelerate the customs clearance of trains a wide railway network and special measuring techniques have been installed. Besides two main railroads, eleven railroads are constructed for entering and exiting the border station. A dynamic scale is installed, which measures the weight of cargo without stopping the train. On both sides of the railway line new X-ray gates are installed. Here the cargo is screened in order to be sure that the content corresponds to the declarations. Due to special sensing elements fixed on the train even the speed of the train is measured and is observed in Kena.[20]

For more safety and faster trade JSC Lithuanian railways participated in the pilot project of EU for assignment of the Authorised Economic Operator (AEO) status. Authorized Economic Operator is an internationally recognized certification that an EU trader's role in the international supply chain is secure and customs controls and procedures are compliant. Authorized Economic Operators include manufacturers, importers, exporters, brokers, carriers, consolidators, intermediaries, ports, airports, terminal operators, integrated operators, warehouses, and distributors.[21]

3.3.2. Simplification of customs procedure:

In Asia and Europe we find two different regimes for carriage by rail.

- Two organisational structures: OTIF(EU) – OSJD(Russia, Asia),
- CIV & SMPS for passenger traffic,
- CIM & SMGS for freight traffic.

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[19] Algis Palionis, Kena - gates to the East and West, issue 04/2008, http://www.jura.lt/contents/article_eng.php?id_year_issue=200804&id_num=12_0.

[20] Algis Palionis, Kena - gates to the East and West, issue 04/2008, http://www.jura.lt/contents/article_eng.php?id_year_issue=200804&id_num=12_0.

[21] AEO definition Wikipedia

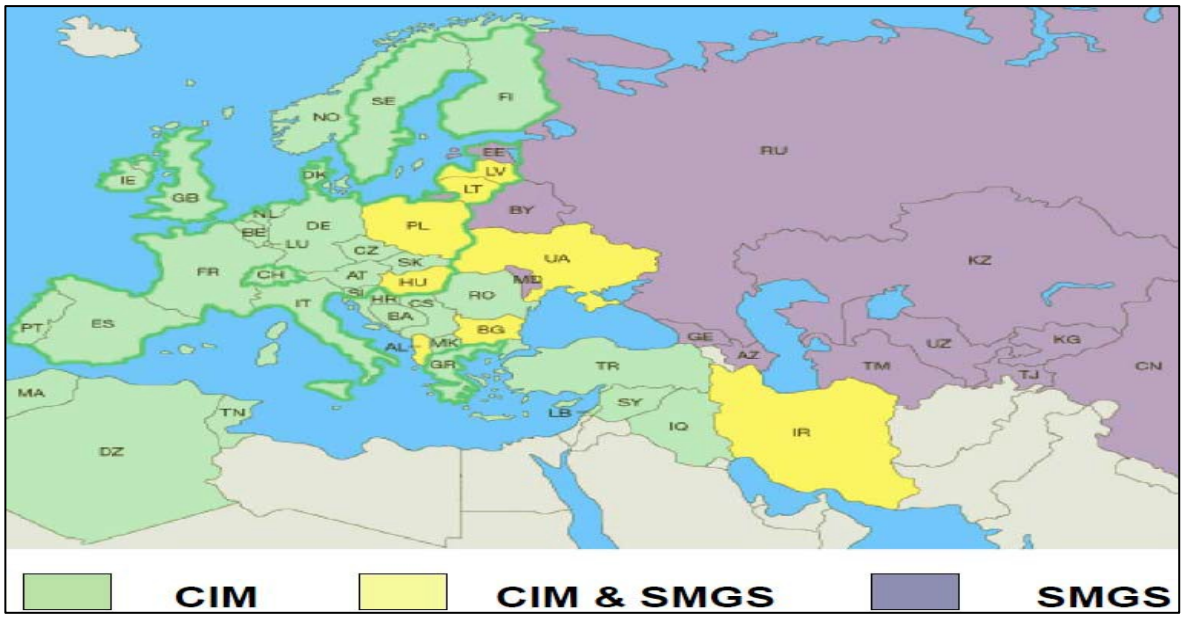
Table 3: Differences in law

CIM (Uniform Rules concerning the Contract of International Carriage of Goods by Rail - Appendix B to COTIF)	**SMGS** (Agreement on International Goods Transport by Rail)
• Consensual contract • Contractual freedom • Consignment note design within the competence of Railway Undertakings • Joint and several liability	• Formal contract • Obligation to set and publish tariffs and to carry • Consignment note defined in SMGS itself • Individual liability

Source: 25 Dr. Th. Leimgruber, Presentation: Common CIM-SMGS consignment note for international rail transport, 27-29 April 2009.

OTIF - (Intergovernmental Organisation for International Carriage by Rail),
OSJD - (Organisation for Cooperation between Railways).

Figure 6: Scope of CIM und SMGS



Source: Dr. Th. Leimgruber, Presentation: Common CIM-SMGS consignment note for international rail transport, 27-29 April 2009.

Before simplification of customs procedure, the consignment note at border crossings between the two jurisdictions had to be rewritten from one format to the other.

For easier trade and quicker customs transit procedure the Viking project uses the new CIM/SMGS consignment note. With the application of the new consignment note the rewrite of documents is not required and only one con-

signment note will be used for the whole transport. That leads to the result that the border crossing time will be significantly reduced.

Here are some more advantages of the CIM/SMGS consignment note:

- Both contracts of carriage can be shown on a single A4 sheet of paper,
- Elimination of extra costs for activities that provide no extra value,
- Elimination of a source of errors by eliminating the transcription of consignment notes when traffic is reconsigned,
- Higher levels of legal certainty for all participants,
- Consignment note can be issued electronically,
- EU export formalities for CIM -> SMGS traffic may be completed at the time the traffic is consigned,
- The CIM/SMGS consignment note is recognised as a banking document if a letter of credit is used,
- The use of the new consignment note is voluntary; the classic system of reconsignment at the interface can still be used.[22]

At the beginning of 2010 the pilot project EAIS (Single Automated Informational System) was started. Ukrainian, Belarusian and Lithuanian customs offices and transport companies use a New Computerised Transit System - rail declaration (NCTS) for the transportation of goods among these countries, what again facilitates the execution of customs procedure for the cargo transported by Viking train.[23]

3.3.3. IT-Systems

Two innovative IT-systems were created to provide high quality service along the entire Viking route. Here we find the KIPIS-system in Klaipeda seaport and the IT-system KROVINYS developed by Lithuanian Railways.

KROVINYS:

JSC Lithuanian Railways has created the new IT system KROVINYS to ensure an easy freight transportation process. For the time of freight transportation the system is capable to execute and to record all necessary documents. The system KROVINYS has also data exchange interfaces with the existing system OPKIS (Operative Computerised Information System for Haulage) and the new KIPIS-System.[24]

KIPIS – Freight and Goods Information System:

The KIPIS-System has been elaborated and installed in Klaipeda seaport. It was developed in close cooperation with the companies and associations oper-

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22 CIM/SGMS Common Consignment Note, http://www.interrail.ag/front_content.php?&idcat=79&changelang=3&idart=330.

23 Presentation: Plaske JCS, Pilot Project «Interaction of EAIS (Single Automated Informational System) and NCTS in Ukraine».

24 Freight Transportation, www.litrail.lt.

ating in the port and the state authorities responsible for inspecting freight and ships. The system is available for a wide range of users, e.g. freight forwarding and shipping companies, stevedoring companies, JSC Lithuanian Railways, Customs Department, Klaipeda Public Health Centre etc.

Main functions of KIPIS:

1. Provision of information required by customs and other state authorities via internet connection;
2. Data exchange amongst the system users to conduct procedures such as temporary storage of goods, import, export and transit, or any other customs formalities;
3. Electronic data exchange with the stevedoring companies for the purpose of placing and executing orders for handling operations.[25]

From Klaipeda seaport 80% of the total cargo volume is brought and carried away by railway transport. This assumes a good communication and data exchange between the railway company (Lithuanian Railways) and the companies operating in the seaport. Therefore an automatic data exchange interface was developed between the systems KROVINYS and KIPIS.

The system benefits all participants of the logistic chain by facilitation and acceleration of cargo movement through the port by way of exchanging electronic data. KIPIS allows the inspection authorities to receive preliminary information and documents for risk assessment and operative, real time and statistical information of the cargo at the port. This helps to control the port operations in a simpler and easier way and leads to better public services. The system reduces the administrative burden and eliminates about 30 various paper documents going between the ship agency, forwarding, stevedoring companies and state authorities controlling freight and goods traffic. This paperwork includes a variety of permits to import, export, handle and reload goods, handling operations reports, quality certificates etc. The result of the elimination of the paperwork is that users of the system are able to share information without wasting time as they did with the old method. Furthermore costs and human/technical resources were saved.[26]

3.3.4. Train schedule

The project participants of the Viking project created train traffic schedule according to which the carriage time from Klaipeda to Illichevsk (distance 1734km) takes 56.5 hours. For example, the train covers the territory of Lithuania (distance 434 km) in 13.75 hours. The fixed train schedule enables

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[25] KIPIS – Freight and Goods Information System, www.portofklaipeda.lt/en.php/urgencies/4875?mark=KIPIS.

[26] 30 KIPIS – Freight and Goods Information System, www.portofklaipeda.lt/en.php/urgencies/4875?mark=KIPIS.

to ensure the delivery of goods to clients on time.

Table 4: Distances of Viking train

Distances	[km]	[h:m]
Lithuania	434	13:45
Belarus	544	22:41
Ukraine	756	19:01
Total	**1734**	56:27

Source: Train schedule Belintertrans, http://en.belint.by/viking, 12.05.2011.

Loading of vehicles on railway platforms, preparation and customs processing of shipping documents for Train 1161 are carried out every Friday from 09:00 am till 05:00 pm on terminal in Illichevsk: Sea port – ferry and in Kiev: – in the territory of Ukrainian State Center of Transport Service "Liski".

Forming of train, customs clearance and border control are carried out at station Korosten, Zhitomir region – in the area of operations of Zhitomir customs. Train departs every Saturday.

Loading of Train 1162 in direction Klaipeda – Kiev – Illichevsk is carried out at Draugiste Station in Klaipeda or directly in Port of Klaipeda. The company "BLC CLASCO" on behalf of "Lithuania Railways" – LG expedition is engaged in execution of railway documents. Train departs every Tuesday.[27]

Figure 7: Viking route

Source: Litrail Antanas Zenonas Kaminskas, Algirdas Šakalys: Presentation: Pilot intermodal project – shuttle train "Viking" increases vitality.

[27] Ukrainian State Center of Transport Services, http://www.liski.com.ua/eng/index.php?thisPage=intmod_viking, 12.05.2011

3.3.5. Technical Solutions:

For the efficient service of the train to carry trailer and semi-trailer, the ports Klaipeda and Illichevsk created a special technology for loading. A metal pre-fabricated rear ramp was built for the loading and unloading of the trailer. In Paneriai Station (Vilnius) the same technology is used. To guarantee a quick container handling in the port, new technologies were developed. In the multi modal terminals of the ports new railway platforms are operated with pneumo-wheeled auto cranes with the ability to lift 50 tons or container auto loaders like reach stacker which can lift up to 37 tons[28].

Figure 8: Phneumo-wheeled auto crane

Source: www.pezzaioli.it/de/images/hupac3.jpg.

Figure 9: Reach stacker

Quelle: www.chinaforklift.com/news-icture/mijack2-5.jpg.

[28] The Viking invasion, issue 06/2009, http://image.ua/img/157/viking.pdf

3.4. Advantages of transportation by Viking train

The Viking train is an international intermodal freight logistics project covering the railway, sea and motor transport. The main success elements of the Viking project are safety, environmental friendliness, fast delivery of cargo from departure station to the destination station, easy crossing of state borders and execution of customs formalities and an attractive tariff.[29] Furthermore, it is to point out the successful cooperation between railway companies, ports, cargo companies and freight forwarder which enabled the realisation of the project. Until now the Viking train route covers the territories of three states in EU and CIS countries and serves clients in the north part of the EU and Black Sea region.

The border crossing time was reduced by successful cooperation with customs and border authorities and development of progressive IT-Systems. The Freight carriage management system KROVINYS is helpful which allows to perform custom and border crossing procedures easily and quickly due to preloaded electronic invoice. The checking of the whole train at the EU and CIS border now takes only 30 minutes.

Final stations of the route are the seaports Klaipeda and Illichevsk which are connecting the Baltic Sea region with the Black Sea region. That provides additional possibilities to cover freight flows from the Far East (China, Kazakhstan).

The Viking project is one of the most successful projects on freight carriage among the EU and CIS countries. Due to the importance of the project for the EU intermodal transport system and the reached improvements for 7 years, the project has been included into “Best practice handbook” of European innovative intermodal freight transport.

All these facts in 2009 led to the result that the Viking project was announced by the European Intermodal Association as the winner of the 9th annual European Intermodal Award for best practices competition.[30]

Figure 10: European Intermodal Award

[29] Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

[30] Stasys Dailydka, Opportunities and Challenges for joint railway policy along EWTC, Presentation EWTC II Conference Vilnius 29/06/2010.

4. Extension of the Viking route

4.1. Extension of the Viking route

Figure 11: International transport corridors, highways and railway routes

The Container train Viking was opened in 2003 to ensure container cargo flow from Baltic Sea to Black Sea and vice versa. Container transport by Viking train becomes increasingly popular. In 2010 this train carried 41,804 TEU. By container- and Ro-Ro lines the Viking train reaches with the ports Klaipeda

and Odessa the ports Immingham, Rotterdam, Antwerp, Hamburg, Bremerhaven, Kiel, Mukran, Aabenraa, Aarhus, Karlshamn, Gdynia, Kaliningrad, Riga, Poti, Istanbul, Pireas, Varna, Constanta etc. .

To strengthen the position of the Viking train in container transport, studies were carried out to extend the train to Central Asia (through Caucasus). Two variants of routes in the East-West transport corridor are proposed:

1. South Baltic Sea Region ─ Lithuania ─ Belarus ─ Russia ─ Kazakhstan ─ China;
2. South Baltic Sea Region ─ Lithuania ─ Belarus ─ Ukraine ─ Georgia ─ Azerbaijan ─ Kazakhstan ─ China.[31]

1) The first variant to extend the Viking route is to use the Eurasian railway mainline. The so called Euro-Asian Continental Bridge or New Silk Road crosses the Viking route in Minsk and Kiev. At these stations it is possible to shift the container to another train. Most containers will be loaded onto trains of Russian Railways. The eastern station of the Eurasian railway network is Lianyungang in Jiangsu Province (China). Lianyungang port which is part of the worldwide network of sea transport linking eastern sea routes e.g. from Japan and South Korea, with western land routes. The Euro-Asia Continental Bridge connects over 40 countries and regions in Europe, South Asia and the Middle East.[32]
2) The second variant to extend the Viking route is to cross the Black Sea by ferry and to use the European – Caucasian – Asian railway route (TRACECA).

4.2. TRACECA - an alternative route

The TRACECA programme initiated at the Conference in Brussels in May 1993 is an EU-funded programme to assist the implementation of an alternative transport corridor from Europe to Central Asia, from the Black Sea via Caucasus and the Caspian Sea through Mongolia and China. The idea is to have lower transport costs for this long-distance transport by shortening the travel distance by a more direct connection to the Trans European Network and the European Transport Corridors.

The corridor starts in the Eastern Europe (Bulgaria, Romania, Ukraine) and also crosses Turkey. The route is passing the Black Sea to the ports of Poti and Batumi in Georgia. For further transport the transport network of the Southern Caucasus is used. A land connection towards this region also exists from Turkey. From Azerbaijan by means of the Caspian ferries (Baku –

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[31] Algirdas Šakalys, Antanas Zenonas Kaminskas, Presentation: Pilot intermodal project – shuttle train "Viking" increases vitality.

[32] Lianyungang, http://en.wikipedia.org/wiki/Lianyungang.

Turkmenbashi, Baku – Aktau) TRACECA route reaches the railway networks of Central Asian states of Turkmenistan and Kazakhstan. The transport networks of these states are connected to destinations in Uzbekistan, Kyrgyzstan, Tajikistan, and reach the borders of China and Afghanistan[33].

Via the Black Sea region the Europe – Caucasus – Asia corridor is linked by shipping lines with the most important European transport corridors:

- IX – from the north to Odessa and Illichevsk (Ukraine),
- VII – through the Danube with the exit to Constanta (Romania) and Ukrainian mouth ports,
- VIII – through the Balkan Peninsula to Bourgas and Varna (Bulgaria),
- IV – through the Balkan Peninsula to Constanta and to the south of Istanbul (Turkey).

By these connections this route could be extended from the north of Europe to the south of China and could become the most important bridge between the West and the East. Over the last 17 years more than 70 projects have been implemented to achieve this goal. New transport infrastructure (roads, railways, ports, etc.) are being built along the whole length of the TRACECA corridor, with simultaneous renovation of the existing infrastructures. Up till now all investments by international financial institutions in the development of the transport infrastructure in TRACECA countries have exceeded one billion Euro. From 2009 to 2015, further 470 million Euro will be spent on the development of the transport corridor to achieve the desired objective of delivering a sustainable, efficient and integrated multimodal transport system between the EU and TRACECA countries by 2015.[34]

4.2.1. Trade in TRACECA

The international transport corridor TRACECA is a multimodal system of land and sea routes permitting international transport between Europe and Asia across the Black Sea. 13 member countries represent the TRACECA corridor and signed the Basic Multilateral Agreement on International Transport for Development of the Europe-Caucasus-Asia Corridor (MLA). These are Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Turkey, Uzbekistan, Ukraine and the Islamic Republic of Iran. Turkmenistan also belongs to the corridor but is only a participating country in the TRACECA programme and is not a member of the MLA.[35]

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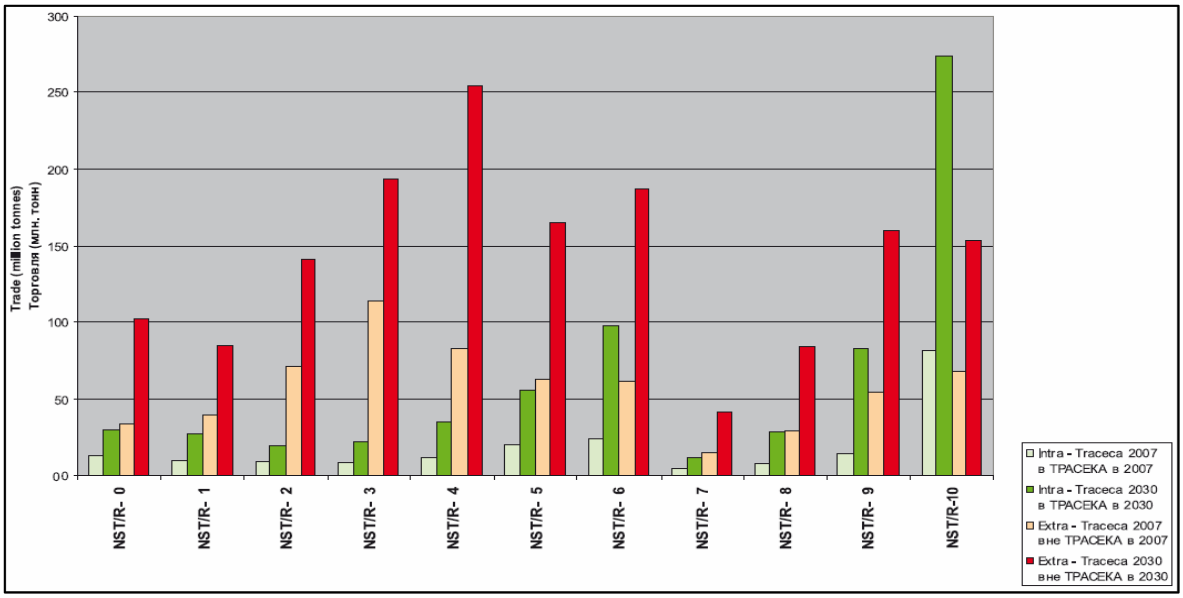
[33] The Silk Road of the 21st century, http://www.traceca-programme.eu/en/home/the-silk-road-of-the-21st-century/.

[34] Alena Moroz, The TRACECA train is still here: boarding continues, http://regionplus.az/en/articles/view/39.

[35] Transport dialogue and interoperability between the EU and its neighbouring countries and Central Asian countries Inception Report, September 2009.

The growth of world trade has directly influenced the growth of trade in the TRACECA countries. Over the last 10 years the volume of cargo transportation through TRACECA has increased more than six-fold and in some areas by ten times. The main cargo carried along the corridor is oil and oil products as well as ore, metals, building materials and chemical products.[36]

Figure 12: International trade volumes by commodity group in TRACECA in 2007



[36] TRACECA Transport and Trade Atlas, November 2009.

NST/R	
0	Agricultural products and live animals Продукцие сельского хазяйства и живые животные
1	Foodstuffs and animal fodder Пишевые продукты и карма для животных
2	Solid mineral fuels Твердое минералыное топливо
3	Crude oil Сырая нефть
4	Ores and metal waste Руды и металический лом
5	Metal products Металические изделия
6	Crude and manufactured minerals, building materials Непереработаные и пириработаные минеральные сырья, страительные материалы
7	Fertilizers Удобрения
8	Chemicals Химические продукты
9	Machinery, transport equipment, manufactured, misc. articles Машины, транспортны оборудование, разные промышлены изделия
10	Petroleum products Нефтяные продукты

In 2007 Extra-TRACECA trade in crude oil reached a volume of 113 million tonnes. But for 2030 it is forecasted that the highest growth will be represented in the Extra-TRACECA trade by Ores and metal waste, metal products, crude and manufactured minerals, and building materials. A growth of more than 210% is expected. In the Intra-TRACECA trade the highest volume in 2007 is represented by petroleum products. It is expected to reach a volume of 270 million tonnes in 2030. The highest growth will be presented by machinery, transport equipment, and manufactured articles with a growth of more than 490%.

In general it could be said that the volume of cargo transported by the TRACECA corridor will continue to grow. It is expected that the annual growth in trade turnover between member states of TRACECA exceeds 20% and between TRACECA countries and the EU more than 15%.[37]

[37] International trade volumes by commodity group in TRACECA in 2007, TRACECA Transport and Trade Atlas, November 2009, page: 33.

4.2.2. Existing problems

Despite these good prospects there are still existing problems which constrain the trade. Container traffic through TRACECA comprises only 10%, whereas container traffic in EU countries comprises 50-60% of overall cargo turnover. At the same time container traffic is not sufficiently balanced. Containers mainly carry imported cargo and are mostly empty when they return. Therefore it is quite important to ensure that containers are full both ways. Another important aspect in the development of the corridor is the use of single tariffs for international cargo transportation. Although single tariffs are the best way of increasing cargo traffic the member countries can not find a common agreement on this issue. There are also some deficits in the area of customs and freight procedures which are not harmonised between the TRACECA countries.

All these problems should be solved in a way that ensures competitiveness and make the corridor more attractive to potential users.[38]

4.2.3. Important role of Ukrainian Ports for TRACECA

Constanta Port (Romania) is the front runner of Black Sea container business. Over the last years, Constanta and Istanbul were the only ports along the Black Sea coast capable of accepting large container ships. From these ports containers were transhipped to ports of other Black Sea countries on small feeder ships. Up to 70-80% of the handled containers in the port of Constanta were transhipped to other Black Sea ports, especially in the Ukraine.[39]

The Ukraine is already in progress to develop its own international container hub ports. There are some advantages for a country to have international container hub ports.

1. Hub ports gain money by transhipping containers.
2. The country can shorten lead time of transportation, which means higher competitiveness of national economy.
3. The country enjoys lower import prices because the port can handle large container vessels directly
4. Avoiding additional cost of feeder ship transportation

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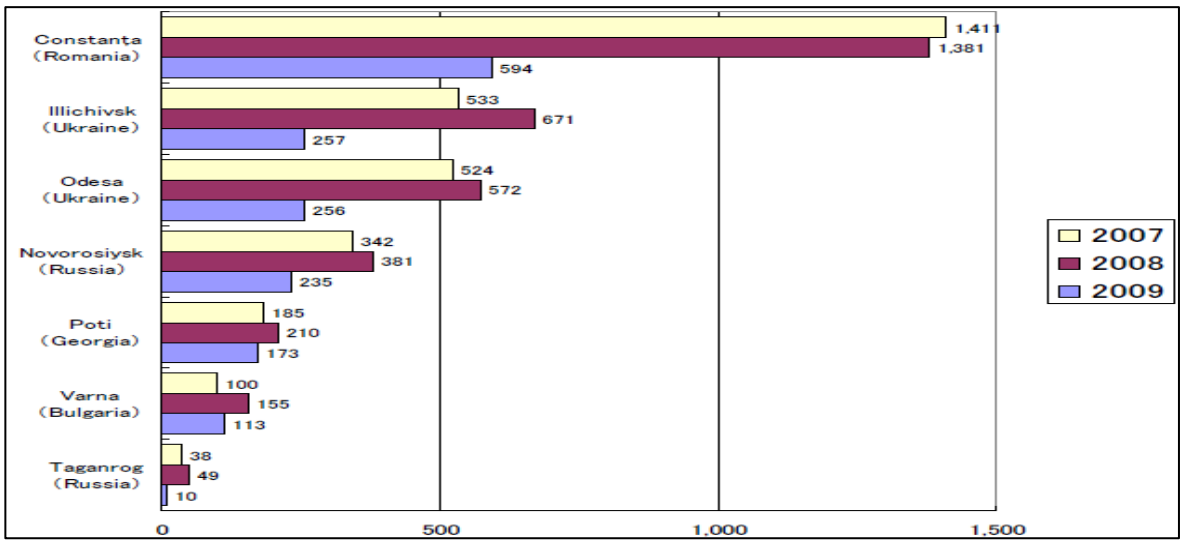
[38] Intermodal Transport & Logistics. Development of combined transport train "VIKING", http://www.unece.org/trans/wp24/wp24-presentations/documents/pres07-03.pdf.

[39] 75 Skvortsov Gennadiy Pavlovich, The role of the Illichevsk Seaport in the Black Sea region, 17/18 September 2008 – Piraeus, http://www.unece.org/trans/doc/2008/wp5/GE1_Piraeus_Item3_Skvortsov_e.pdf.

Figure 13: Container Handling at Major Black Sea Ports (1,000TEU)



Source: HATTORI Michitaka, International Political Economy of Black Sea Port Sector: Rivalry between Russia and Ukraine, 4th March 2010, Seoul.

For the last years Ukraine improved its port conditions to catch up the cargo capacities of the port of Constanta. The ports of Illichevsk and Odessa together handled 1,242,700 TEU and nearly reached the container turnover of the port of Constanta with 1,380,900 TEU in 2008. The world economic crisis also decreased the container turnover in the Black Sea region. Figure 13 shows how severely container handling at Black Sea ports was hit by recent economic crisis. Ukrainian ports suffered most of all. Because of the strong dependence on Ukrainian cargo the port of Constanta suffered almost as much as Ukrainian ports. Forecasts predict that Ukraine will regain its peak level of container handling of 1,242,700 TEU only in 2015.[40]

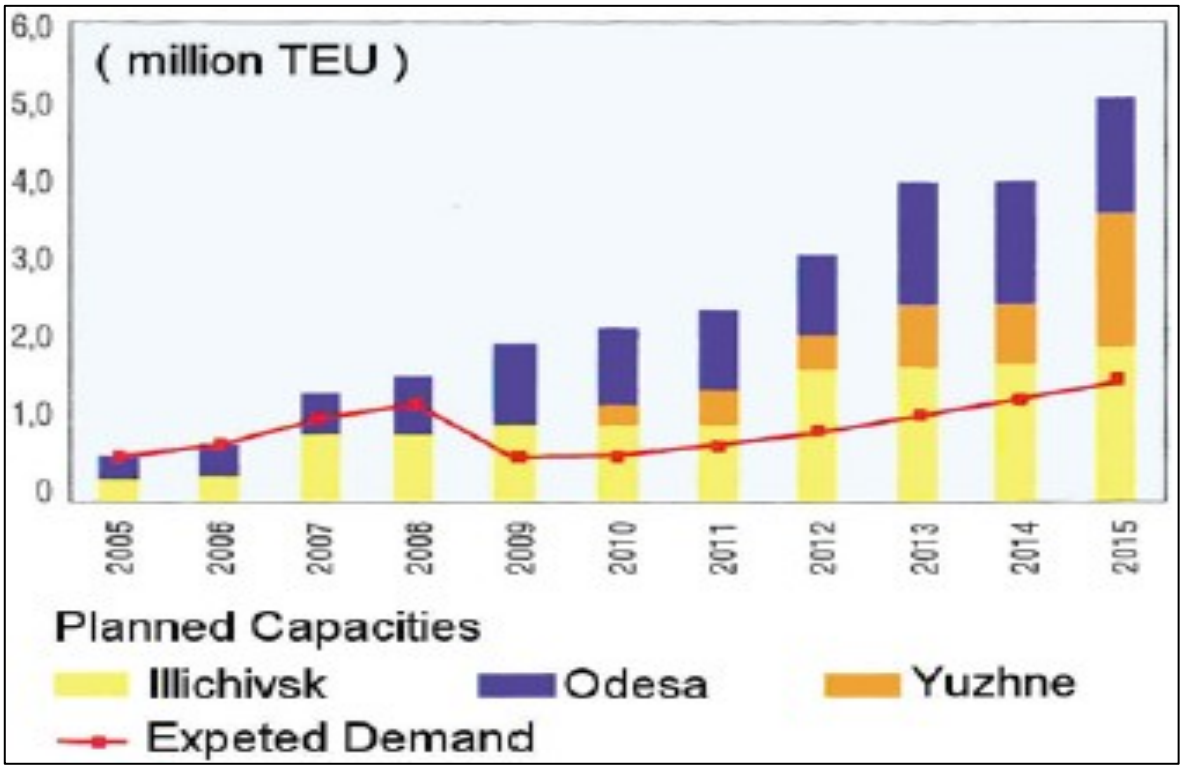
The trend shows that the port of Constanta will soon be replaced as transhipment center. In the last years the capacities of the container terminals in the Ukraine have been increased from 500,000 TEU in 2005 to more than 2,000,000 TEU in 2010. It is expected that the ports of Illichevsk and Odessa will become the transhipment centre instead of Constanta after the crisis has been overcome. Major factors are:

- its key positions at the cross-roads of main transport routes between Europe, Asian and the TRACECA corridor,
- well developed intermodal transportation communications,
- uniting network of international transport routes in the single transport systems(rail, road, sea),

[40] Container Handling at Major Black Sea Ports, HATTORI Michitaka, International Political Economy of Black Sea Port Sector: Rivalry between Russia and Ukraine, 4th March 2010, Seoul.

- well developed port infrastructure to handle large container vessels,
- connecting the ocean container lines with regional trans-black sea feeder lines to the ports of Russia, Georgia, Bulgaria and others,
- further development stages are planned in order to maintain the competiveness among the other Black Sea ports.

Figure 14: Ukraine Container Terminals: Planned Capacity Expectation and Forecast of Demand



Source: HATTORI Michitaka, International Political Economy of Black Sea Port Sector: Rivalry between Russia and Ukraine, 4th March 2010, Seoul.

Up to 2015 the Ukrainian container capacity is planned to increase over 5.0 million TEU. With this amount the country could reach the leading position among the Black Sea countries. Unfortunately, due to these plans the negative gap between supply and demand of container handling capacities at Ukrainian ports will widen further, because it will take a long time for the demand to recover. Therefore Ukraine has to continue the development of the intermodal infrastructure and has to expand the service in the area of transit operation of container in the ports to reduce the gap between supply and demand.[41]

One example of the well developed intermodal transportation service via the Ukraine is the container train Viking. To support this train line and the in-

[41] Ukraine Container Terminals: Planned Capacity Expectation and Forecast of Demand Source: HATTORI Michitaka, International Political Economy of Black Sea Port Sector: Rivalry between Russia and Ukraine, 4th March 2010, Seoul.

termodal transport between Baltic Sea and Black Sea the container train "Zubr" was launched in September 2009. In cooperation with Latvian, Belarusian and Ukrainian railways, Estonian Railway has released the container train Zubr, which connects the ports of Illichevsk/Odessa, Riga (Latvia) and Tallinn (Estonia). On its track the train stops also in Kiev and Minsk. These two trains contribute significantly to the growth of the ferry and Ro-Ro transport service in the Black Sea. There is a whole network of intermodal transportation lines in this region. But TRACECA corridor covers the main part with the rail-ferry lines Varna – Illichevsk - Poti/Batumi and Illichevsk – Derince. Furthermore it could be said that the container trains Viking and Zubr are a natural extension of TRACECA route from the Black Sea to the Baltic Sea.[42]

4.2.4. Viking connection to TRACECA saves time

The connection of the TRACECA and Viking transport route will increase the container traffic between EU and Asia. Compared to other connection to the TRACECA corridor the Viking-ferry link over the Black Sea saves a lot of time and therefore the train is very attractive for the customer. But the saving of time for the customer in return increases the transport rate. Because of these circumstances the customer has to decide how important it is, how fast the cargo reaches the destination.

If we compare the tracks Klaipeda – Tbilisi (capital of Georgia) and Klaipeda – Baku (Azerbaijan) on the one hand only by railway connection and on the other hand by Viking + ferry connection, we receive the following results.

Table 5: Comparison characteristics

Mode	Route	Distance, km	Transit time, days	Price 20' USD	Price 40' USD
Railways	Klaipeda-Tbilisi	4055	20	1800	3250
	Klaipeda-Baku	3532	18	1330	2400
"VIKING" + ferry	Klaipeda-Tbilisi	3241	9	2320	4448
	Klaipeda-Baku	3792	13	2884	5445

Source: Ivan Liptuga, Presentation: VIKING – development prospects for the Black Sea

[42] Container train ZUBR - a link between the Baltic and the Black Sea, http://oldwww.evr.ee/files/zubr_ENG_scr.pdf.

Region.

Due to the Viking + ferry connection the duration of the cargo transport can be reduced by 11 days on the Klaipeda-Tbilisi route compared to the ordinary rail track. For the second route Klaipeda-Baku the duration can be reduced by 5 days. That is an impressive reduction of time and the higher costs for 40' Container of 1198 USD against the reduced 11 days are mostly capable and worth of considering this alternative. The higher costs of 3045 USD for 5 days on the other route seems to be very high and the future will show if this offer is accepted by the customers.

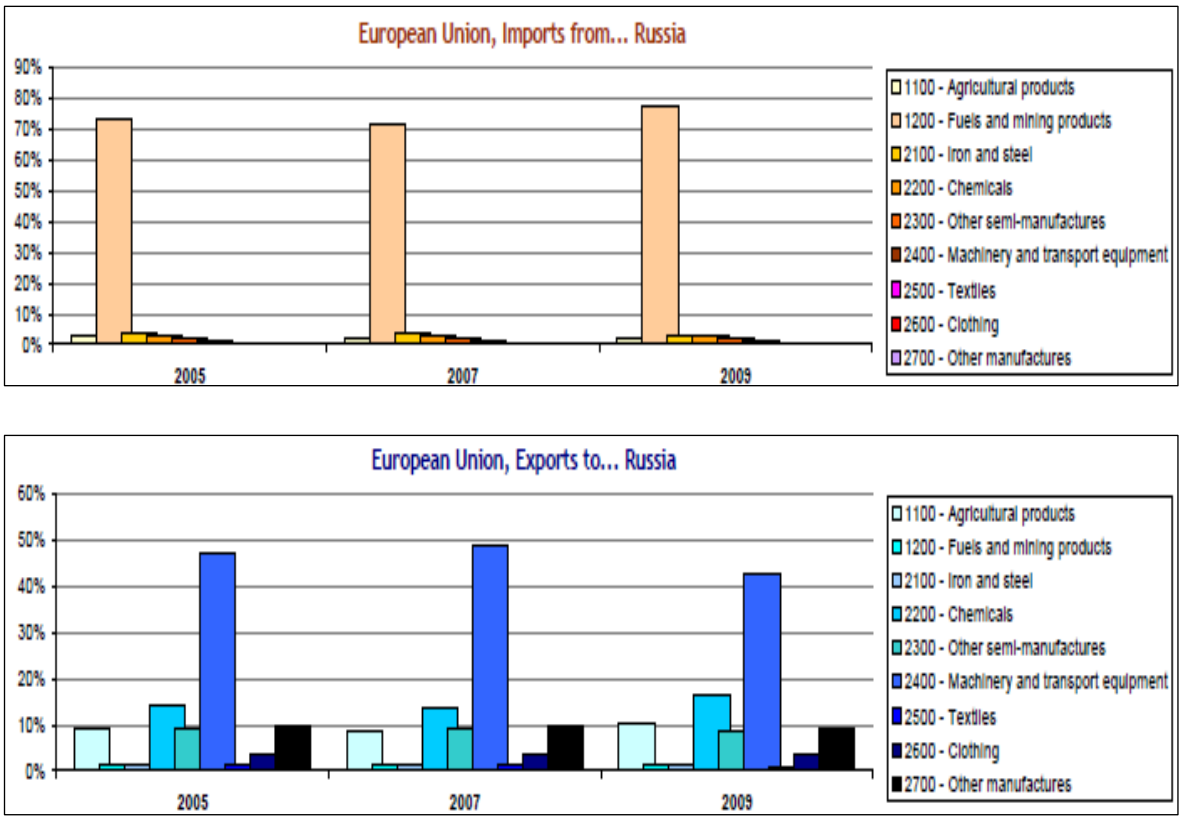
5. Cargo flows between Baltic Sea and Black Sea

Over the last 10 years the rail transport market in the Baltic and Black Sea region has been more and more reconstructed and barriers like border crossing procedures have been reduced. Today the rail freight market is more advanced than the passenger market and in Eastern Europe rail freight transport is more important than rail passenger transport. This is especially the case in the Baltic Rim. Most of the cargo which is shipped to the Baltic ports is transit cargo to Russia and China.

5.1. Rail freight transport of transit cargo via Baltic Ports

Poland, Estonia, Latvia and Lithuania traditionally offer the most direct and the shortest transit routes for trade between Russia and the EU. Future economic growth in Russia offers the prospect of large increases in trade between east and west. The statistics show that EU imports from Russia are dominated by fuels and mining products with a share of around 75% over the last years. Machinery and transport equipment with a share of over 40% take the main part of the EU exports to Russia. Further important cargo groups are chemicals and miscellaneous manufactured articles.

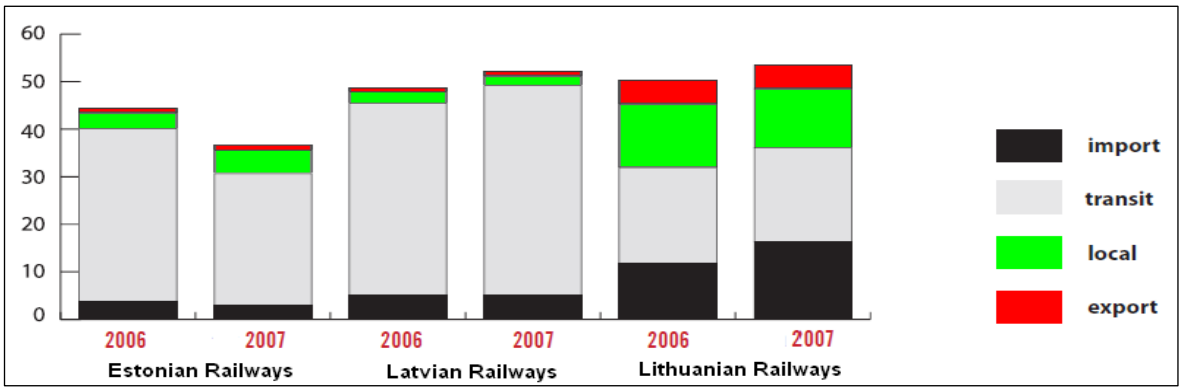
Figure 15: EU/RUS Import-Export statistic



Source: http://trade.ec.europa.eu/doclib/html/113440.htm.

In 2006 over 80% of the trade volume to and from CIS countries consisted of trade with Germany, Benelux countries and Scandinavian countries. Due to the poor infrastructure and low capacity of Russia's own ports, Baltic ports have been used for transit operations. Railway routes which connect the ports with the hinterland play a major role for such transit flows. In Estonia, Latvia and Lithuania the share of transit flows transported by rail differs strongly per country. In case of Latvia, approximately 86% of the rail transport was transit in 2007. In Estonia the transit share was around 75%. On the Lithuanian rail network the transit traffic share was only 33% in 2007.

Figure 16: Rail freight volumes on the rail networks of the Baltic States in 2006 and 2007 (million tonnes)



Source: Situation and Perspectives of the Rail Market, Zoetermeer, 30 March 2010, page 121.

After the EU accession of Estonia, Latvia, Lithuania and Poland, Russia is reconsidering its export position. Now, Russia tries actively to export via its own ports on the Baltic Sea. For this reason Russia is investing in transport infrastructure and cargo handling facilities to provide the required port capacity. To keep the position as transit countries, the Baltic States have made serious efforts to attract transit cargoes bound for other CIS countries. For example, Estonia and Latvia are encouraging such countries to invest in their ports. Lithuania has developed a favourable and flexible tariff policy to attract CIS cargo to its ports. The result of these efforts in the future will be that the Baltic ports will further take a significant role for transit cargo to and from Russia and the CIS countries although the Russian ports will expand and become more efficient.[43]

5.2. Baltic Sea Container and Ro-Ro traffic

The Container-boom in the last years has also influenced the cargo traffic in the Baltic Sea. The container transport with container ships has a great importance for the Baltic-external traffic which mainly goes to the great North Sea ports. Because of the short routes in the Baltic Sea the internal cargo traffic is mainly dominated by Ro-Ro ships and ferries.

The increase of cargo volume of the major eastern Baltic Sea ports in the area of Ro-Ro and containerised cargo stopped in 2007/2008 and turned into a decrease in 2008/2009. It was the first drop in cargo volume, after 10 years. The decrease in the volume of container and Ro-Ro cargo resulted from lower consumer demand due to the global economic crisis.

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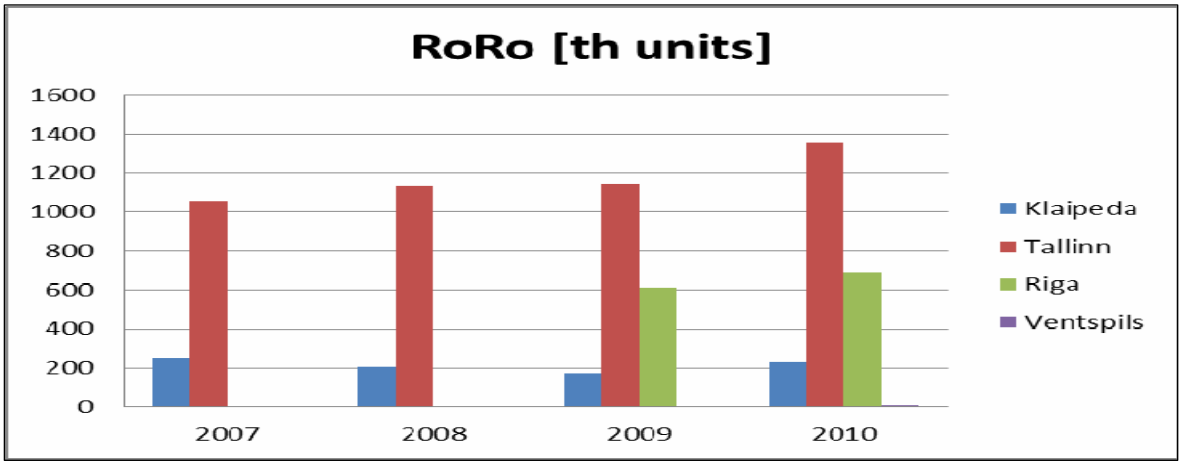
[43] Russian Rail Freight via Baltic Ports, Situation and Perspectives of the Rail Market, Zoetermeer, 30 March 2010, page 121.

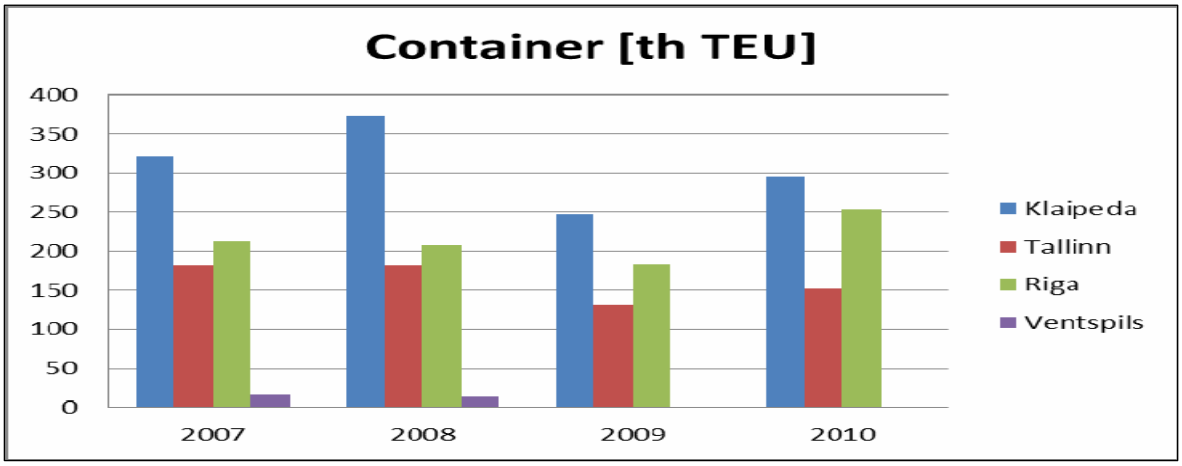
Among the Baltic ports Klaipeda port is steadily regaining its leading position in the area of container and Ro-Ro turnover over last years. In 2009 container turnover in the ports of the Baltic States decreased in comparison to the year 2008 by 27.7 % up to 563,320 TEU, whereof 247,977 TEU or 44.0 % of the total container turnover in the Baltic states were handled in Klaipeda port. The first half of 2010 allows optimistic forecasts. The turnover of Ro-Ro and containerized cargo was rapidly increasing in Klaipeda port. In the first six month of 2010, the handling figures for containerized cargo increased by 32.7 % and for Ro-Ro cargo by 36.8 %. Such a growth of this type of cargo flows indicates increasing demand for consumer goods, thus leading to the assumption that global consumption is growing and the economic recovery has started.

Figure 17: Turnover of major Baltic Ports I



Source: Statistics Klaipeda State Seaport, Statistics Port of Tallinn, Statistics Port of Riga, Statistics Port of Ventspils.

Figure 18: Turnover of major Baltic Ports II



Source: Statistics Klaipeda State Seaport, Statistics Port of Tallinn, Statistics Port of Riga, Statistics Port of Ventspils.

5.3. Commodity structure of the Baltic Sea Region

The main trading goods which are transported across the Baltic Sea are oil and oil products. For 2020 it is expected that this situation will be the same. Oil and oil products constitute about a third of the total trade in the Baltic Sea region. They belong together with building materials, manufactured goods and chemicals to the most important categories of goods.

Above-average growth rates are expected for high-quality goods (vehicles, machinery, electronics) and time-sensitive goods such as food. In the inter-industry trade in the area of the metal processing industry, engineering, automotive supplier, electrical and communication technology strong increments are expected. The share of traditional raw materials (iron ore, copper, etc.) and products from the industries such as wood processing, furniture manufacturing, textile and clothing industry will remain largely unchanged or show only small increases.

Due to the global economic crisis, the trade volume has decreased in the Baltic Sea region. The recovery of the market in this region will take some time so that the expected figures for 2020 will not be met. But in general can be assumed that the commodity structure of the Baltic Sea Region will develop similarly to the expected forecasts.

Figure 19: Development of the commodity groups for the years 2003, 2010 and 2020 in the Baltic Sea Region, (results for 2010 estimated, mln. tonnes)

million tonnes		2003		2010		2020	
		BSR Exports	BSR Imports	BSR Exports	BSR Imports	BSR Exports	BSR Imports
1	non ferrous ore, scrap	2.9	4.2	3.0	5.1	3.5	6.7
2	iron, steel	70.2	51.8	80.7	57.8	101.2	70.6
3	non ferrous metal	8.9	8.3	10.4	9.8	13.3	12.6
4	food and beverages	43.7	40.2	49.9	46.6	63.3	60.4
5	fresh fruit and vegetables	4.9	15.5	6.3	16.9	8.8	19.8
7	chemicals	61.9	64.6	75.6	77.2	101.3	99.8
8	vehicles and parts	20.8	16.7	26.6	21.8	37.7	31.8
9	machinery, electronic goods, electrical equipment	25.9	24.4	32.2	30.2	43.2	41.4
10	leather and textile goods	7.3	10.6	8.2	12.3	10.1	15.6
11	other manufactured goods	100.0	56.6	118.7	68.3	150.7	91.0
12	pulp and waste paper	17.5	9.4	19.9	11.0	24.2	14.1
13	wood	68.5	39.8	79.7	47.5	101.7	61.5
14	grain and animal feed	27.3	25.9	30.8	30.2	38.2	38.2
15	coal	62.9	39.7	77.0	48.0	108.0	66.9
16	crude oil and oilproducts	258.1*	223.6	324.8	245.8	456.8	289.8
17	iron ore	29.9	19.9	30.7	19.5	32.9	18.9
18	copper ore and bauxit	0.4	2.7	0.5	3.1	0.8	4.2
19	building materials	80.6	76.0	85.0	78.5	95.7	89.9
20	fertilizer	18.4	14.1	21.2	14.5	27.2	15.8
	Total	**1 043.6**	**744.0**	**1 214.9**	**844.2**	**1 548.4**	**1 049.1**

Source: Beate Lange, Die Entwicklung des Seetransportes im Ostseeraum, 2007, page 38.

5.4. Chinese cargo flows via Baltic ports

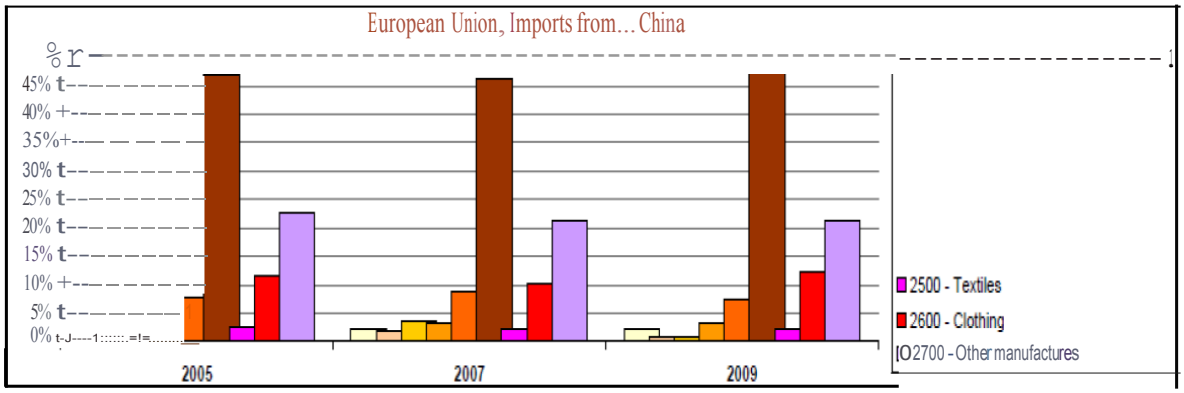
The transit trade sector of the Baltic countries has started to adopt a more global perspective with the goal to guide Chinese cargo traffic to Europe through Baltic ports. In the long-term perspective, Chinese trade with the EU over the land route provides a high potential of growth for railway transportation and the Baltic ports.

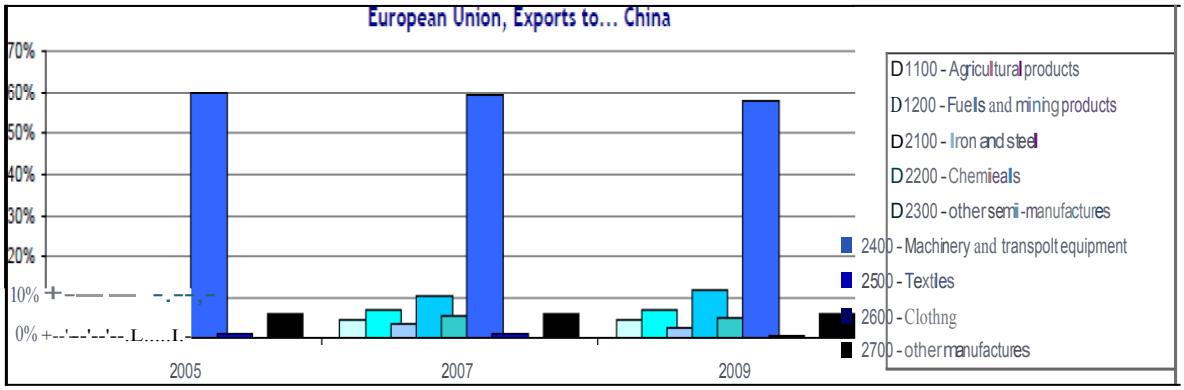
Chinese trade offers for the rail freight sector the prospect of large flows of manufactured goods and reducing the existing dependency on low value bulks. When taking a closer look at the import/export-statistics of China, this theory can be supported. In recent years it could be seen that the majority of EU imports and exports with China consisted of over 60% of manufactured goods like machinery and mechanical appliances, electrical equipment, textiles and textile articles, vehicles, aircraft, vessels and miscellaneous manufactured articles. The increasing container handling rates (e.g., China handled 108 million TEU in the first three quarters 2010) seems to support this outlook.[44]

In the past, cargo from East Asia to Central Asia dominated traffic on the New Eurasia Land Bridge route. In recent years cargo traffic to Russia and Europe has started to grow. Container shuttle trains like the Viking train could take advantages of this development because manufactured products contain the higher value commodities which are most likely to be carried by container or by road trailer.

[44] China Container Port Industry Report 2010, www.researchinchina.com.

Figure 20: EU Imports/Exports from China





EU Imports from...					EU Exports to...				
TOC Sections	World	China			TDC Sections	World	China		
		Millions of euro	Share of Total	Share of total EU Imports			Millions of euro	Share of Total	Share of total EU Exports
TOTAL	1.199.288	214.749	100,0%	17,9%	TOTAL	1.094.229	81.633	100,0%	7,5%
TDC 16	267.365	96.553	45,0%	36,1%	TOC 16	320.474	34.959	42,8%	10,9%
TOC 11	74.925	30.737	14,3%	41,0%	TOC 17	140.437	12.753	15,6%	9,1%
TDC 20	32744	22.686	10,6%	69,3%	TDC 15	76.528	8.550	10,5%	11,2%
TOC 15	60.661	11.593	5,4%	19,1%	TOC. 06	178.852	7.338	9,0%	4,1%
TDC06	105.921	7.493	3,5%	7,1%	TOC07	42.007	3.987	4,9%	9,5%
TDC 12	14. 420	7.489	3,5%	51,9%	TOC 18	52.339	3.891	4,8%	7,4%
TOC 17	86.543	6.749	3,1%	7,8%	TOC 10	23.983	1.827	2,2%	7,6%
TOC07	30.871	5.806	2,7%	18,8%	TOC 11	30.370	1.203	1,5%	4,0%
TOC 18	45.304	5.206	2,4%	11,5%	TOC _	24.326	946	1,2%	3,9%
roc oa	9.524	5.054	2,4%	53,1%	roco•	39.507	932	1,1%	2,4%
TOC 13	8.657	3.682	1,7%	42,5%	TOC 05	60.969	860	1,1%	1,4%
TOC 10	13.206	2.036	0,9%	15,4%	TOC08	8.298	697	0,9%	8,4%
TDCO	8.557	1.927	0,9%	22,5%	TOC01	13.735	650	0,8%	4,7%
TDC t4	27.513	1.833	0,9%	6,7%	TOC 13	13.601	573	0,7%	4,2%
TOC01	17.768	1.718	0,8%	9,7%	TOC 20	18.455	527	0,6%	2,9%
TOC 02	33.515	1.349	0,6%	4,0%	TOC 21	17.673	469	0,6%	2,7%
TOCO<	32.833	1. 193	0,6%	3,6%	TOC 09	7.793	240	0,3%	3,1%
TOCOS	305.873	686	0,3%	0,2%	TOC02	14.728	203	0,2%	1,4%
TDC 21	16.615	657	0,3%	4,0%	TDC 12	5.247	84	0,1%	1,6%
TOC OJ	5.635	38	0,0%	0,7%	TDCO1	2.743	55	0,1%	2,0%
TOC 19	839	34	0,0%	4,0%	TDC 19	2..164	13	0,0%	0,6%

TDC sectiom (Hannonized S11tem):

11)(01	Ch.01-Gl	Livt tnimils; inimil products	11)(11	Ch -61	Ttxtiles ilnd ttxtiltilrticles
11)(02	Ch.06-H	V'1f'Jb1t producu	11)(12	Ch. 64-67	Footwnr, htildtfu, umbrttW, sun umbtttas, wt Uiint-StickL
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Source: China main economic indicators, trade.ec.europa.eu/doclib/html/113366.htm.

5.5. Trade Growth Black Sea region

The following tables show the development of cargo traffic in the Black Sea region between 1995 and 2005.

On the export side nearly 70% of total tonnes are bulk commodities, principally liquid bulks. However, in value terms it is reversed, food, manufactures and other cargo take a share of nearly 70% of the value of the exports. The share of liquid bulks by value has risen sharply from 19% in 1995 to 28% in 2005. On the other hand the value of other cargo decreased from 27% to 20% between the years 1995 - 2005. All the sector shares by weight were relatively constant over the last 10 years.

Exports from Black Sea Region: Annual US$ bn.

	1995	1995 Share	2000	2000 Share	2005	2005 Share
Dry Bulk	7	6%	11	5%	25	5%
Liquid Bulk	23	19%	58	26%	135	28%
Food&Manufactures	58	48%	103	47%	222	47%
Other Cargo	32	27%	48	22%	94	20%
TOTAL	120	100%	220	100%	476	100%

Exports from Black Sea Region: Annual million tonnes:

	1995	1995 Share	2000	2000 Share	2005	2005 Share
Dry Bulk	92	22%	191	24%	290	25%
Liquid Bulk	175	42%	361	45%	491	43%
Food&Manufactures	71	17%	126	16%	190	17%
Other Cargo	79	19%	128	16%	180	16%
TOTAL	416	100%	805	100%	1150	100%

Imports from Black Sea Region: Annual US$ bn.

	1995	1995 Share	2000	2000 Share	2005	2005 Share
Dry Bulk	5	4%	6	3%	15	3%
Liquid Bulk	12	10%	21	11%	36	8%
Food&Manufactures	81	69%	128	69%	313	71%
Other Cargo	19	16%	32	17%	78	18%
TOTAL	117	100%	187	100%	442	100%

Imports from Black Sea Region: Annual million tonnes:

	1995	1995 Share	2000	2000 Share	2005	2005 Share
Dry Bulk	86	33%	139	31%	185	34%
Liquid Bulk	95	37%	173	39%	152	28%
Food&Manufactures	50	19%	90	20%	136	25%
Other Cargo	26	10%	46	10%	74	14%
TOTAL	257	100%	448	100%	546	100%

Source: Imports/Exports from Black Sea Region 1995 – 2005, Source: WTO Trade Statistics, 2007.

On the import side, liquid bulks only contribute to 28% by weight and 8% by value in 2005. Whereas food and manufactures contribute 71% by value and 25% by weight. In the next few years the shares of higher value cargoes are generally rising like in the other regions which were already considered. The turnover of dry bulks will be on the same level but liquid bulks will further decrease.

This trade growth will again push forward the development of the ports and the hinterland connections of the Black Sea in the sector of containerised cargo. Container services provide vital trading connections between the Black Sea countries and the rest of the world for the higher value product sectors. Within the last five years the traffic growth and port development has attracted shipping lines to bring larger container vessels into the Black Sea. The possibility to handle more containers will also support the increase of manufactured products by rail transportation in the next years.[45]

6. Outlook/Conclusion

The international rail freight transport market is much more advanced than the passenger transport market in terms of liberalization. Rail freight transport is, by nature, more oriented towards cross-border traffic. This led to the emergence of new undertakings, lower prices and traffic volume increase. The best practice case container train VIKING is one example of this liberalization process. From the beginning of operation of the train the freight volumes steadily increased until the economic recession. The advantages which led to this success are a fixed time schedule, improved border crossing procedures and low tariffs. Due to the crisis the freight volume decreased in 2008. However, it can be expected that once the economic crisis is over, the volumes will recover towards previous levels. The figures of 2010 show an optimistic trend that the recovery of the global economic has started.

The current rail transport volume with China is modest, but cargo transportation to Russia and Europe has now started to grow. Notably the economy of

[45] Improvements of Maritime Links between TRACECA and TEN's Corridors, Final Report May 2009.

China has been less hard hit by the crisis and provides good prospects for the rail traffic to Europe. But the development of rail traffic between China and Western Europe suffers due to the quality of infrastructure, delays at borders and lack of interoperability (gauge differences between China (1,435mm gauge), Kazakhstan/Russia/Baltic Rim/Finland (1,520mm gauge) and Western Europe (1,435mm gauge)). To reduce the interoperability problems and to accelerate the transport of goods between Asia and Europe the Viking train extends its track by ferry from the port of Illichevsk to the port of Poti and Batumi and joints the TRACECA sector consequently. This connection links the Caucasus area and Central Asia via the Black sea by the Viking train with the Baltic Sea. The ports of Georgia, Poti and Batumi, became the main gates for the TRACECA route to Europe. The container traffic grows rapidly through these ports. For the development of the TRACECA sector for rail traffic into Europe, a better tariff structure needs to be developed. Furthermore, bilateral and multilateral agreements, and eventually a corridor approach, need to be developed to reduce the barriers to efficient operation. Borders where a gauge change is necessary should be developed as the natural exchange points where locomotives, rolling stock and personnel changes and all procedures and checks are carried out simultaneously.

The future of the railway freight transport is the long-distance transport of high-quality goods. The trend shows a decrease from bulk cargo which dominates the rail freight sector to smaller freight, lots with higher value and co-modal transport growth. One reason for this development is that the transport by rail is now 3 times faster than the sea transport from Asia to Europe. If we look at the transport statistics of the Viking train the trend can be seen. In 2009 the main content of the container were mainly organic chemistry products (34%), textile (13%), transport facilities and spare parts (12%) and ferrous metals (9%).[46] In general we can say that for the Viking train an increase can be expected in transportation of machinery, vehicles, manufactured products like electronics, textile, chemicals, and miscellaneous article.

Saint Petersburg has shown the largest absolute container turnover over the last years. Freight flows from China via Kazakhstan to Russia will grow so that the port of Saint Petersburg cannot handle this traffic on its own. It is expected in the future that all ports in the eastern Baltic Sea will continue to handle trade flows to/from Russia and China. The strategy plan of the port of Saint Petersburg will probably specialise more in containerised high value goods rather than bulks. One important reason of this plan is the relative absence of interoperability problems between Kazakhstan and Russia. Beside the port of Saint Petersburg we find Klaipeda port with the highest turnover rates in Ro-Ro and containerised cargo among the other major ports in the eastern

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46 "International Freight Forwarder's Day 2009", http://mail.plaske.net/en/home/results-of-event-2009/.

Baltic Sea. This leading position makes it easier to attract new cargo for the Viking train for the regular trips between Klaipeda and Illichevsk. In order to keep the competitive position in railway transport beside the Russian ports, the other major ports in the eastern Baltic region have to invest in its infrastructure.

There are two different options to improve the competitiveness. First, the Baltic States invest in a better connection with the Russian railways. Second, the states solve the interoperability problems. Both options are in progress, but the second one has more potential. The Rail Baltica project can help to reduce the interoperability problems. The Trans-European railway Rail Baltica, linking Helsinki – Tallinn – Riga – Kaunas – Warsaw – Berlin on its track. With its completion in 2016 this railway line will change the rail freight traffic in all directions. The Viking and Rail Baltica line will cross each other in Kaunas. The region around Kaunas and Vilnius could grow to a major hub for containerised and Ro-Ro cargo in the future. Two transport corridors (I, IX) cross this region and provide the logistic complexes of Kaunas and Vilnius with freight flows from the north-south and east-west axis. Containerised cargo from China which comes via the Black Sea and then via the Viking line to Kaunas could easily be reloaded on the Rail Baltica train which is on the way to Europe. On the other side container flows from the ports of Riga, Tallinn and Klaipeda could be concentrated at this intersection point and from there sent to the south or west. We still have gauge changes on the route from China via the Black Sea and in Kaunas, but due to the technical improvement on this route the time for reloading of the cargo will be minimized. With these future prospects logistic complexes at this intersection point will further expand and the regions Kaunas and Vilnius will merge together.

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