Baltic Sea Region Programme 2007-2013

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

ACL Corridor I

Ventspils – Riga - Moscow

Grant Agreement N°:	#068
Project acronym:	ACL
Project title:	Amber Coast Logistics
Funding scheme:	Collaborative Project
Project start:	1. October 2011
Project duration:	36 Month
Work package no.:	3
Deliverable no.:	3.4.B1
Status/date of document:	Final
Lead contractor for this document:	FDT Aalborg, Denmark
Project website:	http://www.ambercoastlogistics.eu

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Following project partners have been involved in the elaboration of this document:

Partner No.	Company short name	Involved experts
8	FDT	Kent Bentzen
8	FDT	Michael Stie Laugesen
8	FDT	Hanna Baster
8	FDT	Inna Gvozdareva
8	FDT	Ruta Kraselnikova

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Table of Contents

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Introduction

This report presents a descriptive analysis of the road and railway corridors connecting Port of Ventspils (LV) with Moscow (RU), through the City of Riga (LV). In total four different land corridors and a number of Baltic Sea corridors are analysed as part of the Amber Coast Logistics Activity 3.4. The reports analysing the other corridors can be downloaded from the Amber Coast Logistics homepage: www.ambercoastlogistics.eu under Reports/Results

Corridor
Corridor I : Ventspils – Riga - Moscow
Corridor II : 1) Riga – Vilnius - Minsk – Kiev & 2) Riga – Smolensk
Corridor III : Sea routes of the Baltic Sea
Corridor IV : Klaipeda – Vilnius – Minsk – Moscow
Corridor V : Hamburg – Berlin - Warsaw – Brest – Minsk

The analyses were performed on the basis of a number of indicators developed and selected by the ACL partners. All indicators were grouped under five headings:

1. Modes
2. Nodes
3. Capacity
4. ICT and
5. Border crossing requirements

The indicators were used for the description of the corridors and were used to identify bottlenecks and sections requiring improvements within the corridors. The indicators also made it possible to compare the different corridors on a number of selected parameters.

Besides, describing the respective routes along Corridor I, a comparison of two road routes, each crossing different border point between Latvia and Russian Federation, were performed.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

The following map shows the route discussed within this report:

Figure 1 Routes within the Corridor I: Source: FDT

Limitations of the research

Due to restrictions on data access FDT has not able to gather data for the Russian side of the road border crossings between Latvia and Russian Federation. ACL partners have contacted the State Border Guard FSB Authority of Russia, but they did not want to share the requested information, as this is classified as confidential. As a result of this FDT tried to gather data for the Russian side of the border, from the Latvian State Border Guard Authority, but they did not possess it. Further, Fortex was contacted, with the same effect as at the Latvian State Border Guard Authority. Therefore information on the waiting time and throughput of border crossings in Russian Federation are not included.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

1. Modes

Road, railroad and inland waterways within Corridor I were planned to be described. However, as **inland waterways** used for goods transportation do not exist in this corridor, only road and railroad routes were described.

Road routes from Ventspils to Moscow:

1. Ventspils – Riga – Plavinas - Rezekne- Zilupe- Velikiye Luki – Rzhew – Moskva, E22 and M9
2. Ventspils – Riga – Plavinas – Rezekne – Grebnova – Moscow

Railroad routes from Ventspils to Moscow:

1. Ventspils – Tukums – Riga – Plavinas – Krustpils – Rezetne – Zilupe - Moskva
2. Ventspils – Tukums – Jelgava – Transport centre in Oleine - Riga – Krustpils – Rezetne – Zilupe - Moscow

Figure 2: Transport corridors connecting Ventspils and Moscow, divided according to modes Source: Network Assessment 2013 of Latvian Railways (http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf) and Google Maps

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

2. Nodes

2.1 Transport and Logistics Centres

There are 2 major Transport and Logistics Centres within the described Corridor I: in Ventspils[1] and Pokrov, close to Moscow[2]. In Ventspils it is 13,000m² large. There is also one located in Olaine, between Riga and Jelgava, but this one was not marked on Figure 7, as it is not located on the shortest way from Ventspils to Moscow.

Information about the Transport Centre in Ventspils: *With controlled temperature ranges of -30°C to +20°C, the warehouses can accommodate any type of goods, can automatically account for incoming and outgoing freight and have video surveillance and round-the-clock security patrols. All services are covered by civil liability insurance. When we store goods destined for markets beyond the EU in our customs warehouses, there is no need to pay import duties or taxes and these warehouses can also be used to store products subsidized for export. Officials from the national veterinary and plant protection services as well as officers from both customs and customs intermediaries are available to take care of the necessary paperwork and formalities promptly*[3].

2.2 Combined terminals

There are 21 road-rail intermodal points in Latvia, but only few of them, can be called intermodal terminals, since they are able to serve only small loads. The biggest combined terminals in Latvia are located in the ports of Riga and Ventspils. In the Russian part of Corridor I, there was identified a combined terminal (rail-road) in Moscow – Terminal "Paveletskiy", which is located at the station Moscow Trading-Paveleckaia.

2.3 Container terminals

Container terminals are available in port of Riga and Ventspils. In Ventspils it has been in operation since 2000, and is equipped with 1 container crane of 70 tonnes lifting capacity[4]. The container terminal in Riga has been in operation since 2009, and is equipped with 2 container cranes, which can lift up to 42–45 tonnes[5]. The combined terminal in Moscow is also capable of serving container transport[6].

1 http://www.girteka.lt/services/network-of-warehouses/logistics-centres/
2 http://www.jp.yusen-logistics.com/eng/support/global_network/europe/russia/
3 http://www.girteka.lt/services/network-of-warehouses/logistics-centres/
4 http://www.investinventspils.lv/en/transport_and_logistics/
5 http://www.rto.lv/en/services/terminal-operations/riga-container-terminal/
6 http://www.transbusiness.ru/cgi-bin/pub/static/1?ru_office_moscow2

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

2.4 Service centres

Service centres for trains: *The stations where running repairs of wagons are carried out: Daugavpils, Rēzekne, Šķirotava, Jelgava, Ventspils, Liepāj. Among stations for freight operations there are 2 marshalling (sorting) yards (Šķirotava and Daugavpils) and 4 district stations (Jelgava, Rēzekne, Krustpils, Gulbene)*[7].

Gasoline stations: There is a plenty of gasoline stations along the Corridor I. They are equally distributed between Ventspils and Moscow.

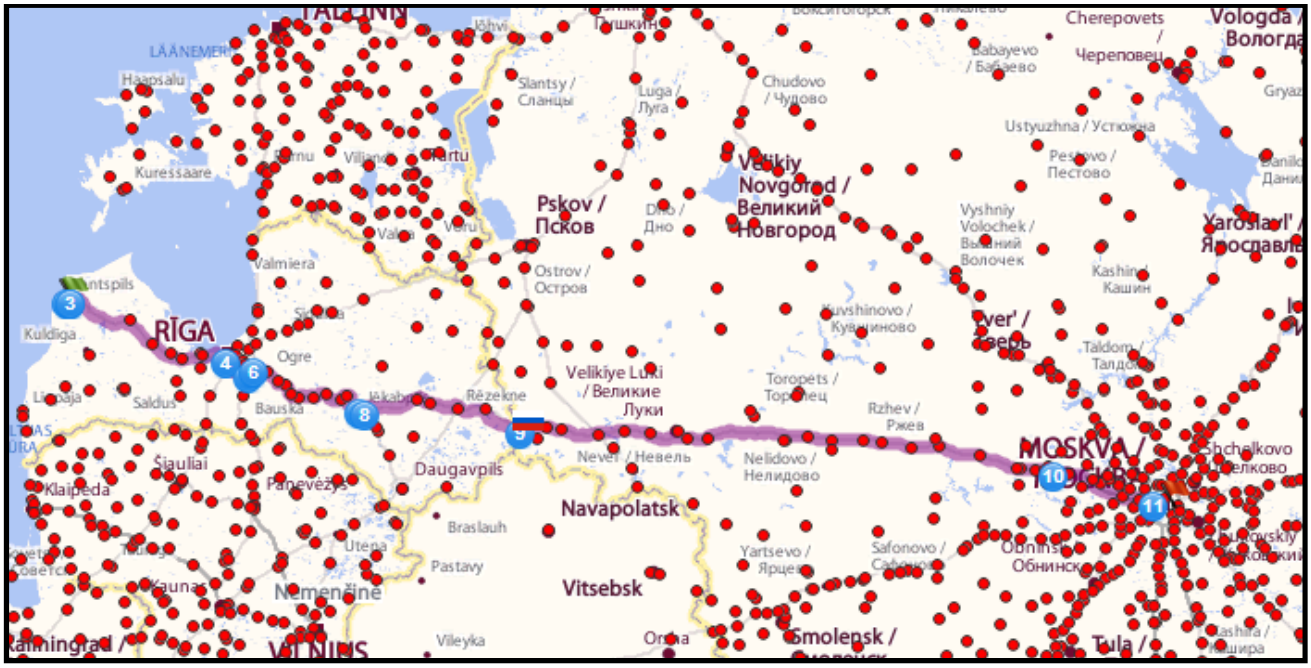


Figure 3: Gasoline stations and car parks between Ventspils and Moscow, source: www.viamichelin.com

[7] http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf, p.13

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

2.5 Border crossings

The state border **railway crossing points** between Latvia and the Russian Federation located within the Corridor I are: Rēzekne Preču station (only for goods transported in freight trains) and Zilupe[8].

The state border **motorway crossing points** between Latvia and the Russian Federation located within the corridor I are: Grebņeva and Terehova (Latvian side) / Burachki (Russian Federation side).

Figure below summarizes information presented in subchapter 2 “Nodes”:

Figure 4: Nodes between Ventspils and Moscow, Source: http://www.intermodal-terminals.eu/database„ http://www.jp.yusen-logistics.com/eng/support/global_network/europe/russia/, http://www.girteka.lt/services/network-of-warehouses/logistics-centres/

As visible in the figure 4, both Port of Ventspils and Port of Riga are prepared for handling containers, as well as they are equipped with Ro-Ro facilities and intermodal terminals. Although within the Corridor I, there are only located 3 transport centers, available at the most important nodes: Ventspils, Riga and Moscow.

[8] http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf, p.13

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

3. Capacity of infrastructure

3.1 Capacity of railway infrastructure

The average daily number of trains operating on the Latvian side of the corridor is between 16 and 26. The biggest traffic is between Riga and Jekabpils, 26.07/24.70 (odd/even) trains on average. The lowest infrastructure occupation is for odd direction between Rezekne and Zilupe – only 9.30 (18.70 for even direction); this also shows that there on this particular corridor is much higher number of freight trains going from the Russian Federation to Latvia, than in the opposite direction. An average number of trains travelling daily on the rest of railroad routes in Latvia is similar: between 16 and 21 trains daily. Regarding maximum axle load, 23.5 ton is a maximum permitted value on railway network in Latvia[9].

Figure 5: Level of daily traffic in 2012 (average annual number of trains), Source: Network Assessment 2013 of Latvian Railways, http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf

[9] http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf, p.14.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

The number of railway tracks on the corridor is presented on Figure 6. Here it can be seen that for most of the corridor there is only a single track available. Only close to the cities Riga and Moscow there a double tracks available.

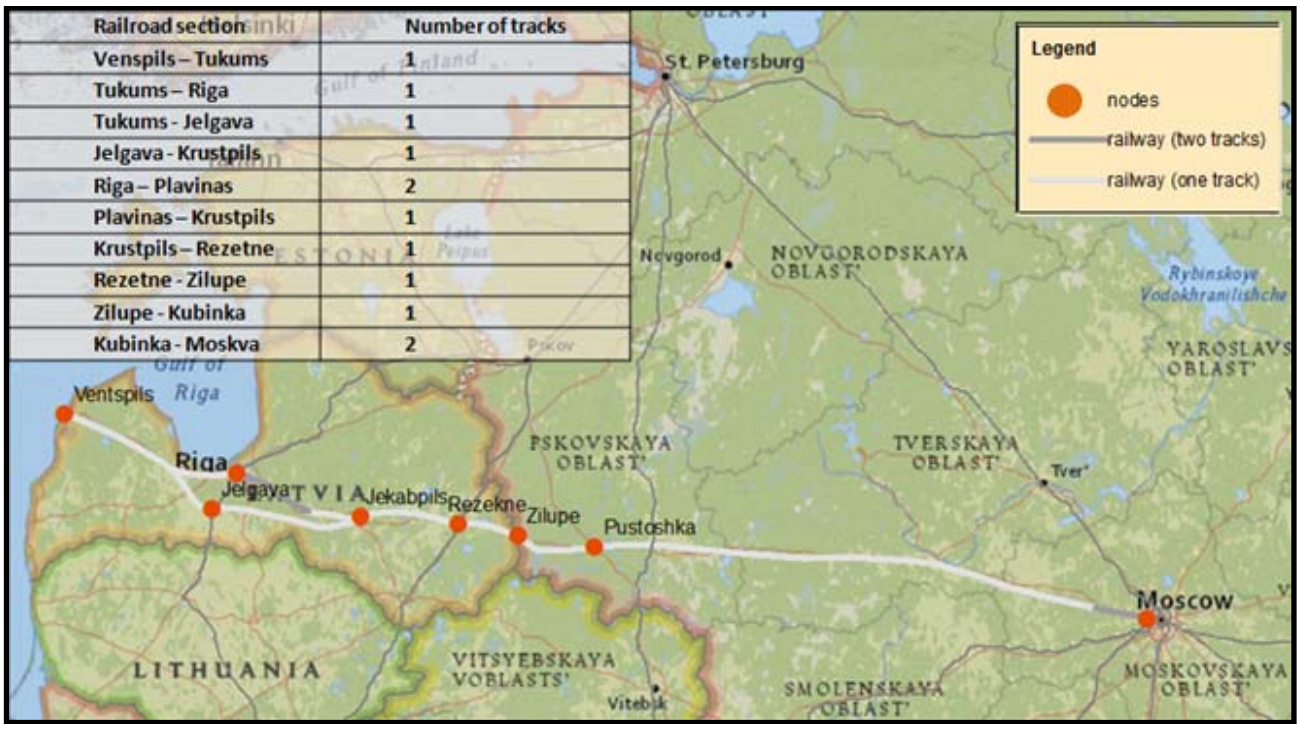


Figure 6: Number of railway tracks, source: Network Assessment 2013 of Latvian Railways, http://www.ldz.lv/texts_files/2013_Tikla_Parskats_EN.pdf and Google Maps

The forecasted level of traffic in 2030 indicates that the whole corridor is expected to be of the highest and second highest occupancy, as shown in Figure 7. However, no investments into railway infrastructure are planned for the whole Corridor I, as presented in Figure 8.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

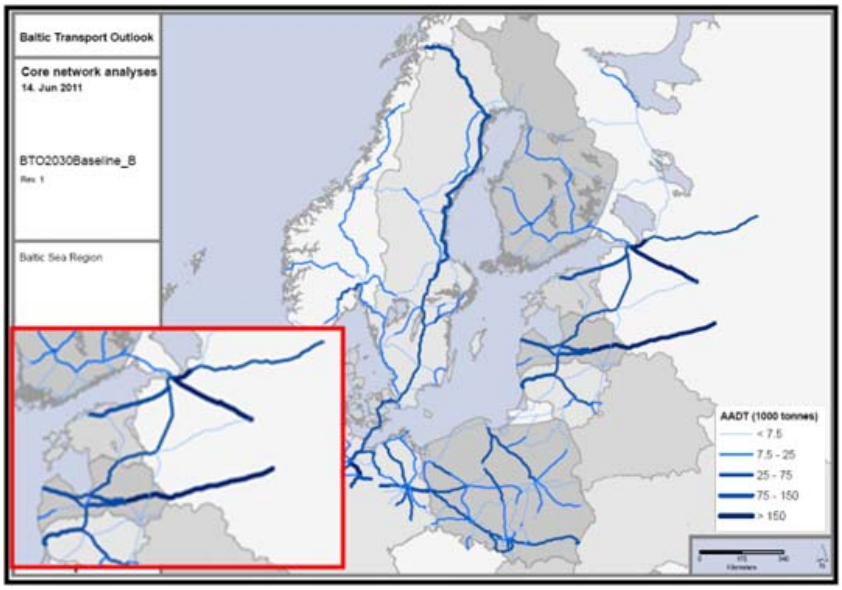


Figure 7: Forecasted level of traffic in 2030 in AADT (Average Annual Daily Traffic)
Source: Baltic Transport Outlook, http://www.baltictransportoutlook.eu/files/BTO_R4RBF_005_Main%20Task%204%20Report%20-%20final.pdf

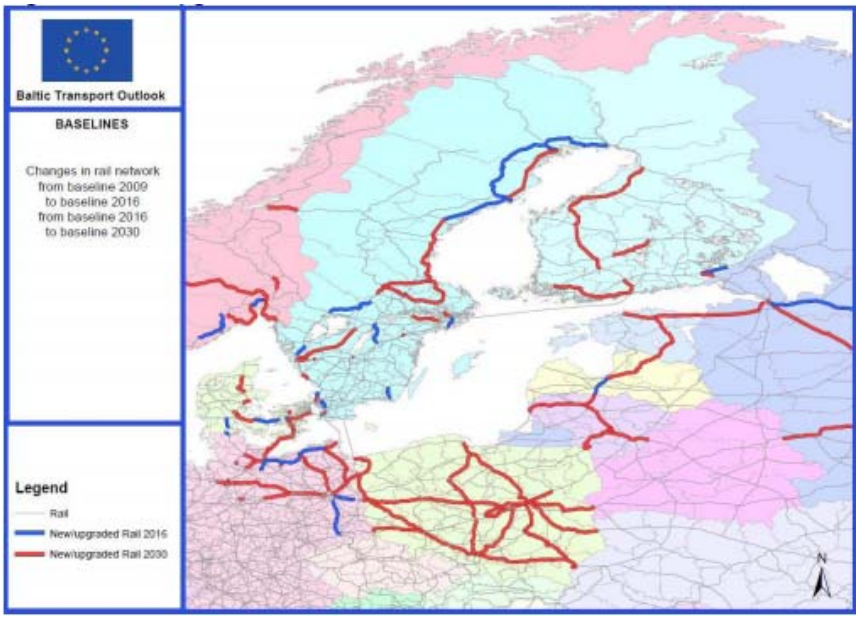


Figure 8: Planned infrastructure investments/upgrades for railway infrastructure until 2016 (blue) and 2030 (red)
Source: http://www.baltictransportoutlook.eu/files/BTO_R4RBF_005_Main%20Task%204%20Report%20-%20final.pdf

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Average travel times between the nodes

An average speed of 49,5 km/h was found for whole Russia, though this speed cannot be obtained but on the railway section Moskva-Zilupe. The normal maximum speed for cargo trains in Russia is 72 km/h, but for the Moscow-Riga line it is 90 km/h. On the basis of this info plus distance, transport time was estimated to be around 10 hours (excluding time at the border). However, this occurred to be far from the real travelling time. It takes minimum 2 days, but only if the train is fully loaded; in this case waiting time at the border is also shorter: 3 hours. It is because fully loaded trains are treated as priority ones and are directed to an additional track and therefore do not wait in a queue at the border. In the other case travelling time takes 1 week and the time spend at the border takes 1-2 days.

The travelling time cannot easily be further decreased; therefore travel time will expectedly take at least 2 days. This is due to bottlenecks around Moscow; and a large number of permission which must be obtained and controlled. Please note that the average travelling time described in this section does not include a waiting time at the border. Number of vehicles waiting at the border must be considered in order to obtain the real life average travel time between the nodes.

Figure 9: Average travel times between the nodes (average time for the section Zilupe-Moscow in brackets).
Source: own elaboration on the basis of distance/max speed allowed for freight trains on the specific railroad section, Latvian railway scheme: ww.ldz.lv/uploaded_images/05_02_2007.ppt

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

3.2 Capacity of road infrastructure

On most parts of the corridor Ventspils-Riga–Moscow there is only one lane in each direction of the road. This can cause troubles for overtaking slower vehicles. Though as illustrated on Figure 11, the estimated annual daily traffic up until 2030 is not much higher than 5.000 vehicles, thus if needed there should be space also to overtake. Therefore, major congestion on these routes is not expected, although at border crossing sections waiting time should be calculated.

Figure 10: Number of lanes. Source: Google Maps

The following four figures show:

- Annual daily traffic
- Forecasted level of congestion in 2030
- Planned infrastructure investments until 2016 and 2030
- Estimated travel times via road

As can be seen from the figures the corridor Ventspils-Riga-Moscow is not among the most heavily used corridors for road transport, therefore the foreseen infrastructure investments are also low. The travel time between the nodes is normally not affected by congestion, as the road infrastructure capacity seems to be sufficient to accommodate the current traffic loads. What slows down the travel time significantly is a long waiting time at the border.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

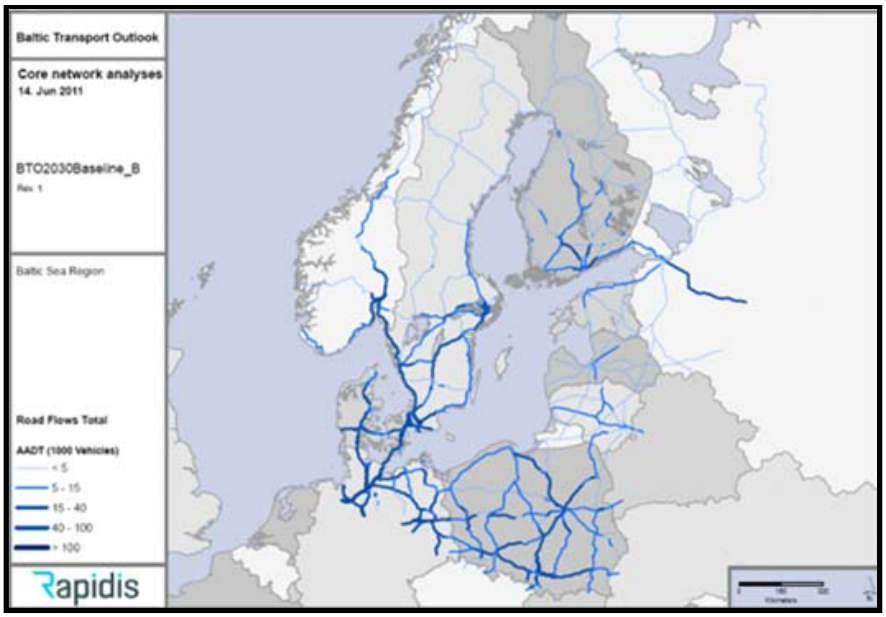


Figure 11 Average annual daily traffic on corridor I (forecasts only). Source: Baltic Transport Outlook, http://www.baltictransportoutlook.eu/files/BTO_R4RBF_005_Main%20Task%204%20Report%20-%20final.pdf

Figure 12: Level of congestion in 2030 (forecasts only). Effective speed lower than 75% of theoretical speed. Source: Baltic Transport Outlook, http://www.baltictransportoutlook.eu/files/BTO_R4RBF_005_Main%20Task%204%20Report%20-%20final.pdf

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

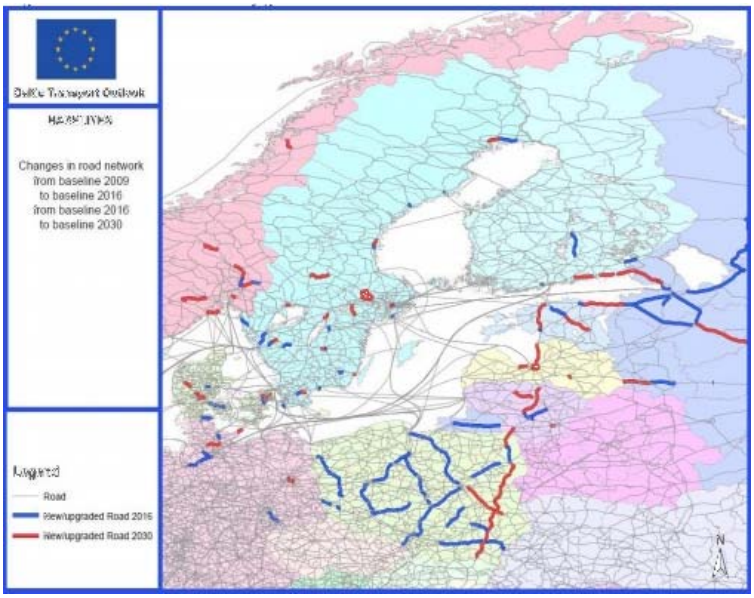


Figure 13: Planned infrastructure investments for railway infrastructure until 2016 and 2030. Source: http://www.baltictransportoutlook.eu/files/BTO_R4RBF_005_Main%20Task%204%20Report%20-%20final.pdf

Figure 14: Travel times between the nodes (waiting time at the borders excluded). Source: http://www.viamichelin.com/web/Maps

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

4. Border crossing facilities

4.1 Estimated waiting time

	Average waiting time		Median waiting time		Maximum waiting time		Minimum waiting time		Capacity of a border crossing [number of vehicles/hour]	
	Latvian border	Russian border	Latvian border	Russian border	Latvian border	Russian border	Latvian border	Russian border	Latvian border	Russian border
Grebneva /Ublienka	4 hours, Queue of 5-32 vehicles	3 hours	1 hour	Confidential data	197 hours, Queue of 200 vehicles	Confidential data	Queue of 0 vehicles	Confidential data	Queue of 32 vehicles	Confidential data
Terehova / Burachki	15 hours, Queue of 5-32 vehicles	Confidential data	12 hours	Confidential data	427 hours, Queue of 200 vehicles	Confidential data	Queue of 0 vehicles	Confidential data	Queue of 32 vehicles	Confidential data
Zilupe	No waiting time	Confidential data	Not gathered	Confidential data	Not gathered	1-2 days	Not gathered	3 hours (for fully loaded trains only)	Confidential data	Confidential data

Table 1 Main information about border crossings in Latvia and Russia Source: Phone-based interviews with Latvian and Russian State Board Guard authorities

Custom clearance together with technical control takes in Russia: 3 days (export from Russia) and 4 days (import to Russia). Custom clearance together with technical control takes in Latvia: 1 day (export from Latvia) and 2 days (import to Latvia)[10].

There are no restrictions outside the cities on travelling during nights and weekends in Latvia.

Real time information on the number of trucks waiting and a waiting time in line at customs points Terekhovo and Grebneva can be obtained by sending a message from phone to number 157, the code request - BORDER[11].

4.2 Scanners at the borders

Scanning at the border is available at all border crossings described in this paper, both at the railway border crossing in Zilupe (however, information gathered only for the Latvian side) and at the road border crossings in Terehova/Burachki and in Grebnova/Ublinka (both on the Russian and the Latvian side of the border).

[10] http://www.doingbusiness.org/data/exploreeconomies/russia/trading-across-borders/
[11] http://www.vid.gov.lv/default.aspx?tabid=9&id=4356&hl=3

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

4.3 Overview of documents to fill to cross the border

Documents required to importing to Latvia: *bill of lading, certificate of origin, commercial invoice, container release order, customs import declaration and packing list.*

Documents required exporting from Latvia: *bill of lading, certificate of origin, commercial invoice, customs export declaration and packing list.*

Documents required importing to Russia: *acceptance order (priemo-sdatochnii order), bill of lading, certificate of conformity (sertifikat sootvetstviya), commercial invoice, consignment note (tovaro-transportnaya nakladnaya), customs import declaration, document confirming payment of customs related fees (platejka), document of warehouse (dokument ucheta skalda), letter from the bank certifying opening of the letter of credit (izveshenie/dokument banka), packing list and sales purchase contract.*

Documents required exporting from Russia: *acceptance order (priemo-sdatochnii order), bill of lading, commercial invoice, consignment note/ CMR (tovaro-transportnaya nakladnaya), customs export declaration, export order (eksportnoe poruchenie), packing list and sales purchase contract*[12].

4.4 Availability of secure rest places (gated areas)

By secure rest places are understood gated parking areas (surrounded with a fence); though none of those described here has a 24 hours guard service. The majority of secure rest places available west from Moscow are not located on the Ventspils - Moscow corridor, but on the corridor connecting St. Petersburg with Moscow. A list of secure rest places for whole Europe can be found on the International Transport Forum website: http://www.iru.org/index/transpark-app. A probe of the information's available on this homepage is presented on next page:

[12] http://www.doingbusiness.org/data/exploreeconomies/russia/trading-across-borders/

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Country	Name		Rating
RU	Bakovka	DETAILS	
RU	Bezborodovo	DETAILS	
RU	Emmaus	DETAILS	
RU	Emmauss	DETAILS	
RU	Istomino	DETAILS	
RU	Khimki	DETAILS	
RU	Konakovo	DETAILS	
RU	Konchinka	DETAILS	
RU	Maltsevo	DETAILS	
RU	Mokshino	DETAILS	

Figure 15: A sample of description of parking areas at the IRU website. Source: http://www.iru.org/index/transpark-app

All parking areas between Ventspils and Moscow are illustrated below:

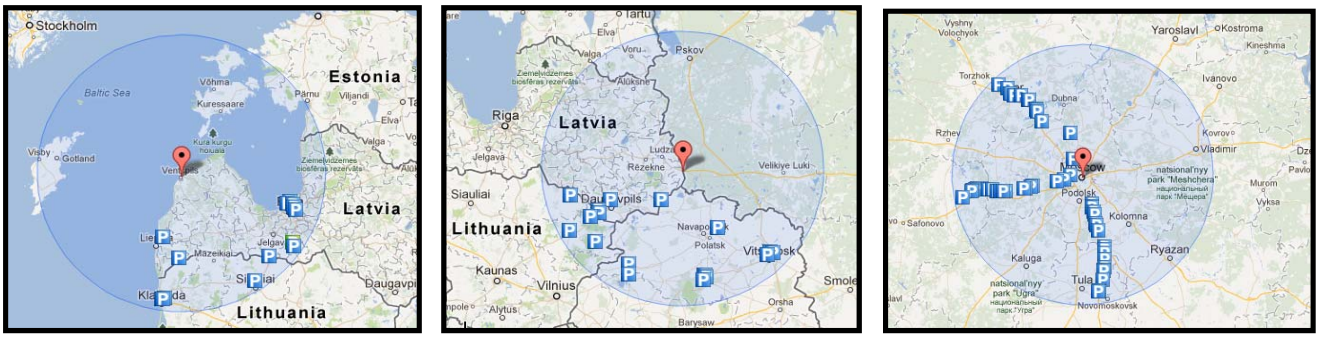


Figure 16: All parking areas on the corridor I Ventspils-Riga-Moscow. Source: http://www.iru.org/index/transpark-app

As it can be seen from the figures, Riga is the only location in Latvia where trucks can safe-park behind gated areas. The main reason for lacking parking spaces next to the city of Ventspils is be due to the fact that most truck drivers rest while being on the Baltic Sea ferry routes or they rest at the port areas, while waiting for the ferries to depart. Hereby the rest can take place in connection to the sea transport leg and no safe, gated parking areas are needed next to Ventspils. On the other end of the corridor, Moscow is from the western entries surrounded by safe, gated parking areas to accommodate the needs of the many drivers delivering to the Russian capital. On the eastern border of Moscow there are no safe and gated rest places available.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

The figure below summarizes information presented in chapter 4:

Figure 17: Border crossing facilities. Source: http://www.internationaltransportforum.org/Pub/pdf/09parking.pdf , http://www.doingbusiness.org/data/exploretopics/trading-across-borders, http://www.vid.gov.lv/default.aspx?tabid=9&id=5784&hl=2#, http://www.intermodal-terminals.eu/database

5. ICT and support systems

As a unique European train control system, ERTMS is designed to gradually replace the existing systems throughout Europe, as these systems in many cases are incompatible with each other. This will bring considerable benefits to the railway sector, as it will boost international freight and passenger transport. The introduction of ERTMS systems will bring significant advantages in terms of maintenance costs savings, safety, reliability, punctuality and traffic capacity.

ERTMS system can be divided into GSM-R and ETCS. The Latvian and Russian ALSN/ALS-EN systems are listed as ETCS Class-B systems (ALSN is also broadly used in Ukraine, Latvia, Lithuania and Estonia*.)* Pure ATC and ERTMS systems are not present in Latvia yet, first tests will be performed from 2014 (tests on GSM-R, as ETCS is already in place). In Russia, ALSN is also used: *since the 1990s, the Russian Railroad Company has introduced a computerized successor system KLUB-U which requires either ALSN only or both ALSN and ALS-EN sensors for compatibility*[13].

The European Commission clearly describes what is needed for implementation of the ETCS system in Latvia: *At present, there is no justification for implementing the ETCS system on the current 1520 mm track gauge network, if full interoperability has already been functioning in the region, whereas when it comes to traffic with the 1435 mm gauge railway network, locomotives cannot physically overcome the track gauge difference. Thus, the implementation of this system itself would not increase the overall interoperability level as the existing Class B system already fully ensures the interoperability for the 1520 mm gauge railway network. If the ETCS were implemented the existing Class B system would also have to be retained in order to ensure the operation of locomotives from the neighbouring countries. In effect, the potential investments required for the ETCS system implementation would be disproportionately high in terms of the possible gains from such implementation*[14].

[13] http://en.wikipedia.org/wiki/ALSN

[14] http://ec.europa.eu/transport/modes/rail/interoperability/ertms/doc/edp/national_deployment_plans/latvia_ndp.pdf

Baltic Sea Region Programme 2007-2013

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

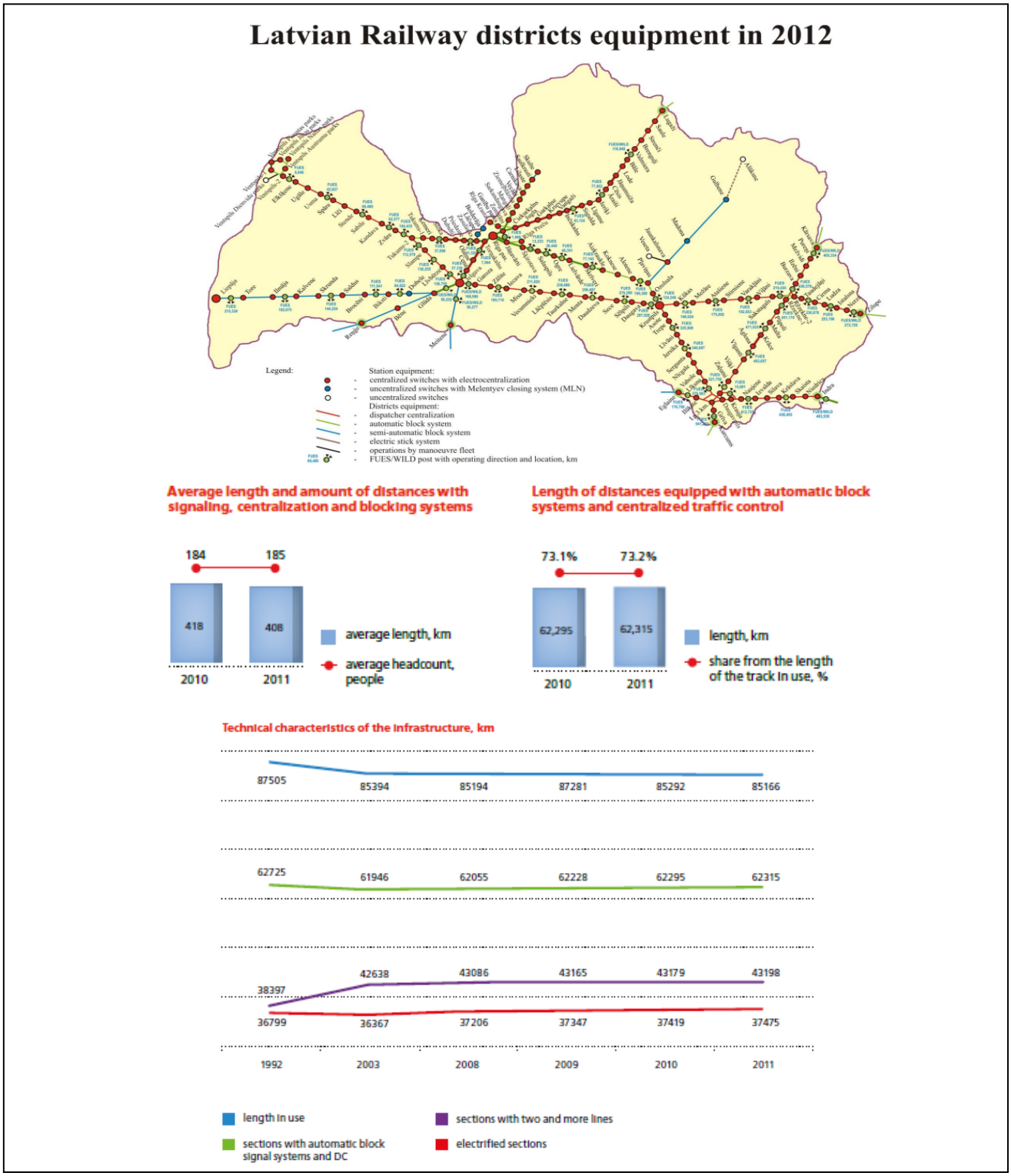


Figure 18: Source:http://ec.europa.eu/transport/modes/rail/interoperability/ertms/doc/edp/national_deployment_plans/latvia_ndp.pdf. Source: Annual report of Russian Railways 2012 , http://eng.rzd.ru/statice/public/rzdeng?STRUCTURE_ID=21

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

5.1 Availability of E-customs

Detailed information about process of obtaining E-customs in Latvia can be found at the following website: http://www.vid.gov.lv/default.aspx?tabid=9&id=2094&hl=1. Data for the Russian side is sparser, but E-customs are available at the Russian side of the Zilupe border crossing.

Figure 19: Availability of E-customs

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

6 Conclusion

Corridor I Ventspils – Riga – Moscow is clearly "underutilized" compared to other corridors leading to Moscow: St. Petersburg - Moscow, Minsk - Moscow, or Kiev – Moscow. Moreover, the Russian Federations future plans for investments into rail infrastructure do not include the corridor leading to the Latvian border. Below is given the conclusions identified in the report.

Weaknesses identified

Transporting goods with train from the Russian border to Moscow, can take up to a week. This is not due to poor infrastructure conditions, but due to economic reasons (though it only takes 1-2 days for fully loaded trains, as they are prioritized; at the border they are having a separate track. There are no inland waterways used for goods transportation within the corridor I, while there are inland waterways from St. Petersburg to Moscow.

The number of gated areas for safe truck parking is limited, though there are secure parking places available near the largest cities, in particular next to Moscow.

Waiting time on the shortest way from Ventspils to Moscow, at the road border crossing in Terehova, takes on average 15 hours. However critical examples have shown that and waiting time can be up to 300 hours. The alternative border crossing in Grebnova is not located far away from Terehova (80 km), but the road quality causes that the travel time is 2 hours longer in total.

There are limited planned investments into road infrastructure in the corridor I, both on the Latvian and Russian sections.

Strengths identified:

Gasoline stations are equally distributed within the corridor I.

Both in Riga and Ventspils are well prepared for handling freight goods; they are container ports, Ro-Ro ports, and are equipped with intermodal terminals (railway).

There is a possibility to obtain statistics and real-time information about the traffic on the Latvian side of the border crossings.

There are available scanners at each border crossings, on both sides.

There available E-customs in a several places on the Latvian section of the corridor I, as well as at on both the Latvian and Russian side of each border crossing.

Corridor II: „Riga-Smolensk”& „Riga – Vilnius-Minsk-Kiev”.

Prepared by Latvian Logistics Association, 2013

1. Modes.

1.1. Road.

To get the cargo by land road from Riga to Smolensk, there are different options in general. The shortest route (geographically) is the one which goes directly through Russia, according to the route:

- **Riga A6(E22) Terehova M20, P133 Smolensk**

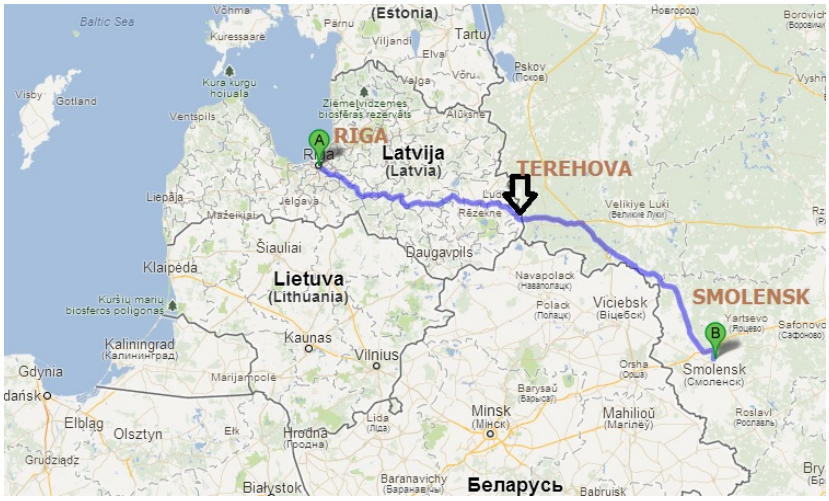


Fig.1 Nodes and shortest route From Riga to Smolensk

Total distance of the route is 653 km. Nevertheless, taking in account the poor conditions of Russian roads, lot of drivers choose an alternative transit route via Belarus instead, because of better road quality and higher safety (these issues will be discussed later). The approximate route via Belarus to Smolensk is:

- **Riga A8 (E22), A14 (E262) Paternieki P20, Viciebsk E95, E30, Orsha H-2700, Ljady, P135, Smolensk.**

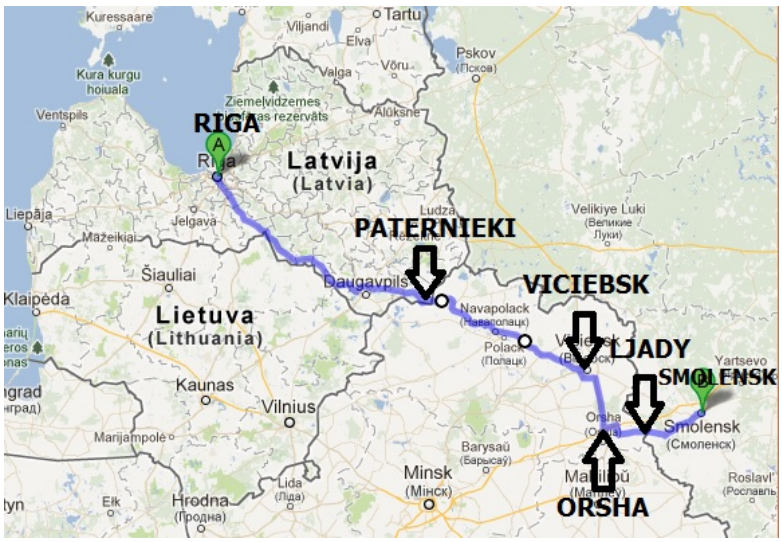


Fig.2 Nodes and alternative route From Riga to Smolensk with transit via Belarus.

When going to Kiev, normally transit through Lithuania and Minsk is used:

- **Riga A8(E22),A7, (E67), A2(E272) Vilnius A3 (E28) Medininkai M7(E28) Minsk M5 (E271), M01 (E95) Novaya Guta M-01 (E95) Kiev.**

Total road distance for this route is about 1040 km and the route with nodes can be seen in the Fig.3.

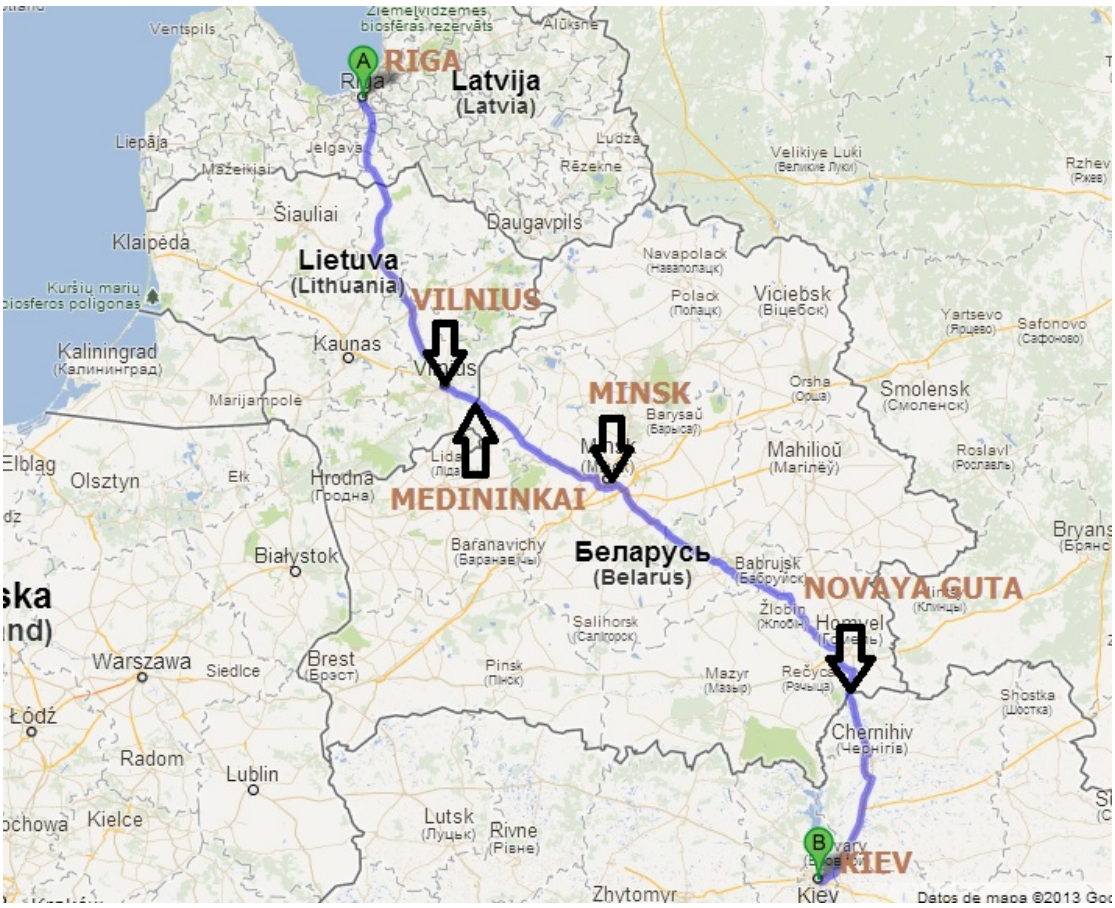


Fig.3 Nodes and land route Riga-Vilnius-Minsk-Kiev

Transit times for land transport in aforementioned corridors are following:

- Transit Time Riga – Vilnius – Minsk – Kiev comprises approximately 72 hours.
- Transit Time Riga – Smolensk comprises 48 hours.

When doing calculations, it is taken in account, that a truck drives 400 km a day in average (as per Law, driver can drive 9 hours straight, without a rest). Therefore, actual driving time from Riga to Smolensk would be 12 hours and to Kiev 20 hours. However, total transit time to Smolensk is 2 days and to Kiev 3 days approximately. The delays are caused by lines on border crossing points (8 hours on average per border crossing point if no delays with Customs).

In general the roads in both corridors, except Lithuania and Belorussia, are in poor condition. During the spring and autumn rains (*rasputitsa*) the driving conditions worsen a lot. In order to keep the roads usable, in these seasons Russia, Belorussia and Ukraine apply restrictions for the cargo payloads for the trucks. Because of the conditions of roads, sometimes truck drivers choose to transit through Belorussia, instead going directly to Russia. In summer (especially in July) the trucks are allowed to move only at nights to avoid the damage of road pavement which being melt by summer sun.

The border crossing points and Customs controls are the main moments, which influence the total transit time. Usually, there always are waiting lines at all border crossing points on Latvian, Russian, Belorussian and Ukrainian borders. The lines may reach up to 1500 trucks with waiting time up to 72 hours. In average (if no extraordinary issues happen) every border crossing takes approximately 8 hours. Lately there have been a lot of delays (mainly in Southern direction towards Kiev) on Belorussian borders, because a number of physical cargo controls carried out by Customs (due often cases of contraband).

Lately there have been a lot of improvements regarding the processing of necessary documentation in order to cross the border. At the moment so called "cargo pre-declaration" is used. That means the trucker before starting his journey already fills out the electronic TIR declaration (in addition to TIR carnet) in NCTS system, where the information is sent in unified format to EU, Russian, Belorussian and Ukrainian Customs systems. The aforementioned greatly reduces the burden on border crossing and facilitates the exchange of information. However, at any and each of these borders (Russia, Belarus and Ukraine) in average EUR 50.00 must be spent on different additional "expenditures" and bribes.

Level of security and availability of safe resting places vary from country to country. The most secure one is Lithuania, which has a good infrastructure of roads and rest areas. Trucks can stop in special parking lots, near the gas stations, warehouses, logistic centers. A bit different situation is at Belorussia. It is still relatively safe, but it has imposed rules that trucks can stop only at especially dedicated places, which are not sufficient I numbers and very scattered over the country. The grimmest situation is in Russia. At the moment there are high levels of crime on the roads (pilferage and robbing) on the way.

What regard the toll roads in Lithuania almost all roads used for transit are the toll ones. In Belorussia there are still a few toll roads (mainly in East-West direction), but the number of them are planned to be increased. What regards Latvia and Russia, there are plans to implement toll roads for trucks in Latvia starting from 1st of January 2014. If it will happen, Russia will do the same.

There still exist system of quotas for entrance of land cargo transport in Russia, Belorussia and Ukraine. Each year each of these countries issues to other countries a certain number of permissions to enter and exit a particular state. Although the number of quotas increases every year, there still have been moments when they are not sufficient due to a rapid increase of road transportation volumes - a situation when the trucks cannot enter the country anymore (it regards the Russia. In Belorussia, when the state quotas are exceeded, there is still an option to buy them on the place). This problem is overcome by some trucking companies registering their vehicles in other countries, where the number of remaining quotas are bigger (for example, Netherlands).

1.2. Railway.

There are 3 specialized container shuttle trains operated by Latvian railroads in West – East and North – South direction: "Zubr" with a route from Riga to Black sea, Container shuttle train "Baltika - Tranzit" for cargo delivery to Kazakhstan and "Riga express" which has a regular service from Riga to Moscow and back.

Railway traffic towards Smolensk goes via Belarus. Mainly Smolensk is used a railway hub (and it is the shortest way) for cargo deliveries by railway to destinations located south of Moscow, for example – Kaluga. A regular container shuttle train service hasn't been launched yet. The closest one is "Riga Express" which goes to Moscow. In Smolensk – Kaluga direction there have been only some spot deliveries with final destination Kaluga.

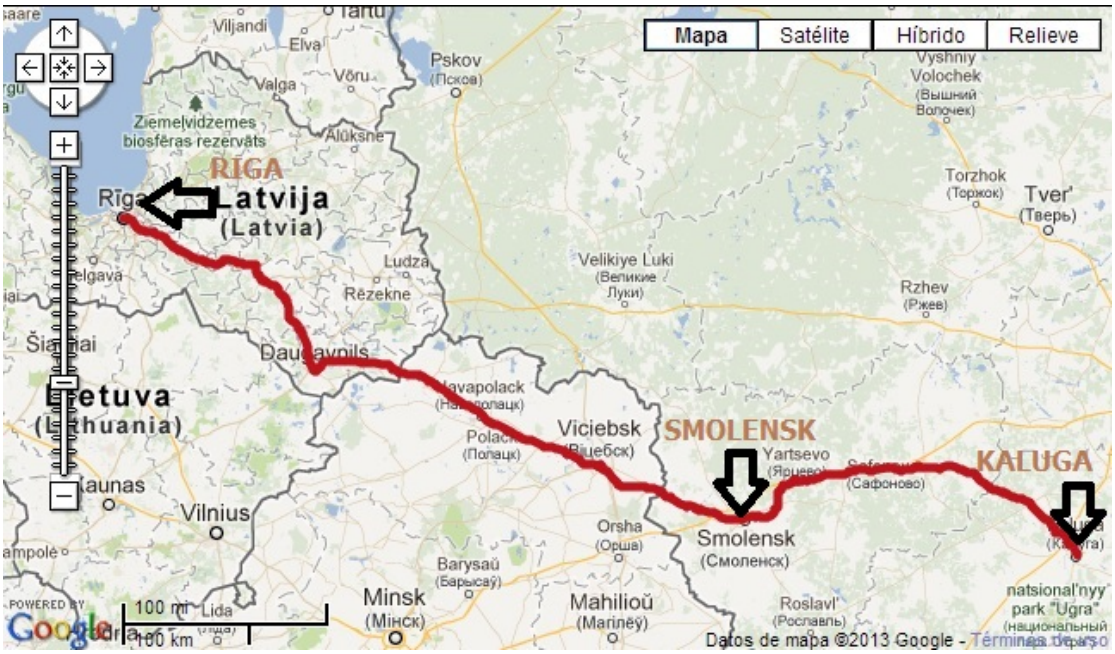


Fig.4 Railway via Smolensk to Kaluga

What regards the container shuttle train „Zubr" it is a project with a final objective to connect Scandinavia with Turkey with Latvia as a transit corridor. However, must be admitted that Latvia is a falling behind Lithuania, which project „Viking" in route Klaipeda – Odessa is already active since 2003. There is a big competition in the southern direction. Without Lithuanian „Viking," great volumes of cargoes are transported by Russian railways from St.Petersburg to Port of Novorossiysk. Poland as well, has its plans for cargo forwarding towards Ukraine.

Fig. 5 Railway transit routes from Baltic region towards Black sea ports

In order to increase the potential of Southern Corridor (Baltic – Black Sea), there have been ideas to unite "Viking" and "Zubr" as they are working in the same main direction. Athough in the year 2012 the total volume of goods transported has increased 3 times, the Ukrainian railway infrastructure load is far from full.

The railway distances in corridors "Riga – Smolensk" and "Riga-Minsk-Kiev" are following:

- **Distance Riga – Minsk - Kiev is 1274 km,**
- **Distance Riga – Smolensk is 610 km**.

In the entire route, railways are equipped with the same wide gauge (1520mm) tracks, what gives a good inteoperability for cargo flows between all Baltic and CIS countries in aforementioned directions.

The transit time for route "Riga– Minsk – Kiev" is varying from 48 to 72 hours. In contrary to land road, the railway route goes directly from Latvia to Belarus, first, avoiding Lithuanian territory. As border crossing points here are used railway stations Indra/ Bigosovo (Latvia/ Belorussia) and Slovechno/Berezhest (Belorussia/Ukraine).

In route "Riga – Smolensk" transit time is approximately 36 hours. As mentioned before, Smolensk is used as a transport hub for railway deliveries which goes further to Russian

hinterland. Border is crossed crossing at station Indra/Bigosovo, because in order to shorten the route, the train goes in transit via Belarus.

Delays in transit time mainly are caused by Customs controls on border stations, what may take from 2 to 24 hours. The same waiting time can be encountered in marshalling yards along the road (for example, in Minsk, Orsha, Smolensk or in Kiev).

1.3. Inland waterways

There are no inland waterways available in this Corridor.

2. Nodes of Corridor II: „Riga-Smolensk"& „Riga – Vilnius-Minsk-Kiev".

For the Transit Corridor II: "Riga – Smolensk" and "Riga – Vilnius – Minsk – Kiev" the main nodes are following:

- Riga – main transport hub of Latvia. The main logistics infrastructure (container terminals, cargo railway stations, warehousing, etc.) is concentrated here. In Riga the cargo arriving from Western-Europe changes it's mode from sea to road or railway. However, for the road transportation there are still some traffic limitations in city center and on bridges during the rush hours.
- Vilnius – one of the main transport hubs in Lithuania. Crossroads for transit corridors which go from North to South and from West to East (from Port of Klaipeda to Belarus and Russia). As no developed ring road exists around the city therefore rush hours may cause delays when going by road.
- Medininkai - major border crossing point between Lithuania and Belarus. Delays may occur due to seasonal fluctuations of traffic intensity. This border crossing is used with a big intensity for traffic between Minsk (where the Belarusian main industrial complexes are located) and port of Klaipeda. The number of cars and trucks waiting in line can be seen online. Total capacity of this Customs point is 1300 trucks inbound and 1300 trucks outbound daily. Normally the length of line does not exceed 30-40 minutes, not taking in account seasonal peaks (for example, New Year or Easter celebrations).
- Minsk –The main industrial center of the country (warehouses, factories, rail yards, e.t.c. are located here), the traffic intensity increases notable on approach to the city and there might be some difficulties during the rush hours. Minsk is the largest transport hub (both road and railroad). It has a well-developed circle road (MKAD) round the city; therefore a lot of time can be spared with no need to enter the city directly. The main railway stations are situated here in direct vicinity of big industrial complexes, which has their direct railway access roads (railway stations "Shabany" and "Kolyadichi" are situated near the industrial giants "MAZ" and "MTZ").
- Novaya Guta – One of 12 border crossing points between Belorussia and Ukraine. Throughput capacity is 200 trucks per 24 hours.
- Kiev – the city is one of the industrial centers of the country. At approach from Belorussian border (Novaya Guta) a high capacity 4 lane motorway is available. The approach to the city is unburdened by a circle road around the city (however, this is better developd on the left bank of river Dniepr). The main railway cargo station is „Kiev- Liski " (railwaystation where container train „Zubr" goes to).
- Terehova –main border crossing point between Latvia and Russia. Average line for border crossing is 40 trucks with estimated average waiting time 3 hours. The number of trucks

waiting in line can be seen online. Delays may occur due to seasonal fluctuations of traffic intensity (number of trucks waiting, depending from the season, can fluctuate up to 1500 trucks in line with waiting time up to 72 hours).

- Smolensk- a big industrial center and an important railway hub in southwest Russia. Mainly concentrated manufacturers of precision machinery, electronics. Therefore, in approaches to city during the rush hours some difficulties may be expected. Smolensk usually used as a Transit/ Customs point for Customs clearance for goods moving further to Russian hinterland and is not a final destination very often. Smolensk, because of relatively close distance from Riga, is mainly a destination for cargoes which goes by road (tent trucks or container carriers). What regards the railways, Smolensk is a good railroad hub for cargoes which have their destination south of Moscow (for example, in Kaluga).

3. Costs

The transportation prices may vary depending from the situation in the market, prices for fuel, road taxes etc.

Approximate prices for transportation of cargo on truck at first quarter of 2013 are:

Route Riga – Smolensk EUR 1400.

Route Riga – Vilnius – Minsk – Kiev: EUR 1700.

Price for railway freightage is approximately: 40-50 percent less.

4. Multimodality.

According to SJSC "Latvian State Roads" average transport intensity on A12 road near Latvian – Russian border crossing point at Terehova is 1900 units per day in year in April, 2013. Transport intensity on A7 near the Latvian – Lithuanian border is in average 4758 units per day. The information is taken from the points situated at 2 general directions from Riga – to the South (Lithuania, Belarus and Ukraine) and to the East (Russia)

However, it must be noted that these data are approximate and are indicating only the traffic load on the road infrastructure in given directions (figures incorporate both domestic and international traffic, personal and commercial transport).

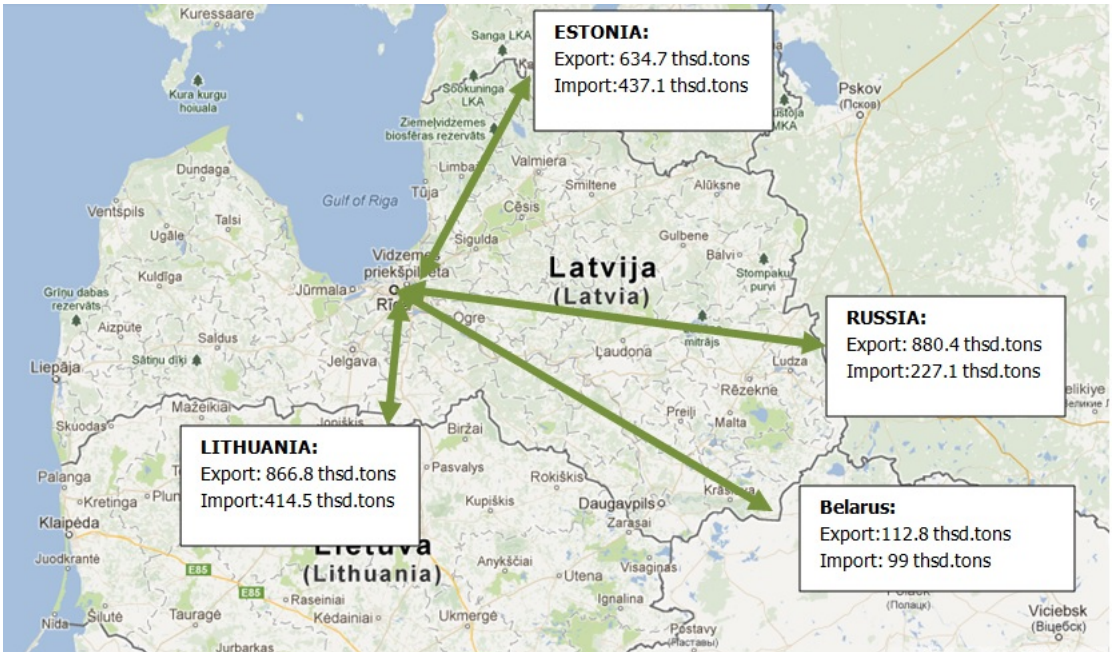


Fig.6 Main directions of Export/Import cargoes carried by road transport registered in Latvia in 2012

As per information from Statistical division of Latvian Customs Authority, Latvian transit corridor is widely used for combinied trasnportation (maritime transport – road transport) and intermodal transportation (maritime transport – railroad).

For cargo import movement, mainly railway is used (cargo changes in Latvia it's mode from rail to sea). In year 2012 43.37% of all cargoes arrived to Latvia by railroad. Only 6.84% were delivered by road transport.

For cargo export(outward movement) the absolute leader is maritime transport (61.79%), 2nd and 3rd place is divided by rail and road transport (19.77% and 15.68% respectively)

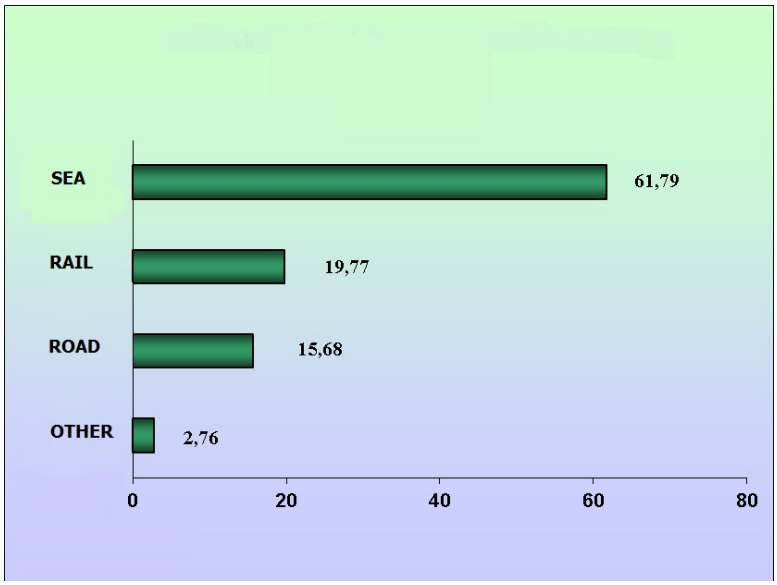


Fig.7 Percentual division of cargo export by transport mode in year 2012

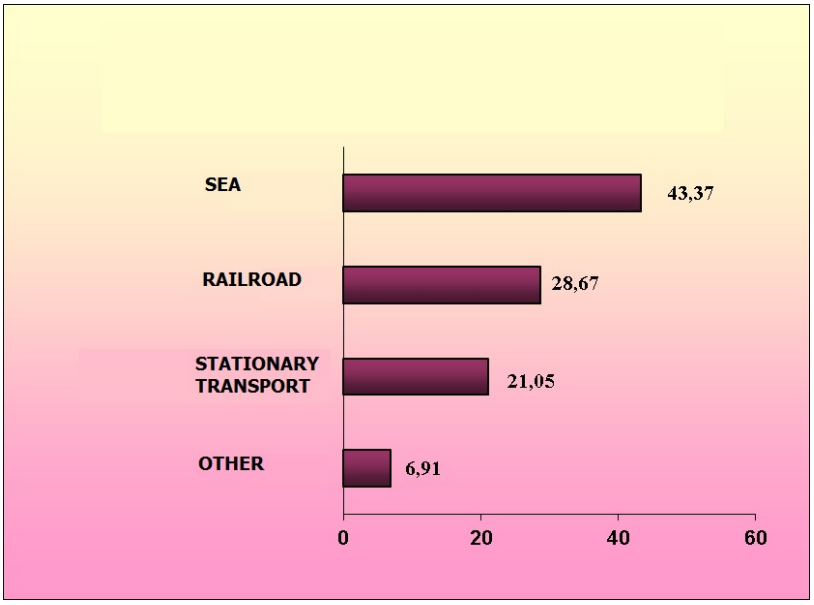


Fig.8 Percentual division of cargo import by transport mode in year 2012

from all transport modes - see the Figure 7.

The similar situation is regarding the cargo Import/ inward movement. In year 2012 43.37% of all cargoes arrived to Latvia were transported by sea and 28.67% by rail. Road transport only comprises 6.85% of all cargoes transported.

In the year 2012 the biggest volume of all cargoes was transported in West –East direction, in general to and from Russia (24.00% for Export and 51.78% for Import movement). It is very interesting that the 2nd and 3rd place are taken such a distant countries as Algiers (13.25%) and Turkey (9.74%) – see Figure 9. Cargo movement to Belarus is only 3.88% for Export but an impressive figure of 19.68% for import. The cargo flow to and from Ukraine is quite minuscule.

Division of Import and Export by country				
Country	**Export, transit, re-export kgs**	**%**	**Import, transit, re-import kgs**	**%**
Russia	1607935824	24.00	7146209001	51.78
Algiers	539774939	13.25	n/a	n/a
Turkey	396941701	9.74	23331138	0.49
Belarus	216480923	3.88	3900743126	19.68
Ukraine	52110608	1.05	154367485	2.82
Others	10632641838	48.08	1391199247	25.23

Fig.9 Division of Import and Export between Russia, Belarus and Ukraine

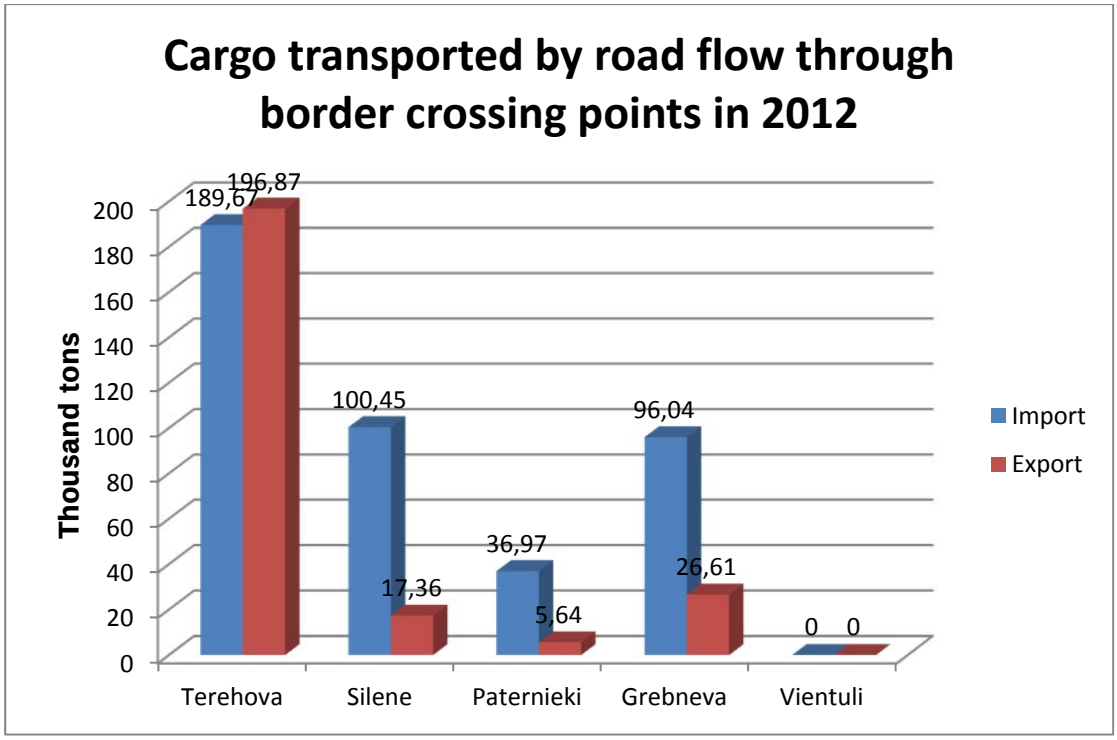


Fig.10 Division of cargo volumes per Road border crossing points

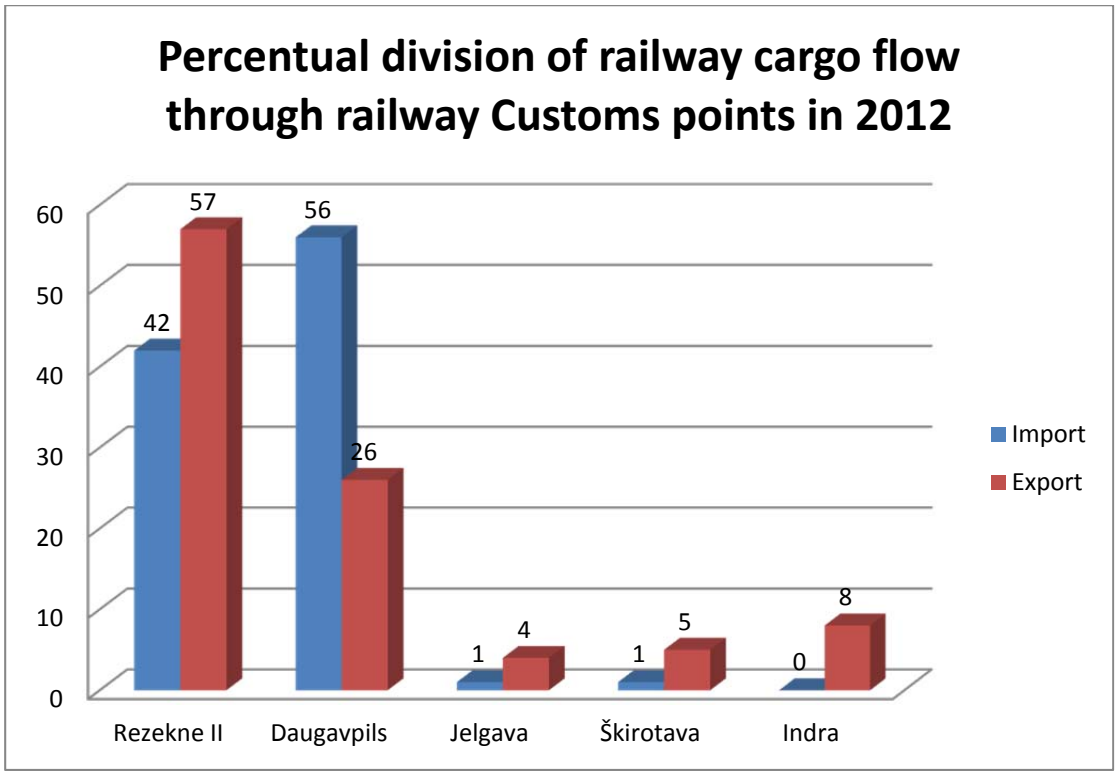


Fig.11 Percentual division of cargo volumes per railway Customs points.

In the Figure 10 is shown the amount of cargo in year 2012 which has crossed (both incoming and outgoing directions) Russian (Terehova, Grebneva) and Belorussian (Silene, Paternieki) borders. It can be seen that the main transit corridor goes in Russian direction.

Latvian -Russian border crossed 509.19 thousand tons with the majority of cargo voume at Terehova (386.54 thousand tons).

In general, the transit cargoes arrive from Western Europe to Latvia by sea where their mode is changed equally to road (combinied transportation) or railway (intermodal transportation) to go further to Eastern direction (Russia, Belarus, and other CIS countries). At the moment the combinied and intermodal transportation in outward movement terms is used almost equallyly (by percentage, as per Figure 7). In Russia or Belarus (either coutnry of final destiantion or transit country), after crossing the border, in one of the main border crossing points (either Silene, Grebneva, Paternieki or Terehova for road transport or Zilupe/ Posin, Indra/Bigosovo, Karsava/ Pitalovo for railway) cargo moves towards to a bigger transport hub where Customs clearance (Sebezh for railway, Smolensk mainly for road transport) normally is performed before transport movement further into hinterland. However, the road trasnport is used for cargo transportation in medium distances to destinations which are situated not to far from the border due generally poor condition of roads.

For import cargoes the main transport mode is railway, the road transport part is quite small (See Fig.8). Whenn arrived to Latvia, the cargo mostly change it's mode from road/ railway to sea, in order to be shipped further to Western Europe.

5. ICT and support sytems, presence of ACT and ERTMS for railway transportation.

At the moment in Latvia is used the 1520mm track gauge railway system in which has a full interoperability with the railway systems of Russia, Belarus, Ukraine and other CIS countries.

As ATC in Latvia, Russia, Belarus and Ukraine is used the same train control system ALSN (ALSN used widely on the railway lines of the ex-Soviet states). ALSN as specified in the Annex to the TSI (Technical Specification for Interoperability) falls under Class B. The actual signaling systems in countries included in Corridor II (for example, KLUB in Russia and Belarus) are based on the same ALSN Standard and basically are its latest modifications with individual additional functions, therefore continuing to provide a full interoperability between all countries.

What regards the European Union backed initiative for European Rail Transport Management System (ERTMS which consists of 2 primary components: ETCS -European Train Control and Command System and GSM-R - the radio communications system to send information to the train); there has already done a work to implementing the first component GSM-R.

Latvian railway plans to fully implement GSM-R as from year 2014 (together with Belarus). Russia already has started this job on year 2012 and Ukraine is plans to start doing this as from year 2016.

What regards of implementation of ECTS system in this region, following must be taken in account:

- Difference between the rail gauges (1435mm in Western Europe and 1520mm in Baltics and CIS countries) still is an obstacle for justification of implementing the ECTS (and therefore finally implementing ERTMS), because the current wide gauge rail network has a full interoperability in the region (rail gauge and ALSN system with all its modifications) and it prevents the direct traffic of new locomotives from Western Europe (which are equipped with different ATC systems) to any of current railroad systems.

- If ECTS still would be implemented the existing Class B system would also to be retained in order to ensure the operation of locomotives from neighboring countries.

Regarding the implementation of ECTS, following stages can be divided (as per actual study for implementation of ECTS system for the "Rail Baltica" corridor, where are existing plans within the framework of an individual EU priority project to renovate the existing railway line and to carry out technical, engineering and economic research towards the development of a new railway line that would comply with the EU standards):

- Stage I: Improvements of the technical condition of the existing line, including the increase of rail traffic speed (but no more than 120km/h). The parameters of the line will not differ from those of the remaining railway network. In the same way as the remaining network, the implementation of the ECTS system will not increase the overall interoperability level already fully provided by existing Class B system. Nevertheless, must point out that, a preparatory work on the updating of existing control-command and signaling systems is carried out already carried out in the East-West corridor with the aim of simplifying the installation of ECTS modules in case such a need arises.
- Stage II: As in 2014 begins a new EU financing period and following development scenarios are possible:
    - No further implementation is done, as no preconditions arise, due to which already existing Class B system (ALSN) could not fulfill its functions or fail to ensure the interoperability.
    - Increase of maximum traffic speed up to 160 km/h, retaining the existing 1520mm gauge. However, the existing ALSN based system is designed and its signals work for speeds up to 120 km/h, therefore it will need updating. These moments could be overcome by following:
        - By setting up ETCS devices for the entire railway line (for example, Meitene-Jelgava-Riga-Lugazi, for Rail Baltica corridor).
        - Since the railway in Latvia remains a part of common 1520mm track gauge railway network and the existing rolling stock (including Latvian and from other countries) will need to use it, the existing ALSN system would be simultaneously maintained (though subject to updating). The line will ensure the movement of said rolling stock with speed up to 120 km/h.
        - A new rolling stock, designed for speeds above 120km/h, already equipped with ETCS on-board devices and Specific Transmission Modules (STM) to allow interoperability with Class B systems on other lines.

      An option of ECTS as the only system also can be considered. However in this case it means, that all the existing rolling stock (in order to permit it to use this line) will have to be equipped with ETCS on-board devices and STM modules, which will increase total costs of the project.
    - A construction of a new 1435mm track gauge line, which would be fully equipped with the latest available version of ERTMS system.

6. Conclusions and recommendations

Corridors "Riga – Smolensk" and "Riga-Vilnius –Minsk-Kiev" are well suited for intermodal transportation thanks to good railway connections and hubs and Logistics centers located in all big nodes of these corridors (Riga, Vilnius, Minsk, Smolensk). Must be noted, as mentioned

before, that in direction of Smolensk mainly goes road transport (because of relatively short distances) and it is used as Customs clearance point for further cargo transportation.

As per increasing cargo turnaround volumes each year, Port of Riga is posing itself to become a major hub in the region with a powerful logistics and cargo distribution schemes by road and railway to the hinterland. Nevertheless, at the moment the rail transportation is taking the upper hand in cargo transit from Latvia to Eastern direction (Russia, Belarus and CIS countries) due to such factors as:

- Minimal waiting time at the border crossing points comparing with land roads.
- No payload restrictions (as on roads) apply.
- No road taxes.
- No dependency from weather conditions (as it happens on Belorussian roads).
- More security.
- No Quotas.

There is good railway interoperability between Latvian, Russian, Belorussian and Ukrainian railways (same track gauge and same ATC standards for signaling) which allows the cargo flow to be processed almost without any problems.

The main transit corridor for Latvia remains in West – East direction, both for land transport and railroads (in this study: Riga – Smolensk or vice versa). There is a lot of movement by land transport towards Smolensk, which is used as Customs clearance point en-route to Russian hinterland. For railway, Smolensk is used as a transport hub for further cargo distribution to destinations south of Moscow (e.g. Kaluga).

In the Southern (Belorussian/ Ukrainian) direction Lithuania still has better positions because of:

- Shorter road distance from Klaipeda to Belarusian border.
- Most Belarusian exporters prefer to use Klaipeda instead of Riga due to a shorter distance and lower total railway freight rates. Here Belorussian exporters/importers pay railway tariff only for 2 countries (BY, LT) and they don't have to pay additionally for Latvia.

Taking in account the aforementioned, following actions should be taken for further development of given transit corridors:

- Further development of combined transportation (maritime and road) in the corridor Western Europe – Riga – Vilnius – Minsk – Kiev with a notion to switch the main cargo flow to intermodal transportation (maritime - railroad), by development of container shuttle train ZUBR in order to overcome the difficulties imposed by toll roads, Custom controls and weather conditions. Besides, as it was seen before (quickly escalating export volumes to Black sea region – Turkey) it is crucial to improve the service up to Ukrainian Black sea ports (Odessa, Ilyichevsk) in order explore and the possibilities which can give the shortest way for cargo transit from Black sea to Scandinavia and vice versa.
- In corridor Riga- Smolensk (and in Western-Eastern corridor in general, as it is main transit direction for Latvia) a further development of intermodal transportation would be in place in order to relieve the border crossing points and land roads. Besides, this would reduce the transit times for delivery of cargoes to Russian hinterland. A further work on development of a regular shuttle train service/ services should be

done to create a direct connection between the Port of Riga and the Russian industrial centers south of Moscow, such as Kaluga and Smolensk, for example.

As it is seen from actual experience, the basic elements of multimodal transportation are already implemented and working in these directions. However, a further work on developing these logistical schemes is required in order to create competitive and highly effective transit corridors, which could successfully compete with Northern Baltic ports (e.g. Sankt Petersburg, Ust-Luga, Kotka) and already existing Russian and Lithuanian container shuttle trains.

References:

SJSC „ Latvian State Roads”

www.lvceli.lv

Russian Railways

www.Cargo.rzd.ru

Latvian Railways

www.ldz.lv

Road department of Riga municipality

www.rdsd.lv

State border commitee of Republic of Belarus

www.gpk.gov.by

Eurasian Economical comitee

www.tsouz.ru

State bureau of Income

www.vid.gov.lv

Association „Latvijas Auto”

www.lauto.lv

Latvian Association of freight forwarders and logistics LAFF

www.laff.lv

European Rail Traffic Management System

http://www.ertms.net

Global System for Mobile Communications - Railway

http://www.gsm-rail.com

Newspaper „Latvijas Avīze”

www.la.lv

Freeoport of Riga authority

www.rop.lv

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

ACL 3.4C – Corridor III

Sea routes of the Baltic Sea

Grant Agreement N°:	#068
Project acronym:	ACL
Project title:	Amber Coast Logistics
Funding scheme:	Collaborative Project
Project start:	1. October 2011
Project duration:	36 Month
Work package no.:	3
Deliverable no.:	3.4C
Status/date of document:	Final
Lead contractor for this document:	Port of Hamburg Marketing, Hamburg, Germany
Project website:	http://www.ambercoastlogistics.eu

Project partners involved in the elaboration of this document:

Partner No.	Company short name	Involved experts
1	HHM	Robert Strack
1	HHM	Marina Rimpo
1	HHM	Sebastian Doderer

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Content

Table of abbreviations

ACL	Amber Coast Logistics
BSR	Baltic Sea Region
CIS	Commonwealth of Independent States
DWT	Deadweight
FDT	Foreningen af Danske Transportcentre
M	Meter(s)
RoPax	Roll On/Roll Off with passenger cabins
RoRo	Roll On/Roll Off
TEU	Twenty feet Equivalent Unit

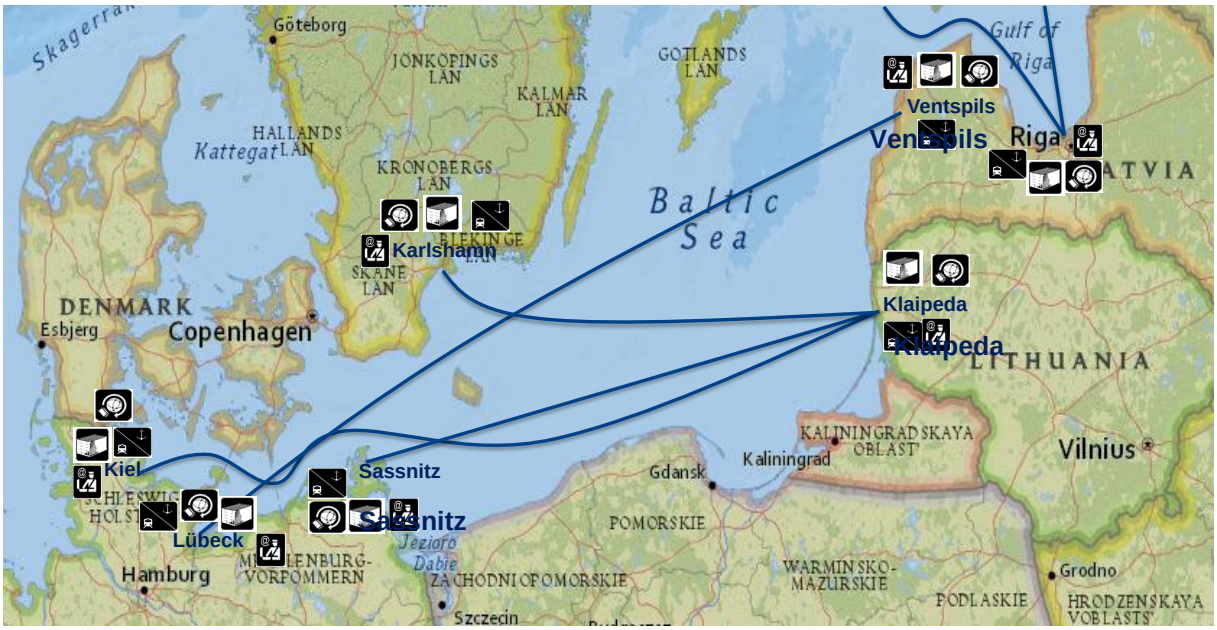
Table of figures and tables

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Introduction

This report gives an overview about sea routes in the Baltic Sea Region (BSR). It describes the sea routes going to and from the ACL Ports of Klaipeda, Riga, Ventspils and Sassnitz. The description includes e.g. details about the frequency of the weekly departures, who the operators are or if the route is a container route, RoRo or a combined one. The report also shows which facilities each port has to handle the different kinds of vessels, if there is a railway access (facilities to handle the trains as well) and the maximum depth of each port. The following map shows the location of the ports of Klaipeda, Riga, Ventspils and Sassnitz and gives an idea of the distances between the ports.

Fig. 1 Ports of the Baltic Sea Region



Source: HHM based on a map of STC and FPV

Port of Klaipeda

Fig. 2 Port of Klaipeda

Source: Port of Klaipeda

Klaipeda State Seaport is the northernmost ice–free port on the Eastern coast of the Baltic Sea. It is the most important and biggest Lithuanian transport hub, connecting sea, land and railway routes from East to West. Klaipeda is a multipurpose, universal, deep-water port, providing high quality services. 17 big stevedoring companies, ship repair and ship building yards operate within the port as well as all types of marine business and cargo handling services. The annual port cargo handling capacity is up to 45 million tons.

The shortest distances connect the port with the most important industrial regions of the Eastern hinterland (Russia, Belarus, Ukraine etc.). The main shipping lines to the ports of Western Europe, South-East Asia and the continent of America pass through Klaipeda port. The port operates 24 hours a day, 7 days a week, all year round. As already said the port of Klaipeda is a deep-water port. The depth of the entrance channel is 15 meters. The depth of the port navigation channel is between 13 and 14.5 meters. The Port accepts gross tonnage vessels, larger than 95 000 DWT bulk carriers and larger than 160 000 DWT tankers. Also the port has a huge storage capacity, a railway access and all the necessary facilities to handle all kind of vessels and trains.

In Klaipėda Port, over 75 per cent of the total volume of cargo is transported by rail; therefore, it is important to develop the port railway network because rail transportation, compared to the road, is more environmentally friendly, faster, and cheaper. The

construction of port railways provides not only a fast delivery of cargo, but also solves traffic-related congestion, pollution, and noise problems.[1] The following chart is giving more details about the characteristics of the port.

Tab. 1 Characteristics of the Port of Klaipeda

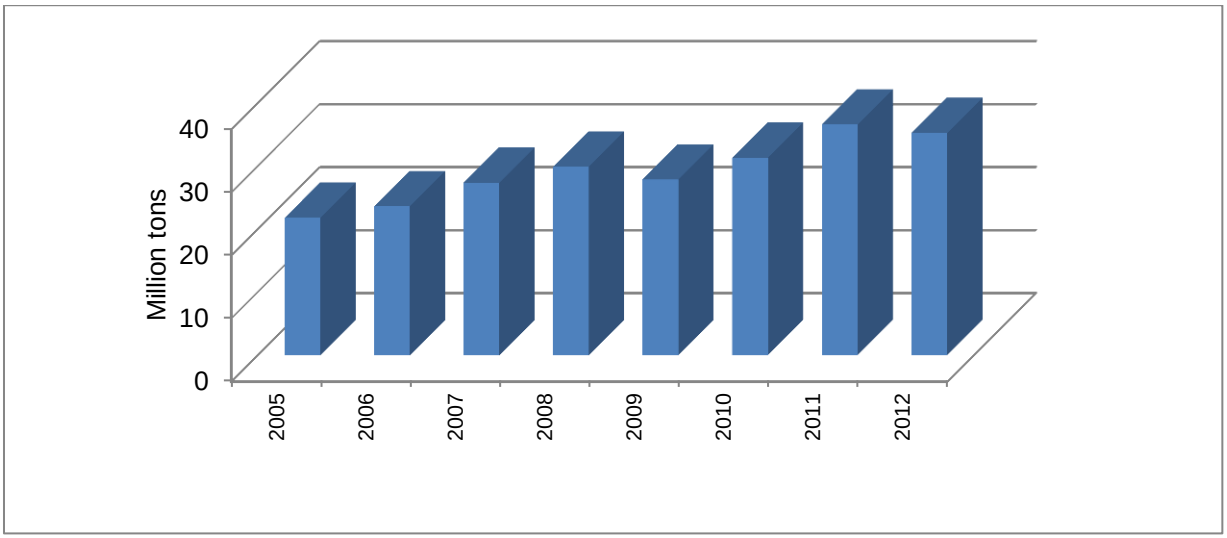
Characteristics of the Port of Klaipeda	
Port territory area	519 ha
Port waters area	897 ha
The length of port quays	26293 m
Port railway length	79000 m
The length of the Northern breakwater	733 m
The length of the Southern breakwater	1374 m
Area of covered warehousing facilities for general cargo	89013 m²

Source: Port of Klaipeda

The Figure 3 shows the annual cargo turnover of the port of Klaipeda in million tones. To get a better overview the years 2002 – 2012 are pictured. It is visible that the cargo turnover continuously increased. In 2002 there were not even 20 million tones handled and 2007 already over 27 million tons. Even when the world economic crisis started in 2007 the cargo turnover gained. Only from 2008 to 2009 there was a decline triggered by the crisis. In 2010 the cargo turnover already started to rise again. 2011 was the highest turnover in the history of the port of Klaipeda (36.6 million tons).

[1] Port of Klaipeda

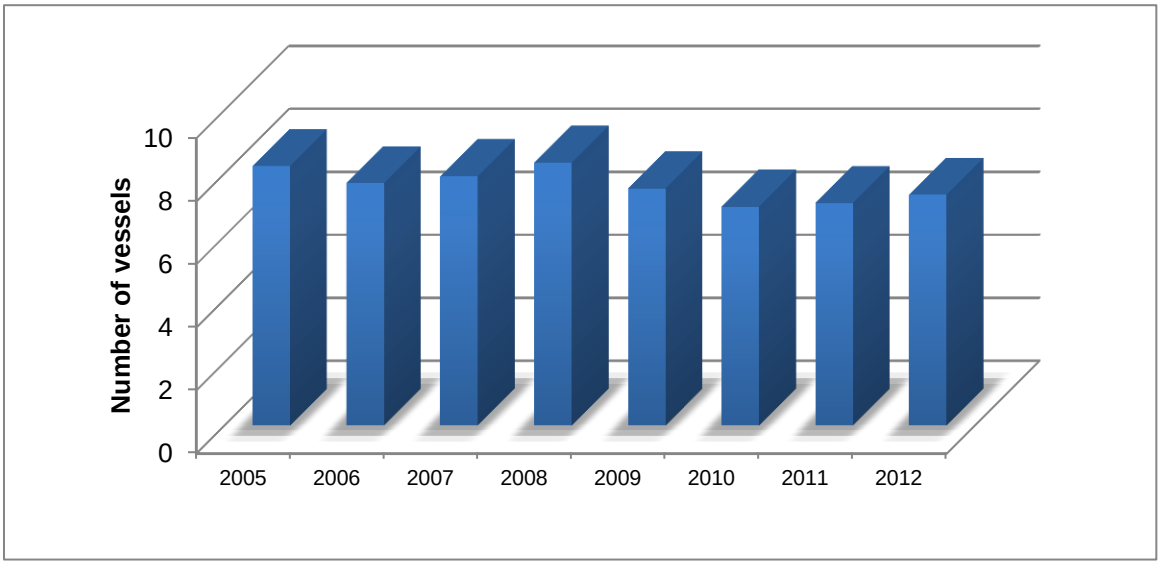
Fig. 3 Annual cargo turnover of Klaipeda port (million tons)



Source: HHM based on data of the Port of Klaipeda

Figure 4 illustrates the number of ship calls in the port of Klaipeda. For a better demonstration the period from 2005 – 2012 was chosen. In 2008 there was a low increase. The years after the total number of vessels decreased to 7,329. But this is not necessarily negative. A possible explanation might be that the operators used larger container vessels. In 2012 the number of incoming and outgoing vessels increased compare to 2011.

Fig. 4 Number of ship calls in the port of Klaipeda



Source: Port of Klaipeda

Chart 2 is showing the actual service operators who are involved in the container traffic to Klaipeda. The average sailing frequency is every 7 days. It means that one ship per week departures to Klaipeda. Hapag Lloyd is the only operator who has a lower sailing frequency. MSC inserts ships with the highest capacity (3400 TEU). The other operators are using ships with a capacity of more or less than 1000 TEU. It was not possible to get any data from Unifeeder and Team Lines. The sailing frequency of the operator Containerships was also not available.

Tab. 2 Container Service Operators

Operators (Container)	Ship capacity	Sailing Frequency
Maersk	1 x 1000 TEU, 1 x 1300 TEU	7 (once a week)
CMA CGM	1 x 900 TEU	7 (once a week)
MSC	2 x 1300 TEU, 2 x 3400 TEU	7 (once a week)
Tschudi Lines	2 x 500 TEU	7 (once a week)
Sea Connect	3 x 600/800 TEU	n.a.
Uni Feeder	n.a.	n.a.
Team Lines	n.a.	n.a.
Containerships	8 x 800/950 TEU	n.a
Hapag Lloyd	1 x 870 TEU	9 (every 9 days)

Source: HHM

The Ferry operator DFDS Seaways is the only operator who is offering services going to or departs from Klaipeda. The cargo capacity is variable. The minimum is1500 lane meters and the maximum are 2340 lane meters. To get a better sympathy how many trailers can be loaded on a RoRo/RoPax ship it is helpful to know that a ship which has about 1940 lane meters cargo capacity, is able to load 125 trailers (13,6m each). The sailing frequency is fluctuating between 3 – 7 departures from Klaipeda per week. The sailing time is 13 – 21 hours. The reason is the distance of the different destinations.

Tab. 3 RoRo/RoPax Service Operators

Operators (RoRo / RoPax)	Cargo Capacity	Sailing frequency	Sailing time
DFDS Seaways	1940 lane meters 2430 lane meters 1500 lane meters	7 departures / week 6 departures / week 3 departures / week	13 h 21 h 18 h

Source: HHM based on data of DFDS Seaways

Port of Riga

Fig. 5 Freeport of Riga

Source: www.maritimejournal.com

The Freeport of Riga is a significant part of global and regional cargo supply chains and passenger traffic network in the Baltic Sea region, providing safe and reliable services. An integral part of the city, the Port recognizes its social and environmental responsibilities and makes a strong contribution to the growth of Latvia's economy. The Port is driven by high performance standards and continuously strives to improve both the quality and breadth of services to clients. Geographically it is to say that the Freeport of Riga is located on both banks of the River Daugava covering 15 kilometers in length. The maximum permissible vessel draft by the berth is about 15 meters. The total loading capacity (assessed) at the terminals of the Freeport of Riga accounts for 45 million tons per annum. In 2010 the volume of the transshipped cargoes has reached over 30 million tons. It is the highest index during

all the 805 years of Riga port activities and number of vessels in 2010 amounted to 4.040.2 Riga is a transit port and part of one of the most important sea corridors connecting Russia, Middle Asia and China with the countries of West and North Europe goes through the Baltic Sea. This sea way is the most advantageous regarding delivery time and financial costs in comparison with the other possible routes.

Latvia, located at the coast of the Baltic Sea, takes the first place in transit trade among other Baltic countries. Thousands of tons of cargoes are arriving every day the Freeport of Riga from Russia and Asia and reloaded to ships; harbor freights conveyed by sea are transshipped to trucks and freight train wagons. The total amount of transshipped goods per annum makes up 20 million tons. About 80 % of freight turnover in the harbor of Riga fall to shipping services and receipt of transit cargoes from CIS countries. The main cargoes supplied and transshipped in port are oil products, wood, coal, various kinds of metal, chemical fertilizers, chemicals and foodstuffs.3 To get a better overview about the port, Chart 4 illustrates the main facts of the Freeport of Riga.

Table 4 Characteristics of the Freeport of Riga

Characteristics of the Freeport of Riga	
Port territory area	6.349 ha
Port waters area	4.386 ha
The length of port quays	13.800 m
Port railway length	79.000 m
Maximum depth	16 m
Maximum vessel draft	14,7 m
Warehouses	180.000 m²

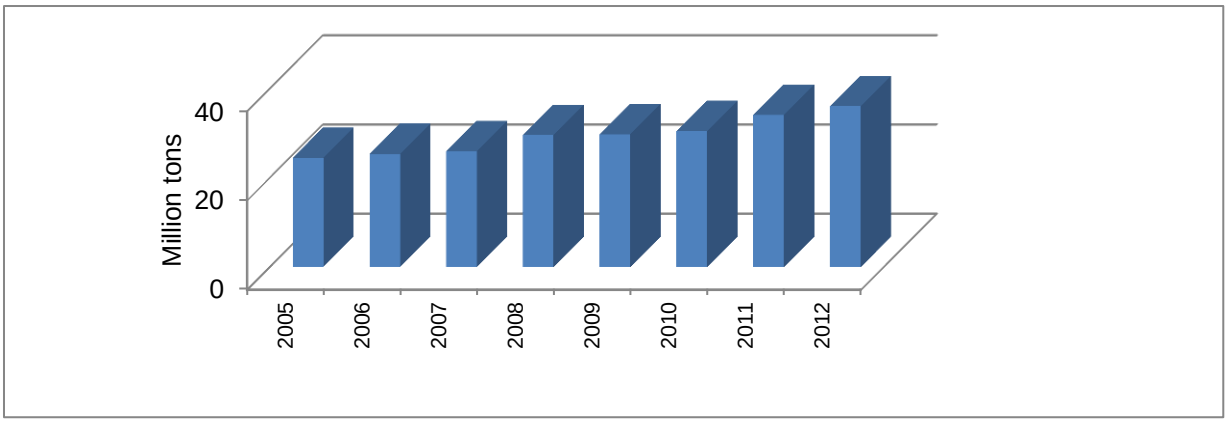
Source: Port of Riga

The Figure 6 shows the annual cargo turnover of the Freeport of Riga in million tones. To get a better overview the years 2005 – 2012 are pictured. It is visible that the cargo turnover continuously increased. In 2005 there were about 25 million tones handled and 2008 already over 29.6 million tons. Even when the world economic crisis started in 2007 the cargo

[2] Port of Riga
[3] Transgroup

turnover gained. Only from 2008 to 2009 the turnover was stagnating. In 2010 the cargo turnover already started to rise again. 2012 was the highest turnover in the history of the port of Klaipeda (36.05 million tons).

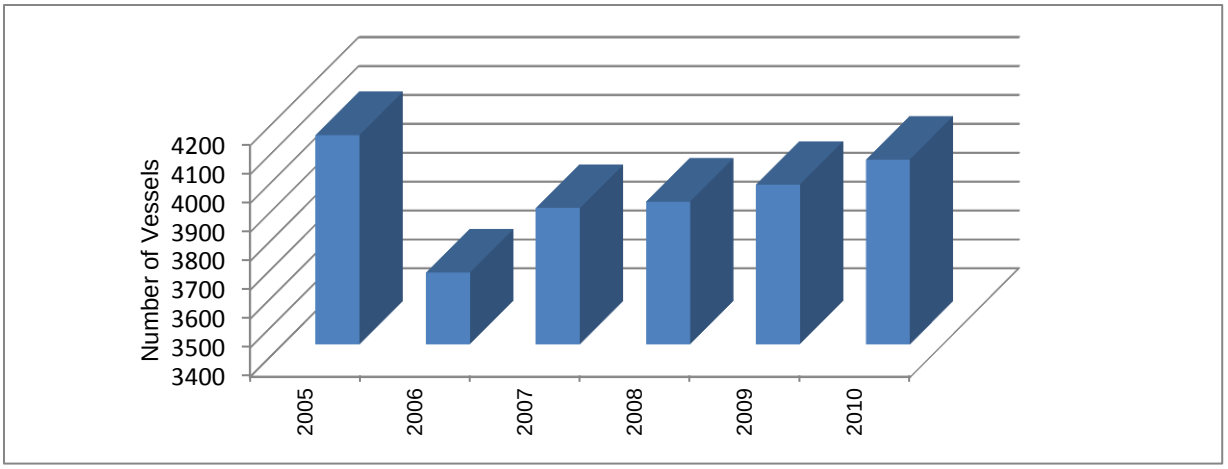
Fig. 6 Annual cargo turnover of the Freeport of Riga (million tons)



Source: HHM based on data of the Freeport of Riga

Figure 7 illustrates the number of ship calls in the Freeport of Riga. For a better demonstration the period from 2005 – 2010 was chosen. In 2006 there was a strong decline from 4124 to 3648 vessels. The years after the total number of vessels increased again. In 2010 the number of incoming and outgoing vessels raise again to 4040. The reason for the decline is not necessarily negative. A possible explanation might be that the operators used larger container vessels.

Fig. 7 Number of vessels in the Freeport of Riga



Source: HHM based on data of the Freeport of Riga

Table 5 is showing the actual service operators who are involved in the container traffic to Klaipeda. The average sailing frequency is every 7 days. It means that one ship per week departures to Klaipeda. Maersk and MSC insert ships with the highest capacity (1.000 - 1.400 TEU). CMA CGM, Container Ships are using vessel with a capacity of 800 – 950 TEU. and Scotline only have vessels with 200 TEU. The other operators are using ships with a capacity of less than 1000 TEU. It was not possible to get any data from Team Lines. The sailing frequency of the operator Containerships and Scotline were also not available.

Table 5 Container Service Operators

Operators (Container)	Ship capacity	Sailing Frequency
Maersk	1x 1000 TEU, 1x 1300 TEU	7 (once a week)
CMA CGM	1x 800 TEU	7 (once a week)
MSC	2x 1370/1400 TEU, 2x 950/1000 TEU	7 (once a week)
Trans Baltica Container Line	1x 650 TEU	7 (once a week)
Team Lines	n.a.	n.a.
Container Ships	8x 800/950 TEU	n.a.
Scotline	9x 200 TEU	n.a.

Source: HHM

The Ferry operator Tallink Silja Line is the only operator who is offering services going to or departs from Riga. The cargo capacity of each vessel is 1030 lane meters. The sailing frequency is 7 departures from Riga per week going to Stockholm. The sailing time is 17 h.

Table 6 RoRo / RoPax Service Operators

Operators (RoRo / RoPax)	Cargo Capacity	Sailing frequency	Sailing time
Tallink Silja Line	1030 lane meters	7 days / week	17 h

Source: HHM based on data of Tallink Silja Line

Port of Sassnitz

Figure 8 Port of Sassnitz

Source: Port of Sassnitz

The Sassnitz-Mukran site is one of the five major ports on the German Baltic Sea coast and handles approx. 5 million tons of goods per annum. It is therefore one of the most important large business centres in the German state of Mecklenburg-Vorpommern. The port is the German Baltic Sea port with the shortest distances to Scandinavia, Finland, Russia and the Baltic States. Shipping companies and customers save costs simply because it is so easy for ships to reach the port from deep waters suitable for ocean-going vessels in the Baltic Sea – and there is no need to use any pilot services. Water depths of 10.5 meters and modern quay facilities make the port accessible for almost any class of ship travelling in the Baltic Sea area. It also provides ideal mooring conditions for large cruise liners and passengers can make use of a wide variety of available services.

The port provides regular and well-used ferry links to Trelleborg (Sweden), Rønne (Denmark), Klaipeda (Lithuania), Ventspils (Latvia), and Baltiysk, Ust Luga and Saint Petersburg (Russia). Other ferry routes to different destinations are in the development phase and will turn the location into a significant transport hub in the enlarged European Union. The Port of Sassnitz is Germany's largest railway ferry port and has established itself as a special port for transporting project loads in the mechanical engineering and plant construction sector. Sassnitz-Mukran is unique in Europe in having track and transhipment equipment for the Russian broad gauge. This is why it is often called the "most westerly

cargo station on the Trans-Siberian railway". The site has five covered warehouses with space for transhipping from the Russian to standard gauge. This infrastructure also includes a gauge changing facility, a pumping unit for liquid (hazardous) goods and four overhead cranes; this enables the port to handle all types of conventional and bulk commodities and liquid goods.

Also interesting to look at is that the ferry port is currently being expanded as a base port for the wind energy sector. The new offshore terminal is being built on a site measuring 60.000 m^2. With a load bearing capacity of 50.000 m^2 and 410 m of quay, the site provides ideal conditions for handling offshore projects. Table 7 shows the main facts about the infrastructure of the port.

Table 7 Characteristics of the Port of Sassnitz

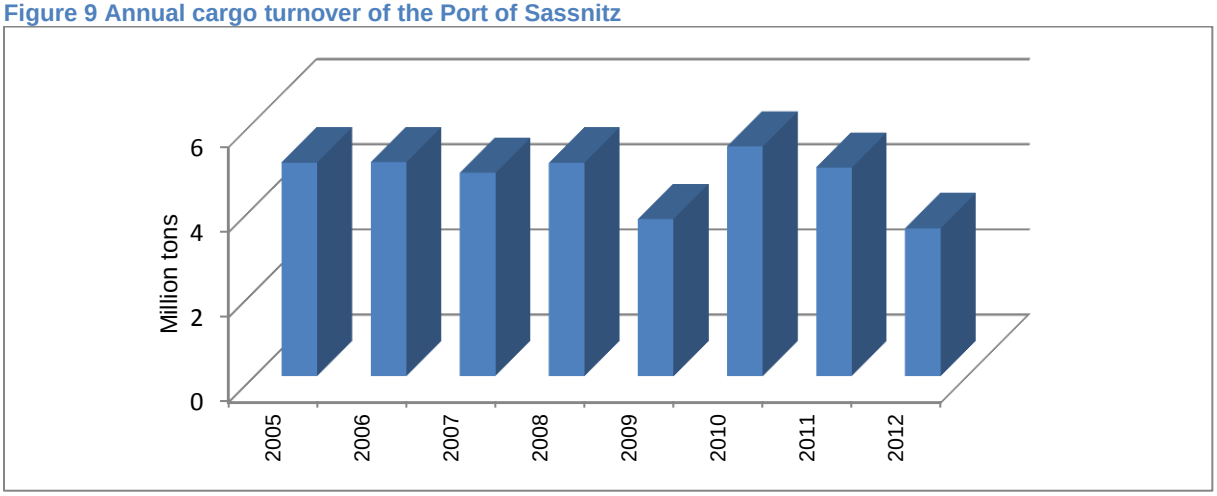
Characteristics of the Port of Sassnitz	
Port territory area	266 ha
The length of port quays	13.800 m
Port railway length	80.000 m
Maximum depth	10,5 m
Warhouses	3.000 m²

Source: HHM based on data of the Port of Sassnitz

The Figure 9 shows the annual cargo turnover of the port of Sassnitz in million tones. To get a better overview the years 2005 – 2012 are pictured. It is visible that the cargo turnover from 2005-2008 is more or less solid. Even when the world economic crisis started in 2007 the cargo turnover reached nearly 5 million tons. From 2008 to 2009 there was a huge decline triggered by the crisis. The turnover in 2009 was only 3.69 million tons. In 2010 the cargo turnover already started to rise again up to the 5.4 million tons which was the highest turnover in the history of the port of Sassnitz.

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

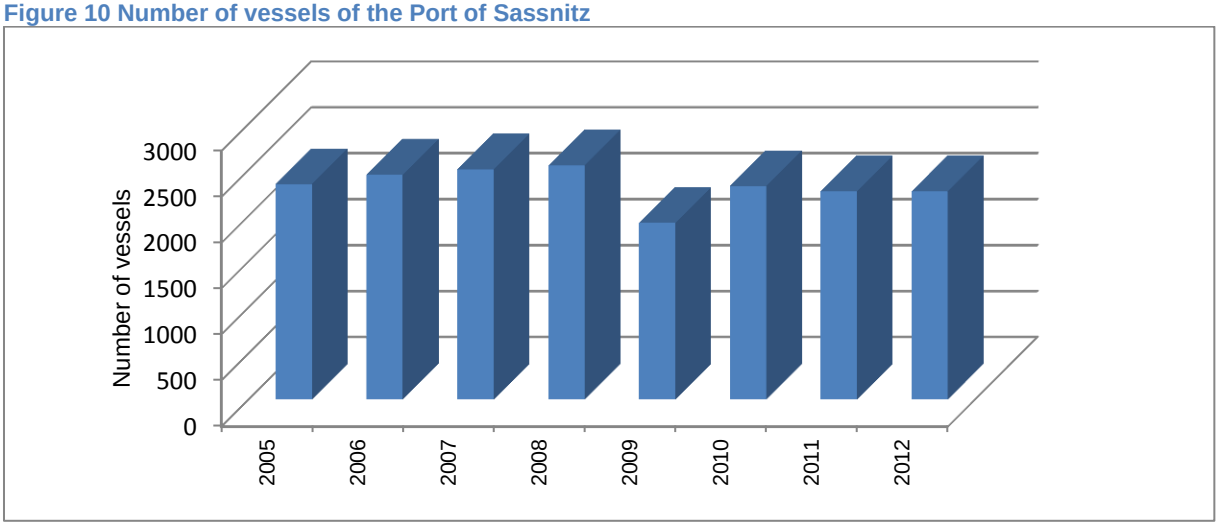
Figure 9 Annual cargo turnover of the Port of Sassnitz



Source: HHM based on data of Port of Sassnitz

Figure 10 illustrates the number of ship calls in the port of Sassnitz. For a better demonstration the period from 2005 – 2012 was chosen. Between 2005 (2.345 vessels) and 2008 (2.549 vessels) there was a low but continuous increase. In 2009 the total number of vessels declined to 1.923. A possible explanation might be the world economic crisis because in figure 11 it is shown that also the cargo turnover declined. In 2010 the number of incoming and outgoing vessels increased again up to 2.324 and stayed solid. The number of vessels is based on the information which is uploaded on the homepage of the Port of Sassnitz and is only approximated.

Figure 10 Number of vessels of the Port of Sassnitz



Source: HHM based on the data of the Port of Sassnitz (approximated)

There are several Ferry operators who are offering services going to or departing from Sassnitz. The cargo capacity of the vessels is variable. The minimum is 515 lane meters and the maximum are 3000 lane meters. The different destinations which are served, are Trelleborg (service operator: Stena Line), Rönne (Faergen), Klaipeda (DFDS), Baltijsk & Ust Luga (Black Sea Ferry & Invest), St. Petersburg & Ventspils (Finnlines / Trans Russia Express). The sailing frequency is fluctuating between 3 – 8 departures from Sassnitz per week. The sailing time is 13 – 48 hours. The reason is the distance of the different destinations. In contrast to Klaipeda and Riga there are no container service operators local in Sassnitz.

Table 8 RoRo / RoPax Service Operators

Operators (RoRo / RoPax)	Cargo Capacity	Sailing frequency	Sailing time
Stena Line (Trelleborg)	1150 lane meters 1189 lane meters	3-5x / daily	4 h
Faergen (Rönne)	515 lane meters 1235 lane meters	3-8x / week	3,5 h
DFDS (Klaipeda)	1539 lane meters	3x / week	18 h
Black Sea Ferry & Invest (Baltijsk & Ust Luga)	1539 lane meters	1x / week	16 h (Baltijsk) 33 h (Ust Luga)
Finnlines / TransRussiaExpress (St. Petersburg & Ventspils)	2900 lane meters 3000 lane meters	1x / week	17 h (Ventspils) 48 h (St. Petersburg)

Source: HHM based on the data of the Port of Sassnitz (approximated)

Freeport of Ventspils

Figure 11 Freeport of Ventspils

Source: Freeport of Ventspils

The Freeport of Ventspils is a significant transit and industrial center, located on the Eastern shore of the Baltic Sea. The Freeport is one of the core network ports of the European Union handling about 30 million tons of cargo per year. One of the biggest advantages is that the port is ice-free the whole year. Because of the maximum depth of 17.5 meters and a draught of 15 meters there is the possibility to accommodate the largest vessels which are able to enter the Baltic Sea. Beside these two main advantages the port assures timely and precise cargo handling operations at its terminals which makes the port to an effective and lucrative gateway for cargo deliveries to and from Russia and other neighboring countries.

The terminals of the ports are divided into liquid, dry bulk and general cargo. The Ventspils Nafta Terminal LTD**.** is the largest Baltic Sea Region oil and petroleum product transshipment terminal operating in port's liquid cargo area. Crude oil and petroleum products are received by pipeline and railways. The tank farm of the enterprise exceeds 1 million cubic metres, and the clients of the company can store their products in case there is no immediate transshipment possibility (due to weather conditions), or in expectation of better market price. The service package of the company also includes chemical analysis of oil and petroleum products in the company laboratory. For general cargo the port is also well equipped. The Noord Natie Ventspils Terminal is the most up-to-date terminal of the Baltic Sea region in terms of equipment. It is a Belgian – Latvian joint venture and equipped with the state-of-art loading/unloading and terminal facilities. After the completion of 1st stage of

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

terminal construction its capacity reaches 250 000 TEU. The Ventplac terminal is offering cargo transshipment and storage services. Current throughput amounts of the company are 0.5 million tons, however the maximum capacity is twice as big. Wood materials are delivered to the port via roads and railroad, than it is further exported to Sweden, Finland, Norway or the UK using the vessels ranging between 0.5 to 4.5 DWT. The Ventplac LTD. also transships woodchips and peat. Woodchips are mainly exported to Sweden, and peat is transported to the Netherlands, Belgium and Germany.

The Freeport of Ventspils has a special economic zone of more than 700ha for development of industrial projects, with „ready to go" provided infrastructure and special tax incentives. Table 9 shows the main facts about the infrastructure of the port.

Table 9 Characteristics of the Freeport of Ventspils

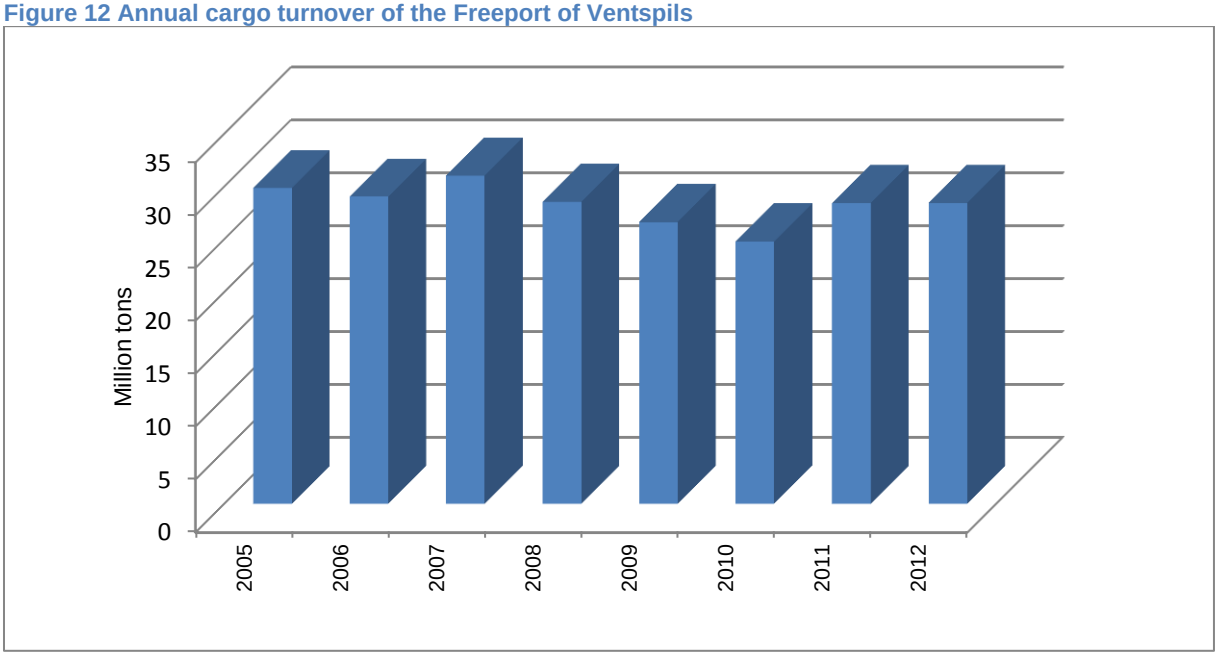
Characteristics of the Freeport Ventspils	
Port territory area	2451 ha
The length of port quays	11.012 m
Port railway length	14.000 m
Maximum depth	17,5 m
Warhouses	170.000 m²
Number of vessels	572 p.a.

Source: Freeport of Ventspils

The Figure 12 shows the annual cargo turnover of the Freeport of Ventspils in million tones. To get a better overview the years 2005 – 2012 are pictured. Between 2005 and 2007 it is visible that there was a small increase from 29.86 to 31.04 million tons. 2008 – 2010 the turnover struggled between 28.57 and 24.82 million tons. In 2011 the cargo turnover started to rise again and stagnated in 2012 (28.54 million tons).

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

Figure 12 Annual cargo turnover of the Freeport of Ventspils



Source: Freeport of Ventspils

There are two different Ferry operators who are offering services going to or departing from Ventspils. The cargo capacity of the vessels was not available. The different destinations which are served, are Nynäshamn, Travemünde (service operator: Stena Line) and Lübeck, St. Petersburg (service operator: Trans Russia Express). The sailing frequency is fluctuating between 2 – 5 departures from Ventspils per week. The sailing time is 13 – 26 hours. The reason is the distance of the different destinations. In contrast to Klaipeda and Riga there are no container service operators local in Ventspils.

Table 10 RoRo / RoPax Service Operators

Operators (RoRo / RoPax)	Cargo Capacity	Sailing frequency	Sailing time
Stena Line			
(Nynäshamn)	n.a	5 days / week	11 h
(Travemünde)	n.a	2 days / week	26 h
Trans Russia Express			
(Lübeck)		2 days / week	26 h
(St. Petersburg)		2 days / week	26 h

Source: Freeport of Ventspils, Stena Line, Trans Russia Express

Conclusions

The analysis of the ports and the sea bases routs connecting them has shown that there is an efficient network of ferry and containership connections available today. The observed ACL ports offer an attractive portfolio of services and, in many cases, plan to significantly extend their capacities for expected future growth.

Apart from competition among themselves and in relation to landbased transport, ports depend to a large extend on the development of global trade. As found out in ACL Study 4.1, only about 20 % of the total BSR container traffic is related to European short sea cargo and intra Baltic trade. In other words, 80 % of the containers are assigned to overseas markets and therefore more or less dependent on the sea routes, even if SECA-regulations and new landside rail and road infrastructure will affect maritime traffic competitiveness. For bulk cargo, this is even more the case.

It is thus likely that parts of the services analyzed can be considered as quite stable and adopted to the accessibility needs of the specific region and / or the long-term customers of the ports.

However, it also made clear that there is still potential for improvements in accessibility along the selected seabased transport corridors. This can be further evaluated by comparing the present paper with the analyses of the other ACL corridors carried out in WP 3.4 The development of transnational development zones for goods transportation that identify potential improvements will thereby be facilitated.

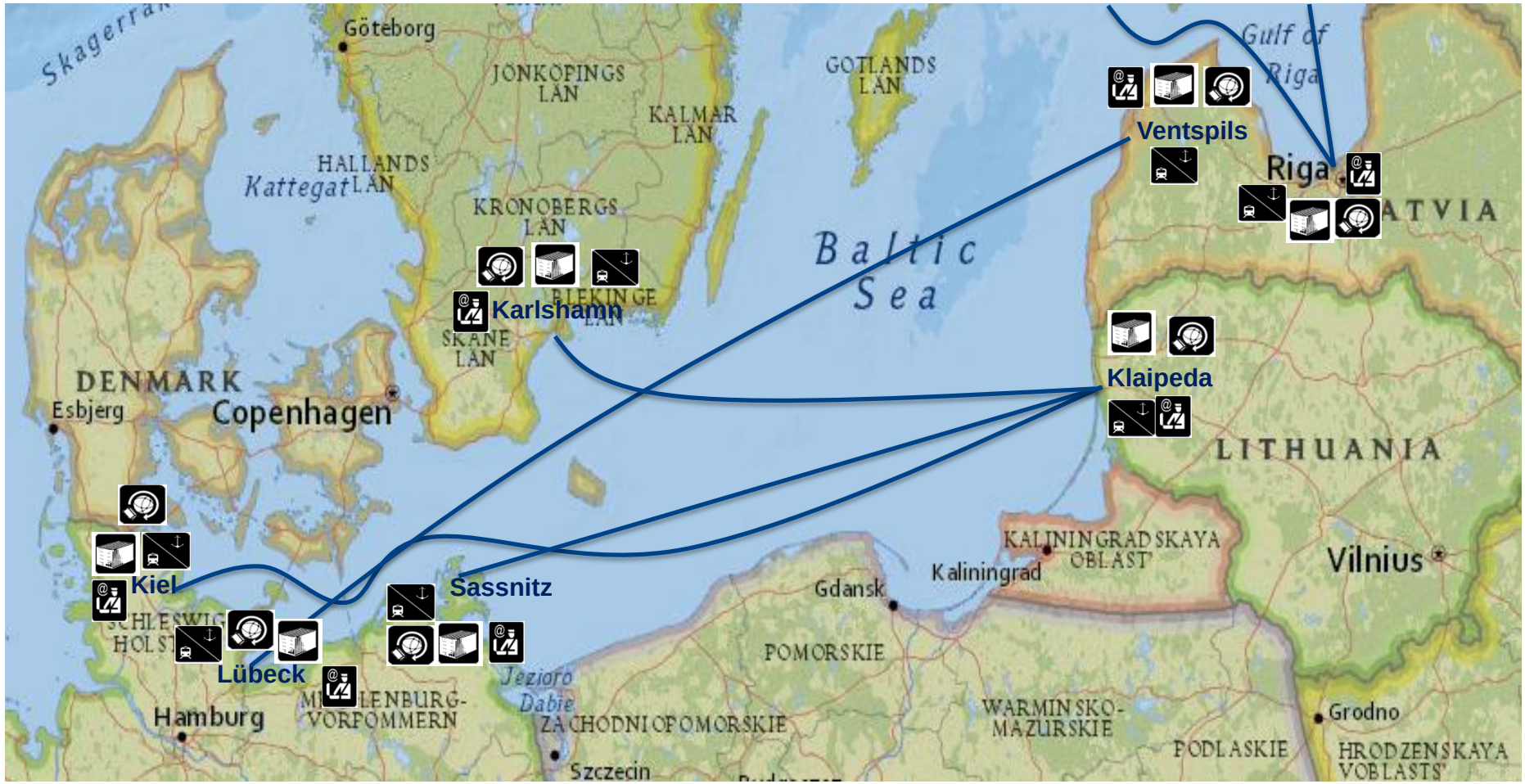
Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

Annex: Maps

- Map overview ports services and main connections
- Map RoRo ferry routes Klaipeda
- Map RoRo ferry routes Riga
- Map RoRo ferry routes Sassnitz
- Map RoRo ferry routes Ventspils
- Map overview container routes

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

- Map overview ports services and main connections



Baltic Sea Region
Programme 2007-2013
Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

- Map RoRo ferry routes Klaipeda

Baltic Sea Region
Programme 2007-2013
Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

- Map RoRo ferry routes Riga

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

- Map RoRo ferry routes Sassnitz

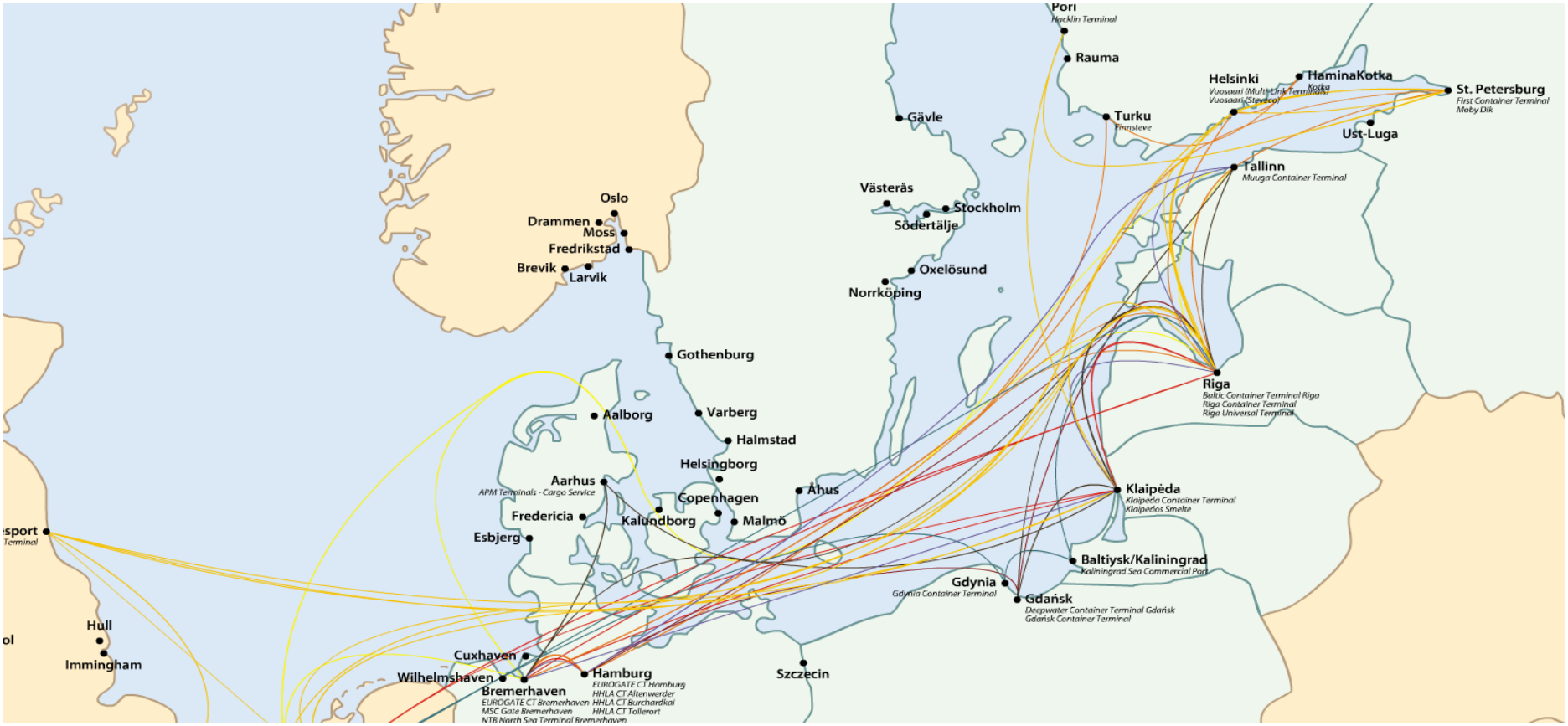
Baltic Sea Region Programme 2007-2013

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

- Map RoRo ferry routes Ventspils

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

- Map overview container routes



Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

ACL corridor IV

Klaipeda-Vilnius-Minsk- Moscow

Grant Agreement N°:	#068
Project acronym:	ACL
Project title:	Amber Coast Logistics
Funding scheme:	Collaborative Project
Project start:	1. October 2011
Project duration:	36 Month
Work package no.:	3
Deliverable no.:	3.4.B4
Status/date of document:	Draft
Lead contractor for this document:	KSRC Klaipeda, Lithuania
Project website:	http://www.ambercoastlogistics.eu

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Following project partners have been involved in the elaboration of this document:

Partner No.	Company short name	Involved experts
1	Klaipeda Shipping Research Centre (KSRC)	Vytautas Paulauskas
1	Klaipeda Shipping Research Centre (KSRC)	Valdas Lukauskas

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

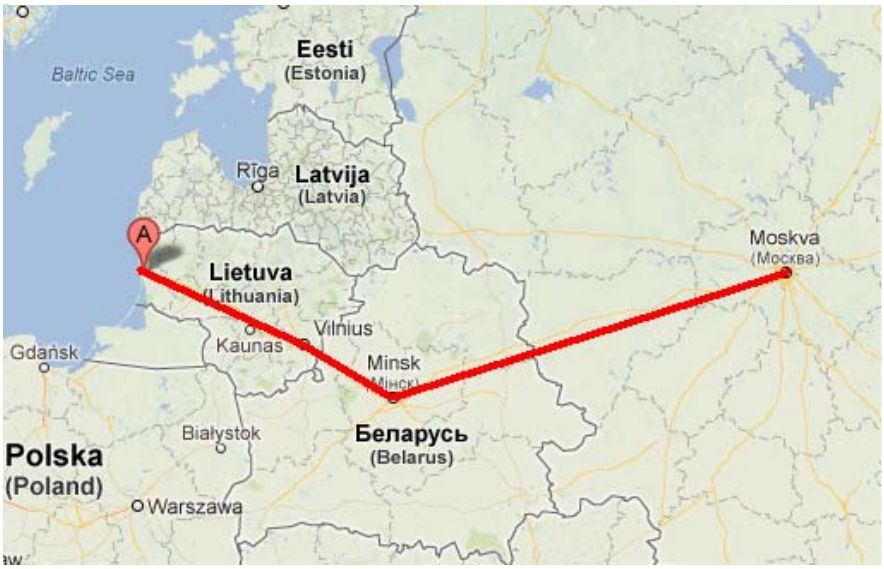
Table of Content

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Introduction

Aim of this research is to describe road and railroad routes connecting port of Klaipeda with Minsk and further with Moscow. This was done on the basis of indicators used for description of all corridors within the Baltic Sea Region. They were used to identify bottlenecks and sections requiring improvements within the corridor IV. The following map shows route discussed within this report:

Figure 1 Routes within the corridor IV



Source: KSRC

Limitations of the research

We was not available exact statistical data about traffic in Klaipeda-Minsk- Moscow, as statistical data are presented in aggregated form plus we were not able gather data for the Belarus side of the road border crossings between Lithuania and Belarus and Belarus - Russian Federation.

Therefore the initial data was gathered from:

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

- Directorate of border crossing infrastructure under the Ministry of Transport and Communications;
- State border guards service at the Ministry of the Interior of the republic of Lithuania;
- The Lithuanian Road Administration under the Ministry of Transport and Communications of the Republic of Lithuania;
- Transport and road research institute;
- Klaipeda State Seaport Authority

The information in this report is derived by KSRC from above mentioned sources, and verified with experts in this field.

1. Modes

Road, railroad and inland waterways within corridor IV were planned to be described. However, **inland waterways** transportation are available just in Klaipeda - Kaunas section (about 300 km), and in practise is not used for combined cargo transportation in this corridor, therefore only road and railroad routes were described.

Road routes from Klaipeda to Minsk and Moscow:

- Klaipeda A1(E85) Vilnius A3(E28) Medininkai M7(E28) Minsk - distance is 494 km. No restrictions on weekends and during the night.

- Klaipeda A1(E85) Vilnius A3(E28) Medininkai M7(E28) Minsk M1(E30) Moscow - distance is 1190 km. No restrictions on weekends and during the night.

In case of Klaipeda-Moscow link the route Klaipeda-Siaulia- Joniskis-Latvia (either via E85, E77 or via E272 might be used. The length of this route in Lithuania comprises about 250 km. In Latvia this flow joins Riga-Moscow corridor, and are analyzed in parts A and C of this package.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Railroad routes from Klaipeda to Minsk and Moscow:

Klaipeda - Minsk distance is 595 km;

Klaipeda - Moscow distance is 1303 km.

Figure 2 Transport corridors connecting Klaipeda and Minsk, divided according to modes

Gouge width is 1520 mm. The main railway lines are adopted to transport the heavy trains up to 6000 t, and length up to 1000 m.

Road and railway routes slightly differ, however they cross main points as Klaipeda, Vilnius, Minsk and Moscow.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

2. Nodes

2.1 Transport and Logistics Centres

Plenty private owned logistic centres operate in the described corridor mainly concentrated near the main points: Klaipeda, Vilnius, Minsk, and Moscow (the term logistic canter is still rather vague, we assume that it encompasses complex of transport, warehousing and logistic services).

The public logistic centres are going to be built in Klaipeda and Vilnius (Infrastructure of those centres will be publicly owned) as services will be provided by private entities), in order to facilitate combined rail and road transportation.

2.2 Container terminals

Container terminals are available in port of Klaipeda. Terminals are equipped with 2 STS container cranes and 3 mobile cranes[1]. Current container throughput is 400 000 TEU[2], however major investments are done in order to establish container transshipment center, that several times enhance container capacities in the port of Klaipeda[3]. The combined terminal in Moscow is also capable of serving container transport[4].

2.3 Ro-Ro terminals

Two ro-ro terminals are available in port of Klaipeda. Current throughput comprises over 270 000 ro-ro unites per year[2]. New ro-ro and passenger terminal is on final construction phase that will significant increase ro-ro capacities in the port.

[1] http://www.terminalas.lt/Konteineriu-terminalas
[2] http://www.portofklaipeda.lt/uosto-statistika
[3] http://www.smelte.lt/lt/klientams/prezentacija/
[4] http://www.transbusiness.ru/cgi-bin/pub/static/1?ru_office_moscow2

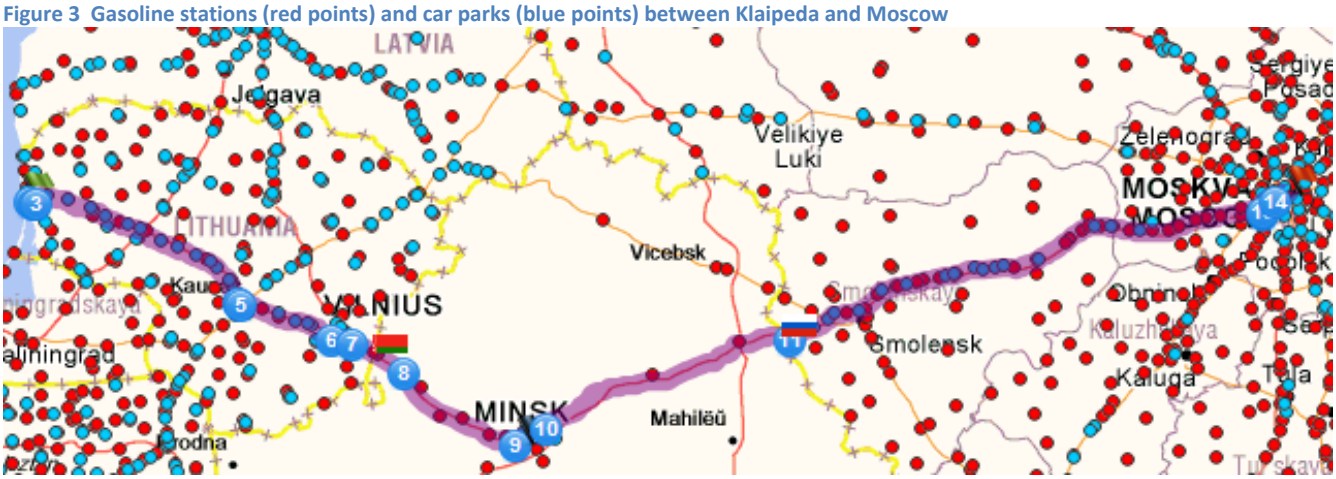
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

2.4 Service centres

Gasoline stations: There is a plenty of gasoline stations along the corridor IV.

Parking places: Parking places are mainly located in Lithuania and Russia.

Figure 3 Gasoline stations (red points) and car parks (blue points) between Klaipeda and Moscow



Source: www.viamicheline.com

2.5 Border crossings

The state border **railway crossing points** between Lithuania and Belarus located within the corridor IV is in Kena station.

The state border **motorway crossing points** between Lithuania and Belarus located within the corridor IV is: Medininkai (Lithuanian Side). Alternative - Lithuania-Belarus border crossing in Lavoriskes might be used in this corridor in case of high load of Medininkai.

In conclusion of chapter 2 Port of Klaipeda is prepared for handling containers, are equipped with Ro-Ro facilities and intermodal terminals plus additional facilities are under construction now. Within corridor IV the 4 most important nodes are: Klaipeda, Vilnius, Minsk, and Moscow.

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

3. Capacity of infrastructure

3.1 Traffic intensity

According to Transport and road research institute data average transport intensity at A3 road near Lithuanian – Belarus border crossing at Medininkai was approximately 1700 units per day in 2010.

Figure 4 Instant traffic intensity in the corridor

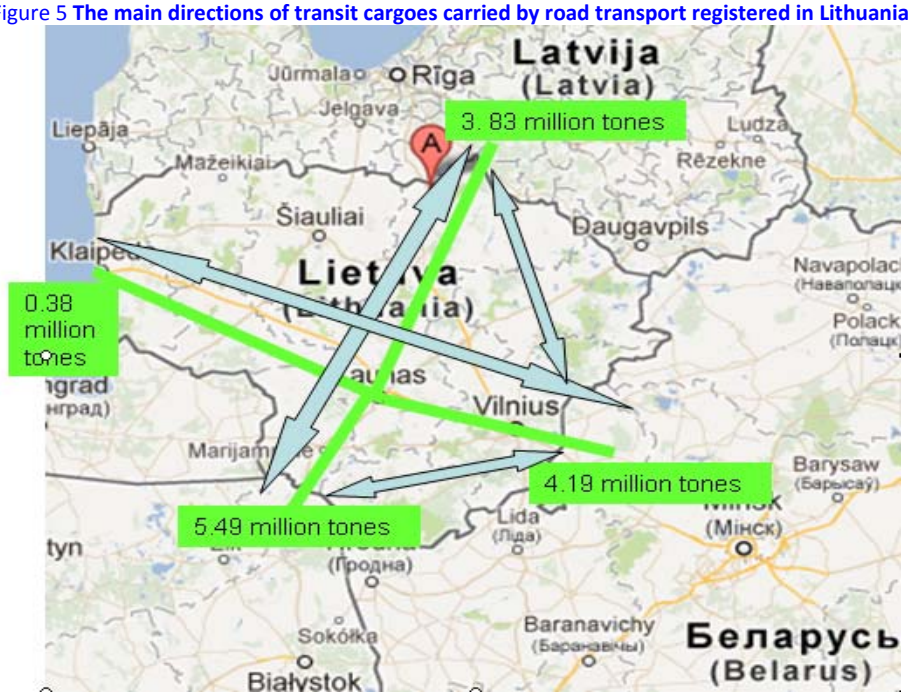
Traffic measurement place	Traffic forward, units per hour	Traffic back, units per hour	Average speed, km per hour
A1 near Klaipeda (Gargzdai)	32	30	92-101
A1 near Kaunas (Babtai)	54	25	91-101
A1 near Vilnius (Vievis)	48	52	93-103
A3 near Vilnius	37	36	80-89

This corresponds to actual data from automatic traffic monitoring tools (Figure 4). Data observed at working day 9 p.m. to minimize influence of noncommercial private cars. In should be noted that traffic consist of domestic and international traffic as well as passenger cars as the road A1 is the main transport link in Lithuania.

In order to evaluate the actual traffic load related to Klaipeda – Vilnius - Minsk corridor the aggregated data from Department of Statistics of Lithuania will be used (Figure 5).

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Figure 5 **The main directions of transit cargoes carried by road transport registered in Lithuania in 2009.**



Transit cargoes that crossed Lithuanian - Belarus border by road in 2009 comprised 4.2 million tones (3.1 million tones at Medininkai Border Crossing and 1.1 million tones at Lavoriskes Border Crossing). In this case transit cargoes means that that cargoes are not related to Lithuania.

However just 0.38 million tons of transit cargo were registered as delivered to Klaipeda Seaport or carried out of the port at the same period. In comparison it should be noted that Lithuanian export and import cargos delivered to Klaipeda sea port or carried away from Klaipeda sea port by road comprises 7.8 million for the same period. Due to the fact that within EU perception of transit carriage is vague, especially then majority of Ro-Ro and container lines connects Klaipeda to European sea ports is obvious that such data needs clarification.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Figure 6 **The main directions of road transport registered in Lithuania in 2009.**

6.3 million tons of containerized and ro-ro cargoes were handled in Klaipeda Seaport in 2009. It's well no that significant part of that amount is related to CIS countries and is carried by road transport. Thus road traffic load in the corridor Klaipeda – Vilnius - Belarus in 2009 comprised approximately 3 -5 million tones.

The rest part of transit cargoes at Medininkai road border crossing comes from Western Europe – Poland – Lithuania – Belarus – CI corridor. Significant amounts of cargo are carried in the Poland-Latvia direction. We can assume that significant part of that cargo is also for Russia and just to avoid crossing Belarus forms another corridor Western Europe – Poland – Lithuania – Latvia - Russia.

Using the same methodology traffic load in the corridor Klaipeda – Vilnius - Belarus carried by rail comprised 10.3 million tons in 2009.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

3.2 Haulage time

By truck:

Driving time Klaipeda - Minsk - 6 hours. (1 day taking in to account drivers work and rest regulation).

Driving time Klaipeda - Moscow – 14 hours. (2 days taking in to account drivers work and rest regulation).

By rail:

Klaipeda – Minsk (using Viking shuttle train, approximately 20 hours including just 30 minutes per train for customs procedures.

Klaipeda – Moscow (using Mercury shuttle train, approximately 56 hours).

3.3 Intermodality

Corridor Klaipeda –Vilnius - Minsk and Klaipeda –Vilnius – Minsk - Moscow have good preconditions for intermodality, including railway connections, logistic centers along the corridor and shuttle trains:

Train Viking (Klaipeda – Minsk- Kiev- Odessa). In service over ten years, 56 thousand TEU in 2011. 20, 40 and 45 feet long containers are transported by this train.

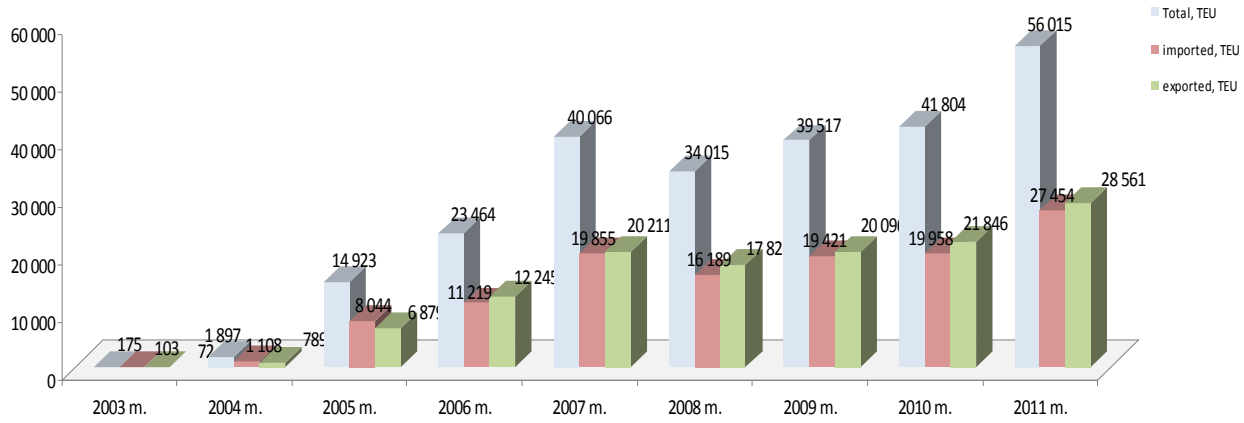
Train (Klaipeda – Moscow). There were several attempts to ensure the service. The resents service was launched in 2012 (capacity 114 TEU, travel time 2 days);

Train Vilnius Shuttle (Klaipeda – Vilnius – Klaipeda).

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Figure 7 The initial concept of intermodal train Viking

Figure 8 Development of shuttle train Viking



Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

4. Border crossing facilities

In Klaipeda Seaport automatic gate system is installed, that allows to read and check containers and trucks data automatically. Stationary scanner is installed for customs needs.

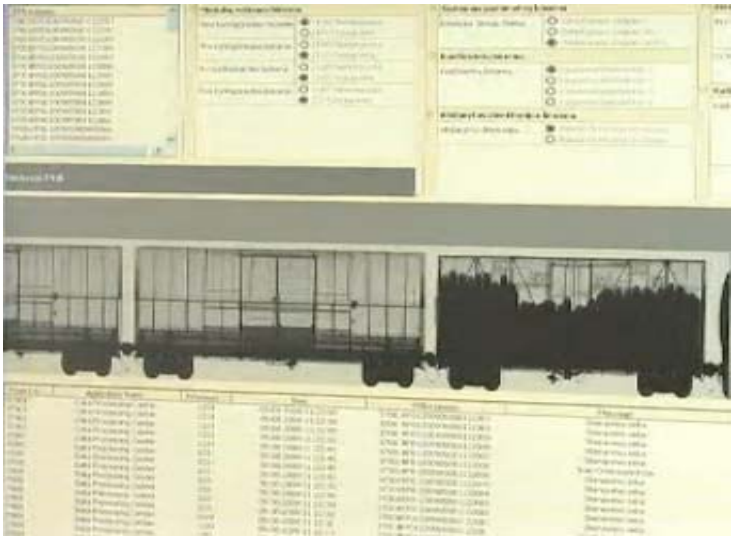
Figure 9 Container scanner in Klaipeda Seaport

At Kena station modern railway border crossing point is established. There is stationary scanner installed in the station that allows scan wagons moving at speed up to 30 km per hour. Thus the trains are scanned without interruption of the traffic. This it combination of prior documents processing allows for shuttle trains Vikingas cross Lithuania - Belarus border in 30 minutes.

At road border crossing points the 15 minutes are allocated for each truck.
At Medininkai road border crossing (on E28 road) capacities are 600 units' inbound and 600 units outbound. That is usually enough to maintain queue no longer than 30 minutes. The total capacities at all Lithuanian-Belarus border crossings are 1300 units inbound and 1300 units outbound. Number of waiting cars and expected waiting time are presented in the Internet online for each Lithuanian-Belarus border crossing.

Figure 10 Processing of scanned images at Kena Station

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)



However several times per year significant queues might accumulate due to seasonal peaks or sticker control measures.

Figure 11 Queue at Lithuanian – Belarus border before New Year

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

For example there was 105 trucks queue with estimated waiting time 14 hours at Medininkai border crossing in 30th of January 2013. Therefore delivery time to Minsk or Moscow is vague and the time anticipated in the contracts is much longer than the driving time.

The second bottleneck is Vilnius Crossing. As there is no real ring road around the Vilnius; therefore delays up to few hours might occur in rush hours.

Baltic Sea Region Programme 2007-2013
Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Conclusion

There are well developed road and railway infrastructure in the corridor Klaipeda –Vilnius – Minsk – Moscow.

Cargo volume carried by road transport in the corridor Klaipeda - Vilnius- Minsk-CIS comprises 3-5 million tons per year. However it is still modest amount in comparison with cargo volumes in the corridor Western Europe - Poland –Vilnius – Minsk - CIS and Western Europe - Poland – Lithuania - Latvia– Russia.

The follow-up actions of ACL project might be pointed to balancing of transport modes:

- redirection of combined transportation (maritime transport and road transport) to entirely intermodal transport (maritime transport – shuttle trains) in the corridor Western Europe - Klaipeda –Vilnius – Minsk – Moscow

- redirection of pure road transport from the corridors Western Europe - Poland –Vilnius – Minsk - CIS and Western Europe - Poland – Lithuania - Latvia– Russia to combined transport Western Europe - Klaipeda – Vilnius – Minsk – Moscow (maritime transport and road transport) and further more to entirely intermodal transport (maritime transport and shuttle trains).

As it was founded separate elements of the intermodal corridor Klaipeda - Vilnius – Minsk – Moscow are being developed quite successfully. However further coordination actions are necessary to develop competitive intermodal corridor Western Europe – Motorways of the Sea – Klaipeda – Shuttle trains - Vilnius – Minsk – Moscow.