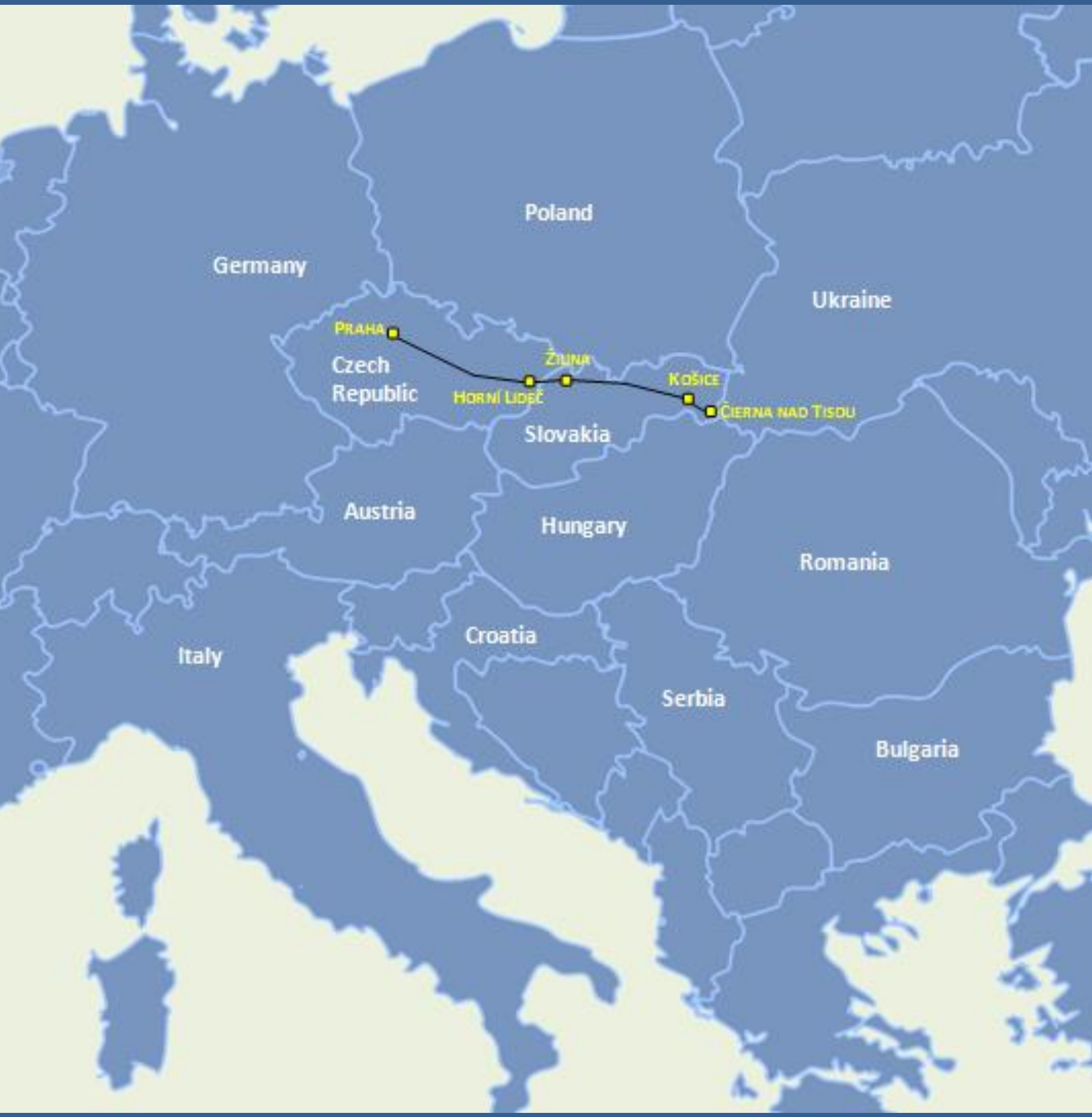
Czech – Slovak Corridor



TRANSPORT MARKET STUDY
RAIL FREIGHT CORRIDOR 9

(DRAFT REPORT V. 4)
MAY 2013

History:

Version	Author	Date	Changes
V.1	Ing. Martin Šuster	February 27, 2013	Primary study adjusted according to comments of corridor members
V. 2	Ing. Martin Šuster	March 2013	Study completion, working off micro-social benefits, working off conclusion
V. 3	Ing. Martin Šuster	April 2013	Study graphic design
V.4	Members of RFC 9 Commission	May 2013	Comments incorporated during the negotiation of MB

Contents

1 INTRODUCTION

To eliminate the imbalance development of various transport modes, road congestion, negative environmental impacts, further support of rail freight competitiveness is necessary (promoting sustainable development). All measures taken so far to improve rail freight have not dealt with common organisation, regulation and optimization of the network in order to eliminate the shortcomings in continuity and reliability in international rail freight transport. Strengthening the cooperation between infrastructure managers should be primarily on allocation of train paths for freight trains for the purpose of mutual coordination and acceleration of international rail freight transport. The result of coordination of border waiting times is their reduction and optimal use of available network for sustainable development of rail transport.

Rail freight corridor 9 (Eastern Corridor) has got a high potential to increase the competitiveness due to its location, tradition and good infrastructure connectivity to East Europe for increasing the performances as well as increasing the share on total transport volume within the countries involved in rail freight transport.

The main aim of the study is a support of increasing the qualitative terms and competitiveness of international rail freight transport.

The study deals with:

- establishment of rail freight corridor 9 (RFC 9) Praha-Horní Lideč-Košice-Čierna nad Tisou,
- completion and precising of data on current technical and technological situation on the corridor,
- analysis of competitive transport modes,
- capacity analysis, structure and level of the charges,
- intended investment impact,
- quantification of the most important benefits of establishing the corridor,
- recommendations for increasing competitiveness of international rail freight transport.

Based on elaborated partial analyses, the measures and recommendations for establishment of rail freight corridor 9, management of paths and improving the coordination, communication and, ultimately, for promotion of performance and competitiveness of rail freight on corridor, are specified.

1.1 TMS LEGAL BACKGROUND, SCOPE AND OBJECTIVE

1.1.1 Legal background (brief description)

The corridor is being established based on Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning a European rail network for competitive freight transport (hereinafter only "Regulation").

This Regulation follows the Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways and Directive of the European Parliament and the Council 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure.

The objective of the Council Directive 91/440/EEC of 29 July 1991 is to achieve the equal and non-discriminatory access to railway infrastructure and to promote a rail market in the Europe through economic competition.

Directive 2001/14/EC, concerning access to network and charges, sets that infrastructure manager has to publish the network statement that contains information on (technical) type and restrictions of network, network access conditions and capacity allocation rules. New operators, if they have such information, can introduce the services generating the competitiveness on internal market and maximizing customer's profit. Directive 2001/14/EC is a part of the first railway package.

The other legal regulation of the first package, part of which is the Directive 2001/14/EC, was the second railway package aimed at revitalizing the railways through rapid construction of an integrated European rail area. Five measures are based on the Directives specified in the transport White Paper and are aimed at improved safety, interoperability and opening up of the rail freight market. These five measures consist of:

- development of common approach to rail safety,
- promotion of interoperability primary principles,
- establishment of an effective management body: the European Railway Agency,
- widening and accelerating the opening up of rail freight market, especially, by enabling the market access for international freight transport on the whole European rail network from 1 January,
- membership in Intergovernmental Organization for International Carriage by Rail (OTIF)

Moreover, the European Commission in its policy for encouraging a rail transport has adopted the approach based on the corridors in the context of trans-European transport network (TEN-T). This allowed allocating the subsidies for rail development projects through TEN-T funds. In fact, in this context, there is ERTMS implementation (ERTMS corridors)

In order to establish the European rail network aimed at the freight transport, some technical and operational incentives were established, e.g.:

- development of interoperability by means of Technical Specification for Interoperability relating to the Traffic Operation and Management (TOM TSI) and Technical Specification for Interoperability on Telematic Applications for Freight (TAF TSI).

- establishment of RailNetEurope, organization joining 33 railway infrastructure managers from the whole Europe. Its main objective is to enable easy and rapid

access to European railway infrastructure and to increase the quality and effectiveness of cross-border rail transport. It offers its customers service, software, accesses to infrastructure managers and provides useful coordination framework between infrastructure managers.

- creation of corridor structures by Member States and infrastructure managers as part of ERTMS development on six main European routes that are important for freight transport.

Further incentive for the promotion of international freight transport is the above mentioned Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning a European rail network for competitive freight transport. Based on the Regulation No 913/2010, rail freight corridors for competitive freight transport are being established.

Other selected incentives within the fourth package associated with support of national and international rail transport are increasing the transparency of financing and accounting division, improving the access to rail infrastructure by third parties (shippers, etc.) as well as changes concerning allocation of licences, capacity and the levying of charges. All these incentives are emerging in new Directive 2012/34/EU of the European Parliament and of the Council of November 2012 establishing a single European railway area. The Directive deals not only with railway infrastructure management, but also with opening up the market with national passenger rail transport services.

1.1.2 Scope

Approach to assess the current situation is comprehensive, with selection of the most important socio-economic benefits and proposal of essential corrective measures, expectations and determination of implementation plan for draft rail freight corridor 9.

Processing the comprehensive socio-economic benefits and overall economic evaluation requires a larger volume of data whereby economic evaluation doesn't need have sufficient expressing power (risk: investment plans are subject to delays and other social effects of minor importance depend on willingness of removing obstacles thereby promoting sustainable growth and quality increase).

1.1.3 Goal

Although the services of national and international freight transport are opened up to economic competition from 1 January 2007, elimination of "barriers" between individual countries was not achieved sufficiently up to now. These barriers relate to border coordination, allocation of international paths, common investment plans concerning border stations and lines, compliance with terms of delivery, reliability, coordination between the terminals, etc.

The aim of the study is to describe and perhaps even specify (terminals, route diversions) a draft rail freight corridor 9, to evaluate the current situation of lines of draft rail freight corridor and to propose corrective measures for improving the current situation. Based on establishing rail freight corridor 9 and measures for improving the current situation to quantify the most significant socio-economic benefits.

More precisely, this study is aimed at:

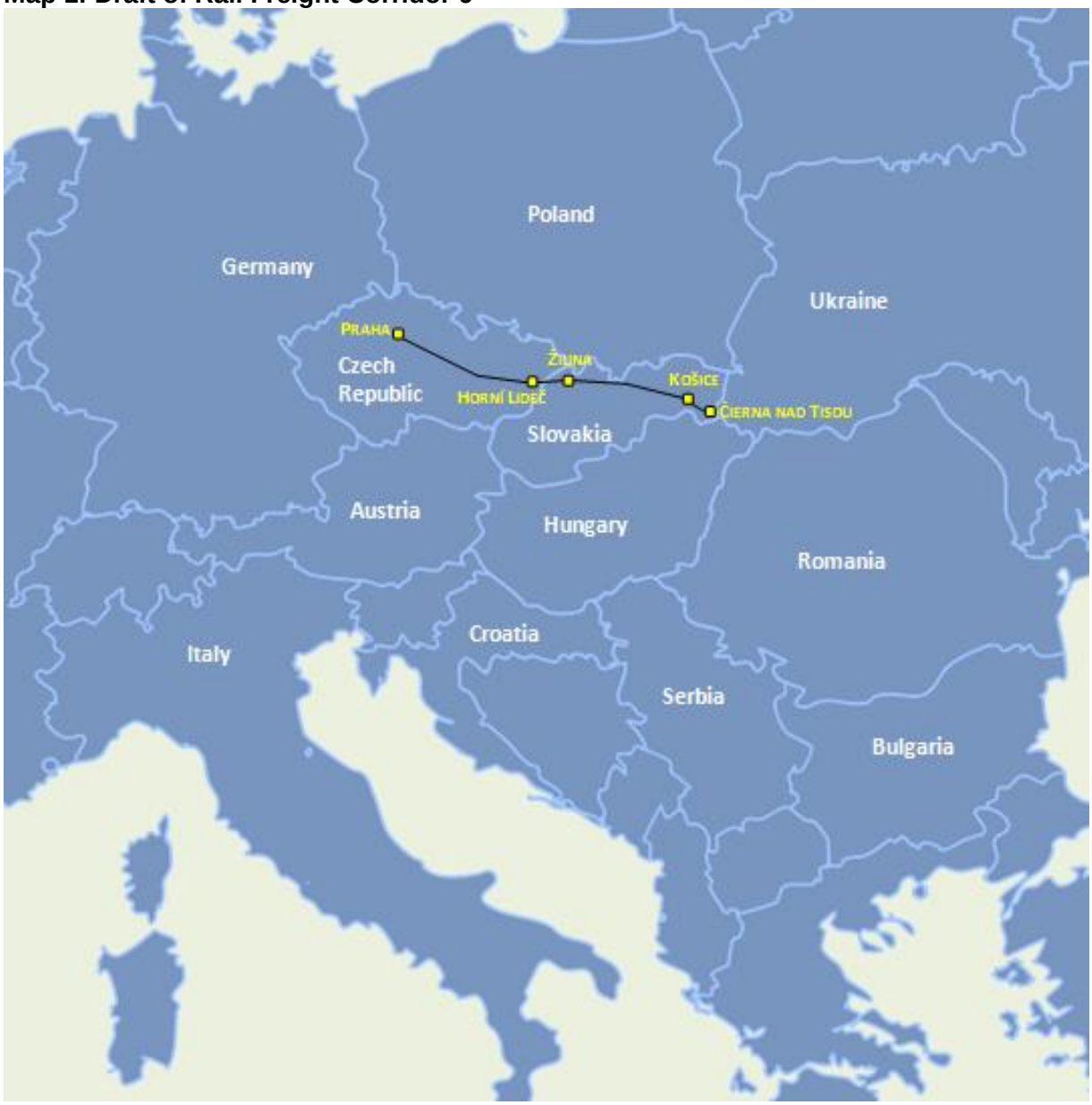
- providing the actual state of main lines, alternative lies and terminals of draft rail freight corridor 9 and future forecast after putting the rail freight corridor into practice,

- providing information on benefits of corridor establishment,
- proposing the corrective measures and recommendations for railway infrastructure quality increase and increasing the international rail transport competitiveness.

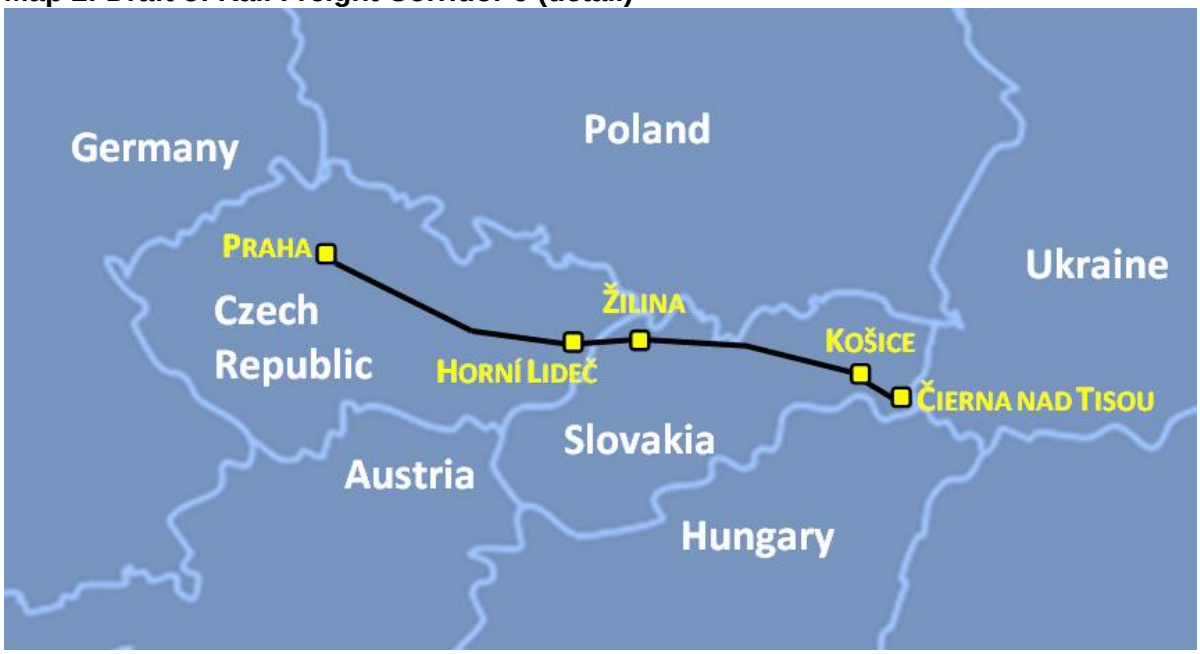
1.2 CORRIDOR GEOGRAPHIC OUTLINE – LISTED IN REGULATION NO 913/2010 (DESCRIPTION + MAP, COMPARISON WITH TEN-T/ PRIORITY AXES/ ERTMS/ RNE CORRIDORS)

Corridor draft according to the Annex " List of initial freight corridors" of Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning European rail network for competitive freight transport, is shown on the following maps no 1 and 2.

Map 1: Draft of Rail Freight Corridor 9

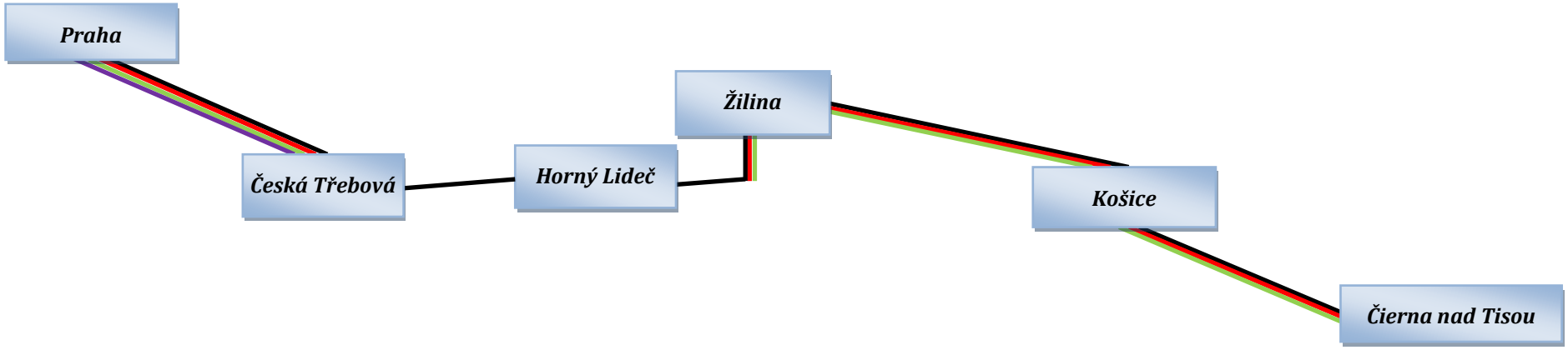


Map 2: Draft of Rail Freight Corridor 9 (detail)



In this Chapter, a simplified overview of comparison of RFC 9 with TEN-T priority axis 22, ERTMS and RNE corridors is shown. The purpose of simply comparison is to provide visual comparison that shows the differences in corridor routes. As a draft of RFC 9 routing is not definite, the comparison may not be comprehensive. Route diversions and alternative routes are not included in RFC 9. Due to transparency, the terminals are not shown in corridor schemes. The purpose of comparison is to show the differences in routes between draft RFC 9 and other corridor routes.

Scheme 1: Comparison of draft RFC 9 with TEN-T/priority axes/, ERTMS/RNE corridors



Legend (for corridor comparison):

- Prague - Rail freight corridor RFC 9 (stations)
- - Draft rail freight corridor RFC 9
- - TEN–T (Corridor IV/Corridor Va)
- - RNE Corridor (Corridor C10/Corridor C7)
- - ERTMS (Corridor E)

1.3 METHODOLOGY OF TMS PREPARATION (SOURCES, QUASTIONNAIRES ...)

To define the recommendations, quantifying the most significant social benefits resulting from implementation of the Regulation, the methodology is set up so as to serve for identifying the impacts of the establishment of the rail freight corridor 9 to promote the freight transport competitiveness.

The document seeks to elaborate several scenarios of impacts (technical, economic and social) depending on satisfying the Regulation strategy. Evaluation of impacts links to improving the technological processes, reducing the waiting times, expected economic growth and investment implementation of measures in corridor's member states.

The study deals with, especially, rail freight transport. It deals with passenger transport only in minimum, if it is necessary (capacity of infrastructure).

1.3.1 Input sources

The study evaluates various scenarios of impacts in order to improve rail freight competitiveness.

The document preparation results from obtained sources relating macroeconomic and microeconomic indicators concerning corridor routing data.

Input sources were provided by individual infrastructure managers. They relates to macroeconomic information of respective country, detailed information on characteristics of railway infrastructure and relevant terminals where RFC 9 will be established, detailed information on capacity, access charges, transport time and further supplementary information.

The study draws from conclusions and objectives of:

- White Paper – European transport policy for 2010: time to decide
- Green Paper
- Feasibility Study Pan-European corridor (Part 1 and 2)
- ETCS Study, Corridor E: Dresden – Prague – Bratislava/Vienna – Budapest – Bucharest – Constanta
- Sustainable development
- Expected economic development of individual countries
- Performance development on draft corridor routes in 2006 - 2010

In accordance with Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning a European rail network for competitive freight transport, it would be suitable to include also customer satisfaction in input data.

Carrying out the customer satisfaction surveys too often, e.g. by means of questionnaires, results in reduction of interest in this kind of feedback. Infrastructure managers organize regular meetings with carriers at national level where obtain a feedback from their customers. In the next year, common satisfaction survey of all customers of all corridors will be realized according to the ERNCF Regulation under the auspices of RNE. RFC 9 will consider this survey as input information on customer satisfaction and support RNE in its realization and periodic repetition.

1.3.2 Initial terms

Assessment of the most important socio-economic impacts is processed according to cost-benefit analysis paper „Guidance on the Methodology for carrying out Cost-Benefit Analysis“, HEATCO - Developing Harmonized European Approaches for Transport Costing and Project Assessment.

The most significant socio-economic benefit savings are assessed based on the Handbook on estimation of external cost in the transport sector (February 2008). The handbook deals with transport externalities in 27 European countries (EU countries 25, Switzerland and Norway). External costs are differentiated according to individual transport modes.

The recommendations for implementation plan and management of corridor routes subjected to rail freight corridor result from the recommendations of particular infrastructure managers and taking into account present technical condition and track technical parameters and free capacity.

Determination of corridor routes is based on infrastructure managers' recommendations, taking into account track technical parameters and track capacity.

1.3.3 Methodological processes

Individual parts of the document are closely related to each other and complement each other.

With respect to the fact that initial draft was defined and elaborated in Annex of Regulation (EU) No 913/2010 of the European Parliament and the Council, concerning a European rail network for competitive freight transport, the primary task is to put RFC 9 more exactly in classification into main routes, alternative routes and connecting terminals. As it is still “live” material, individual routes can be complemented or modified also with respect to technical and capacity possibilities of individual sections.

In case of terminal specification it is similar, but construction of new terminals or widening the facilities and capacity of terminals depend on economic growth and building up new companies and industry parks in the vicinity of draft freight corridor (e.g. new investments in terminal Žilina-Teplička, Haniska near Košice).

In order to define the most significant socio-economic benefits of Transport Market Study of basic scenario and to come to recommendations, the following tasks, defined in Table 1, were carried out:

Table 1: Monitored indicators

Technical parameters	Maximum train length and length of associated critical sections
	Maximum train weight on critical sections
	Maximum axle load on critical sections
	Maximum speed on critical sections
	Existence of ERTMS
Transport performances	Development of transport performances on the corridor in 2006-2011
	Development of transport performances on the whole country network
Macroeconomic indicators	GDP development
	Development of transport share in GDP
Microeconomic indicators	Transport time savings on borders
	Structure and level of access charges
International transport	Transit share in total freight transport
Modal split	Development of rail and road freight ratio
Capacity analysis	Percentage utilization of the routes (≥50%, 50% - 90%, ≤90%)
Waiting times	Coordination at cross-border stations (unnecessary delays due to lack of coordination, reasons for delay)
	Coordination between terminals (unnecessary delays due to lack of coordination)
Impact of journey time	Development of running times after complex modernisation of railway lines, chronologically, according to infrastructure managers' strategies
Investment plans	Their impact on the improvement of technological, capacity and coordination possibilities
Other plans	Their impact on the improvement of technological, capacity and coordination possibilities

Particular aspects of the effects, listed in Table 1, are elaborated from the data provided by the individual infrastructure managers. View of monitored indicators is complex (interrelated) for the whole rail freight corridor 9.

In the next step, the important task is to divide these aspects into two main categories (macroeconomic and microeconomic) from which the socio-economic benefits resulting from time savings and externalities will be emerged from, referred to transport performance forecast and „converted transport".

In addition to transport forecast, a microeconomic aspect is supported by „converted transport" resulting from modal split analysis. „Converted transport" will, in its part, support increase of time savings and externalities. „Converted transport" results from increase of quality, time and satisfaction of customers following the application of Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning a European rail network for competitive freight.

Within the support of transport forecasts, the capacity analysis, analysis for reducing the time intervals resulting from elimination of border waiting times, wrong coordination between terminals or increasing the technical speed and analysis of access charges are carried out.

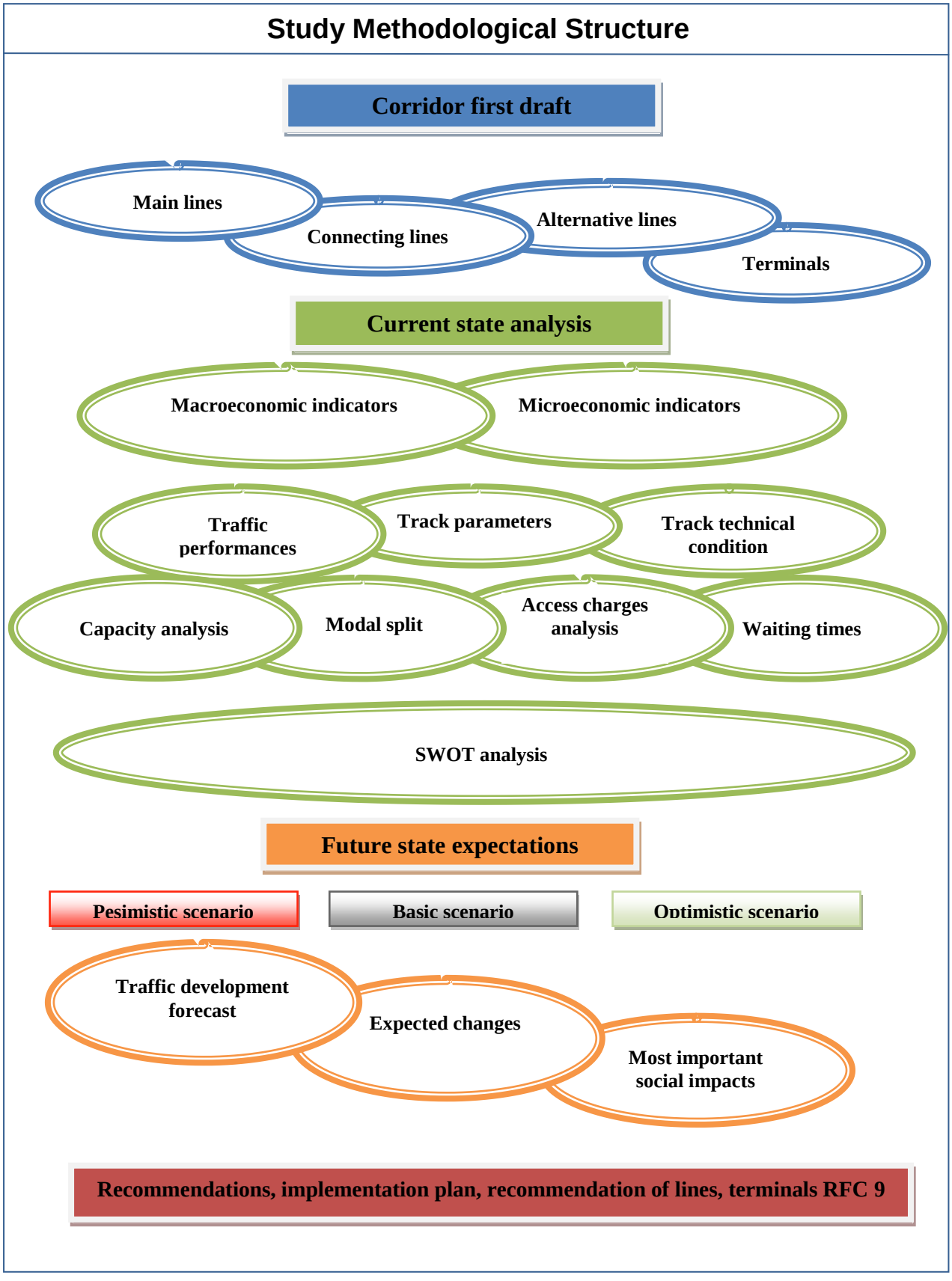
After completion of current situation analysis, the second phase follows. In the second phase, based on complex assessment of current situation, development of transport performances will be modelled. Development of transport performances follows the expected macroeconomic results as well as capacity analysis, waiting times, access charge analysis and willingness to meet the specified objectives.

Based on the modelled transport performances resulting from increasing the quality of freight corridor and thus customer satisfaction as well as from converted transport, the selected socio-economic benefits will be quantified. Within preparation of freight corridor and its expected full establishment in 2014, the benefits are recalculated from this year.

Use of individual rates, which are recalculated by value index, the gross domestic product per capita in particular country in purchasing power parity, expressed to the European Union average (EU = 100%, Slovakia = 52,9%, Czech Republic = 72%, etc.), plays the key role in the assessment of externalities and revenues from time savings.

In the last step, the recommendations or proposals and measures for eliminating the shortcomings (technical, technological, legal, political, capacity, charging) and associated objectives are proposed. Overall methodology of document preparation is shown in the following scheme:

Scheme 2: Document Preparation Methodology



2 ANALYSIS OF CURRENT „AS IS“ SITUATION

Analysis of current situation assesses each corridor country apart. First, economic and transport current situation of the country as a whole is evaluated and then transport and technical level of the corridor for draft main and alternative lines.

Analysis of access charges and transport time is carried out comprehensively for all countries.

Finally, SWOT analysis of strengths and weaknesses, opportunities and threats was carried out.

2.1 GENERAL SOCIO-ECONOMIC SITUATION AND CHARACTERISTICS OF TRANSPORT MARKET (2006 – 2010) AND RAIL FREIGHT CORRIDOR 9 INFRASTRUCTURE ACCORDING TO INDIVIDUAL COUNTRIES.

Due to improved clarity, the individual parts dealing with, in general, socio-economic situation, characteristics of transport market and railway infrastructure are elaborated summarily according to the respective countries of the corridor.

Additional partial analyses compare the respective countries of rail freight corridor RFC 9 among each other.

2.1.1 Czech Republic – general socio-economic situation (2006 – 2010)

The Czech Republic is a landlocked industrial country in the Central Europe. Number of inhabitants: 10.5 million (source: Czech Statistical Office).

Prague is the capital of the Czech Republic (located on the corridor) with 1 272 692 inhabitants. The second largest city is Brno with 384 277 inhabitants, not located on the corridor. The other large city is Ostrava with 302 456 inhabitants that is located on the alternative line of draft RFC 9.

Macroeconomic indicators
The gross domestic product per capita in purchasing power parity reached 80% of EU average (EU 27) in 2010. Heavy industry and services are GDP basis. GDP development, industry structure in 2010 and GDP development prognosis are shown in the following Table 2.

Table 2: Czech Republic GDP structure, development and prognosis

GDP structure (2010)		Reality						Prognosis	
Czech Republic	**Share in %**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Agriculture	2,3								
Industry	30,6								
Transport	10,3	7,0	5,7	3,1	-4,7	2,7	1,8	0,0	1,5
Trade	13,7								
Services	32,2								

Source: Member of RFC 9 Commission from the Czech Republic, Eurostat prognosis – GDP real growth rate database - volume

Table 3: GDP per capita in Czech Republic in purchasing power parity

Years	Reality					
	2006	2007	2008	2009	2010	2011
EU (27)	100,0	100,0	100,0	100,0	100,0	100,0
Czech Republic	80,0	83,0	81,0	82,0	80,0	80,0

(data are expressed in relation to EU average (EU 27 = 100), Source: Eurostat

Based on the above mentioned tables, we can conclude the economic growth slowdown in the Czech Republic following the years with high GDP growth. The slowdown is caused by economic crisis which is reflected by reducing external demand, especially from Germany. During economic crisis, economic growth rate decreased by 4.7%. Repeated recovery occurred between 2010 and 2011. According to Eurostat prognosis this trend of slow recovery will continue (see Table 3).

Table 4: Development of state expenditures in infrastructure in Czech Republic

Transport mode	State expenditures in infrastructure (millions of EUR)				
	2006	2007	2008	2009	2010
Rail	527,1	680,1	918,2	783,7	569,8
Road	1690,7	1658,4	2038,5	2101,0	1739,8
Waterways	21,1	15,6	21,5	62,3	58,5
Air	80,6	85,5	324,3	97,6	82,3
Pipeline	28,4	32,0	17,3	8,4	9,2
Total	**2347,9**	**2471,6**	**3319,8**	**3053,0**	**2459,6**

Source: Member of RFC 9 Commission from the Czech Republic
1€=25,-CZK

State expenditures in infrastructure decreased and in 2010 reached the level of 2007. The largest share of total state expenditures is in road infrastructure.

Modal split
The market potential of individual freight transport modes within the Czech Republic in the period of 2006 – 2010 is shown in the following table. The market potential of rail transport is influenced by the performance of rail carriers in the overall transport market.

Table 5: Freight transport development in thousands of tons in the Czech Republic

Transport mode	Freight transport development in thousands of tons				
	2006	2007	2008	2009	2010
Rail	97 491	99 777	95 073	76 715	82 900
Road	444 574	453 537	431 855	370 115	355 911
Waterways	2 032	2 242	1 905	1 647	1 642
Air	22	22	20	15	14
Total	**544 119**	**555 577**	**528 853**	**448 492**	**440 466**

Source: Member of RFC 9 Commission from the Czech Republic

Gradual decrease of transport performances has occurred in monitored years in all transport modes. The most significant decrease is in road and rail transport. In spite of rail volume decrease, share of rail transport of total traffic volume has increased. It is due to greater decrease of road transport. The share of rail transport from the total traffic volumes was in the range of 17% - 19% in years 2006-2010.

Significant decrease in transport performances was recorded in 2009 when there was decrease by 19.3% compared to 2007. However, this trend changed already in 2010 when there was a

growth of 8.06% compared to 2009. In 2010, intermodal transport share of total volume of tonnes transported is 11.96 %. Increase in number of carriers on SZDC network as well as on draft rail freight corridor is observed (see Annex B, Table B.4).

Table 6: Brief development of passenger transport in thousands of passengers

Transport mode	Passenger transport development in thousands of passengers				
	2006	2007	2008	2009	2010
Rail	183 000	184 200	177 400	165 000	164 800
Road - public	388 000	375 000	373 400	367 600	381 200
Road - individual	2 160 000	2 220 000	2 250 000	2 240 000	1 970 000
Waterways	1 100	1 100	900	1 200	900
Air	6 700	7 000	7 200	7 400	7 500
Total	**2 738 800**	**2 787 300**	**2 808 900**	**2 781 200**	**2 524 400**

Source: Member of RFC 9 Commission from the Czech Republic

Since 2008, total number of passengers has been decreasing. The significant decrease occurs in road individual and rail transport.

Table 7: Rail freight transport according to groups of goods

Goods structure	Rail freight transport development according to groups of goods in millions of tonne-km				
	2006	2007	2008	2009	2010
Products of agriculture	228,0	114,5	632,0	772,0	843,0
Coal, gas, oil	6603,0	6361,6	5 221,0	5 066,0	4 876,0
Metals	2317,0	2330,9	1 193,0	919,0	966,0
Chemicals	826,0	730,2	740,0	630,0	753,0
Wood, paper	1068,0	1492,2	363,0	349,0	366,0
Others	4737,0	5274,5	7 288,0	5 056,0	5 966,0
Total	**15779,0**	**16304,0**	**15 437,0**	**12 792,0**	**13 770,0**

Source: Member of RFC 9 Commission from the Czech Republic

Since 2008, existing goods classification NST/R (24 groups) has been replaced by new classification NST 2007 (20 groups of goods) in accordance with the Commission Regulation No 1304/2007.

A significant transport share according to groups of goods has coal, gas and oil. This share has not decreased in each year under 33% of total traffic volume. Metals are further important commodity. Their share is about 10% of total rail performances.

More detailed information on the Czech Republic is shown in summary tables of Annex A.

Support (technical) of rail freight development for the whole Czech Republic territory:

In the perspective, existing terminals will be extended by the locality Česká Třebová where processing the trains from the north German ports will be rerouted, with containers being directed at the Slovak Republic and Hungary. The cancellation of container terminal on the freight station Praha Žižkov is under consideration.
Another potential for rail freight development in the Czech Republic is a programme of the Ministry of Transport of the Czech Republic for the public logistic centres. The programme envisages the construction of public logistic centres that will be, by its size, location and offer of services, predestined for intermodal transport (with public access). For central and north Bohemia, the completion of public logistic centre in Lovosice (outside the corridor) is under consideration, for north Moravia, Paškov is considered (within the corridor). Moreover, it is

considered in the area of Brno (outside the corridor) or Přerov (within corridor) and Pardubice (within the corridor) and Plzeň (outside the corridor).

Another important project for supporting the rail transport development is the programme "Support of branch tracks revitalisation". The aim of the programme is investing in the existing branch tracks and establishing the new ones or investment in offer to repurchase the branch track that is no longer operated or would not be operated, if it has not been repurchased. Nowadays, 3rd round of calls for submission of applications under this programme is in progress.

Detailed information on corridor on the Czech Republic territory

Detailed information concerns the industry centres and terminals along the lines of RFC 9 in the Czech Republic that share in traffic performances significantly (in terms of volume).

Significant industrial zones with connection to rail freight transport on RFC 9:

Zone Prague

Major companies in automobile industry and transport engineering
- freight cars: Daewoo Avia Praha
- aircrafts: Aero Vodochody

Major companies in metallurgical industry
- Poldi Hütte, Kladno

Major companies in chemical industry
- petrochemistry – Benzina Praha
- basic chemistry – Spolana Neratovice,
- pharmaceutical and beauty industries – Zentiva Praha, Dermacol Praha

Zone Mladá Boleslav (outside the corridor)

Major company in automobile industry:
- ŠKODA AUTO

Zone Kolín, Kolín – Ovčáry

Major companies in automobile industry and transport engineering
- industry zone TPCA (motor cars)

Major companies in chemical industry
- petrochemistry – Koramo Kolín

Zone Pardubice, Semtín, Hradec Králové

Major companies in chemical industry
- petrochemistry – Paramo Pardubice
- basic chemistry – Syntezia Pardubice, Semtex Semtín

Zone Olomouc, Přerov and Hranice na Morave

Major companies in automobile industry and transport engineering
- aircrafts: Let Kunovice, Moravan Otrokovice

Major companies in chemical industry
- basic chemistry – Deza Valašské Meziříčí, Precheza Přerov
- rubber industry – Barum Otrokovice, Gumotex Břeclav,

Zone Ostrava

Major companies in automobile industry and transport engineering
- motor cars: Hyundai Nošovice
- freight cars: Tatra Kopřivnice

Major companies in metallurgical industry
- Arcelor Mittal Ostrava
- Evraz Vítkovice Steel, Ostrava
- Třinecké železárny, Třinec
- ŽDB Group, Bohumín

Major companies in chemical industry
- Pharmaceutical and beauty industries – Galena Opava

Terminals:

Private intermodal terminal Praha - Uhříněves: Metrans, a.s. – road-rail transhipment
Private intermodal terminal Praha - Žižkov: ČSKD Intrans s.r.o. – road-rail transhipment
Private intermodal terminal Přerov: ČSKD Intrans s.r.o. – road-rail transhipment
Private intermodal terminal Lípa nad Dřevnicí: Metrans, a.s. – road-rail transhipment
Private intermodal terminal Ostrava - Paškov: AWT – road-rail transhipment
Private intermodal terminal Ostrava - Šenov: Metrans, a.s. – road-rail transhipment

Support of freight transport on RFC 9:

- construction of intermodal terminal Česká Třebová
- construction of public logistic centre Paškov
- construction of public logistic centre Pardubice
- modernization of lines on corridor and elimination of bottlenecks and sites with high capacity

The data relating exclusively the lines that are proposed for the establishment of the rail freight corridor (main or alternative lines) are shown in the following tables.

Table 8: Freight transport development on draft rail freight corridor 9 in the Czech Republic in tonne-km

Years	Freight transport in tonne-km		
	2009	2010	2011
Praha - Poříčany	9 386 426	13 403 239	14 588 182
Poříčany - Kolín	8 666 466	12 054 753	13 621 634
Kolín - Řečany nad Labem	20 371 153	24 668 630	31 037 112
Řečany nad Labem - Pardubice	14 752 998	20 471 592	25 195 972
Pardubice - Choceň	16 822 371	20 687 032	24 806 652
Choceň - Česká Třebová	18 443 063	22 325 771	26 723 324
Česká Třebová - Zábřeh na Moravě	15 021 207	18 319 076	19 723 524
Zábřeh na Moravě - Olomouc	15 337 107	18 482 983	19 938 816
Olomouc - Přerov	14 962 256	18 096 783	19 372 639
Přerov - Hranice na Moravě	29 700 708	33 601 270	33 804 813
Hranice na Moravě - Valašské Meziříčí	7 170 528	8 557 107	8 529 079
Valašské Meziříčí - Horní Lideč	5 461 419	6 302 819	6 215 431
Horní Lideč - Horní Lideč st.hr.	4 563 930	5 980 065	5 988 440
Total	**180 659 632**	**222 951 120**	**249 545 618**

Source: Member of RFC 9 Commission from the Czech Republic

Freight growth is higher on draft corridor than on the whole SZDC network on the Czech Republic territory after 2008 and 2009 when decrease in performances has been occurred.

The highest growth of transport volume between individual sections is noted on the track section Kolín – Pardubice, i.e. by 24,57% in 2011 compared to 2010. Minor decrease of transport volume is noted on the sections Valašské Meziříčí – Horní Lideč, state border but there is a growth in number of freight trains as well as freight transport volume on given sections (see Annex B2).

Table 9: Comparison of transport volume structure between draft RFC 9 and SZDC network

Type of train	Freight transport					
	Corridor			SZDC network		
	Number of trains	Train-km	Share in market in %*	Number of trains	Train-km	Share in market in %*
Intermodal trains	1 635,0	207 211,0	12,2%		3 284 751	8,7%
Block trains						
Wagon loads	7 935,0	447 021,0	26,3%		6 836 884	18,2%
Others						
Total	24 856,0	1 699 611,0	100,0%		37 568 712	

Note: Market share is based on train-km

Intermodal transport on draft RFC 9 in the Czech Republic represents 12,2% share of total transport volumes (train-km) on the corridor in 2012 (monitored period: 1st quarter of 2012). This share of intermodal transport on the corridor is higher than on the whole SZDC network where this share is at the level of 8,7% of the total transport volume (train-km).

Table 10: Passenger transport development on draft RFC 9 in the Czech Republic

Years	Passenger transport in train-km		
	2009	2010	2011
Praha - Poříčany	3 205 341	3 243 838	3 407 503
Poříčany - Kolín	1 742 934	1 744 800	1 748 629
Kolín - Řečany nad Labem	1 251 195	1 227 563	1 228 474
Řečany nad Labem - Pardubice	1 138 978	1 198 917	1 183 093
Pardubice - Choceň	1 993 880	1 971 636	1 988 421
Choceň - Česká Třebová	1 435 488	1 432 045	1 433 426
Česká Třebová - Zábřeh na Moravě	1 464 905	1 418 618	1 402 146
Zábřeh na Moravě - Olomouc	1 981 831	1 982 614	1 958 492
Olomouc - Přerov	1 185 969	1 161 280	1 160 283
Přerov - Hranice na Moravě	1 325 664	1 334 772	1 232 693
Hranice na Moravě - Valašské Meziříčí	469 695	418 177	419 326
Valašské Meziříčí - Horní Lideč	645 295	590 608	567 644
Horní Lideč - Horní Lideč st.hr.	76 744	74 154	73 651
Total	**17 919 928**	**17 801 032**	**17 805 792**

Source: Member of RFC 9 Commission from the Czech Republic

In contrast to decrease in rail passenger transport performances on SZDC network, the growth of passenger transport performances on the corridor remains.

Since 2006, continued growth of carriers has been observed on SZDC network. SZDC has a higher number of carriers on draft corridor than ZSR (see Annex B, Table B.4).

Capacity of proposed lines of RFC 9 is utilized maximum on the level higher than 90% of line capacity on the sections Příčany – Pardubice, Choceň – Česká Třebová. The other lines of draft RFC 9 are utilized maximum on the level lower than 90% of line capacity.

Table 11: Capacity utilization on RFC 9 lines in the Czech Republic in selected years

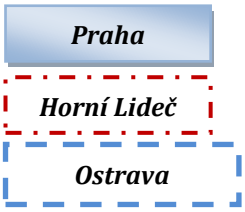
Line section	Capacity																	
	2010									2012								
	Max. capacity *			Free capacity *			Capacity utilization (in %)			Max. capacity *			Free capacity *			Capacity utilization in %)		
	↓	↑		↓	↓		↑	↓		↓	↑		↓	↑		↓		↑
Praha - Poříčany	127	189	176	57	77	57	55%	59%	67%	127	190	177	63	37	57	50%	81%	68%
Poříčany - Kolín	167	148		29	14		83%	91%		192	178		41	20		79%	89%	
Kolín - Pardubice	170	172		34	35		80%	80%		170	173		2	5		93%	97%	
Pardubice - Choceň	186	200		53	65		71%	67%		187	201		23	27		88%	87%	
Choceň - Česká Třebová	170	182		36	47		79%	74%		166	177		11	4		93%	97%	
Zábřeh na Moravě - Česká Třebová	198	182		99	79		50%	57%		198	182		75	49		62%	73%	
Olomouc hl. n. - Zábřeh na Moravě	209	212		104	104		50%	51%		210	213		90	83		57%	61%	
Přerov os.n. - Olomouc hl. n.	171	221		52	98		70%	56%		265	221		130	77		51%	65%	
Valašské Meziříčí - Hranice na Moravě	-	-		-	-		-	-		99	99		56	55		43%	44%	
Hranice na Moravě - Vsetín	-	-		-	-		-	-		149	145		106	98		29%	32%	
Vsetín - Horní Lideč	-	-		-	-		-	-		145	152		105	116		28%	24%	
Prosenice - Přerov	180	164		83	68		54%	59%		181	164		86	75		52%	54%	
Hranice na Moravě - Prosenice	216	228		61	64		72%	72%		217	229		52	43		76%	81%	
Ostrava-Svinov - Hranice na Moravě	192	185		56	58		71%	69%		191	185		35	46		81%	75%	
Ostrava hl.n - Ostrava-Svinov	179	184		12	28		93%	85%		180	185		4	14		98%	92%	
Ostrava hl.n. - Bohumín přednádraží	184	186		33	49		82%	73%		184	187		38	47		79%	75%	
Bohumín os.n. - Dětmarovice	177	179		78	70		56%	61%		177	180		71	70		60%	61%	
Dětmarovice - Český Těšín	130	129		65	59		50%	55%		135	129		63	53		53%	59%	
Český Těšín - Třinec	120	128		36	47		70%	63%		151	145		61	59		59%	59%	
Třinec - Mosty u Jablunkova	147	130		89	75		40%	43%		187	179		129	121		31%	32%	

Note: Colour marking of table cells the same as for schemes for capacity utilization
** capacity per day*

Scheme 3 of stations, their facilities, lines and technical parameters of rail freight corridor on the Czech Republic territory shows the proposed lines and their technical parameters. More detailed and further additional information (not listed in schemes) concerning terminals, marshalling yards is listed in Annex B.

Legend:

Description of stations:



Corridor station

Station on corridor in neighbouring country

Station on alternative line

Type of line:

Corridor double and more track main line
Corridor single track main line
Corridor double and more track (connecting, route diversion) alternative line
Corridor single track (connecting, route diversion) alternative line

G GSM-R

E ECTS

P/C profile

1 P /C 45/375

2 P/C 67/391

3 P/C 70/400

4 P/C 78/402

M Marshalling yard

I Intermodal terminal

Z 3 KV DC

Y 25 KV AC (50 Hz)

V 15 KV AC (16 2/3 Hz)

X Non-electrified

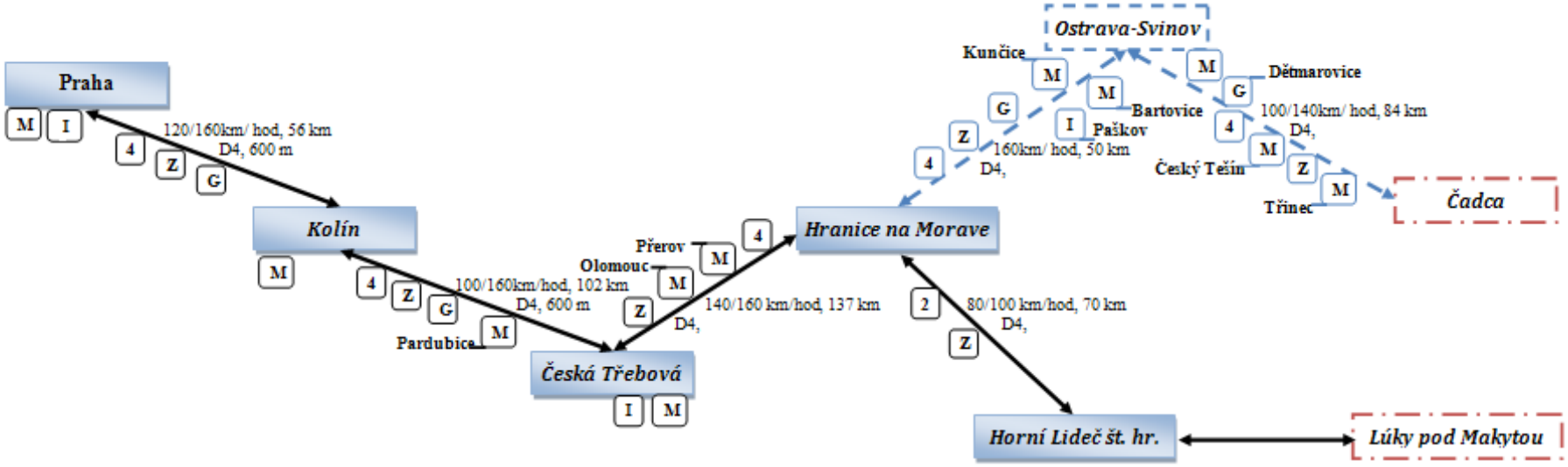
Capacity:

Capacity utilization up to 50%
Capacity utilization between 50% and 90%
Capacity utilization over 90%
n/a

Line description:

100/160 km/h, 220 km, C4, 750 m
Minimum/maximum speed/h, distance, class of load, maximum train length

Scheme 3: Scheme of lines and technical parameters of Rail Freight Corridor on the Czech Republic territory (SZDC)



Capacity:

SZDC

Praha–Česká Třebová	50 min
Česká Třebová–Čadca	90 min
Česká Třebová–Lúky p. M.	240 min
Č. Třebová–Ostrava-Žilina	180 min
Č. Třebová–Púchov–Žilina	150 min

Legend

Electric traction:
- Z _ *3 KV DC*
- Y _ *25 KV AC (50 Hz)*
- X _ *Non-electrified*

Profile (P/C)
- 1 _ *P/C 47/377*
- 2 _ *.P/C 67/391*
- 4 _ *. P/C 78/402*

Further information
- M _ *Marshalling yard*
- I _ *Intermodal terminal*
- G _ *GSM-R*

2.1.2 Slovak Republic – general socio-economic situation (2006 – 2010)

Slovakia is a landlocked country in the Central Europe with 5.43 million of inhabitants. Bratislava is the capital of the Slovak Republic with 428.9 thousands of inhabitants (located on the corridor). The second largest city is Košice with 233.9 thousands of inhabitants (on the corridor).

Macroeconomic indicators

Gross domestic product per capita in purchasing power parity reached 73% of EU average (EU 27) in 2010. Heavy industry and services are GDP basis. GDP development and industry structure in 2010 and GDP development prognosis are shown in the following table. The purchasing power parity is over 75% in Bratislava region (region where corridor passes).

Table 12: Slovak Republic GDP structure, development and prognosis

GDP structure (2010)		Reality						Prognosis	
Slovak Republic	**Share in %**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Agriculture	2,85	8,3	10,5	5,8	-4,9	4,2	3,3	1,8	2,9
Industry	36,47								
Transport	17,23								
Trade									
Services	34,37								

Source: Member of RFC 9 from the Slovak Republic, prognosis Eurostat – GDP real growth rate database - volume

Table 13: GDP per capita in the Slovak Republic in purchasing power parity

Years	Reality					
	2006	**2007**	**2008**	**2009**	**2010**	**2011**
EU (27)	100,0	100,0	100,0	100,0	100,0	100,0
Slovak Republic	63,0	68,0	73,0	73,0	73,0	73,0

(data are expressed in relation to EU average 27 = 100, Source: Eurostat

Based on the above tables, we can conclude the economic growth slowdown (the Slovak Republic had the highest GDP growth in the Central Europe). Growth slowdown is caused by economic crisis which is reflected by reducing external demand, especially from Germany. During the economic crisis, economic growth rate decreased by 4.9%. Repeated recovery occurred between 2010 and 2011. According to Eurostat prognosis, this trend of slow recovery will continue (see Table 13).

Table 14: Development of state expenditures in infrastructure in the Slovak Republic

Transport mode	State expenditures in infrastructure (millions of EUR)				
	2006	**2007**	**2008**	**2009**	**2010**
Rail	234,9	302,5	214,4	190,3	285,8
Road	541,0	675,7	755,1	854,0	516,8
Waterways	2,1	1,5	4,7	3,8	5,1
Air	13,5	17,8	33,4	59,1	74,7
Pipeline		51,5	46,3	63,6	51,1
Total	**791,50**	**1 049,00**	**1 053,90**	**1 170,80**	**933,50**

Source: Member of RFC 9 Commission from the Slovak Republic, Statistical Office of Slovak Republic

Total state expenditures in infrastructure decreased in 2010 in spite of increasing the expenditures in infrastructure for rail. Increasing the expenditures in infrastructure for rail is due to decreasing the prices and access charge structure implementing the Regulation of the European Commission resulting from the Directive of the European Parliament and the Council 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification. In the past, the Slovak Republic belonged to EU countries with the highest level of railway infrastructure access charges (see Chapter 2.4).

Modal split

The market potential of individual freight transport modes in the Slovak Republic in 2006 – 2010 is shown in the following table. The market potential of rail transport is influenced by the performance of rail carriers in the overall transport market.

Table 15: Freight transport modal split in the Slovak Republic in 2006 – 2010

Transport mode	Freight transport modal split in thousands of tons				
	2006	2007	2008	2009	2010
Rail	52 449	51 813	47 910	37 603	44 327
Road	181 424	179 296	199 218	163 148	143 071
Waterways	1 713	1 806	1 767	2 192	3 109
Air	0,52	0,19	0,31	0,01	0,01
Total	**235 587**	**232 915**	**248 895**	**202 943**	**190 507**

Source: Member of RFC 9 Commission from the Slovak Republic, Ministry of Transport, Construction and Regional Development (MDVRR SR)

Since 2008 there has been a significant decrease in the total traffic volume.

Significant decrease in traffic volume after 2008 was in road goods transport. In rail freight transport there was a slight growth in 2010 after a significant decrease in traffic volume in 2008 and 2009. The waterways records a long-term growth.

By high growth of road transport by 2009 and decrease in rail performances, the rail share of total traffic volume has still decreased (up to rail freight rate of total traffic volume for 18.5% to 80.4% share of road goods transport). This trend changed in 2010 when a share of rail freight in total traffic volume of all transport modes was 23.3% which means increase in rail freight share in total traffic volume of all transport modes compared to 2009 by 4.47%. Share of volume of road goods transport in total traffic volume decreased in 2010 compared to 2009 by 5.3%.

After expectation of moderate economy recovery, we assume also transport recovery in stagnant transport modes (rail, road) in terms of traffic volume.

Table 16: Development of total number passengers according to particular transport modes

Transport mode	Passenger transport development in thousands of passengers				
	2006	2007	2008	2009	2010
Rail	48 438	47 070	48 744	46 667	46 583
Road - public	403 270	384 637	365 519	323 142	312 717
Road - individual	1 792 000	1 811 986	1 833 082	1 846 439	1 859 479
Waterways	111	122	122	110	120
Air	2 291	3 068	4 176	2 288	554
Total	**2 246 110**	**2 246 883**	**2 251 643**	**2 218 646**	**2 219 453**

Source: Member of RFC 9 Commission from the Slovak Republic, MDVRR SR

The total number of passengers has been decreasing. A significant decrease is in public road, rail and air transport. Road individual transport observes the growth of passenger number during the whole monitored period.

Table 17: Rail freight transport according to groups of goods

Goods structure	Rail freight transport development according to groups of goods in millions of tonne-km				
	2006	2007	2008	2009	2010
Products of agriculture	217,5	157,0	112,8	84,5	62,6
Coal, gas, oil	2 329,0	2 356,1	2 237,2	1 927,5	1 800,3
Metals	4 587,8	4 340,5	4 132,5	2 941,3	3 786,3
Chemicals	726,9	706,1	680,2	480,0	573,1
Wood, paper	516,4	485,0	469,5	397,6	513,9
Others	1 610,3	1 602,3	1 666,8	1 133,2	1 368,9
Total	**9 988,0**	**9 647,0**	**9 299,0**	**6 964,0**	**8 105,0**

Source: Member of RFC 9 Commission from the Slovak Republic, MDVRR SR

Metals and metal products, coal, gas and oils have a significant share of transport on ZSR network according to groups of goods. The share of these commodities did not decrease in 2006-2010 under 68.5% of total rail traffic volume.

More detailed information on the Slovak Republic is shown in Tables of Annex A.

Support (technical) of rail freight development for the whole Slovak Republic territory:

Support of rail freight transport is realized through the Transport Operational Programme. The Ministry of Transport, Construction and Regional Development of the Slovak Republic through a common vision of railway sector in SR and strategy paper “Transport Development Strategy 2020” (Government Resolution no. 158 of March 3, 2010) points out, inter alia, the need to modernize the lines included in pan-European corridors, primarily, completion the section Bratislava – Žilina – Čadca, state border, and marshalling yard Žilina – Teplička and constructing the terminals with public access to enhance the growth of intermodal transport in Bratislava, Leopoldov, Žilina and Košice. In case of modernization of the section Liptovský Mikuláš – Košice, it is necessary to examine whether current proposed and extreme expensive solution of modernization is really only one possible in terms of fulfilment of EU conditions as well as the obligations of AGC and AGTC Agreements. In the Strategy, part Large investment, modernization of transhipment station Čierna nad Tisou is under consideration. Revitalization of more promising branch tracks is the other contribution to rail freight development.

Detailed information on corridor on the Slovak Republic territory

Detailed information concerns the industry centres and terminals along the lines of RFC 9 in the Slovak Republic that share in traffic performances significantly (in terms of volume).

Significant industrial zones with connection to rail freight transport on RFC 9:

Zones Košice and Čierna nad Tisou:

Major companies in metallurgical industry
- *Haniska near Košice, Veľká Ida*: U. S. Steel Košice, s. r. o.

Major companies in construction industry:
- *Turňa nad Bodvou, Veľká Ida*, *Kostoľany nad Hornádom:* Carmesuse Slovakia, s. r. o.

Major companies in automobile industry and transport engineering
- *Veľká Ida*, *Wolkswagen Slovakia, a. s*

Chemical industry
- *Čierna nad Tisou: Proburgas, a. s. (pumping station - gas)*
- *Vojany SWS spol. s. r. o. (pumping the liquid petroleum products)*

Zones Žilina and Púchov:

Major companies in automobile industry and transport engineering
- *Žilina Teplička:* Kia Slovakia, BGL AutoRail GmbH, Metrans /Danubia/ a. s.
- *Púchov* – Matador Púchov

Major company in construction industry
- *Varín* - Dolvap s. r. o.

Others:
Major companies in wood processing industry
- *Ružomberok:* Mondi SCP a.s.
- *Liptovský Hrádok:* Rettenmeier Tatra Timber s.r.o.

Terminals:
Private intermodal terminal Žilina – Intrans a. s. – road-rail transhipment,
Private intermodal terminal Haniská near Košice – Metrans a. s.- road-rail (standard gauge) – rail (broad gauge) transhipment,
Private intermodal terminal Košice – Intrans a. s. – road-rail (standard gauge) transhipment,
Private intermodal terminal Interport servis s. r. o. – road-rail (standard gauge) – rail (broad gauge) transhipment,
Private intermodal terminal Dobrá – Transcontajner Slovakia a. s. – road – rail (standard gauge) – rail (broad gauge) transhipment.

Eastern Slovak transhipment yards Čierna nad Tisou and Maťovce

Eastern Slovak transhipment yards are important transhipment stations between standard gauge and broad gauge. They represent significant transport links between Eastern Europe and Asia and Central, Southern and Western Europe (provide transhipment or bogie changing from standard gauge to broad gauge and vice versa). They significantly share in traffic flows on RFC 9. Eastern Slovak transhipment yards ensure transhipment of more than 90% of raw materials and commodities imported to Slovakia by rail from Eastern Europe and Asia.

Transhipment of raw materials or commodities from Eastern Europe and Asia from broad gauge to standard gauge is carried out in the border crossing station Čierna nad Tisou.
Transhipment of commodities exported from Slovakia to Eastern Europe and Asia is carried out in the border crossing station Chop (Ukraine).

Goods transport without transhipment is possible to Romania through the border crossing Diakovo – Halmeu. However, transport of dangerous goods and out of gauge goods is not possible.

Border crossing station Maťovce serves, primarily, for transport of consignments to broad gauge branch tracks but also for transhipment of bulk substrates, such as coal and ore. There is bogie change-out system from broad gauge to standard gauge and vice versa that serves, mainly, for changing the bogies of wagons carrying the dangerous goods.

Support of freight transport on RFC 9:

- Public intermodal terminal Žilina – Teplička – road-rail transhipment (by 2014),
- Construction of public intermodal terminal Košice – Bočiar – road-rail transhipment (by 2015)
- Development of private intermodal terminals in the locality of Haniska near Košice
- Modernization of railway station Čierna nad Tisou (by 2015)
- Modernization of lines on the corridor and elimination of bottlenecks and sites with high capacity
- Transport time reducing, improving the profile and alignment of the lines,
- Expected continuous growth in transport in the East-West direction (expected permanent increase in foreign trade between Eastern Europe, Asia and European Union).

Data concerning exclusively lines proposed for the establishment of the rail freight corridor (main and alternative lines) in the Slovak Republic are shown in the following tables.

Table 18: Freight transport development on draft rail freight corridor 9 (RFC 9) in the Slovak Republic

Years	Freight transport					
	2009			2010		
	Number of trains	Train-km	Gross tonne-km	Number of trains	Train-km	Gross tonne-km
Čadca št. hr. - Žilina	16 390	478 503	815 419 911	19 247	480 711	776 591 346
Lúky pod Makytou št. hr. - Púchov	6 483	128 140	155 697 367	6 590	128 072	141 455 761
Púchov - Žilina	18 701	483 389	641 547 523	22 737	452 201	561 182 372
Žilina - Vrútky	19 936	356 150	542 461 586	22 535	344 195	518 317 962
Vrútky - Poprad	19 557	1 716 419	3 052 378 350	22 301	1 754 467	2 981 367 481
Poprad - Spišská Nová Ves	18 034	514 836	777 479 083	19 050	513 515	779 951 803
Spišská Nová Ves - Kysak	14 050	788 984	1 395 098 750	20 436	830 632	1 468 410 376
Kysak - Košice	16 661	260 482	427 031 910	23 858	274 534	441 268 940
Košice - Čierna nad Tisou	34 684	1 246 273	1 856 185 756	38 973	1 236 418	1 806 009 230
Čierna nad Tisou – Čierna nad Tisou št. hr.	4 593	18 372	58 469 272	6 422	16 797	50 199 554
Total	**169 089**	**5 991 548**	**9 721 769 508**	**202 149**	**6 031 542**	**9 524 754 825**

Source: Member of RFC 9 Commission from the Slovak Republic, PIS ŽSR

In 2011 compared to 2010 there is an increase in number of trains of rail freight transport on draft rail freight corridor 9 by 19.55%, but decrease in total traffic volume by -2,03%. This development results from change of payments for access to railway infrastructure from January 1, 2010 when balance between train-km and gross tonne-km was changed. Decrease in payments, structure and balance between train-km and gross tonne-km for access to railway infrastructure is for the purpose of supporting the rail transport on ZSR network (number of trains is higher but with lower weight).

Growth of rail freight volume is on the section Košice – Poprad. From that, the highest growth of rail freight volume is on the section Kysak – Spišská Nová Ves, i.e. growth in 2011 compared to 2010 by 5,25%. Decrease in transport volume is recorded on the other lines of draft rail freight corridor 9. From that, the highest decrease of rail freight volume is on the section Čierna nad Tisou – Čierna nad Tisou, state border, i.e. decrease in 2011 compared to 2010 by 14,14%.

Share of international freight transport on draft lines of RFC 9 of total traffic volume on the corridor increases, i.e. in 2011 compared to 2010, growth by 2,20 % (train-km). In 2011, share of international freight transport on draft lines of RFC 9 in total traffic volume is 51,15%.

Table 19: Comparison of traffic volume structure between draft RFC 9 and ZSR network

Type of train	Freight transport					
	Corridor			ZSR network		
	Number of trains	Train-km	Share in market in %	Number of trains	Train-km	Share in market in %
Intermodal trains	481	17 409	0,94%	1 865	152 511	3,50%
Block trains	5 492	1 079 430	58,05%	13 645	1 848 211	42,40%
Wagon loads	10 275	547 311	29,44%	30 476	1 796 931	41,22%
Others	11 882	215 199	11,57%	27 386	561 622	12,88%

Note: Market share is based on train-km

Intermodal transport on draft RFC 9 represents 0.94% share of total transport performance volume (train-km) on the corridor in 2010 (monitored period: 1st quarter of 2012). This share of intermodal transport is much lower than on the whole ZSR network where this share is at the level of 3.5% of the total transport volume (train-km) on ZSR network. (Share of intermodal transport on SR lines of draft RFC 9 is 11.36%).

Since 2006, the continuous growth of carriers on ZSR network as well as on the corridor has been observed (see Annex B, Table B 4).

Table 20: Passenger transport development on RFC 9 in the Slovak Republic

Years	Passenger transport (train-km)			
	2008	2009	2010	2011
Čadca št. hr. - Žilina			567 872	659 629
Lúky pod Makytou št. hr. - Púchov			202 379	180 155
Púchov - Žilina			1 018 858	1 152 958
Žilina - Vrútky			508 740	532 481
Vrútky - Poprad			2 479 767	2 608 316
Poprad - Spišská Nová Ves			588 431	594 933
špišská Nová Ves - Kysak			1 138 788	1 180 813
Kysak - Košice			499 267	492 112
Košice - Čierna nad Tisou			880 112	902 460
Čierna nad Tisou - Čierna nad Tisou št. hr.			11 664	11 620
Total			7 895 878	8 315 477

Source: Member of RFC 9 Commission from the Slovak Republic, PIS ŽSR

Compared to decrease in performances on the whole ZSR network, increase in passenger performance volume (train-km) is observed on the lines of RFC 9, i.e. growth in 2011 compared to 2010 by 5,31%.

The highest growth is observed on the line Žilina – Čadca, state border, i.e. growth in 2011 compared to 2010 by 16,16%. The highest decrease was observed on the line Púchov – Lúky pod Makytou, state border, i.e. decrease in 2011 compared to 2010 by -10,98%.

The increase is observed in national passenger transport (7,09%) but the decrease is observed in international passenger transport in 2011 compared to 2010 (-2,74%).

The capacity of draft corridor is, except for cross-border line Čierna nad Tisou – Čierna nad Tisou, state border, utilized below 50%. The capacity of the cross-border line Čierna nad Tisou – Čierna nad Tisou, state border, is utilized for 88% (there is only 1 free route on given section). Maximum capacity utilization (maximum number of routes) still decreases (see table X) due to following the conditions of border and customs controls. Decrease in maximum capacity is due to Slovakia's entry into the Schengen area.

Table 21: Capacity utilization on RFC 9 lines on the Slovak Republic territory in selected years

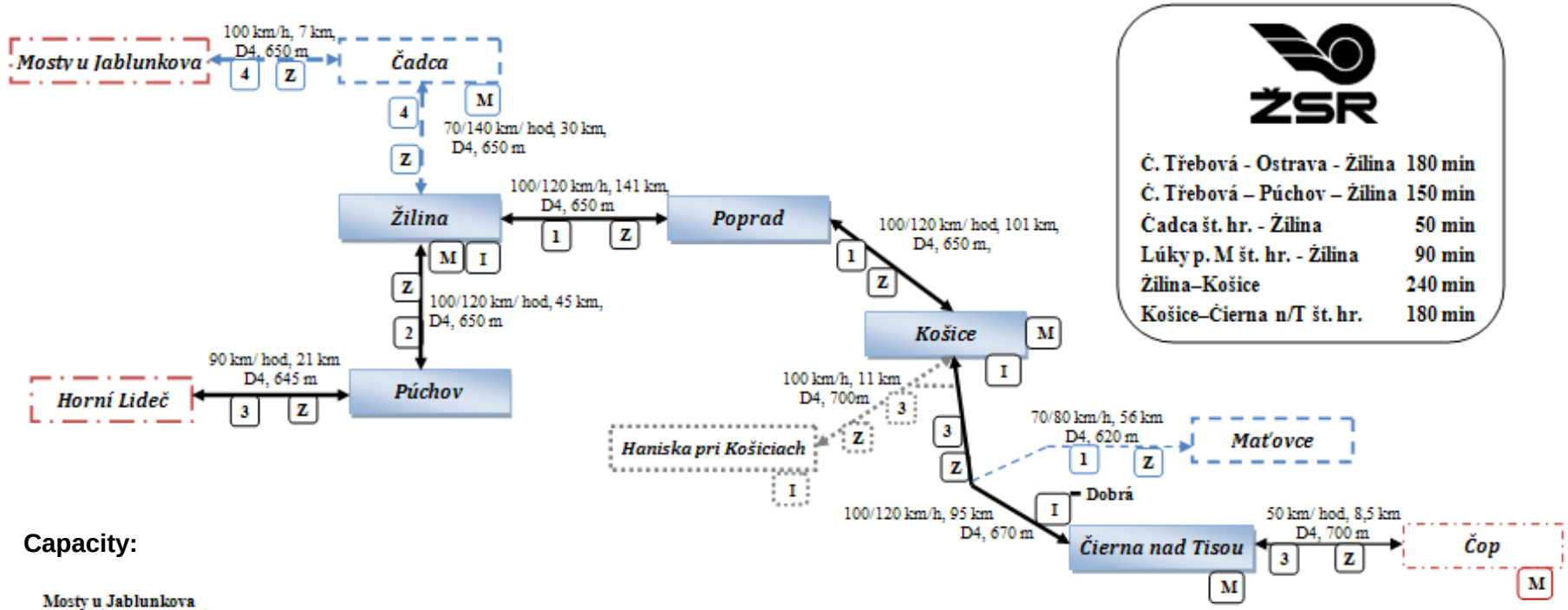
Track section	Capacity																	
	2006						2009						2011					
	Max. capacity *		Free capacity *		Capacity utilization (in %)		Max. capacity *		Free capacity *		Capacity utilization (in %)		Max. capacity *		Free capacity *		Capacity utilization (in %)	
	↓	↑	↓	↓	↑	↓	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑
Žilina - Čadca št. hr.																		
Lúky p. M. št. hr. - Púchov	145	130	112	145	130	112	136	144	127	95	15%	23%	165	156	125	110	16%	20%
Púchov - Žilina	169	173	85	169	173	85	176	183	82	83	41%	42%	175	174	100	97	32%	33%
Žilina -Spišská N.Ves	149	144	51	149	144	51	157	166	49	87	46%	43%	145	153	51	71	45%	34%
Spišská N. Ves - Kysak	169	156	93	169	156	93	174	171	96	94	33%	35%	180	173	112	104	28%	30%
Kysak - Košice	193	186	91	193	186	91	208	199	94	89	41%	44%	207	204	102	105	39%	37%
Košice - Čierna n. T.	121	91	70	121	91	70	158	101	99	56	23%	33%	120	119	73	74	25%	26%
Čierna nad Tisou - Čierna n. T. št .hr.	107		80		19%		26		7		77%		18		1		88%	

Note.: Colour marking of table cells the same as for schemes for capacity utilization
** capacity per day*

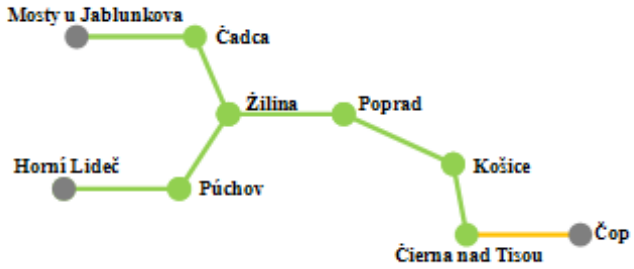
Further information on capacity is shown in Table B 7 of Annex B.

Scheme 4 of stations, their facilities, lines and technical parameters of rail freight corridor on the Slovak Republic territory shows the proposed lines and their technical parameters. More detailed and further additional information (not listed in schemes) concerning terminals, marshalling yards is listed in Annex B.

Scheme 4: Technical parameters of corridor lines on the Slovak Republic territory - ŽSR



Capacity:



Legend:

Electric traction:
- Z _ *3 KV DC*
- Y _ *25 KV AC (50 Hz)*
- X _ *Non-electrified*

Profile (P/C):
- 1 _ *P/C 47/377*
- 2 _ *.P/C 67/391*
- 3 _ *.P/C 70/400*
- 4 _ *P/C 78/402*

Further information:
- M _ *Marshalling yard*
- I _ *Intermodal terminal*

2.1.3 Summary of socio-economic situation in the Czech and Slovak Republics (2006 – 2011)

Socio-economic situation in the Czech and Slovak Republics is very similar.

The both economics are highly-export oriented and the Eurozone debt crisis, which adversely affects the economy of foreign trade partners (especially Germany), reduced GDP growth in both countries to a minimum.

Secondary data of GDP development, that are shown in the following table and diagram, are used from Internet portals of national statistical offices and Eurostat. These data were drawn simultaneously from several portals.

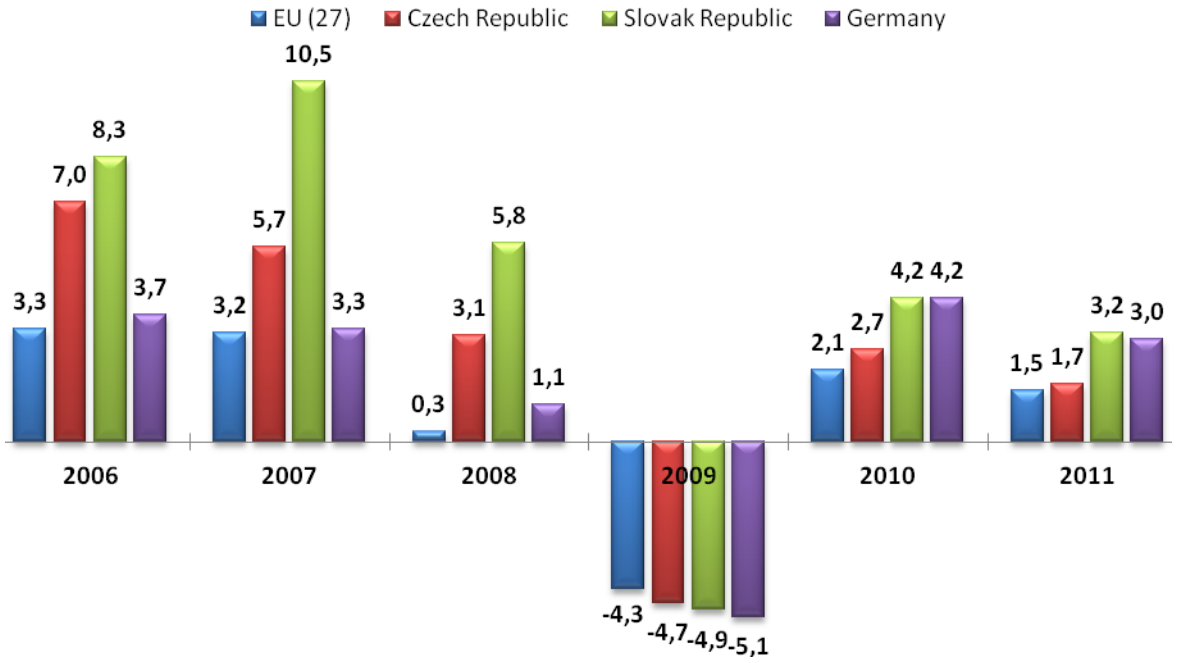
The following table and diagram show GDP growth in the Czech and Slovak Republics in 2006 – 2011. For objectification and comparison of economic situation development with EU, GDP development in EU (27 member states) and Germany, as the biggest trading partner of both countries, is shown in the table and diagram.

Table 22: GDP real growth rate – volume (percentage change in the previous year)

	Reality					
Years	2006	2007	2008	2009	2010	2011
EU (27)	3,3%	3,2%	0,3%	-4,3%	2,1%	1,5%
Czech Republic	7,0%	5,7%	3,1%	-4,7%	2,7%	1,7%
Slovak Republic	8,3%	10,5%	5,8%	-4,9%	4,2%	3,2%
Germany	3,7%	3,3%	1,1%	-5,1%	4,2%	3,0%

Source: Czech Statistical Office, Ministry of Finance, Statistical Office of the Slovak Republic, EUROSTAT

Diagram 1: GDP real growth rate – volume



GDP growth observed a rapid growing trend in the Czech and Slovak Republics in 2006 and 2007, while there was not observed such rapid growth in EU and Germany. In 2008, there was observed decrease in GDP compared to the previous period. In 2009, there was an inter-year decrease not only in the Czech and Slovak Republics but also in Germany and EU (27). In 2010 and 2011, a slow recovery occurred.

The table and the diagram confirm the fact that GDP development in EU and Germany affects development in the Czech and Slovak Republics (significant impact of external environment on GDP development).

These facts will be considered in prediction of expected future "To be" situation on the draft rail freight corridor 9.

2.2 COMPARISON OF TRANSPORT PERFORMANCES, TRAVEL TIME BETWEEN ROAD AND RAIL AND INFRASTRUCTURE ACCESS CHARGES

2.2.1 Comparison of road and rail transport performances

Based on the partial analyses carried out in particular countries, we can conclude that in both the Czech and Slovak Republics dynamic growth of road transport (interrupted by economic crisis) and rail stagnation is recorded. Rail's share on the total traffic volume has still decreased by 2008. In crisis years, share of rail transport has increased again due to a larger decrease in road transport compared to rail transport (see diagrams 2 and 3).

Transport development in monitored period and comparison between road and rail as well as the trends according to individual countries are shown in the following diagrams.

Diagram 2: Road and rail trends in the Czech Republic

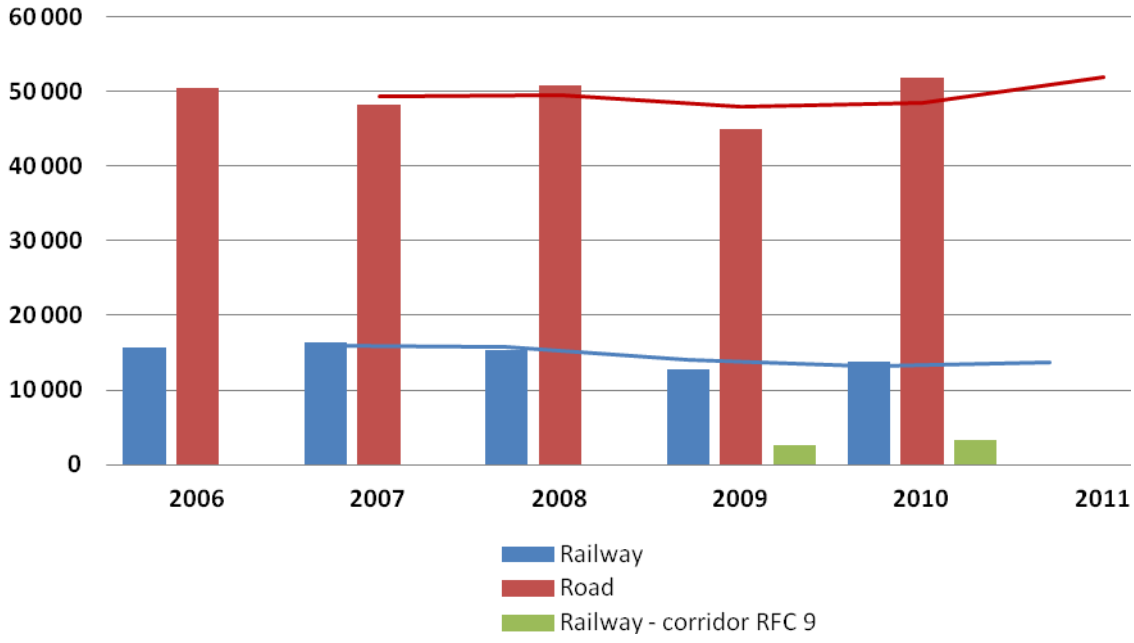
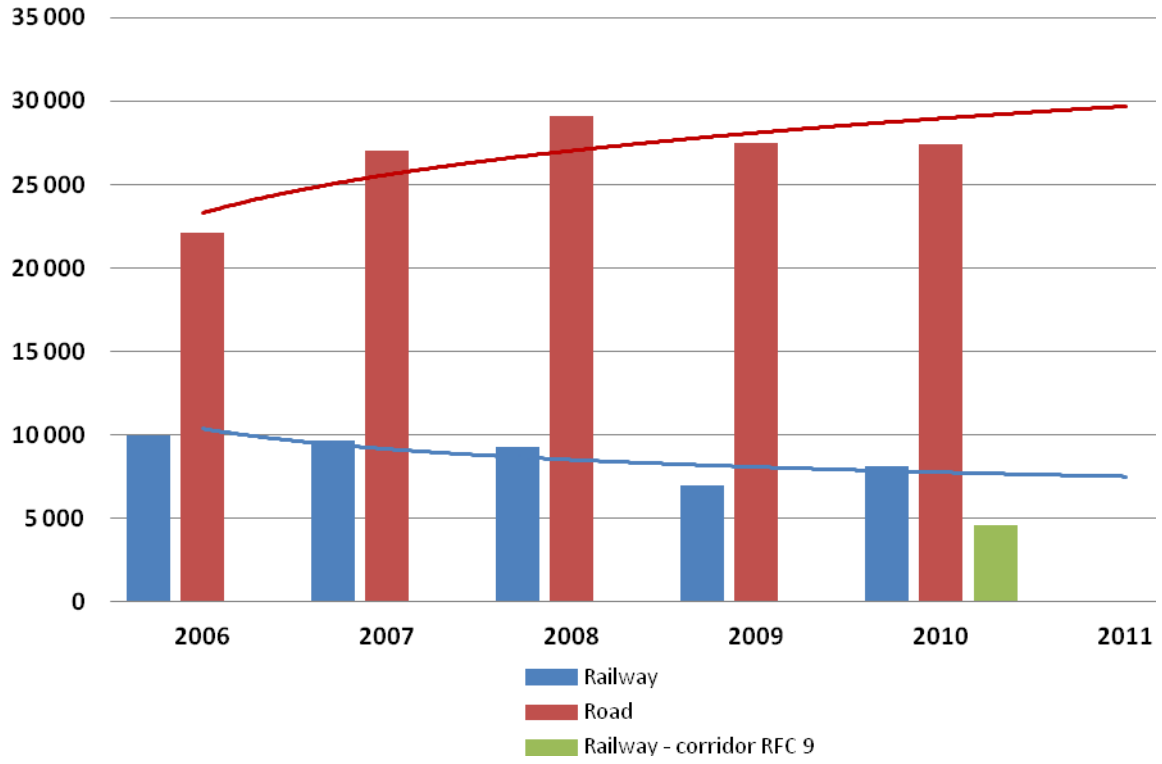


Diagram 3: Road and rail trends in the Slovak Republic



Based on the diagrams, we can conclude that a long-term trend is decrease in rail transport on the lines of minor importance (regional lines, connecting lines without presence of terminals and large industrial enterprises, etc.) while a moderate increase can observe on the main lines and corridors (supported, for example, by new investment induced by automobile industry).

Share of intermodal transport on the total rail volume increases.

Therefore, one of the possibilities how to increase rail flexibility is not only to increase the technical parameters of corridor lines (transport time reducing) and to reduce the costs of the regional lines but also to support the intermodal transport in combination road-rail, waterways-rail-road or rail standard gauge (1435 mm) – rail broad gauge (1520) – road.

Nevertheless, it is paradoxical that towards West as well as East rail freight has a significant role in transport.

2.2.2 Comparison of transport times by road infrastructure and rail infrastructure

In general, it is known that road transport is in terms of transport time and location more flexible. It confirms also average speed on the line Prague - Košice calculated in the following table.

Crews, driving times, breaks and rest periods required for determination of total time of transport by road on the route Prague - Košice are specified in accordance with Regulation (EC) No 561/2006 of the European Parliament and the Council on the harmonization of certain social legislation (hereinafter Regulation 561/2006) relating to road transport (in particular international road transport over 3,5 t).

Transport time by rail is determined on the basis of average transport times where necessary actions to ensure the transport are included (forwarding times are not included in total time).

Table 23: Average speed calculated on the section Praha - Košice

Transport	Section	km	hours	km/h
Rail freight transport – wagon load	Praha – Púchov - Košice	689	65,5	10,50
Rail freight transport – unit through train	Praha – Púchov - Košice	689	17,25	39,94
Truck transport – two-man crew	Praha – Trenčín - Košice	670	10,82 – 14,16	54,0- 70,0**
Truck transport – one driver, shortened rest period	Praha – Trenčín - Košice	670	19,82 – 23,16	54,0- 70,0**

*total time without forwarding time which can be up to 12 hours
**Source: e.g. Mercedens Benz VDA

Data for road transport are drawn from the technical parameters of manufacturers. Average speed of truck transport is affected by the structure of road transport infrastructure (highways, motor roads, lower category roads), technical condition of infrastructure and actual situation on the roads (congestion, unfavourable weather, other extraordinaries).

In goods transport by trucks with two drivers, average speed of 54 km/h and following the rules on driving time, break and rest of drivers according to Regulation 561/2006, total transport time from Košice to Prague through Trenčín is 14,16 hours.

In goods transport by trucks with two drivers, average speed of 70 km/h and following the rules on driving time, break and rest of drivers according to Regulation 561/2006, the total transport time from Košice to Prague through Trenčín is 10,82 hours.

In goods transport by trucks with one driver, average speed between 54 km/h and 70 km/h, shortened rest period and following the other rules according to Regulation 561/2006, the total transport time from Košice to Prague through Trenčín is between 19,82 and 23,16 h.

Based on these facts, we can conclude that transport time by trucks can be shorter on the section Košice - Prague compared to through freight train (without shunting operations in marshalling yards) by 6 h.

2.2.3 Comparison of infrastructure access charges

For comparison of charge levels, as the structure and form of charges is different in the countries of rail freight corridor 9, the evaluation is carried out in relation to train km (comparison based on average rates in relation to train km is used in the international studies, e.g. Charges for the Use of Rail Infrastructure 2008).

In general, each country of rail freight corridor 9 has implemented, in larger or smaller extent, Regulation of the European Commission under the Directive of the European Parliament and the Council No 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification. Comparison of rail infrastructure access charges in 2008 and 2011 on the basis of train km is shown in the following table and diagram.

Directive of the European Parliament and the Council 2001/14/EC of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification is amended along with other Directives to Directive of the European Parliament and the Council 2012/34/EU of 21 November 2012 establishing a single European railway area. Directive 2012/34/EU amends, inter alia, the allocation of licences, railway infrastructure capacity, structure and the levying of charges for the use of railway infrastructure and associated infrastructure equipment.

Table 24: Comparison of rail infrastructure access charges in €/train km

Country	Access charges in 2008*		Access charges in 2012**	
	Access charges for typical 960 gross ton freight train (€/train-km), Years 2008	Access charges for typical 2000 gross ton freight train (€/train-km), Years 2008	Access charges for typical 960 gross ton freight train (€/train-km), Years 2008	Access charges for typical 2000 gross ton freight train (€/train-km), Years 2008
Czech Republic	4,83	7,76	3,87	6,22
Slovak Republic	9,54	10,31	2,24	3,60

*Source: Charges for the Use of Rail Infrastructure 2008
** Source: Data provided by members of Rail Freight Corridor 9 Commission, 1€ = 25 CZK

Diagram 4: Comparison of rail infrastructure access charges in €/train km

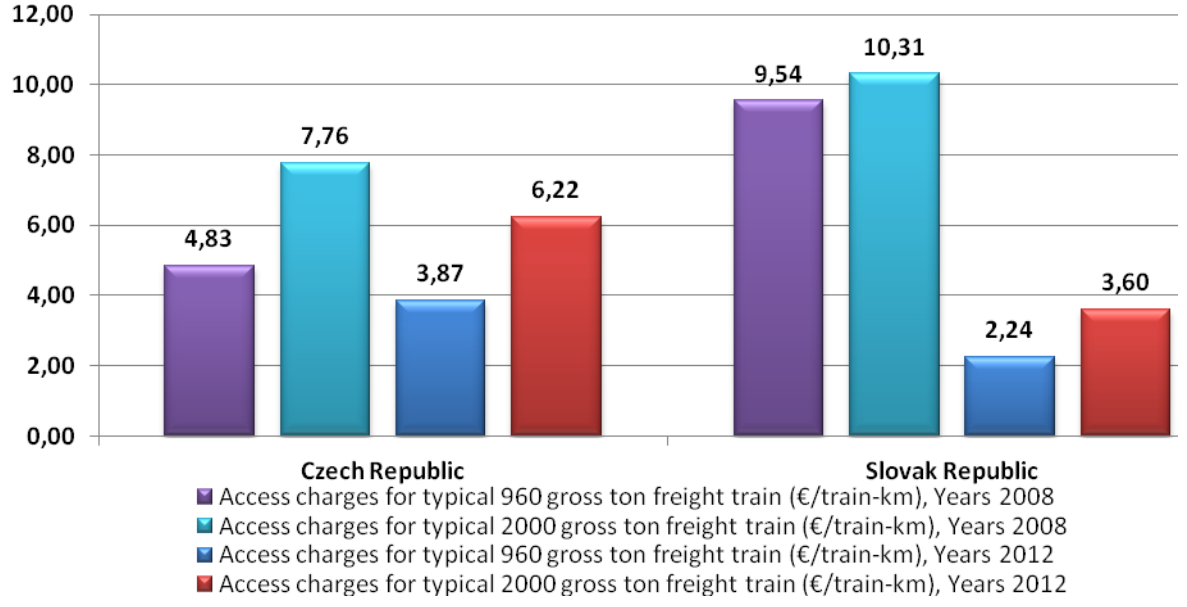


Table 25: Comparison of charge structure according to defined variables

Categories:	Variables:	Czech	Slovakia
Type of required allocation			
Transport	According to number of passengers and per travel		
	Degree of travel priority	x	
	Particular transport conditions		
Reservation duration	Year	x	x
Time period	Working time/holiday season		
	Night time		
	Interval		
	Season		
	Ad hoc	x	x
	regular	x	x
	irregular (as necessary)	x	x
Operation	Level of transport (number of train km/year)		
	Transport contract (number of required travels)		
Slot	Slot -km		
	Slot		
	Type of required slot		
Offered services (journeys)			
Performance indicator	Optimal travel time		
	Traffic density		
	Saturation, temporary and local bottlenecks		
	Performance regime/delay/minutes		
Stops at stations	Number of passengers		
	Minutes (at station/junction)		
	Stop/Station/Arrival or departure to/from station		x
Route	Number of trains / Train running		
	Tonne kilometres or gross tonne-km	x	x
	Seats - km		
	Trains - km	x	x
	Covered km (total length)		
Type of rolling sock used			
Train characteristics/wear caused	Number of train bogies / bodies		
	Number of train pantographs		
	Number of axles		
	Train weight		
	Use of tilting equipment	x	
	Train speed		
	According to mobility / type of tractive unit		
	Type of train		
	Particular transport conditions	x	
Type of operation			
Area	National / international / regional / high speed		
	Type of transport (passenger / freight)	x	
	Geographical area / charging area		
Type of traction			
Consumption (measuring units used)	Day		
	Used litres of fuel (diesel)		
	Electric train-km		x
	KWh consumed		
Type of traction	Electric / diesel traction	x	x
Type of infrastructure used			
Stations	Distinction departing train, arrival ...		
	Station categories		x
Particularities	Special infrastructure (bridges ...)		
	Concrete joint		
Network	Track gauge (narrow-gauge track ...)		x
	Section speed		
	Permissible load on the rail		
	Category/Type of line/Network	x	x

As seen in table and diagram, in the past, the Slovak Republic belonged among EU countries with the highest rail infrastructure access charges. It has changed from 1 January 2011 by modification of structure and level of rail infrastructure access charges. Based on the analysis of structure and level of rail infrastructure access charges, we can conclude that charging policy of respective countries has not negative effect on the establishment of the rail freight corridor.

2.2.4 Comparison of prices between road truck transport and rail transport

Price quantification is without included costs of the loading and unloading.

Prices are approximate and average, based on data provided by road carriers on the Slovak Republic territory and from public available information of the largest rail freight carrier (on the ZSR network) – Railway company Cargo Slovakia a. s.

In road transport, an approximate price for semi-trailer set carrying goods weighing 25 t is quantified, where price calculation is based on data provided by carriers, with annual performance of semi-trailer set of 168 000 km, average price of fuels in 2012 and defined business conditions in the Slovak Republic in 2012.

The rail freight price is set for one wagon consignment weighing 40 t on the basis of Rail freight tariff SCNT – 7777.00 particular transport conditions, prices and payment terms for transportation of wagon consignments Slovakia – Czech. The price does not include conditions resulting from contractual systems that use multiple incentive instruments (volume coefficients, discounts for block trains) depending on annual volume of transportations of contract carrier.

Table 26: Average speed calculated on the section Košice – Praha compared between road and rail

Transport mode	Section	Km	Price*	Price for tonne-km
Road set – semi-trailer set (truck)	**Košice - Trenčín - Praha**	670	824	0,0447
Rail – wagon consignment	**Košice - Púchov - Praha**	689	1 700	0,0617
Rail – unit freight train	**Košice - Púchov - Praha**	689	23 394	0,0385

**approximate price calculated on the basis of several offers, not offer price*

2.3 CAPACITY ANALYSIS

Based on the partial capacity analyses carried out in actual state analysis, we can conclude that draft lines of RFC 9 have sufficient free capacity on the Slovak Republic territory and except for the lines Praha – Česká Třebová there is sufficient free capacity on the Czech Republic territory, too. Increasing the transport performances on the corridor, except for the section Praha – Česká Třebová and border sections with Ukraine, is possible without large changes.

However, it is necessary, for smooth absorbing the new transport performances, to take legislative or technical measures for the capacity-restrictive sections in order to increase the capacity or to divert the new transport performances through draft alternative lines (with the agreement of customer).

The most capacity-restrictive sections on draft RFC 9 are on the territory of the Czech Republic and in border areas.

On the Slovak Republic territory, higher capacity utilization is on the border lines with Ukraine Čierna nad Tisou – Čop and Maťovce – Užhorod.

On the Czech Republic territory, the lines Poříčany – Pardubice and Choceň – Česká Třebová, that serve not only for transportations of RFC 9, are utilized in terms of capacity for more than 90%.

Table 27: Summary of lines with high capacity utilization (GVD 2013)

Country	Lines with capacity utilization more than 90%
Czech Republic	Poříčany - Pardubice (more than 90%)
	Choceň - Česká Třebová (more than 90%)
Slovak Republic	Čierna nad Tisou (broad gauge)– Čierna nad Tisou st. bor. (broad gauge) (77,6%)
	Maťovce (broad gauge) – Užhorod (broad gauge) (70,8%)
	Čierna nad Tisou (standard gauge)– Čierna nad Tisou st. bor. (standard gauge) (66,3%)

The most corridor lines with capacity utilization less than 50% are on the Slovak Republic territory.

2.4 SWOT ANALYSIS

Within SWOT analysis, the particular strengths and weaknesses, opportunities and threats associated with establishment of RFC 9 are identified. The basis is to evaluate respective factors resulting from establishment of RFC 9. By interdependency of strengths and weaknesses on the one hand and opportunities and threats on the other hand, we can obtain new qualitative information that evaluates current state and benefits of the establishment of the rail freight corridor.

In processing and evaluating the individual factors, the opinions of all countries, involved in the establishment of RFC 9, have been taken into account. SWOT analysis generates a conceptual aspect for system analysis. It aims at the key factors for further strategic decision making.

Evaluation primary factors are:

- partnerships
- technical aspect
- capacity
- charges
- flexibility = time aspect

Implementation of the measures only in one member state will not result in significant increase in the international freight transport competitiveness. Therefore, it is necessary to implement the measures jointly after mutual agreement of all member states of the corridor (see following SWOT analysis).

Table 28: SWOT analysis at the corridor level

Strengths	Weaknesses
- Strong relationships resulting from a common state history; - Existing strong and long-term cooperation; - A common vision in building railway network resulting from common railway history of common state; - High interconnection of transport; - Good technical conditions (in comparison with other parts of network in each country); - Sufficient free capacity (Slovakia); - Ecological transport; - Effective bulk transport; - Safety; - High flexibility of path allocation; - Strengthening the partnerships.	- Poor technical condition of infrastructure (Slovakia); - High intensity of possesions and low-speed runs (mainly on ZSR network); - Customs controls at inappropriate place in term of transport (customs controls at Slovak-Ukraine border on an open line); - Low flexibility of rail transport; - Low line speed (outside modernized corridors); - Restrictions on border lines (in many cases these are single track lines with decreased capacity); - High transport times compared to road transport.
Opportunities	**Threats**
- Government transport policy (transport reforms); - Increase of road goods transport costs (e.g. charging of non-primary roads); - Shift of dangerous transport to safer transport mode (shift from road to rail). - Complex modernization of lines (especially Slovakia); - Improvement of cooperation; - Cross-border cooperation (improvement of technical parameters of border lines); - Increase in maximum capacity on border lines; - Elimination of inappropriate location of customs controls in term of transport at Slovak-Ukraine border; - Support of intermodal transport; - Support of RoLa; - Reducing the running times; - Obtaining the new transportations; - Increasing the share of confidence trains (without technical/commercial and RID inspections – within Schengen area); - Harmonization of GVD between individual corridor countries; - Incorporation of rail transport into logistic processes; - Improvement of infrastructure technical condition by modernization; - ERTMS introduction; - Speeding up the modernization process (Slovakia); - Construction of branch tracks to new-built industrial parks, companies (car companies); - Connecting to logistic centres; - Support of existing branch tracks; - Construction of public terminals with public access.	- Decreasing the maximum capacity at borders with Ukraine; - Economic crisis; - Maintaining the inappropriate location of customs controls at Slovak-Ukraine border; - Lack of free capacity; - Slow corridor modernization; - Intermodal alternatives; - Re-evaluation of EU mega trucks; - Increased performance can lead to increasing of fault rate; - Non-competitive running times of long distance trains; - No interface with logistic chains and centres; - Mass transportation attenuation; - High costs of sidings; - Unfavourable policy for rail transport; - Increased difficulty of short distance passenger traffic in the surrounding of centres; - Giving priority to passenger traffic more than freight traffic.

3 EXPECTATIONS OF FUTURE DEVELOPMENT "TO BE" SITUATION

3.1 CALCULATION MODEL FOR THE TRAFFIC FORECAST

Based on analysis of current state, data assembly, identification of problems and risks, it is possible to create the forecast model that will serve to determine the expected development on the transport market "As to be" after observing the defined conditions of recommendations for the establishment of the rail freight corridor. Traffic forecast modeling results from these aspects (= traffic support areas):

- GDP prognosis,
- technical condition improvement = ensure full harmonization of technical condition of rail freight corridor (based on an intended modernization on the draft RFC 9, especially the Slovak Republic),
- reducing border waiting times,
- observing the timeframe of corridor introduction.

These aspects are interrelated and are reflected in deduction of the transport demand and creating a calculation model for the traffic forecast.

As transport performance forecasting depends, mostly, on economic development (and the resulting investments for infrastructure technical condition improvement) and it is, with respect to ongoing global economic crisis, rather ambiguous, the transport performance development forecast is elaborated in three scenarios (pessimistic, medium and optimistic). The fundamental characteristics of the scenarios will be described in the expected changes in traffic flow according to the aspects of impact on traffic flow development.

Transport demand will depend on the aspects (transport support areas) influencing the transport demand development. Thus, based on GDP growth in the respective countries, technical condition improvement and reducing the running times by means of border waiting time elimination, we can expect increase in rail traffic competitiveness and thereby also increase in transport performances on RFC 9.

The following calculations are based on the fact that:
Elasticity factors used in forecasts, associated with GDP growth, are:

e_{GDP}= 0,35 - 0,8 (demand in freight traffic)

Level of transport elasticity depends on an economic advancement and on prognosis model of economic development (pessimistic, medium, optimistic).
In transforming economies, the level of elasticity is lower due to assumption of development of industries not relating with rail freight transport increase (services).

When the model is more economically favourable, a higher wiligness to incorporate the recommendations on the technical and legislative levels is expected, that support rail traffic growth (e.g. faster modernization, running times reducing, decreasing the border waiting times, increasing the number of confidence trains and other incentives in technical and legislative area will support higher interconnection of economic growth and rail traffic growth).

Rail freight corridor 9 will profit not only from GDP growth, but also from improving the infrastructure technical condition, eliminating the unreasonable border waiting time and

improving the economic situation abroad. Technical condition improvement and border waiting time reduction will be shown in increase in transport performances due to increasing in quality of provided services and speed and flexibility of transport.

For transport performance modelling, GDP is a starting point of the forecast. It plays a key role in the assessment of transport demand development within the Study.

GDP prognosis is based mainly on input data of National Statistical Offices, EU sources[1], in consideration of Word Economic Outlook data[2].

Table 29: Prognoses of GDP growth in member states of draft RFC 9 and EU.

Prognoses of GDP growth rate in rail freight transport (average inter-year growth)			
Years	**2012- 2014**	**2015- 2017**	**2018-2021**
EU (27)	0,57%	1,64%	1,67%
Czech Republic	0,07%	2,65%	3,54%
Slovak Republic	2,13%	3,50%	3,60%

Source: Eurostat, Czech Statistical Office, Statistical Office of the Slovak Republic, Eurostat - Europe 2020 indicators, WEO data

Traffic growth assessment was carried out in three steps.

In the first step, a deduction of transport market growth is determined by weighted arithmetic mean calculated from GDP of own country and from GDP of neighbouring member state of RFC 9 and from GDP of the European Union. Determination of arithmetic mean weight in the individual countries results from these facts:

- sequence of international transportations between the Czech and Slovak Republics along the draft corridor is very high (especially as a secondary raw materials from Ukraine to Ostrava region and vice versa to Košice),
- GDP of both countries depends highly on development of EU macroeconomic indicators (therefore, impact of economic situation development in the European Union is included in transport development).

Based on these facts, weight of impacts on transport development is adapted according to the following table:

Table 30: Weight of impacts defined for total transport demand forecast on RFC 9 (for the purposes of the Study)

Country	**Weight**	
	SR multiple factor	**CR multiple factor**
EU (27)	0,1	0,1
Czech Republic	0,3	0,7
Slovak Republic	0,6	0,2

[1] EUROSTAT: Most popular database tables – Real GDP growth rate
http://ec.europa.eu/regional_policy/sources/docoffic/working/regions2020/pdf/regions2020_en.pdf
[2] Word Economic Outlook (WEO) data, IMF http://www.econstats.com/weo/CAUT.htm

In the second step, the forecast is influenced by assumptions for improving the infrastructure technical condition, construction of terminals and expected high private investments along the corridor. Improving the infrastructure technical condition, construction of terminals are in accordance with available information of national plans of modernization and reconstruction relating the infrastructure of rail freight corridor 9. From technical point of view it is important to eliminate bottlenecks and capacity problems and to reduce the running times on the Slovak Republic territory. These problems can be eliminated by modernization and reconstruction of the lines to required parameters of AGC and AGTC Agreements. Assumption of modernization and reconstruction implementation in respective countries is always on the national level. The problems at borders are minimum as to this corridor due to high share of confidence trains. Expected improvement of technical condition is calculated using the comparative coefficient (elasticity coefficient) according to HEATCO Study – Developing Harmonized European Approaches for Transport Costing and Project Assessment.

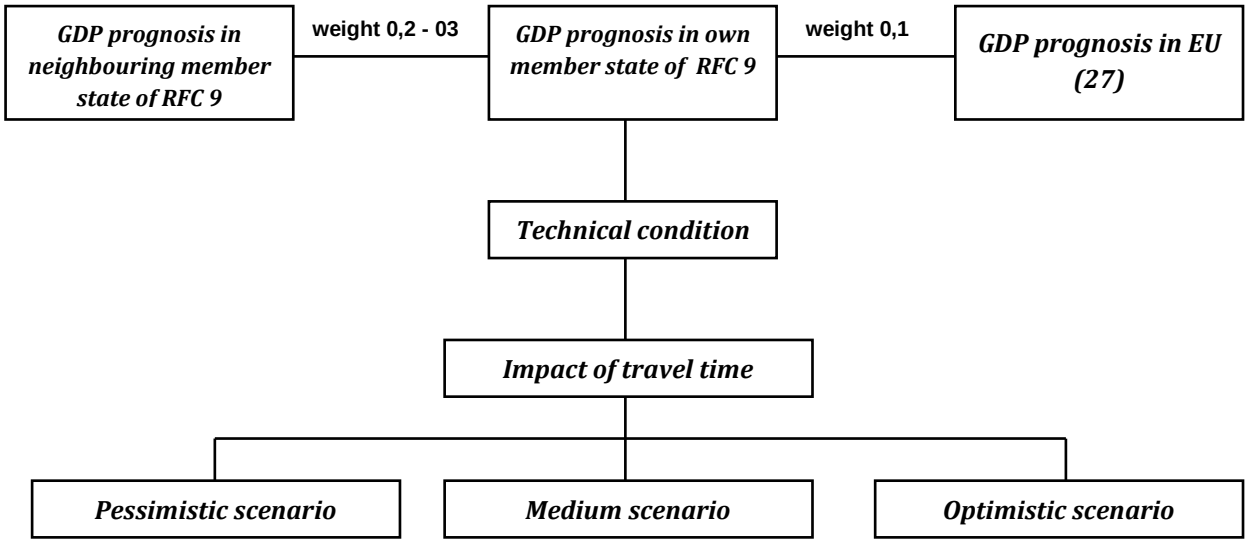
The third step consists in modelling the predicted transport performances based on consideration of impacts described in the previous steps and on assumption of corridor establishment. Transport performance prediction is divided according to assumptions of economic recovery in pessimistic, medium and optimistic secenarios (see Chapter 3.3). Based on these scenarios, all impacts, inputting to the model for determination of predicted transport performances, are adapted.

Based on the predicted transport performances, the most important macroeconomic and microeconomic social effects, resulting from RFC 9 establishment, are defined. Transport performances and social effects are considered for the corridor main lines (alternative and connecting lines are not included in calculations).

Macroeconomic social effects result from reducing the external costs (noise, accidents, congestions, air pollution and climate changes) and microeconomic social effects result from reducing the running times on the corridor (impact of travel time).

Expected reducing the running times on RFC 9 will reflect in increasing the competitiveness of international freight transport, thereby increasing the transport growth. Running time reduction is calculated using the comparative coefficient in accordance with HEATCO Study – Developing Harmonized European Approaches for Transport Costing and Project Assessment.

Scheme 4: Scheme of calculation model for the traffic forecast



3.2 ESTIMATED CHANGES OF TRAFFIC FLOW

Estimated changes of traffic flow on corridor RFC 9 are simulated in 3 scenarios.

Basis for scenarios are as follows:

Optimistic scenario – characters of economic recovery in 2013, abidance of positive economic indicators upto 2022, modernization and reconstruction of lines according to scheduled plan, yearly decreasing of border waiting times, flexibile elimination of technical and capacity problems, increasing of carriers' flexibility during handover of wagons on borders, transport growth is supported by high ratio of new intermodal transport, low growth of demand for transport of bulk substrates.

Medium scenario - slow economic recovery since 2013, gradual improvement of economic indicators, modernization and reconstruction with delay of 1 - 2 years, yearly decreasing of border waiting times, increasing of carrieres' flexibility during handover of wagons on borders, transport growth is supported by high ratio of new intermodal transport, stagnation of demand for transportation of bulk substrates.

Pessimistic scenario - characters of economic recovery in 2015, abidance of positive economic indicators since 2015, modernization and reconstruction with delay of 2 - 3 years, slow yearly decreasing of border waiting times, slow increasing of carriers' flexibility during handover of wagons on borders, soft increase of intermodal transport, stagnation of demand for trasnportation of bulk substrates.

3.3 RISKS OF PROGNOSIS

The most important influence which coud considerably change the prognosticated development is the estimated time period of economic crisis. The longest time period of economic crisis is in the pessimistic scenario, up to the end of 2014. The lenght of economic crisis will result in decreasing of investments in infrastructure technical condition improvement, elimination of capacity barriers and willingness to reduce waiting times on borders by increasing of carriers' flexibility on borders and by elimination of technical limitations. The important part of ensuring the infrastructure technical condition improvement is the subsiding from the funds of EU in particular member states. Using of money from the EU subsidy funds for modernization and reconstruction of railway lines and stations contributes not only to improvement of infrastructure technical condition but also to the growth impulse of economy. Delay in using money from the EU subsidy funds for modernization and reconstruction of railway lines and stations can lead to decrease the positive potential effects for economy of given country.

The next risk is the growth of freight transport by another modes of transport, whereas railway transport can stagnate. That´s why it is necessary for competitiveness of railway freight transport to provide high-class infrastructure, cooperation and coordination of neighbouring infrastructure managers as well as flexibile cooperation between national dominant carriers and other private carriers in handover of wagons on borders.

The low technical equipment of border lines or stations causes higher problems than low technical equipment in inland. Examples for low technical equipment on borders are low speed, single track and non-electrified lines.

3.4 EXPECTED FREIGHT TRANSPORT DEMAND ON RFC 9 IN 2013 - 2022, „AS TO BE"

Transport demand forecasting starts from the previous chapters. Perspective transport demand (in %) is shown in particular tables according to selected scenarios of economic situation development.

Table 31: Transport demand deduction according to prognostic model "pessimistic scenario"

Pessimistic scenario			
Demand growth rate forecasts in freight transport (inter-year growth)			
Years	2013- 2014	2015- 2017	2018-2022
Czech Republic	0,17%	0,95%	1,18%
Slovak Republic	0,26%	1,07%	1,36%

Given trend (pessimistic scenario) can be characterized as maintaining the transport performances, i.e. transport performance stagnation. It is preserved in current state maintaining, with a very slight improvement.

Table 32: Transport demand deduction according to prognostic model "medium scenario"

Medium scenario			
Demand growth rate forecasts in freight transport (inter-year growth)			
Years	2013- 2014	2015- 2017	2018-2022
Czech Republic	0,31%	1,77%	2,02%
Slovak Republic	0,41%	1,99%	2,12%

Given trend (medium scenario) can be characterized as improving the transport performances, especially after 2014, i.e. following economic situation improvement in 2013 and 2014. It increases the growth rate.

Table 33: Transport demand deduction according to prognostic model "optimistic scenario"

Optimistic scenario			
Demand growth rate forecasts in freight transport (inter-year growth)			
Years	2013- 2014	2015- 2017	2018-2022
Czech Republic	0,41%	2,17%	2,86%
Slovak Republic	0,87%	2,60%	2,88%

Given trend (optimistic scenario) can be characterized as a slight growth of trasnport performances. It increases, continuously and dynamically, the growth rate.

All trends, due to export economies, are linked to EU-wide economic situation.

In the following diagram and table, total transport demand growth forecast required for the purposes of the Study, comprising all areas of transport support according to scenarios of economic situation development, is shown.

Diagram 5: Transport performance development in millions of net tonne-km according to particular scenarios (on the main lines)

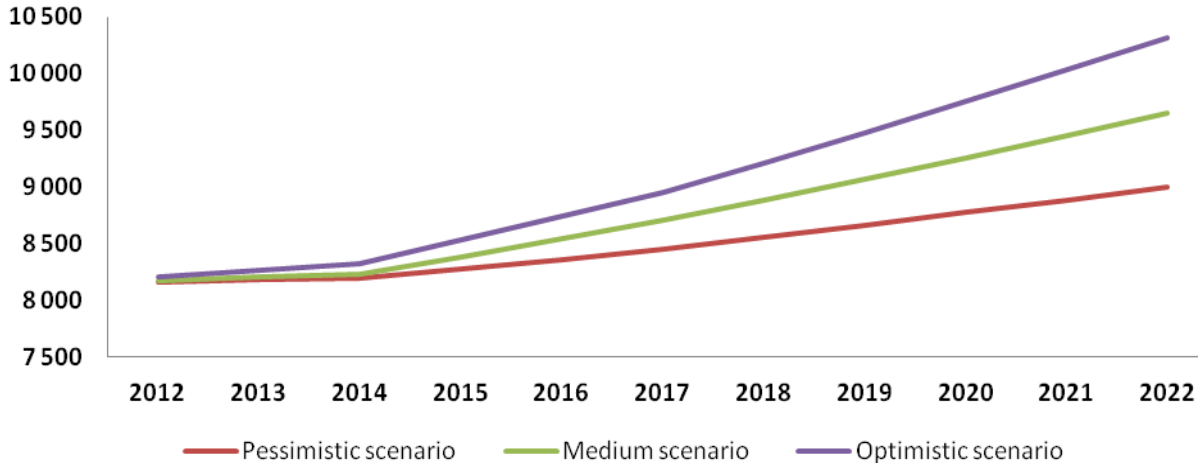


Table 34: Transport performance development in millions of net tonne-km according to particular scenarios (annual) for main lines of RFC 9

Scenario / Years	Transport performances in millions of net tonne-km (annual)		
	2015	2018	2022
Pessimistic scenario	8 278,1	8 555,2	9 000,5
Medium scenario	8 386,1	8 886,6	9 646,8
Optimistic scenario	8 529,7	9 213,6	10 317,8

3.5 SOCIO-ECONOMIC BENEFITS STEMMING FROM THE ESTABLISHMENT OF THE RAIL FREIGHT CORRIDOR RFC 9

The most important socio- economic benefits stemming from the establishment of the rail freight corridor are:

- reduction of transport times in freight transport (micro effect - impact of investments),
- reduction of external costs (macro effect).

The estimated changes of the structure of transport flow are incorporated in the socio-economic benefits stemming from the establishment of the rail freigt corridorr RFC 9.

Reduction of running times (impact of travel time)

Modernization of RFC 9 leads to reducing the running times. As the Czech Republic has seen a significant shift towards modernization, reduction of running times is expected especially on the Slovak Republic territory. Processing the impacts of travel time is based on the expected time sequence of railway track modernization resulting from the ZSR strategy and from average values of running time savings which will become evident after completion of the whole corridor modernization.

An extent of the running time reduction depends on journey and type of freight train. For the financial statement of impacts of time savings, average values of running time reduction are used. Comparison is between running times resulting from GVD 2012/2013 and modelling the running times for complex modernized section according to technical parameters defined in AGC and AGTC Agreements.

The timeframe of corridor modernization, resulting primarily from the ZSR strategy (Long-term investment plan 2011 – 2021), enters into social effects, too.

The most of these social effects will become evident only after 2021.

Table 35: Average savings of running times in rail transport after complex modernization of RFC 9

Country	Section	Freight transport (minutes per tonne)
		Long-distance
Czech Republic	Praha – Horní Lídeč	5
Slovak Republic	Lúky pod Makytou – Púchov	0
	Púchov – Žilina	5,5
	Žilina - Košice	53,0
	Košice – Čierna nad Tisou	28,5

Increasing in average speed, after complex modernization of the section Púchov – Žilina for freight transport, is by 18,6 km/h. In the Czech Republic, increasing in average speed is minimal (due to completion of modernization on the most corridor lines – effect has been already achieved, the plan considers only modernization of large stations).

There is a high potential for reducing the running times for freight transport on the main lines of RFC 9. Reduction of running times is modelled up to 87 min in compliance with technical parameters of AGTC and AGC Agreements.

Time values result from the expected time saving on the individual modernized sections, assumptions of modernization completion and transport volumes.

Economic benefits were calculated by multiplying, for each year, by the following factors:

- Time saving is calculated only after modernization completion
- Expected freight volume in individual years
- Freight train load factor = 669 t, it will be reduced yearly by 1 %
- Time value (2005) = 1,22 €/ t[3]

Freight train load factor resluts from average load of freight train in 2011 on the main corridor lines in the Czech and Slovak Republics.
Annual development: economic benefit (annual values) differs based on the time value growth.

Time value is applicable to 2005, it is indexed annualy by 1% (based on the expected growth rate of GDP per capita).

Calculation: *Impact of running time =* *½ * Transport demand * time saving after modernization completion * time value*

Socio-economic benefits were calculated for every year by taking into account of the following factors :

- impact of running time (calculated using the mentioned formula)
- estimated volume of freight transport on the borders according to the transport prognosis
- time of implementation 2013 – 2021
- expected enhancement of technical condition
- time value (2005): 1,22 €/t
- time value will become evident only after modernization completion resulting from ZSR and SZDC investment strategy on the main lines of RFC 9

A slow rate of modernization of the lines associated with rail freight corridor 9 is expected in the Slovak Republic.

Time value applicable at the end of the year 2005 is indexed in the next years of analysis by 1% (expected annual growth rate of GDP per capita).

[3] **HEATCO -** Developing **H**armonised **E**uropean **A**pproaches for **T**ransport **Co**sting and Project Assessment, Deliverable 5, Proposal for Harmonised Guidelines, Due date of deliverable: 15 December 2005, Actual submission date: February 2006, Estimated VTTS values – freight trips (€2002 per freight tonne per hour, factor prices), EU (25 Countries)
Time value used up to the end of 2005 is increased in the next years of analysis by 1% (expected average annual growth rate of GDP per capita)

Table 36: Final NPV (travel time impact) thousands of € according to particular scenarios

*Travel time impact in thousands of €	
NPV 2022 (pessimistic scenario)	**7 439,1**
NPV 2022 (medium scenario)	**12 515,1**
NPV 2022 (optimistic scenario)	**18 528,8**

Final net present value (NPV 2022) of travel time impact is expressed from the expected gradual reduction of running times by 2022 by 5 min in the Czech Republic (since 2017) and 24,5 min (since 2021).

Complex modernization of all main lines of RFC 9 is not expected in the Slovak Republic by 2022.

Finacial evaluation of external costs (macro effect)

Thanks to ensuring the competitive freight we will achieve the increase of the rail transport by shift from road to rail, in new as well as generated transport. The reduction of negative impacts of congestions, accidents, pollution, noise, climate changes will be result, mainly, from transfer of the goods from road to rail.

The level of the external impacts is evaluated in finances by unit costs to tonne km based on the instructions listed in the Handbook on estimation of external cost in transport sector (2007), prepared by the consortium led by CE Delft on behalf of DG TREN.

For the derivation of the value of the unit costs the following impact aspects were used:

- development of GDP and purchasing power parity per capita,
- for air pollution, we have integrated the next factor in calculations: 0,5% annual decrease related to technological improvements which will lead to reduction of emission factors.

Table 37: External costs in eurocento per tonne km

Freight transport	Congestions	Accidents	Air pollution	Noise	Climate changes	Total
Truck	2,17	0,03	0,22	0,09	0,22	**2,73**
Freight train	0,01	0,01	0,07	0,04	0,1	**0,23**

Source: Handbook on estimation of external cost in transport sector (2007), prepared by the consortium led by CE Delft on behalf of DG TREN

External benefits were calculated on the basis of unit costs (table 61) for freight transport according to particular scenarios of transport demand development.

Table 38: Final NPV (2022) in thousands of € according to particular scenarios

External costs in thousands of €	
NPV (2022) pessimistic scenario	**31 674,3**
NPV (2022) medium scenario	**61 819,8**
NPV (2022) optimistic scenario	**97 078,2**

3.6 TECHNICAL CONDITION IMPROVEMENT = IMPACT OF INVESTMENTS

Improvement of technical condition, modernisation or reconstruction can increase the capacity of the line and reduce the running times. Reduction of the running times is determinated based on the estimated change in technical speed. The main focus is in line sections with maximal technical speed lower than 100 km/h (data based on „as is situation“).

Table 39: Expected investments in RFC 9 (main and alternative lines)

Country	Expected investments	Impact of investments
Czech Republic	New terminal Česká Třebová, construction of new logistic centres Brno, Pardubice,	Support of rail demand
	Modernization of corridor stations from EU funds	Increase in speed and quality of provided services
Slovak Republic	Modernization of line section Púchov - Žilina	Increase in line speed, reduction of running times, increase in safety of transport of extraordinary consignments (out of gauge consignments) by 2015
	Construction of public intermodal terminal Žilina	Support of combined transport, improvement of access to rail by 2015
	Construction of public intermodal terminal Košice	Support of combined transport, improvement of access to rail by 2015
	Modernization of railway station Čierna nad Tisou	Increase in capacity, increase in quality of provided services by 2015
	Modernization of line section Žilina – Košice	Increase in line speed, reduction of running times, increase in safety of transport of extraordinary consignments (out of gauge consignments), especially tunnel Strečno I, Štiavnický tunnel) by 2015
	Modernization of line section Košice – Čierna nad Tisou	Increase in line speed, reduction of running times after 2015
	Modernization of railway station Maťovce	Lengthening the tracks in station will increase the length of trains, station capacity and improve the shunting operations
	Electrification of important connecting lines	Ecological aspect, increasing the track performance

Expected investments are drawn from data provided by the Commission members of respective countries.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 MEASURES TO IMPROVE FREIGHT PERFORMANCE

Definition of measures

Measures for improvement of freight performance on recommended lines and terminals of RFC 9 can be devided into following groups:

Macroeconomic measures (= low influencable from the IMs point of view):

- support of GDP growth
- transport policy focused on development of environmental friendly transports, coordination and support on the level of states
- internalization of external costs

Microeconomic measures (= high influenceable from the IMs point of view):

- motivation of freight carriers to flexibility by means of access charges (parking fee, cancellation fee, indexes for regular/ad-hoc paths...),
- modernization and reconstruction of lines (increase of capacity, support of interoperability, coordination of investments especially in border crossing stations and lines),
- support of „confidence trains“ = without technical / commercial inspections (mutual recognition of trains),
- establishing of common procedures for coordinating traffic management and setting up a joint body for applicants called Corridor one-stop shop (C-OSS) which will cooperate with all national OSS,
- drawing up a common document (or brochure or network statement) as a marketing tool helping to promote and present the rail freight corridor,
- flexibility of path allocation.

Combination of microeconomic and macroeconomic measures (cooperation of state, state authorities with infrastructure manager and freight carriers)

- support of legislative and technical conditions for transhipmment stations Čierna nad Tisou and Maťovce

Macroeconomic measures (measures of state, state authorities and state offices)

Macroeconomic measures are focused mainly on economic and transport policy. These measures are related to sustainable mobility. The conception of sustainable mobility is focused on two priorities = provision of high flexibility, low costs and effective mobility of goods on the one hand and minimalizing of claims arising from accidents, change of climate, noice, environmental damages, respiratory diseases, transport congestions due to increase of transport density on the other hand. That´s why it is necessary to support the ervironmental friendly modes of transports even by internalization of external costs and by another means of support (different types of restrictions).

Microeconomic measures (measures of infrastructure managers or measures in cooperation with freight carriers)

Microeconomic measures concern exclusively an infrastructure manager or measures of several common railway undertakings (infrastructure manager + freight carrier).

Motivation of freight carriers to flexibility by means of access charges (parking fee)

Motivation of freight carriers to decrease transport time (stays on borders, intermediate stations – not for transport reasons) can be achieved by implementation of infrastructure access charge "parking fee on siding tracks" (stay, detach wagons on infrastructure manager's tracks). The level and correct structure of a parking fee is an indirect tool how to affect the carriers and to motivate them to decrease stays on the network and thus waiting times on the borders and in intermediate stations. (On the other hand, the implementation of parking fee can´t solve the problems of RU with lack of locos, wagons and correct structure of rolling stock). One of the most effective tool to increase the flexibility in path allocation process and charging policy (=fast reaction time for ad-hoc path allocation, parking fee, cancellation fee, indexes for regular/ad-hoc trains, preferences for intermodal transport, dangerous goods, extraordinary shipments...) is suitable and complementary strategy of charges on the rail freight corridor 9.

Modernization and reconstruction of lines (increase of capacity, support of interoperability, coordination of investments - especially in border crossing stations and lines)

Modernization or reconstruction of railway lines is an important task of each infrastructure manager. On the one hand, the modernization and reconstruction of railway lines supports the growth of the national economics (GDP growth and support of employment) and in case of subsidies from EU funds it can decrease the charges of national accounts. On the other hand, increasing of speed, technical level, improvement of profile and alignment of lines, safety and reliability leads not only to increase of capacity and interoperability but also to increase of competitiveness of passenger and freight railway transport.
During modernization or reconstruction of railway lines on the borders, it is suitable to provide for coordination of investment plans of involved IMs in the way that the modernization of border stations and lines shall be in close time sequence among involved IMs. Modernization and reconstruction of border stations and lines concern, in particular, transhipment stations Čierna nad Tisou and Maťovce not only for improvement of technical conditions, profile and alignment of lines but also customs inspections supporting the transport aspects.

Support of confidence trains (mutual recognition of trains)

The next possibility how to reduce the waiting times on borders (especially between the Czech and Slovak Republics) is the elimination of technical/commercial inspections in border crossing stations. The elimination of technical/commercial inspections in border crossing stations is based on enhancement of confidence trains acceptance, i.e. mutual recognition of trains. In acceptance of confidence trains, there are two possibilities: mutual recognition of technical and commercial inspections between respective RUs from origin station to destination station (on the whole train path) or in shunting operations in marshalling yards, carrying out the technical and commercial inspections by employees of neighbouring IM.

One of possible solutions for mutual recoginition of technical/commercial activity is the issuing of international certificate for wagon examiners and commercial staff which inspection work will be recognized by several infrastructure managers.

Creation of common procedures for coordinating traffic management along the corridor and setting up the corridor one-stop shop (OSS)

It is necessary to determinate procedures and cooperation during path allocation process realized by corridor OSS and national OSS. Processes should include the information flows about scheduled and ad-hoc possessions, restrictions, extraordinariness which can influence path allocation process.

Drawing up a common corridor document (brochure or network statement) as a marketing tool helping to promote the corridor

Promotion of corridor is one of the most important issues for the establishment of the corridor. The possible forms of promotion: internet, website, brochures, etc. By means of communication facilities, potential customers should have a fast and reliable access to all information they need (e.g. access conditions, OSS, scheduled and unscheduled possessions, capacity availability, technical parameters, ground plan limitations, charges, etc.)
It is appropriate to provide all necessary information in the languages of countries (Czech and Slovak) involved in corridor RFC 9 but also in other languages (at least in English).

Flexibility of path allocation

Path allocation process should follow the same rules but actually differs from country to country. Directive 2001/14/EC determinates the duty of IM to respond to the path requests as quickly as possible and in any event within five working days. Table 64 shows an overview of actually practised response times. It would be useful to unify the rules for allocation of regular as well as for ad-hoc paths on the future corridor RFC 9 with the focus on the highest possible level of flexibility.

Table 40: Capacity/path allocation by respective infrastructure managers in hours

Country	Infrastructure manager	Deadline for submitting of path request by carriers (hours)
Czech Republic	SZDC	2 h
Slovak Republic	ŽSR	6 h

Source: Members of RFC 9 Commission

Combination of microeconomic and macroeconomic measures (cooperation of state, state authorities with infrastructure managers and freight carriers)

Combination of measures requires mutual communication between the state authorities and the railway undertakings, harmonization of perspectives and possibilities of solution to meet long-term development goals.

Support of legislative and technical conditions for transshipment stations Čierna nad Tisou and Maťovce

Border stations Čierna nad Tisou and Maťovce represent important traffic flows for rail freight corridor (so-called "entrance gateway of the corridor").

Based on the capacity analysis in the Slovak Republic, in comparison between 2006 and 2011, it is necessary to ensure such legislative and technical conditions so that the customs nad border inspections (on standard as well as broad gauges) following train set run through RALLEN checking equipment were not carried out on the open line (checkpoint no 1) or were carried out on the correspondent reception track in the station Čierna nad Tisou (checkpoint no 2). Nowadays, these border and customs inspections do not affect the smooth traffic circulation but in increasing traffic demand (expected trend of traffic flow development with respect to continued growth of rail transport in the East Europe and increasing the importance of Asia-Europe shipments) they can cause significant restrictions and, ultimately, stagnation of traffic growth on RFC 9 and rerouting the transport outside the corridor (maximum number of trains that could be transported is 22 trains according to current valid GVD 2013). Therefore, when modernizing the station Čierna nad Tisou, it is necessary to take account of this fact and to locate the customs area up to the reception tracks in the station Čierna nad Tisou (change of checkpoint no 1 location).

The important part is also the terminal Dobrá. Unloding the intermodal trains, possibility of creating the third Schengen point in intermodal terminal Dobrá with a smooth transition of trains on the broad gauge (i.e. without customs and border controls at checkpoints 1, 2 and 3) would help to speed up transport significantly and unload the overload section (toal transport from Čierna nad Tisou št. hr. (broad gauge) to Dobrá about 10 h).

Morevoer, it is necessary to ensure appropriate conditions for expected transport growth in railway station Maťovce, not only of standard gauge lines (alternative lines) but also of broad gauge lines in the border crossing station.

Risk:

When existing conditions concerning transport restrictions (insufficient free capacity) on the transition stations are not solved, the transport demand forecasts, modelled in Chapter 3.4 Expected freight transport demand on RFC 9 in 2013- 2022, „AS TO BE", can't be met. In 2020, current free capacity, when expectations for medium scenario are met, will not be sufficient.

4.2 IMPLEMENTATION PLAN AND MANAGEMENT OF CORRIDOR ROUTES

Implementation plan

Implementation plan of RFC 9 establishment with a brief description is processed in the following table.

Table 41: Implementation plan

Term	Description
till February 28, 2013	Elaboration of primary Study (data provided by members of RFC 9 Commission)
till March 31, 2013	Approval of TMS by Managing Board of RFC 9
till April 15, 2013	Final version of TMS and Implementation Plan
till May 10, 2013	Submission of Implementation Plan to Executive Board
till November 10, 2013	Establishment of Rail Freight Corridor 9

Source: Regulation No 913/2010, approved terms for RFC 9

Train paths

Based on capacity analysis and market demand analysis (utilization of existing RNE catalogue paths) we propose new paths:

1. CZ – SK : Praha Malešice – Česká Třebová - Horní Lideč – Čierna nad Tisou, 2200 t, 650m
2. CZ – SK : Česká Třebová - Horní Lideč – Čierna nad Tisou , 2200 t, 650m
3. CZ – SK : Česká Třebová - Horní Lideč –Maťovce, 2200 t, 650m,
4. CZ – SK : Praha Malešice Česká Třebová - Horní Lideč – Čierna nad Tisou, P/C 47/377, 1600 t, 610 m P/C 47/377
5. CZ – SK : Česká Třebová - Horní Lideč –Haniska pri Košiciach, P/C 47/377, 1600 t, 610 m
6. CZ – SK : Česká Třebová - Horní Lideč – Haniska pri Košiciach, 2200 t, 610 m
7. CZ – SK : Hranice na Moravě - Čadca - Žilina Teplička, 2200 t, 650m
8. CZ – SK : Hranice na Moravě - Čadca - Žilina Teplička, 2200 t, 650m
9. CZ – SK : Hranice na Moravě - Čadca - Žilina Teplička, 2200 t, 650m
10. CZ – SK : Hranice na Moravě - Čadca –Žilina Teplička, P/C 70/400, 1600 t, 610 m
11. CZ – SK : Hranice na Moravě - Čadca –Žilina Teplička, P/C 70/400, 1600 t, 610 m
12. CZ – SK : Hranice na Moravě - Čadca - Žilina 2200 t, 610m
13. CZ – SK : Hranice na Moravě - Čadca - Žilina Teplička, 2200 t, 650m

Notice: paths 7-12 must have time dependence with paths 1-6.

Experience in allocation of catalogue paths RNE:

SZDC, ZSR:
Catalogue paths are allocated only in ad-hoc path allocation process = no demand of RU for annual timetabling process. In ad-hoc path process, parameters and timetabling of the path are not respected = trains are allowed to be longer/shorter, heavier/lighter, faster/slower, late/ahead.

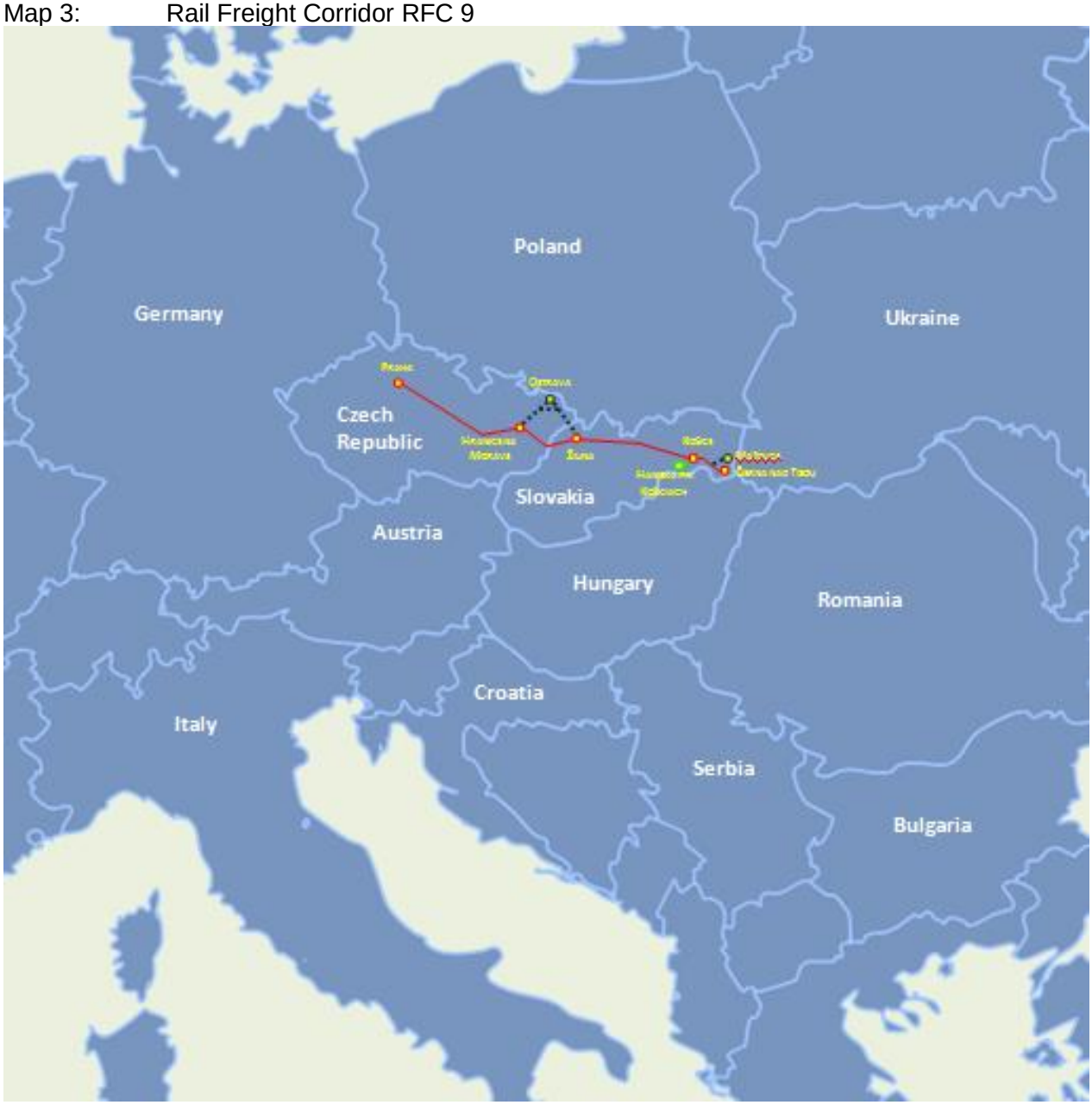
4.3 CONCLUSION

Based on the traffic flow analyses, we recommend the Managing Board to integrate the line Hranice na Moravě – Ostrava – Žilina into the corridor main lines due to connecting the terminals and significant operation performances.

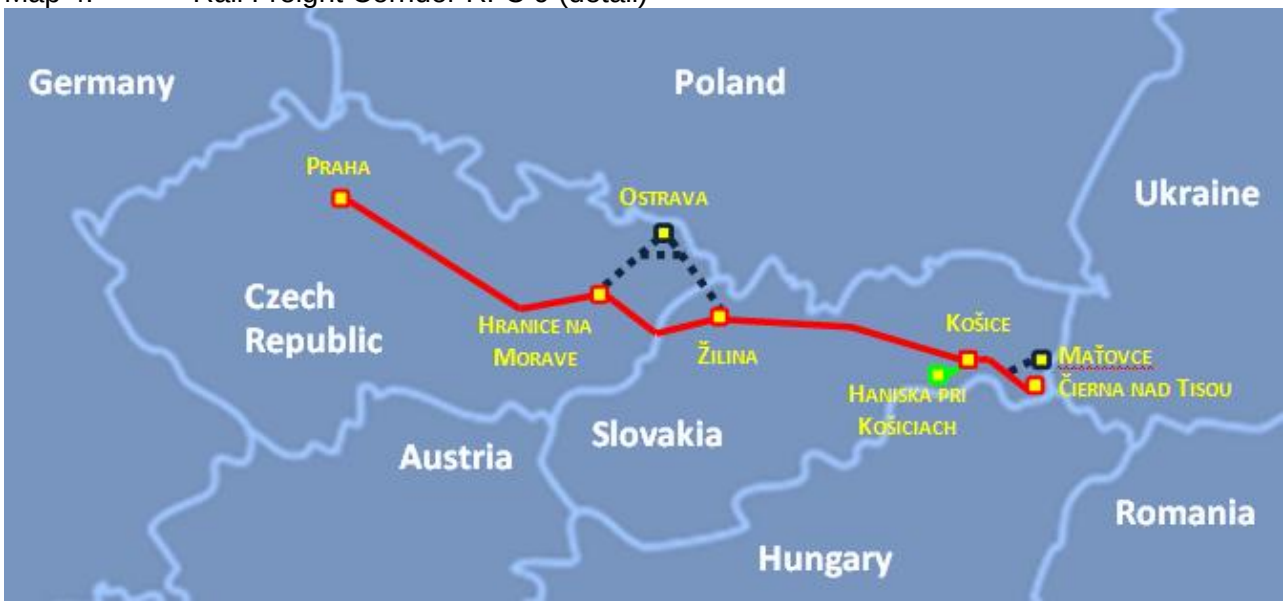
Recommendations of terminals and lines are in accordance with schemes in current state analysis and in Annex B: Corridor info.

In the following map and table, the corridor composition according to respective countries, classified as main lines, alternative lines, terminal lines and terminals, is defined.

Map 3: Rail Freight Corridor RFC 9



Map 4: Rail Freight Corridor RFC 9 (detail)



Legend:

- Main line
- Alternative line
- Connecting line
- Main line station
- Alternative line station
- Connecting line station

Map 5: Intermodal terminals near by Rail Freight Coridor RFC 9

Legend:

- Private intermodal terminal on main line
- Private intermodal terminal on alternative line or connecting line
- Private intermodal terminal near by RFC 9
- Potential (considered) public intermodal terminal with public access

Table 42: Complex definition of Rail Freight Corridor RFC 9

Country	Characteristic	Line sections/Terminals/Marshalling yards
Czech Republic	Main line	Praha - Poříčany
		Poříčany - Kolín
		Kolín - Pardubice
		Pardubice - Česká Třebová
		Česká Třebová - Olomouc
		Olomouc - Prosenice
		Prosenice - Hranice na Moravě
		Hranice na Moravě - Horní Lideč st.hr.
	Alternative line	Hranice na Moravě - Ostrava-Svinov
		Ostrava-Svinov - Dětmarovice
		Dětmarovice - Mosty u Jablunkova
		Mosty u Jablunkova/Čadca (CR/SR)
	Terminals	Praha Uhříněves
		Praha Žižkov
		Česká Třebová
		Paškov
	Marshalling yard	Kolín seř. nádraží
		Pardubice
		Česká Třebová
		Olomouc přednádraží
		Přerov přednádraží
		Ostrava hl.n
		Český Těšín
		Ostrava – Bartovice
		Ostrava - Kunčice
		Třinec
Slovak Republic	Main line	Horní Lideč/Lúky pod Makytou (CR/SR)
		Lúky pod Makytou – Púchov
		Púchov - Žilina
		Žilina - Vrútky
		Vrútky – Liptovský Mikuláš
		Liptovský Mikuláš - Poprad
		Poprad - Spišská Nová Ves
		Spišská Nová Ves - Kysak
		Kysak - Košice
		Košice - Čierna n. Tisou
		Čierna nad Tisou (NR) - Čierna nad Tisou št.hr. (standard gauge)

Country	Characteristic	Line sections/Terminals/Marshalling yards
		Čierna nad Tisou (ŠR) - Čierna nad Tisou št.hr. (broad gauge)
	Alternative line	Mosty u Jablunkova/Čadca (ČR/SK)
		Čadca - Žilina
		Výhybňa Slivník - Maťovce
	Connecting lines	Barca – Haniska pri Košiciach
		Krásno nad Kysucou – Haniska pri Košiciach
	Terminal	Žilina
		Košice
		Haniska pri Košiciach
		Dobrá
	Marshalling yard	Žilina - Teplička
		Košice freight station

Deatiled technical parameters of lines and stations are in Annex B, tables B 5 and B 8.

To fulfill the expected benefits stemming from the establishment of the freight corridor, it is necessary to provide for motivation of carriers to increase the flexibility and total time of transport what isn't possible without financial means intended for modernization and reconstruction of the rail freight corridor and assignement of resources needed for establishment of the rail freight corridor (resources for set up of Corridor-OSS, corridor presentation, elaborating brochures or information technology support).

A lot of European studies and also practical experience of infrastructure managers confirm that a great deal of the goods transported today on the lines of the future corridor RFC 9 originates in the Eastern countries (especially Ukraine and Russia). Therefore, it is necessary to pay special attention to development of important transhipment stations Čierna nad Tisou and Maťovce.

List of tables: Annex A

List of tables: Annex B

Annex A: Country info

Table A 1: Population

Country	City	Location towards corridor	Number of inhabitants*
Czech Republic	Praha	on corridor	1 272 690
	Brno	90 km from corridor	384 277
	Ostrava	on corridor (alternative line)	302 456
Slovak Republic	Bratislava	160 km from corridor	428 791
	Košice	on corridor	233 900
	Prešov	20 km from corridor	89 087
	Žilina	on corridor	84 334

Table A 2: Country economy

Country	GDP structure (2010)		GDP growth in %					
		Share in %	2006	2007	2008	2009	2010	2011
Czech Republic	Agriculture	2,3	7,0	5,7	3,1	-4,7	2,7	1,8
	Industry	30,6						
	Transport	10,3						
	Trade	13,7						
	Services	32,2						
Slovak Republic	Agriculture	2,85	8,3	10,5	5,9	-4,9	4,2	2,9
	Industry	36,47						
	Transport	17,23						
	Trade							
	Services	34,37						
	Others	9,08						

Table A 3: Infrastructure

Country	Transport mode	State expenditures in infrastructure (mil. EUR)					
		2006	2007	2008	2009	2010	2011
Czech Republic	Railway	527,1	680,1	918,2	783,7	569,8	
	Road	1 690,7	1 658,4	2 038,5	2 101,0	1 739,8	
	Waterways	21,1	15,6	21,5	62,3	58,5	
	Airports	80,6	85,5	324,3	97,6	82,3	
	Pipelines	28,4	32,0	17,3	8,4	9,2	
	Total	**2 347,9**	**2 471,6**	**3 319,8**	**3 053,0**	**2 459,6**	**0,0**
Slovak Republic	Railway	234,9	302,5	214,4	190,3	285,8	297,6
	Road	541,0	675,7	755,1	854,0	516,8	
	Waterways	2,1	1,5	4,7	3,8	5,1	
	Airports	13,5	17,8	33,4	59,1	74,7	
	Pipelines		51,5	46,3	63,6	51,1	
	Total	**791,5**	**1 049,0**	**1 053,9**	**1 170,8**	**933,5**	**297,6**

Table A 4: Freight transport

Country	Transport mode	Traffic volumes																											
		2006						2007						2008						2009						2010					
				International (in %)			National (in %)			International (in %)			National (in %)			International (in %)			National (in %)			International (in %)			National (in %)			International (in %)			National (in %)
		tonnes (thousand)	tonne-km (million)	Import	Export	Transit	Inland	tonnes (thousand)	tonne-km (million)	Import	Export	Transit	Inland	tonnes (thousand)	tonne-km (million)	Import	Export	Transit		tonnes (thousand)	tonne-km (million)	Import	Export	Transit		tonnes (thousand)	tonne-km (million)	Import	Export	Transit	
Czech Republic	Railway	97 491	15 779	23%	22%	8%	47%	99 777	16 304	22%	23%	8%	47%	95 073	15 437	22%	23%	8%	46%	76 715	12 791	23%	21%	8%	48%	82 900	13 770	23%	23%	9%	45%
	Road	444 574	50 369	5%	4%	2%	89%	453 537	48 141	4%	4%	2%	90%	431 855	50 877	5%	4%	3%	88%	370 115	44 955	5%	4%	3%	88%	355 911	51 832	6%	5%	4%	85%
	Waterways	2 032	818	19%	16%	44%	21%	2 242	898	11%	11%	49%	29%	1 905	863	10%	9%	61%	20%	1 647	641	20%	8%	52%	20%	1 642	679	17%	10%	50%	23%
	Airports	22	47	47%	49%		4%	22	41	47%	49%		4%	20	37	48%	50%		2%	15	29	50%	48%		2%	14	22	48%	51%		1%
Slovak Republic	Railway	52 449	9 988	23%	39%	24%	14%	51813	9647	24%	38%	25%	13%	47910	9299	23%	37%	26%	15%	37 603	6964	24%	39%	21%	15%	44 327	8105	25%	39%	22%	14%
	Road	181 424	22 114	4,4%	3,3%	3,4%	88,9%	179296	270500	5,7%	4,7%	4,8%	84,8%	199218	29094	5,0%	4,3%	6,2%	84,5%	163 148	27484	6,0%	4,6%	7,8%	81,7%	143 071	27411	7,2%	5,7%	8,6%	78,4%
	Waterways	1 713	623	67,8%	9,3%	16,9%	6,1%	1806	843	64,5%	4,9%	15,9%	14,7%	1767	979	61,5%	11,0%	22,4%	5,1%	2 192	1230	84,3%	3,5%	10,2%	2,0%	3 109	2166	87,8%	2,5%	7,2%	2,5%
	Airports	1	0,80	90,2%			9,8%	0,19	0,30	98,5%			1,5%	0,31	0,40	99,7%			0,3%	0,01	0,03	100,0%			0,0%	0,01	0,00	91,7%			8,3%

Table A 5: Passenger transport

Country	Transport mode	2006					2007					2008					2009					2010				
		Passengers (thousands)	passenger-km (million)	Average distance (km)	International (in %)	National (in %)	Passengers (thousands)	passenger-km (million)	Average distance (km)	International (in %)	National (in %)	Passengers (thousands)	passenger-km (million)	Average distance (km)	International (in %)	National (in %)	Passengers (thousands	passenger-km (million)	Average distance (km)	International (in %)	National (in %)	Passengers (thousands)	passenger-km (million)	Average distance (km)	Internati-onal (in %)	National (in %)
Czech Republic	Railway	183 000	6 922	38	1%	99%	184 200	6 898	37	1%	99%	177 400	6 803	38	1%	99%	165 000	6 503	39	1%	99%	164 800	6 591	40	1%	99%
	Road – public	388 000	9 501	25	1%	99%	375 000	9 519	25	1%	99%	373 400	9 215	25	1%	99%	367 600	9 494	26	1%	99%	381 200	10 816	28	1%	99%
	Road - individual	2 160 000	69 630				2 220 000	71 540				2 250 000	72 380				2 240 000	72 290				1 970 000	63 570			
	Waterways	1 100	13				1 100	13				900	17				1 200	11				900	13			
	Airports	6 700	10233	1525	98%	2%	7 000	10477	1 502	98%	2%	7 200	10749	1 502	98%	2%	7 400	11 331	1 541	99%	1%	7 500	10 902	1 460	99%	1%
	Total																									
Slovak Republic	Railway	48 438	22 213	43	5%	95%	47 070	2 165	46	7%	93%	48 744	2 296	47	7%	93%	46 667	2 264	49	6%	94%	46 583	2 309	50	6%	94%
	Road – public	403 270	7525	17	1%	99%	384 637	7 596	20	1%	99%	365 519	6 446	18	1%	99%	323 142	4 538	14	1%	99%	312 717	4 436	14	1%	99%
	Road - individual	1 792 000	25 824	15			1 811 986	25 994	14			1 833 082	26 395	14			1 846 439	26 420	14			1 859 479	26 897	14		
	Waterways	111	4	30	15%	85%	122	4	33	21%	79%	122	3	25	25%	75%	110	3	27	26%	74%	120	3	25	28%	72%
	Airports	2 291	2 465	1436	99%	1%	3 068	3 699	1 206	99%	1%	4 176	4 650	1 114	99%	1%	2 288	3501	1 530	99%	1%	554	835	1 507	99%	1%
	Total	**2 246 110**					**2 246 883**					**2 251 643**					**2 218 646**					**2 219 453**				

Table A 6 : Structure of goods on railway

Country	Goods structure	Volumes in tonne-km (million)					
		2006	2007	2008*	2009	2010	2011
Czech Republic	Products of agriculture			632,0	772,0	843,0	
	Coal, gas, oil			5 221,0	5 066,0	4 876,0	
	Metals, iron ore			1 193,0	919,0	966,0	
	Chemicals			740,0	630,0	753,0	
	Wood, paper			363,0	349,0	366,0	
	Others			7 288,0	5 056,0	5 966,0	
	Total			**15 437,0**	**12 792,0**	**13 770,0**	
Slovak Republic	Products of agriculture	217,5	157,0	112,8	84,5	62,6	-
	Coal, gas, oil	2 329,0	2 356,1	2 237,2	1 927,5	1 800,3	-
	Metals, iron ore	4 587,8	4 340,5	4 132,5	2 941,3	3 786,3	-
	Chemicals	726,9	706,1	680,2	480,0	573,1	-
	Wood, paper	516,4	485,0	469,5	397,6	513,9	-
	Others	1 610,3	1 602,3	1 666,8	1 133,2	1 368,9	-
	Total	**9 988,0**	**9 647,0**	**9 299,0**	**6 964,0**	**8 105,0**	

Annex B: Corridor info - summarized

Table B 1: Passenger transport

		Passenger transport (train-km)		
		2009	2010	2011
Czech Republic	Praha - Poříčany	3 205 341	3 243 838	3 407 503
	Poříčany - Kolín	1 742 934	1 744 800	1 748 629
	Kolín - Řečany nad Labem	1 251 195	1 227 563	1 228 474
	Řečany nad Labem - Pardubice	1 138 978	1 198 917	1 183 093
	Pardubice - Choceň	1 993 880	1 971 636	1 988 421
	Choceň - Česká Třebová	1 435 488	1 432 045	1 433 426
	Česká Třebová - Zábřeh na Moravě	1 464 905	1 418 618	1 402 146
	Zábřeh na Moravě - Olomouc	1 981 831	1 982 614	1 958 492
	Olomouc - Přerov	1 185 969	1 161 280	1 160 283
	Přerov - Hranice na Moravě	1 325 664	1 334 772	1 232 693
	Hranice na Moravě - Valašské Meziříčí	469 695	418 177	419 326
	Valašské Meziříčí - Horní Lideč	645 295	590 608	567 644
	Horní Lideč - Horní Lideč st.hr.	76 744	74 154	73 651
	Total	**17 919 928**	**17 801 032**	**17 805 792**
Slovak Republic	Lúky pod Makytou št.hr. - Púchov		202 379	180 155
	Púchov - Žilina		1 018 858	1 152 958
	Žilina - Vrútky		508 740	532 481
	Vrútky - Poprad		2 479 767	2 608 316
	Poprad - Spišská Nová Ves		588 431	594 933
	Spišská Nová Ves - Kysak		1 138 788	1 180 813
	Kysak - Košice		499 267	492 112
	Košice - Čierna nad Tisou		880 112	902 460
	Čierna .Tisou - Čierna nad Tisou št. hr.		11 664	11 620
	Čadca št. hr. - Žilina		567 872	659 629
	Total		**7 895 878**	**8 315 477**
	International total		**1 466 077**	**1 429 807**
	National total		**6 429 801**	**6 885 670**

Table B 2: Freight transport

Country	Line section	Freight transport								
		2009			2010			2011		
		number of trains	train-km	gross ton	number of trains	train-km	gross ton	number of trains	train-km	gross ton
Czech Republic	Praha - Poříčany	10 682	388 757	9 386 426	13 659	505 230	13 403 239	14 788	548 204	14 588 182
	Poříčany - Kolín	10 036	230 766	8 666 466	12 636	291 305	12 054 753	14 110	324 170	13 621 634
	Kolín - Řečany nad Labem	19 021	408 560	20 371 153	22 223	477 648	24 668 630	27 108	582 456	31 037 112
	Řečany nad Labem - Pardubice	15 424	309 981	14 752 998	20 187	408 288	20 471 592	24 097	488 993	25 195 972
	Pardubice - Choceň	16 839	584 071	16 822 371	20 441	709 148	20 687 032	23 694	821 544	24 806 652
	Choceň - Česká Třebová	19 069	475 414	18 443 063	22 791	559 128	22 325 771	26 285	646 427	26 723 324
	Česká Třebová - Zábřeh na Moravě	15 201	604 318	15 021 207	17 924	715 877	18 319 076	18 484	737 927	19 723 524
	Zábřeh na Moravě - Olomouc	16 095	707 354	15 337 107	18 323	804 253	18 482 983	19 025	835 653	19 938 816
	Olomouc - Přerov	15 814	363 049	14 962 256	17 724	407 909	18 096 783	18 315	422 174	19 372 639
	Přerov - Hranice na Moravě	28 901	774 270	29 700 708	31 418	839 466	33 601 270	30 412	812 214	33 804 813
	Hranice na Moravě - Valašské Meziříčí	8 059	167 523	7 170 528	8 508	179 882	8 557 107	8 680	181 516	8 529 079
	Valašské Meziříčí - Horní Lideč	4 720	176 351	5 461 419	5 051	188 950	6 302 819	5 239	194 279	6 215 431
	Horní Lideč - Horní Lideč st.hr.	3 631	23 602	4 563 930	4 409	28 658	5 980 065	4 562	29 653	5 988 440
	Total	**183 492**	**5 214 016**	**180 659 632**	**215 294**	**6 115 742**	**222 951 120**	**234 799**	**6 625 210**	**249 545 618**
Slovak Republic	Lúky p.M. št.hr. - Púchov				6 483	128 140	7 877 213	6 590	128 072	7 160 485
	Púchov - Žilina				18 701	483 389	24 819 721	22 737	452 201	23 207 980
	Žilina - Vrútky				19 936	356 150	30 365 055	22 535	344 195	30 021 316
	Vrútky - Poprad				19 557	1 716 419	34 779 016	22 301	1 754 467	33 233 229
	Poprad - Spišská Nová Ves				18 034	514 836	27 234 028	19 050	513 515	27 390 925
	Spišská Nová Ves - Kysak				14 050	788 984	24 843 517	20 436	830 632	24 837 914
	Kysak - Košice				16 661	260 482	27 313 898	23 858	274 534	26 779 859
	Košice - Čierna n.Tisou				34 684	1 246 273	51 657 981	38 973	1 236 418	50 662 174
	Čierna n.Tisou - Čierna n.Tisou št.hr.				4 593	18 372	14 617 318	6 422	16 797	13 726 651
	Čadca št.hr. - Žilina				16 390	478 503	27 930 300	19 247	480 711	26 478 138
	Total				**169 089**	**5 991 548**	**271 438 045**	**202 149**	**6 031 542**	**263 498 671**
	International transport				**21 204**	**2 927 210**		**21 255**	**3 052 628**	**21 204**
	National transport				**62 644**	**3 051 495**		**64 061**	**2 914 652**	**62 644**

Table B 3: Type of freight

Country	Type of transport	Freight trains* - corridor			Freight trains* – whole country network		
		Number of trains	Train-km	Share in market in %	Number of trains	Train-km	Share in market in %
Czech Republic	Single wagon loads	7 935	447 021	26,3%		6 836 884	18,2%
	Intermodal transport	1 635	207 211	12,2%		3 284 751	8,7%
	Total	**24 856**	**1 699 611**	**100,0%**		**37 568 712**	
Slovak Republic	Block trains	5 492	1 079 430	58,05%	13 645	1 848 211	42,40%
	Single wagon loads	10 275	547 311	29,44%	30 476	1 796 931	41,22%
	Intermodal transport	481	17 409	0,94%	1 865	152 511	3,50%
	Others	11 882	215 199	11,57%	27 386	561 622	12,88%
	Total	**28 130**	**1 859 349**		**73 372**	**4 359 275**	

**current situation 01.07.2012-30.09.2012*

Table B 4: Carriers

Country	Structure of carriers																	
	2006			2007			2008			2009			2010			2011		
	N*	O*	N+O*	N*	O*	N+O*	N*	O*	N+O*	N*	O*	N+O*	N*	O*	N+O*	N*	O*	N+O*
Czech Republic	38/5	11/3	4/4	44/7	11/3	3/2	43/13	6/3	4/4	53/17	8/4	1/1	56/19	12/4	1/1	62/25	13/5	0/0
Slovak Republic	22/19	1/1	0/0	23/19	1/1	0/0	25/19	1/1	0/0	29/20	1/1	0/0	29/20	1/1	1/1	37/22	2/1	2/1

**N – freight carrier*
**O – passenger carrier*
**Total (carriers with valid access contract) / Active (carriers who perform transport on the corridor)*

Table B 5: Infra characteristic

Country	Line section	Line characteristics										Services		
		Section overlapping with other RFC corridor?	Length of section (km)	Number of tracks	Electric traction (kV/Hz)	Max. length of train (m)	Line category	Max. slope (‰)	Profile (P/C)	Max. speed (km/h)	ERTMS equipment (ETCS, GSM-R)	Intermodal terminals/keeper	Marshalling yards/keeper	Other service facilities (refuelling, RoLa, scales, etc.)
Czech Republic	Praha - Poříčany	RFC 7	33	3	3 KV DC	600	D4	↑ 7 / ↓ 7	78/402	120/140	GSM-R	Praha Uhříněves / Metrans (www.metrans.cz)	Praha Libeň - SŽDC	
	Poříčany - Kolín	RFC 7	23	2	3 KV DC	600	D4	↑ 4 / ↓ 4	78/402	160	GSM-R		Kolín seř.n.- SŽDC	
	Kolín - Pardubice	RFC 7	42	2	3 KV DC	600	D4	↑ 4 / ↓ 4	78/402		GSM-R		Pardubice - SŽDC	
	Pardubice - Česká Třebová	RFC 7	60	2	3 KV DC	600	D4	↑ 8 / ↓ 2	78/402	100/160	GSM-R	Česká Třebová (from summer 2012) / Metrans (www.metrans.cz)	Česká Třebová - SŽDC	
	Česká Třebová - Olomouc	No	86	2	3 KV DC		D4	↑ 7 / ↓ 11	78/402	160	GSR-R (in plan)		Olomouc / SŽDC	
	Olomouc - Prosenice	No	30	2	3 KV DC		D4	↑ 7 / ↓ 7	78/402	140/160	GSR-R (in plan)		Přerov / SŽDC	
	Prosenice - Hranice na Moravě	RFC 5	21	2	3 KV DC		D4	↑0 / ↓ 4	78/402	140	GSR-R (in plan)			
	Hranice na Moravě - Horní Lideč st.hr.	No	70	2	3 KV DC		D4	↑ 15 / ↓18	67/391	80/100	-			
Alternative line	Hranice na Moravě - Ostrava-Svinov	RFC 5	50	2	3 KV DC		D4	↑4 / ↓ 4	78/402	160	GSM-R	Paskov / AWT (www.awt.eu)	Ostrava / SŽDC	
													Ostrava - Kunčice	
													Ostrava - Bartovice / SŽDC	
Alternative line	Ostrava-Svinov - Dětmarovice	RFC 5	21		3 KV DC		D4	↑ 4 / ↓ 0	78/402	120/140	GSM-R			
Alternative line	Dětmarovice – Mosty u Jablunkova st.hr.		55	2	3 KV DC		D4	↑ 16 / ↓16	78/402	100	GSR-R (in plan)		Český Těšín / SŽDC Třinec / SŽDC	
Slovak Republic	Lúky pod Makytou št. hr. - Púchov	No	21	2	3 kV/50 Hz	645	D4	↑2 / ↓18	70/400	90	-			Púchov/scale
	Púchov - Žilina	RFC 5	45	2	3 kV/50 Hz	650	D4	↑4 / ↓7	70/400	100/120	-	Žilina/Intrans (www.intrans.sk)	Žilina Teplička/ŽSR	Žilina/scale Žilina/stationary crane
	Žilina - Vrútky	No	21	2	3 kV/50 Hz	650	D4	↑2 / ↓7	47/377	100/120	-			Vrútky/scale
	Vrútky - Poprad	No	120	2	3 kV/50 Hz	650	D4	↑16 / ↓16	47/377	100/120	-			Ružomberok/scale
	Poprad - Spišská Nová Ves	No	26	2	3 kV/50 Hz	650	D4	↑16 / ↓8	47/377	100/120	-			Spišská N. Ves/scale
	Spišská Nová Ves - Kysak	No	59	2	3 kV/50 Hz	650	D4	↑8 / ↓0	47/377	100/120	-			Kysak/scale
	Kysak - Košice	No	16	2	3 kV/50 Hz	650	D4	↑7 / ↓1	47/377	100/120	-	Košice/Intrans (www.intrans.sk)	Košice/ŽSR	Košice/scale Košice/portal crane
	Košice - Čierna nad Tisou	No	95	2	3 kV/50 Hz	670	D4	↑15 / ↓16	70/400	100/120	-	Dobrá/ ZSSK Cargo (www.zscargo.sk)	Čierna n.Tisou/ ŽSR	Čierna nad Tisou/ transhipment yard/ thawing shed/ rotary dump cark/ scales/ track cranes/ pumping complex
	Čierna nad Tisou – Čierna nad Tisou št. hr.	No	4	1	3 kV/50 Hz	700	D4	↑3 / ↓3	70/400	50	-			
Alternative line	Čadca št. hr. - Žilina	No	37	2	3 kV/50 Hz	650	D4	↑0 / ↓16	70/400	100/140	-		Čadca/ŽSR	
Alternative line	Výhybňa Slivník - Maťovce	No	55,9	1	3 kV/50 Hz	620	D4	↑15 / ↓15	47/377	70/80	-			Maťovce/ bogie change-out system/ transhipment yard
Connecting line	Barca - Haniska pri Košiciach	No	10,6	2	3 kV/50 Hz	700	D4	↑8 / ↓3	70/400	100	-	Haniska pri Košiciach/ Metrans (www.metrans.cz) Haniska pri Košiciach/ Interport (www.interport.sk)		
Connecting line	Barca - Krásna nad Hornádom	No	1,4	1	3 kV/50 Hz	700	D5	↑9 / ↓0	70/401	60	-			

Table B 6: Time and average charges

Country	Line section	Transport times		Access charges								
				Containers			Chemicals			Standard goods		
		Average transport times - rail* (min)	Average transport times - road (min)	Access charge for intermodal train (ca. 40 x40´containers-600 m, 1200 t)	Average transport charge for train (1x40´containers/20 t)	Average transport charge for truck (1x40´containers/20 t)	Access charge for block train (ca.500 m, 1800 t, chemicals)	Average transport charge for train (40 t chemicals-RID)	Average transport charge for tank truck (40 t chemicals-ADR)	Access charge for single loading wagons (ca.500 m, 1500 t,)	Average charge for wagon load** 1x 30 t	Average transport charge for truck - 20 t
Czech Republic	Praha - Hranice na Moravě	360 min	650 min – 1400 min	€ 734			€ 1 743			€ 846	€ 959	€ 824
	Hranice na Moravě - Horní Lideč st.hr.	120 min		€ 174			€ 414			€ 201	€ 416	
	Hranice na Moravě - Mosty u Jablunkova st. hr.	225 min		€ 313			€ 744			€ 361	€ 552	
Slovak Republic	Lúky pod Makytou št. hr.- Žilina	90 min		€ 248			€ 311			€ 280	€ 333	
	Žilina - Košice	240 min		€ 809			€ 1 038			€ 923	€ 653	
	Košice - Čierna nad Tisou št. hr.	180 min	90 – 125 min	€ 341			€ 434			€ 387	€ 388	

*including technological time for PPS
**modelling based on designated points, distance in km (points are not identical with points of loading, unloading, contact points at branch tracks) and tarrifs for international transport effective from January 1, 2013
NB: prices without VAT

Table B 7: Capacity limitations

Country	Line section	Capacity 2006						2007						2008						2009					
		Max. capacity *		Free capacity *		Capacity utilization (in %)		Max. capacity *		Free capacity *		Capacity utilization (in %)		Max. capacity*		Free capacity *		Capacity utilization (in %)		Max. capacity*		Free capacity *		Capacity utilization (in %)	
		↓	↑	↓	↓	↑	↓	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑
Czech Republic	Praha - Poříčany																								
	Poříčany - Kolín																								
	Kolín - Pardubice																								
	Pardubice - Choceň																								
	Choceň - Česká Třebová																								
	Zábřeh na Moravě - Česká Třebová																								
	Olomouc hl. n. - Zábřeh na Moravě																								
	Přerov os.n. - Olomouc hl. n.																								
	Valašské Meziříčí - Hranice na Moravě																								
	Hranice na Moravě - Vsetín																								
	Vsetín - Horní Lideč																								
	Prosenice - Přerov																								
	Hranice na Moravě - Prosenice																								
	Ostrava-Svinov - Hranice na Moravě																								
	Ostrava hl.n - Ostrava-Svinov																								
	Ostrava hl.n. - Bohumín přednádraží																								
	Bohumín os.n. - Dětmarovice																								
	Dětmarovice - Český Těšín																								
	Český Těšín - Třinec																								
	Třinec - Mosty u Jablunkova																								
Slovak republic	Žilina - Čadca št. hr.	163	172	110	124	28%	20%	164	172	110	124	20%	19%	164	171	120	129	21%	19%	192	180	141	136	18%	19%
	Lúky p.M. št.hr. - Púchov	172	159	105	100	31%	32%	171	160	107	101	29%	32%	171	160	102	94	30%	33%	180	180	107	116	29%	29%
	Púchov - Žilina	145	130	112	94	19%	23%	143	131	108	102	18%	26%	174	140	137	89	14%	22%	136	144	127	95	15%	23%
	Žilina - Spišská N. Ves	169	173	85	94	38%	35%	169	173	87	85	36%	41%	169	173	82	83	39%	41%	176	183	82	83	41%	42%
	Spišská N. Ves - Kysak	149	144	51	60	42%	43%	150	147	50	75	39%	45%	151	147	50	74	42%	46%	157	166	49	87	46%	43%
	Kysak - Košice	169	156	93	90	30%	30%	168	156	88	86	31%	37%	167	156	85	82	34%	37%	174	171	96	94	33%	35%
	Košice - Čierna nad Tisou.	193	186	91	86	41%	43%	195	185	85	83	42%	45%	195	185	77	75	44%	45%	208	199	94	89	41%	44%
	Čierna nad Tisou. - Čierna nad Tisou št. hr.	107		80		19		110%		59%		29%		53		35		38%		26		7		77%	

Country	Line section	Capacity 2010									2011						2012								
		Max. capacity*			Free capacity *			Capacity utilization (in %)			Max. capacity *		Free capacity *		Capacity utilization (in %)		Max. capacity *			Free capacity *			Capacity utilization (in %)		
		↓	↑		↓	↑		↓	↑		↓	↑	↓	↑	↓	↑	↓	↑		↓	↑		↓	↑	
Czech Republic	Praha - Poříčany	127	189	176	57	77	57	55%	59%	67%							127	190	177	63	37	57	50%	81%	68%
	Poříčany - Kolín	167	148		29	14		83%	91%								192	178		41	20		79%	89%	
	Kolín - Pardubice	170	172		34	35		80%	80%								170	173		2	5		93%	97%	
	Pardubice - Choceň	186	200		53	65		71%	67%								187	201		23	27		88%	87%	
	Choceň - Česká Třebová	170	182		36	47		79%	74%								166	177		11	4		93%	97%	
	Zábřeh na Moravě - Česká Třebová	198	182		99	79		50%	57%								198	182		75	49		62%	73%	
	Olomouc hl. n. - Zábřeh na Moravě	209	212		104	104		50%	51%								210	213		90	83		57%	61%	
	Přerov os.n. - Olomouc hl. n.	171	221		52	98		70%	56%								265	221		130	77		51%	65%	
	Valašské Meziříčí - Hranice na Moravě																99	99		56	55		43%	44%	
	Hranice na Moravě - Vsetín																149	145		106	98		29%	32%	
	Vsetín - Horní Lideč																145	152		105	116		28%	24%	
	Prosenice - Přerov	180	164		83	68		54%	59%								181	164		86	75		52%	54%	
	Hranice na Moravě - Prosenice	216	228		61	64		72%	72%								217	229		52	43		76%	81%	
	Ostrava-Svinov - Hranice na Moravě	192	185		56	58		71%	69%								191	185		35	46		81%	75%	
	Ostrava hl.n - Ostrava-Svinov	179	184		12	28		93%	85%								180	185		4	14		98%	92%	
	Ostrava hl.n. - Bohumín přednádraží	184	186		33	49		82%	73%								184	187		38	47		79%	75%	
	Bohumín os.n. - Dětmarovice	177	179		78	70		56%	61%								177	180		71	70		60%	61%	
	Dětmarovice - Český Těšín	130	129		65	59		50%	55%								135	129		63	53		53%	59%	
	Český Těšín - Třinec	120	128		36	47		70%	63%								151	145		61	59		59%	59%	
	Třinec - Mosty u Jablunkova	147	130		89	75		40%	43%								187	179		129	121		31%	32%	
Slovak republic	Žilina - Čadca št. hr.	182	181		132	141		17%	15%		207	180	159	135	21%	21%									
	Lúky p.M. št.hr. - Púchov	176	173		111	113		24%	25%		174	173	114	111	26%	27%									
	Púchov - Žilina	174	169		136	125		17%	20%		165	156	125	110	16%	20%									
	Žilina - Spišská N. Ves	171	175		93	90		32%	30%		175	174	100	97	32%	33%									
	Spišská N. Ves - Kysak	156	144		52	70		42%	38%		145	153	51	71	45%	34%									
	Kysak - Košice	186	175		116	108		25%	24%		180	173	112	104	28%	30%									
	Košice - Čierna nad Tisou.	211	206		99	99		36%	35%		207	204	102	105	39%	37%									
	Čierna nad Tisou. - Čierna nad Tisou št. hr.	26			6			85%			18		1		88%										

Table B 8: Bottlenecks

Country	Line section	Bottleneck	Reasons	Suggestions how to remove bottlenecks
Czech republic	Praha – Česká Třebová	all section	Insufficient capacity of line section; capacity utilization reaches about 90% in sections Poříčany – Kolín – Pardubice and Choceň – Česká Třebová, in other sections over 75%.	Increase in capacity of line section, it can be solved, partially, by building up new ETCS L2 (implementation)
		Praha-Libeň	Limited capacity of initial track development (disturbing routes for trains in direction of Praha-Malešice – Praha-Libeň and Praha-Běchovice – Praha-Libeň).	Construction of grade separated mouth of track Praha-Malešice – Praha-Libeň into railway station Praha-Libeň
		Praha-Běchovice – Úvaly	So far, non-modernized section of I. national rail corridor, local speed limitation, inadequate interlocking, section parameters are not in compliance with international conventions.	Complex reconstruction of the section within the construction *„Modernization of track section Praha-Běchovice – Úvaly“* (ensuring the compliance with the loading gauge, UIC GC, adjustments of track geometry parameters, elimination of local speed reductions, reconstruction of contact line system and interlocking), construction project is now completed and preparation for contractor selection is in progress, expected start of construction in second mid-2013.
		Choceň – Ústí nad Orlicí	Section led in inappropriate alignment of the line (line speed only 80 – 85 km/h), there are not platforms at RWSt Brandýs nad Orlicí, section parameters are not in accordance with relevant international conventions.	Construction of line relocation for the speed of 160 km/h, achievement of compliance with the loading gauge UIC CG.
		Ústí nad Orlicí	Speed limitation at passing through RWSt Ústí nad Orlicí (70 – 85 km/h).	Reconstruction of the railway station Ústí nad Orlicí within the construction *„Passing through railway junction Ústí nad Orlicí“* (adjustment of profile of the line, construction of platforms in station, ensuring the compliance with the loading gauge UIC GC, building up new interlocking), construction in implementation, date of completion 2015.
		Česká Třebová	Speed limitation at passing through the junction Česká Třebová to 60 km/h.	Reconstruction of junction Česká Třebová.
	Hranice na Mor. – Horní Lideč	all section	Profile for combined transport 67/391; other sections of RFC 9 on SZDC network have profile 78/402.	
		listed railway stations	Missing platforms at RWSt Hranice na Moravě město, Hustopeče nad Bečvou, Jablůnka, Vsetín, Valašská Polanka and Horní Lideč that negatively affects station intervals and track capacity	Reconstruction of stations including construction of island platforms.
		Hranice n. M. – Hustopeče n. Beč.	Line section is not equipped with interlocking of automatic block type but with automatic line block system, the section Hranice n. M. město – Hustopeče nad Bečvou is divided by signalling point into two block sections at most, therefore, the line section Hranice n. M. – Hustopeče n. B. currently shows the least capacity on the SZDC network lines included in RFC 9, capacity utilization compared to other sections is only about 50%.	Construction of new block signalling system of automatic block type.
Slovak Republic	Púchov - Žilina	Púchov	Complex modernization of RWSt Púchov (in the near future). Subsequently, the modernization of other sections towards Žilina will continue.	
		Žilina	Reduced speed on Bratislava track development.	
	Žilina - Spišská Nová Ves	tunnels near Strečno	Reducing the profiles P/C (tunnel Strečno I. - max. P/C - 50/380 by line speed; (P/C 67/391; speed reduction v = 15 km/h)	Modernization of the line with parameters necessary for achievement of track geometry and alignment for the train speed of 160 km/h and compliance with AGTC and AGC Agreements (keeping of load and profile parameters on the whole section).
		Úsek Liptovský Mikuláš - Štrba	Profile and alignment of the line (mainly high up-gradient) – reduction of train weight or adding pushing of trains – line follows the geographical nature of the country.	Modernization of the line with parameters necessary for achievement of track geometry and alignment for the train speed of 160 km/h and compliance with AGTC and AGC Agreements (keeping of load and profile parameters on the whole section).
		Úsek Spišská Nová Ves – Poprad - Štrba	Profile and alignment of the line (mainly high up-gradient) – reduction of train weight or adding pushing of trains – line follows the geographical nature of the country.	Modernization of the line with parameters necessary for achievement of track geometry and alignment for the train speed of 160 km/h and compliance with AGTC and AGC Agreements.
	Spišská Nová Ves - Košice	Košice freight station (marshalling yard)	Reduced limits of train length.	Modernization and reconstruction of the station.
	Košice - Čierna nad Tisou	Úsek Nižná Myšľa - Ruskov	Profile and alignment of the line (mainly high up-gradient) – reduction of train weight or adding pushing of trains – line follows the geographical nature of the country.	Modernization of the line with parameters necessary for achievement of track geometry and alignment for the train speed of 160 km/h and compliance with AGTC and AGC Agreements (keeping of load and profile parameters on the whole section).
		Úsek Kuzmice - Ruskov	Profile and alignment of the line (mainly high up-gradient) – reduction of train weight or adding pushing of trains – line follows the geographical nature of the country.	Modernization of the line with parameters necessary for achievement of track geometry and alignment for the train speed of 160 km/h and compliance with AGTC and AGC Agreements (keeping of load and profile parameters on the whole section).
	Čierna nad Tisou – Čierna nad Tisou št. hr.	Úsek Čierna nad Tisou – Čop (UA)	Reduced section capacity – customs inspections on the open line, scanner (RAVEN), unsatisfactory conditions for customs inspections in station Čierna nad Tisou and terminal Dobrá	Modernization and reconstruction of the station in consideration of performing customs inspections in stations Čierna nad Tisou and Dobrá (new customs routes).

Table B 9: Border crossing stations and terminals

Country	Border crossing stations	Number of tracks	Max. length of tracks (m)	Duration of operations (change of HDV, etc.)	Average time of operation duration	Remarks	Terminal	Location on corridor	Type of terminal	Number of tracks	Max. length of track	Storing capacity	Opening hours	Remarks
Czech Republic	Horní Lideč	10	864				Praha - Uhříněves	on corridor	Intermodal/ www.metrans.cz	13	600	270 000 m2	non stop	
	Mosty u Jablunkova	4	665				Praha Libeň - SŽDC	on corridor	Marshalling yard/ SŽDC	23	839			
							Praha Žižkov	on corridor	Intermodal/ private (Intrans)	4	260	N/A	N/A	
							Kolín seř.n.	on corridor	Marshalling yard/ SŽDC	11	600		non stop	
							Pardubice	on corridor	Marshalling yard/ SŽDC	16	838			
							Česká Třebová	on corridor	Marshalling yard/ SŽDC	32	739		non stop	
							Česká Třebová	on corridor	Intermodal/ www.metrans.cz	6*	700*	N/A	N/A	Open in summer 2012
							Olomouc přednádraží / SŽDC	on corridor	Marshalling yard/ SŽDC	44	939			
							Přerov přednádraží / SŽDC	on corridor	Marshalling yard/ SŽDC	39	775			
							Ostrava hl.n / SŽDC	on corridor	Marshalling yard/ SŽDC	29	999			
							Paskov www.awt.eu	20 km - Ostrava	Intermodal/ awt.eu	3	270	30 000 m2	Mo-Fri 6:00 - 16:00	
							Ostrava – Šentov	on corridor	Intermodal/www.mentrans.cz	4	250	25 000 m2	Mon-Fri 07:00 - 21.30 Sat-Sun on request	
							Český Těšín	on corridor	Marshalling yard/ SŽDC	25	707			
							Ostrava - Bartovice / SŽDC	on corridor	Marshalling yard/ SŽDC	14	838			
							Ostrava -	on corridor	Marshalling	21	688			

Country	Border crossing stations	Numb er of tracks	Max. length of tracks (m)	Duration of operations (change of HDV, etc.)	Average time of operation duration	Remarks	Terminal	Location on corridor	Type of terminal	Number of tracks	Max. length of track	Storing capacity	Opening hours	Remarks
							Kunčice / SŽDC		yard/ SŽDC					
							Třinec / SŽDC	on corridor	Marshalling yard/ SŽDC	9	696			
							Mělník	outside corridor	Intermodal/ private (Star Container)	3	614	67000m2	Mon-Fri 6:00-20:00, Sat, San on request	
							Lovosice	outside corridor	Intermodal/ private (TSC Lovosice)	2	250	10000m2	Mon-Fri 6:00-22:00, Sat 6:00-12:00, San 14:00-22:00	
Slovak Republic	Čadca (CZ/SK)			0 min.- 6 h	0		Žilina Teplička	on corridor	Marshalling yard/ŽSR	19	825		non stop	
	Lúky p. Makytou (CZ/SK)	7	675	0 min.- 6 h	0	side ramp (135 m2)	Žilina	on corridor	Intermodal/ SKD Intrans	1	327	1000m2	Mo-Fri 7:00 - 15:30, Su, Sun as necessary	
	Čierna n.Tisou* (SK/UA)	130	2066			ramp, scale, broad gauge/standard gauge	Košice	on corridor	Intermodal/ SKD Intrans	2	180	2600m2	Mo-Fri 7:00 - 15:30, Su, Sun as necessary	
	Maťovce*	13	882			bogie change-out system, ramp, broad gauge/standard gauge	Košice	on corridor	Marshalling yard/ŽSR	70	1035	512m2	non stop	Crane, scale, ramp
							Haniska pri Košiciach	13 km from corridor/ Košice	Intermodal / Metrans					Transhipment standard gauge / broad gauge / road
							Haniska pri Košiciach	13 km from corridor /Košice	Intermodal / Interport servis					Transhipment standard gauge / broad gauge / road

Country	Border crossing stations	Numb er of tracks	Max. length of tracks (m)	Duration of operations (change of HDV, etc.)	Average time of operation duration	Remarks	Terminal	Location on corridor	Type of terminal	Number of tracks	Max. length of track	Storing capacity	Opening hours	Remarks
							Veľké Kapušany	On corridor	Intermodal / www.premaco.eu					Transhipment standard gauge / broad gauge / road
							Čierna nad Tisou	On corridor	Marshalling yard/ŽSR	21	945		non stop	Transhipment standard gauge / broad gauge
							Čierna nad Tisou ŠRT	On corridor	Marshalling yard/ŽSR	16	1093		non stop	

**data concern standard gauge*

BIBLIOGRAPHY

Regulation (EU) No 913/2010 of the European Parliament and the Council of 22 September 2010, concerning a European rail network for competitive freight transport

Handbook on the Regulation concerning a European rail network for competitive freight (Regulation EC 913/2010)

HEATCO - Developing Harmonized European Approaches for Transport Costing and Project Assessment, 2004 – 2006

Guide to cost-benefit analysis of investment projects (Structural Fund – ERDF, Cohesion Fund and ISPA), 2004

Guidance on the Methodology for carrying out Cost-Benefit Analysis, WD No. 4, the New Programming Period 2007 – 2013

Data of National Statistical Offices and Ministries of individual member states

EUROSTAT prognosis – GDP real growth rate database-volume

International Monetary fund, WEO dataEcon statistic

Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area,

International transport forum: Charges for the use of rail infrastructure 2008

NEA Study: PREPARATORY STUDY FOR AN IMPACT ASSESSMENT FOR A RAIL NETWORK GIVING PRIORITY TO FREIGHT, Contract No 2008/E2/143-2007/01/SI2.501586

Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on harmonisation of certain social legislation relating to road transport

www.zsr.sk

www.zscargo.sk

www.szdc.sk

www.cdcargo.cz