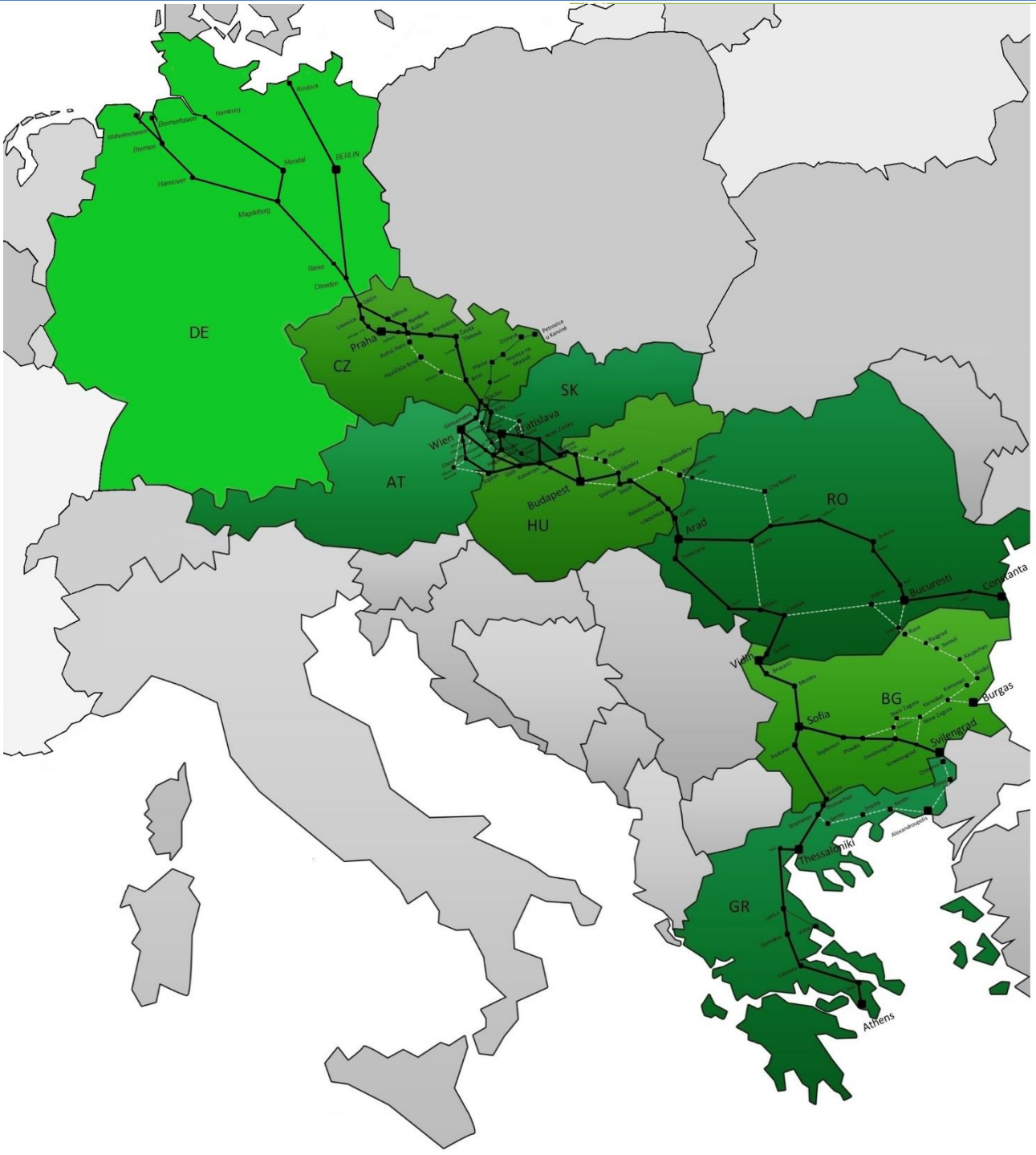
# TRANSPORT MARKET STUDY
# RAIL FREIGHT CORRIDOR
# ORIENT/EAST-MED




DE – CZ – AT – SK – HU – RO – BG – EL

RFC7 Orient/East-Med

DE - CZ - AT - SK - HU - RO - BG - EL

# Contents

# GLOSSARY/ ABBREVIATIONS

| Glossary/ abbreviations | Definition |
|---|---|
| **AB** | Allocation Body |
| **AT** | Republic of Austria |
| **AŽ** | Hekurudha Shqiptare (Albanian railways) |
| **BG** | Republic of Bulgaria |
| **CFL** | Société Nationale des Chemins de Fer Luxembourgeois (Luxembourg National Railway Company) |
| **CFM** | Calea Ferată din Moldova (Railway operator in the Republic of Moldova) |
| **CFR** | Compania Naţională de Căi Ferate (Manager of infrastructure in Romania) |
| **C-OSS** | Corridor One Stop Shop (Budapest)<br>A joint body designated or set up by the RFC organizations for applicants to request and to receive answers, in a single place and in a single operation, regarding infrastructure capacity for freight trains crossing at least one border along the Freight Corridor (EU Regulation No. 913/ 2010, Art. 13). |
| **CZ** | Czech Republic |
| **DB Netz** | DB Netz AG (German railway infrastructure manager company) |
| **DE** | Federal Republic of Germany |
| **EC** | European Commission |
| **ERTMS** | European Railway Traffic Management System<br>ERTMS is a major industrial project being implemented by the European Union, which will serve to make rail transport safer and more competitive. It is made up of all the train-borne, trackside and lineside equipment necessary for supervising and controlling, in real-time, train operation according to the traffic conditions based on the appropriate Level of Application. |

| | |
|---|---|
| **ETCS** | European Train Control System<br>This component of ERTMS guarantees a common standard that enables trains to cross national borders and enhances safety. It is a signalling and control system designed to replace the several incompatible safety systems currently used by European railways. As a subset of ERTMS, it provides a level of protection against overspeed and overrun depending upon the capability of the line side infrastructure. |
| **EU** | European Union |
| **GR** | Greece |
| **GYSEV** | GYSEV Raaberbahn (Austrian – Hungarian railway company) |
| **GDP** | Gross Domestic Product |
| **HU** | Hungary |
| **HŽ** | Hrvatske Željeznice (Croatian Railways) |
| **IB** | Infrabel (Belgium manager of railway infrastructure) |
| **IM** | Infrastructure Manager |
| **ITT** | Intermodal transport terminal rail-road, rail-water |
| **MÁV** | Magyar Államvasutak (Hungarian State railways) |
| **MŽ** | Македонски Железници (Macedonian Railways) |
| **N/A** | Not Available |
| **NRIC** | The National Railway Infrastructure Company (Bulgaria) |
| **OSE** | Οργανισμός Σιδηροδρόμων Ελλάδος (The Hellenic Railways Organization) |
| **ÖBB** | Österreichische Bundesbahnen (The Austrian Federal Railways) |
| **PCS** | Path Coordination System, formerly known as Pathfinder.<br>IT tool for coordination of path requests. |
| **PKP** | Polskie Koleje Państwowe (Poland State Railways) |
| **PR** | ProRail (Dutch Rail Infrastructure Manager, Capacity Allocation Body and Entity responsible for Traffic Control) |
| **RFC OEM** | Rail Freight Corridor Orient/ East- Med |
| **RFI** | Rete Ferroviaria Italiana (Italian railways manager of infrastructure) |

| | |
|---|---|
| **RNE** | Rail Net Europe |
| **RO** | Romania |
| **RU** | Railway Undertaking |
| **SBB** | Schweizerische Bundesbahnen (Switzerland Federal Railways) |
| **SK** | Slovak Republic |
| **SNCF** | Société Nationale des Chemins de fer Français (French National Railway Corporation) |
| **SŽ** | Slovenske železnice (Slovenian Railways) |
| **SŽDC** | Správa železniční dopravní cesty (Manager of infrastructure in Czech Republic) |
| **TCDD** | Türkiye Cumhuriyeti Devlet Demiryolları (Turkish State Railways) |
| **TEU** | TEU- Twenty- foot Equivalent Unit (a measure used for capacity in container transportation) |
| **TMS** | Transport market study |
| **TSI (TAF, TAP, OPE)** | Technical Specification for Interoperability<br>The European technical standards for interoperability. DIRECTIVE 2008/57/EC, Art. 2: a 'technical specification for interoperability' (TSI) means a specification adopted in accordance with this Directive by which each subsystem or part subsystem is covered in order to meet the essential requirements and ensure the interoperability of the rail system'.<br>TAF/ TAP - Technical Specifications for Interoperability for Telematic Applications for Freight/ for Passenger Services |
| **UŽ** | Укрзалізниця (Ukrainian Railways) |
| **VPE** | Vasúti Pályakapacitás-elosztó Korlátolt Felelősségű Társaság (Capacity Allocation Body) |
| **ŽS** | Železnice Srbije (Serbian Railways) |
| **ŽSR** | Železnice Slovenskej republiky (Manager of infrastructure in Slovakia) |

# LIST OF TABLES

# LIST OF FIGURES AND GRAPHS

## List of figures:

## List of graphs:

# INTRODUCTION

Rail freight transport is an important and irreplaceable part of the market of freight transport services. Rail freight transport takes a share in human society development that harmonizes the economic and social progress with full preservation of the environment. The impact of exogenous and endogenous factors caused that the rail freight transport has lost a significant market share which led to a decrease in rail sector effectiveness and a shift of transport performances to other more environmentally demanding modes of transport. Shift of transport performances leads to an increase in negative external costs, higher state subsidies to transport infrastructure and thus creates a higher demand on the state budget. This unfavourable situation had to be solved through appropriate measures, e.g. by establishing the European rail freight corridors. The establishment of the European freight corridors should bring, in particular, better, more complete, more reliable and less expensive services to railway undertakings. Such services of single European railway infrastructure contribute to increased acquisition activity of railway undertakings providing freight services. Increased acquisition activity, reliable, safe and cost competitive service lead to a shift of transport performances from more environmentally demanding transport modes to rail. The shift of transport performances to rail freight transport leads to a decrease in social costs generated by transport.

It is necessary to evaluate the quality and effectiveness of the European rail freight corridors at defined intervals and subsequently, based on the evaluation, to take measures for increasing the competitiveness and growth of overall effectiveness of the corridor. The measures are based on the previously approved development strategy of the particular corridor. The strategy is developed based on acquisition, processing and subsequent evaluation of technical, technological, transport and economic indicators obtained from various sources. Since this is a large area of information, it is necessary to elaborate a comprehensive scientific study separately for each corridor.

Based on the above mentioned facts, it is necessary to elaborate a Transport Market Study (TMS) also for RFC OEM which will evaluate the objective situation, the perspectives and the effectiveness of the corridor. At the same time, the strategic measures leading to a higher effectiveness of RFC OEM will be derived based on the evaluations of individual parts of the study.

# 1 OBJECTIVE OF TRANSPORT MARKET STUDY

The gradual decrease in rail freight performances and the associated shift of transport performances to less environmentally-friendly modes of transport led to a number of measures for promoting the growth of rail freight performances.

The establishment of European rail freight corridors at EU level should contribute to the shift of transport performances from more environmentally demanding transport modes to less environmentally demanding rail freight transport. These corridors should ensure, in particular, equal, non-discriminatory and easier conditions of access to the whole railway infrastructure of individual Member States for all railway undertakings. Harmonisation and synergy between particular railway infrastructures are to ensure, first of all, better quality, more available, comprehensive and cost effective services for railway undertakings. Cost-effective services motivate railway undertakings to higher acquisition activity, thus more suitable modal split will be ensured for the whole society.

## 1.1 Aspects of establishing European rail freight corridor RFC OEM

The chapter is aimed at the interpretation of basic expected objectives and effects of establishing the seventh European rail freight corridor. At the same time, the chapter provides an interpretation of basic legislation governing the establishment and operation of the seventh European rail freight corridor.

## 1.2 Theoretical and expected objectives of RFC OEM establishment

Above all, the improved competitiveness of rail freight in the EU is to be achieved by establishing the European rail freight corridors. The main expected objectives of establishing the corridors, defined by the European Commission (hereinafter referred to as EC), can be summarized as follows:

1. Strengthening competitiveness of rail freight transport compared with other modes of transport.
2. Harmonization and synergy between national rail systems.
3. Coordination of investment in qualitative railway infrastructure with possibility of financial support from EU funds.
4. Strengthening cooperation in allocation of railway infrastructure capacity to international freight trains between single infrastructure managers.
5. Conformity with existing objectives of other specific corridors, e.g. TEN-T, ERTMS, Rail Net Europe.

The establishment of RFC OEM is to lead to the fulfilment of the expected partial objectives that can be summarized in the following points:

1. Growth of transit rail freight performances.
2. Growth of international rail freight performances (import, export).
3. Better services of infrastructure managers provided to railway undertakings.
4. Better services provided by railway undertakings to carriers.
5. Shift of transport performances from environmentally demanding modes to rail freight**.**
6. Increase in reliability and decrease in transit time.
7. Cost reduction for railway undertakings.
8. Growth of socio-economic effectiveness of the railway system.

In addition to the expected partial objectives mentioned above, the establishment of RFC OEM also brings particular benefits to railway undertakings and terminals:

- overview of infrastructure capacity included in the corridor, including the capacity provided with priority,
- attending to an application for allocation of capacity on the whole route within the corridor in one place,
- better services in terms of transit time, regularity, reliability and information,
- strengthening customer approach,
- coordination of investment projects in railway infrastructure between railway administrations,
- coordination of possessions on the corridor, reduction of operating restrictions,
- harmonization of infrastructure technical and transport parameters,
- improving infrastructure included in the corridor, including connecting lines to terminals and support of eliminating bottlenecks,
- chance to strengthen priority rules in operative traffic control for freight trains carrying out transport performances on the corridor.

The defined expected objectives and benefits of the RFC establishment are, in particular, to increase the competitiveness of rail freight services compared with other modes of freight transport, especially road goods transport. The benefits are better, more reliable and more available rail freight services and the reduction of operating and technological costs of railway undertakings.

# 2 LEGISLATIVE ASPECTS OF RFC OEM ESTABLISHMENT

Rail Freight Corridor RFC OEM is being established based on Regulation No 913/2010 of the European Parliament and the Council of 22 September 2010 concerning a European rail network for competitive freight transport and it was put into operation on 10 November 2013 in accordance with the deadline set out in this Regulation. The Management Board must update the data in the Transport Market Study (TMS) on a regular basis in accordance with Article 9 of Regulation (EU) No 913/2010. Regulation (EU) No 913/2010 was amended by adoption of Regulation No 1316/2013 of the European Parliament and the Council of 11 December 2013 establishing the Connecting Europe Facility.

When updating TMS of RFC OEM, according to Regulation (EU) No 1316/2013 of the European Parliament and the Council of 11 December 2013 establishing the Connecting Europe Facility, the changes of principal and diversionary lines as well as the following extensions must be taken into account in accordance with Annex II of this Regulation.

- extension to Germany (Wilhelmshaven/Bremerhaven/Hamburg/Rostock),
- extension in Bulgaria (Burgas/ Svilengrad),
- extension in Greece (Patras),

Further, with a view to the geographical orientation of the corridor, two further aspects should be taken into account in the TMS update:

- the transport market in Turkey, with particular focus on international traffic between Turkey and Central Europe,
- existing and potential future transport flows from and to the Caucasus region, entering/leaving the RFC OEM routes via the Bulgarian and Romanian Black Sea ports of Burgas, Varna and Constanta.

In both cases the Iron Silk Road project should be taken into account in these contexts.

Regulation (EU) No 913/2010 continues Council Directive 91/440/EEC of 29 June 1991 on the development of the Community's railways and Directive 2001/14/EC of the European Parliament and the Council of 26 February 2001 on the allocation of railway infrastructure capacity and levying of charges for the use of railway infrastructure.

- objective of Council Directive 91/440/EEC is to achieve the equitable and non-discriminatory access to rail infrastructure and support of rail market in Europe through economic competition,

- Directive 2001/14/EC concerning access to network and charges provides that the infrastructure manager has to publish a network statement containing information on the (technical) type and the restrictions of the network, the conditions of access to the network and the rules for capacity allocation. Directive 2001/14/EC is part of the first railway package.

The following enactment was the second railway package with measures to revitalize railways by rapidly creating an integrated European railway area. The measures are based on the guidelines set out in the White Paper on Transport and are aimed at higher safety, interoperability and opening of the rail freight market to the private sector. These five measures are concerned with:

- developing a common approach to rail safety,
- promoting the fundamental principles of interoperability,
- establishing an effective managing body (European Railway Agency, Regulation (EC) No 881/2004 repealed and replaced by the European Union Agency for Railways according to Regulation (EU) 2016/769 of the European Parliament and the Council of 11 May 2016 on the European Union Agency for Railways,
- extension and acceleration of the opening of the rail freight market,
- membership in the Intergovernmental Organization for International Carriage by Rail (OTIF).

Furthermore, in its policy to encourage rail transport the European Commission has adopted an approach based on corridors in the context of a trans-European transport network (TEN-T). This allowed the allocation of subsidies to railway development projects through TEN-T funds.

In order to establish and support the European railway network as regards freight transport, some technical and operational initiatives have been launched. These are, for example:

- the development of interoperability through the technical specifications for interoperability (TSIs) in particular relating to Traffic Operation and Management (OPE TSI) and TSI relating to Telematic Applications for Freight Services (TAF TSI). Of course, further TSIs such as those relating to infrastructure, vehicles, etc. are also of vital importance for the improvement of interoperability.
- the activities of RNE, an organization connecting 34 infrastructure managers and allocation bodies across Europe. The main objective is to enable easy and quick access to information regarding the European railway infrastructure regarding international railway traffic and to improve the quality and effectiveness of cross-border rail transport entailing the development of harmonised international business processes.

# 3 METODOLOGY OF WORK AND METHODS OF INVESTIGATION

The chapter contains a description of the working process of TMS elaboration. At the same time, the chapter describes the ways of gathering the materials, data and information necessary for elaborating the partial objectives of TMS. Based on the specified working process, used methods necessary for elaborating the particular partial objectives of TMS are listed in the chapter.

## 3.1 Working process of TMS elaboration

For the complete elaboration of TMS, based on determining the main objectives, the methodological working process, shown in Figure 1, was chosen.

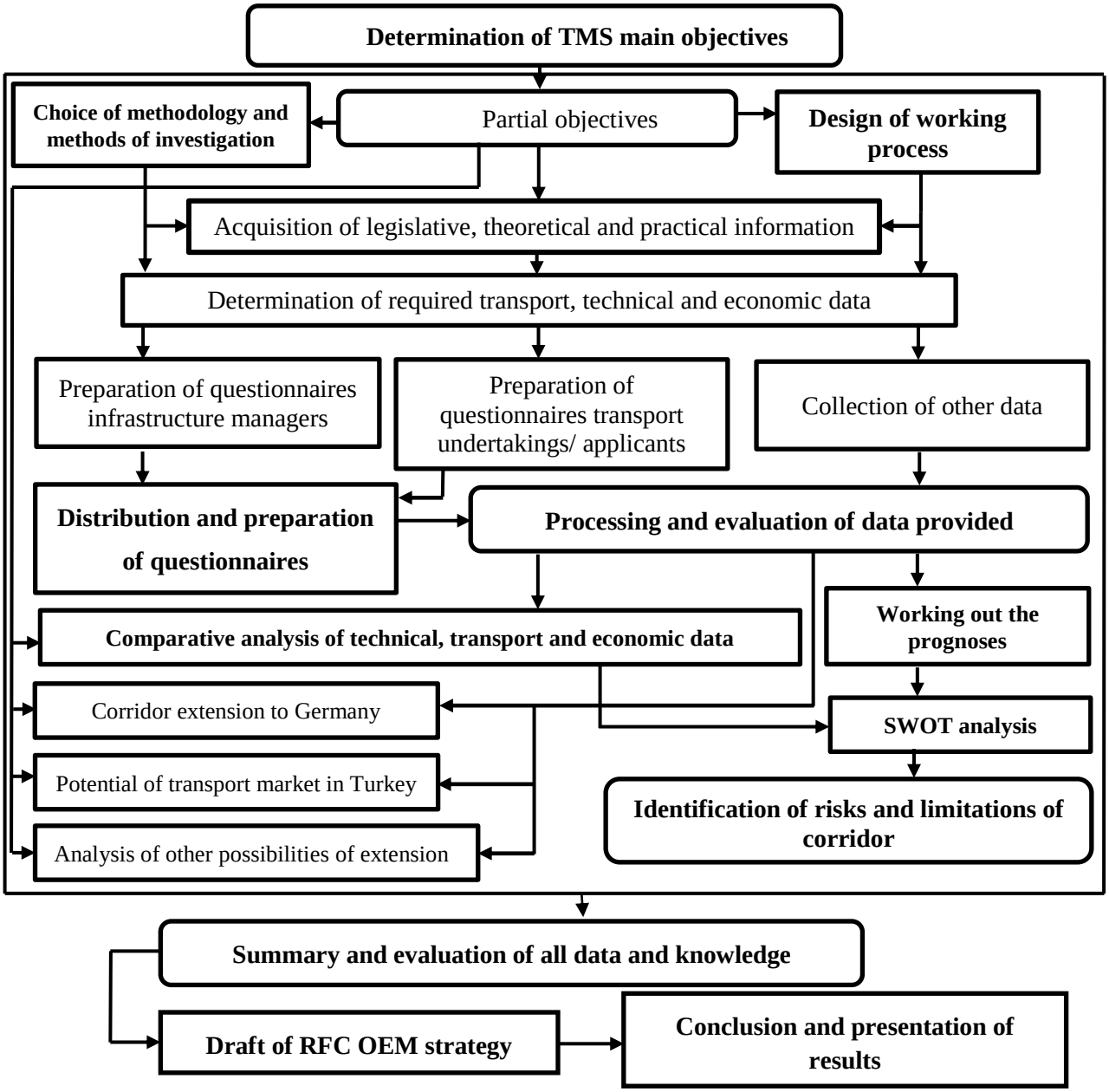



Figure 1: *Graphic representation of methodical working process of TMS*

## 3.2 Material used in TMS elaboration

The complete elaboration of all TMS tasks requires the analysis and processing of various technical, transport, capacity and economic indicators. As it is a wide range of statistical and analytical information, it is necessary to start from several sources. Therefore, in elaborating the TMS, the following sources of information were used:

- EU legislative regulations, modifications and standards,
- annual reports of infrastructure managers of corridor member states,
- network statements of infrastructure managers of corridor member states,
- traffic and transport performances provided by corridor infrastructure managers,
- traffic and transport performances from statistical offices of corridor member states, including Germany as new member of RFC OEM,
- data of Turkey statistical offices,
- data of Eurostat,
- data of International Monetary Fund,
- data of Organization for Economic Cooperation and Development,
- data of World Bank,
- economic indicators provided by statistical offices of corridor member states,
- reports and studies of Core Network Corridors,
- other available economic, traffic and transport information necessary for study elaboration,
- data from questionnaires sent to infrastructure managers,
- data from questionnaires sent to railway undertakings,
- Manual Update of the Handbook on External Costs of Transport“(final report for the European Commission - 2014),
- theoretical aspects of study elaboration obtained from available scientific literature,
- articles, reports, publications dealing with problems of RFC corridors,
- previous TMS RFC OEM.

The statistical and analytical data required for elaborating the individual parts of TMS, with which it will be possible to determine the strategic objectives of European Rail Freight Corridor OEM, are shown in Table 1.

*Table 1: Statistical and analytical indicators monitored in TMS*

| | |
|---|---|
| **Technical parameters** | Standard length of train, maximum length of train, class of line, signalling equipment, electrification system, loading gauge, average speed of train, speed limits, slopes/ gradients |
| **Transport performances** | Development of transport performances on corridor lines<br>Development of transport performances on all lines of member state |
| **Macroeconomic indicators** | GDP development and prognosis in member states<br>Share of individual economic sectors in GDP in % |
| **Microeconomic indicators** | Level of infrastructure charges for type trains<br>Transit time |
| **Modal Split** | Development of modal split between individual modes of transport |
| **International transport** | Transport and traffic performances in international transport |
| **Capacity analysis** | Development of total transport capacity utilization<br>Development of transport capacity utilization of individual corridor lines<br>Waiting times and reasons of delays are monitored separately from this study by the Train Performance Management Working Group |
| **Other indicators** | Investment, technical and technological measures, proposal of extension of lines and terminals, etc. |
| **Corridor indicators** | Corridor benefits |

## 3.3 Methods used in TMS elaboration

The TMS partial objectives have been worked out using the following methods:

- method of investigating written sources – used for selecting appropriate literature for processing the theoretical and legislative part of TMS,
- method of scientific abstraction – in examining the basic theoretical and legislative basis for introduction of the European freight corridors,
- method of information gathering and processing – used for information collection and its subsequent processing,
- benchmarking – in comparison of some transport and technical statistical data,
- method of analysis – in processing and searching required transport and technical statistical data,
- method of comparative analysis – comparison in analytical part,
- method of synthesis – for summarizing information and data obtained,
- method of induction and deduction – used in all parts of TMS, in creating logical judgements based on theoretical, legislative and empirical knowledge,

- brainstorming – used in formulating proposals of economic measurement of implementing a proposal of new methodology of railway infrastructure charging and consultations with practitioners,
- methods of statistical analysis – used in searching and processing required transport, technical and economical statistical data,
- prognostic method – used in development of TMS prognostic scenarios.

# 4 RFC OEM CHARACTERISTICS

The chapter contains a description and the characteristics of the RFC OEM corridor. A part of the corridor description is a graphical representation of currently included and proposed lines. The chapter contains the technical parameters of all included principal and diversionary lines as well as the lines proposed for inclusion in the RFC OEM corridor.

## 4.1 RFC OEM basic structure

For the European rail freight corridors, bodies have been established which through their activities take a share in the proper functioning of the corridor. At the same time, their coordination contributes to meeting the main and partial objectives of corridor establishment and responds to the challenges of effective daily operation and the provision of the best possible solution to customer needs.

**RFC OEM bodies:**

- **Executive Board** – representatives at the level of Ministries of transport of member states,
- **Management Board** – at the level of infrastructure managers and where appropriate Allocation Bodies of member states,
- **Railway Advisory Group (RAG)** – made up of representatives of railway undertakings,
- **Terminal Advisory Group (TAG)** – made up of owners and operators of terminals included in corridor,
- **Corridor One- Stop Shop (C-OSS)** – simplifies and standardizes the international capacity planning process,
- **Working Groups** – ensuring primarily marketing, infrastructure development, traffic control, information exchange, and coordination of OSS activities.

**Main tasks of Executive Board:**

- is responsible for defining the corridor main objectives, supervises and takes measures,
- determines the framework for infrastructure capacity allocation within the corridor,
- approves documents and plans elaborated by the Administrative Board,
- periodically reviews the corridor implementation plan,
- submits to the European Commission a report on the results of executing the implementation plan every two years starting from the corridor establishment.

**Main tasks of Management Board:**

- decides on its legal status, organizational structure, personnel and sources,
- decides on corridor implementation aspects in accordance with the Regulation based on mutual consent (unanimously), holds sessions several times a year, as needed,
- elaborates documents and plans defined in the Regulation,
- establishment of the Corridor One Stop Shop (C-OSS) as the only contact point for applicants,
- establishes Advisory Groups.

The Management Board monitors the performance and quality of rail freight services within the corridor and once a year publishes the results on the web site of the corridor together with the results of the satisfaction survey of corridor users. In order to ensure a non-discriminatory access to railway infrastructure and fair economic competition it cooperates with regulatory bodies of member states, at the same time it performs the task of the Appellate Body.

**Main tasks of Corridor One-Stop Shop (C-OSS)**

Regulation 913/2010 has introduced a new 'player' to the rail freight business. As a unique contact and coordination point, the Corridor One-Stop Shop – hereinafter: C-OSS – simplifies and standardises the process of international capacity planning, application and allocation using the common European IT tool Path Coordination System (PCS) developed by Rail Net Europe. All available path product of the corridor are registered in PCS and can be easily booked via this system. C-OSS will manage the request through the whole phase providing maximum 'care' as a single service provider acting as one IM on behalf of all involved IMs.

**RFC OEM route according to Regulation of the European Parliament and Council (EU) No. 1316/ 2013 on the establishment of the connecting Europe facility:**

(**Germany** – corridor extension along the lines to Germany ports since 2018) – Praha – Vienna / Bratislava – Budapest / – Bucharest – Constanta / – Vidin – Sofia – Thessaloniki – Athens

**Current member states:**

Czech Republic, Slovak Republic, Austria, Hungary, Romania, Bulgaria, Greece.

**New member state:**

Federal Republic of Germany – expected entry in 2018.

**Date of putting RFC OEM into operation:** 08.11.2013

**Seat of Corridor One Stop Shop (C-OSS):** Budapest

## 4.2 RFC OEM graphical representation

In this subchapter, for the sake of an overall visual presentation, principal, diversionary and for some countries connecting lines are marked on the maps of the whole railway infrastructure of individual infrastructure managers. The graphical representation of RFC OEM is shown in Figure 2.


Figure 2: *Graphical representation of RFC OEM routing*

*(Source: József Ádám Balogh, C-OSS manager)*

**Federal Republic of Germany**

On the territory of the Federal Republic of Germany, the extension of RFC OEM lines directed at Wilhelmshaven/ Bremerhaven/ Hamburg/ Rostock - Dresden- Bad Schandau - Děčín (CZ) is under consideration. Possible routing of RFC OEM in graphical form in the Federal Republic of Germany is shown in Figure 3.

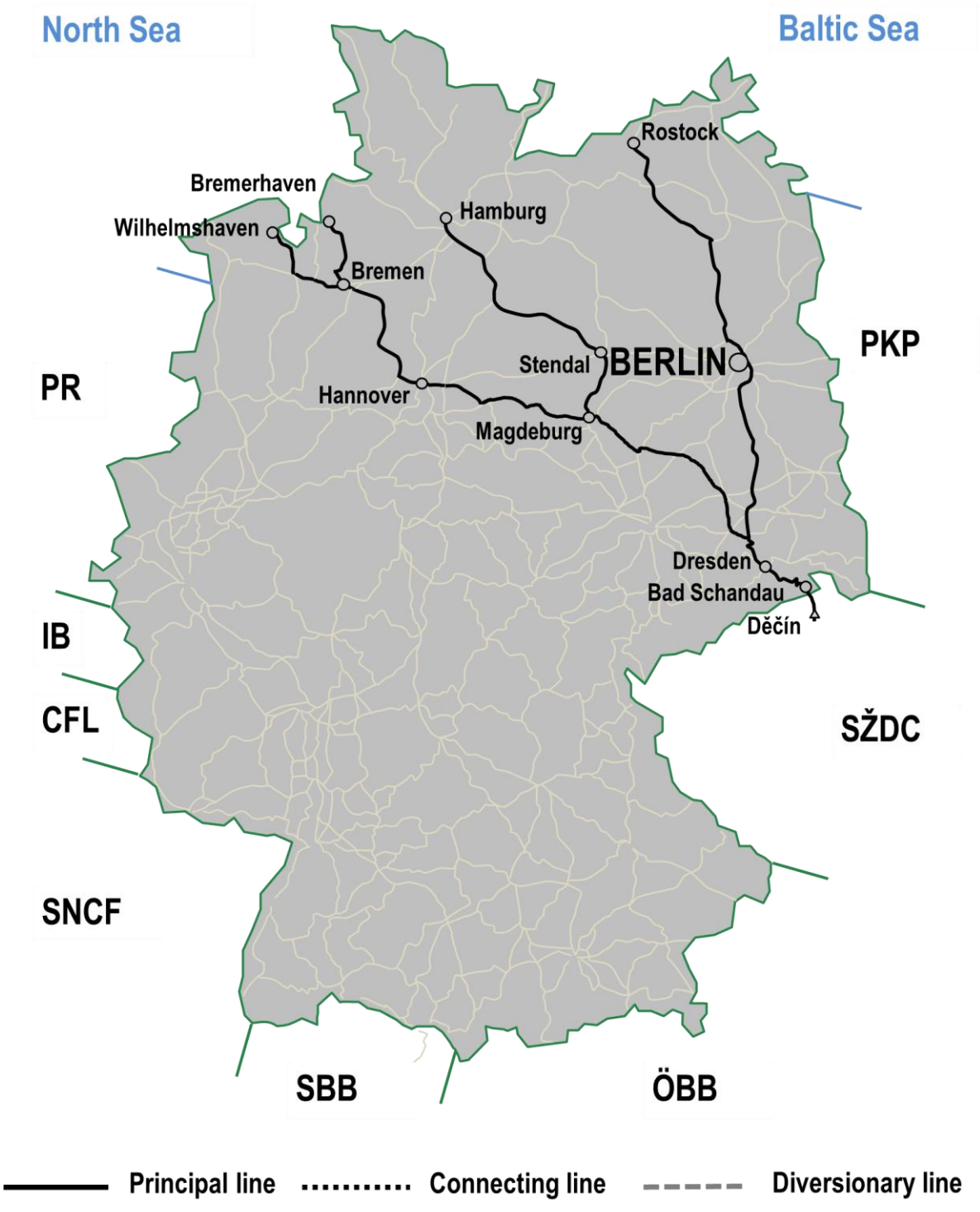



Figure 3: *Graphical representation of RFC OEM on DB Netz network*

*(Source: József Ádám Balogh, C-OSS manager)*

The graphical representation of the lines in Figure 3 to be included in RFC OEM confirms the connection of German ports with RFC OEM railway infrastructure. Such a connection creates more favourable conditions especially for intermodal transport.

**Czech Republic**

RFC OEM principal line in the Czech Republic is routed through the transport nodes Praha - Kolín - Česká Třebová - Brno/Břeclav - Hohenau (AT)/Břeclav - Lanžhot - Kúty (SK). Extension to the Federal Republic of Germany is directed at Praha/ Kolín - Ústí nad Labem - Děčín - Bad Schandau (DE). Diversionary line is routed through Kolín - Kutná Hora - Havlíčkův Brod - Křižanov, while connection to the principal line is in the railway station Brno. The connecting line from PKP infrastructure to SŽDC is routed through Břeclav - Ostrava and border crossings Bohumín-Vrbice – Chalupki (PL) and Petrovice u Karviné - Zebrydowice (PL). Graphical routing of RFC OEM lines in the Czech Republic is shown in Figure 4.

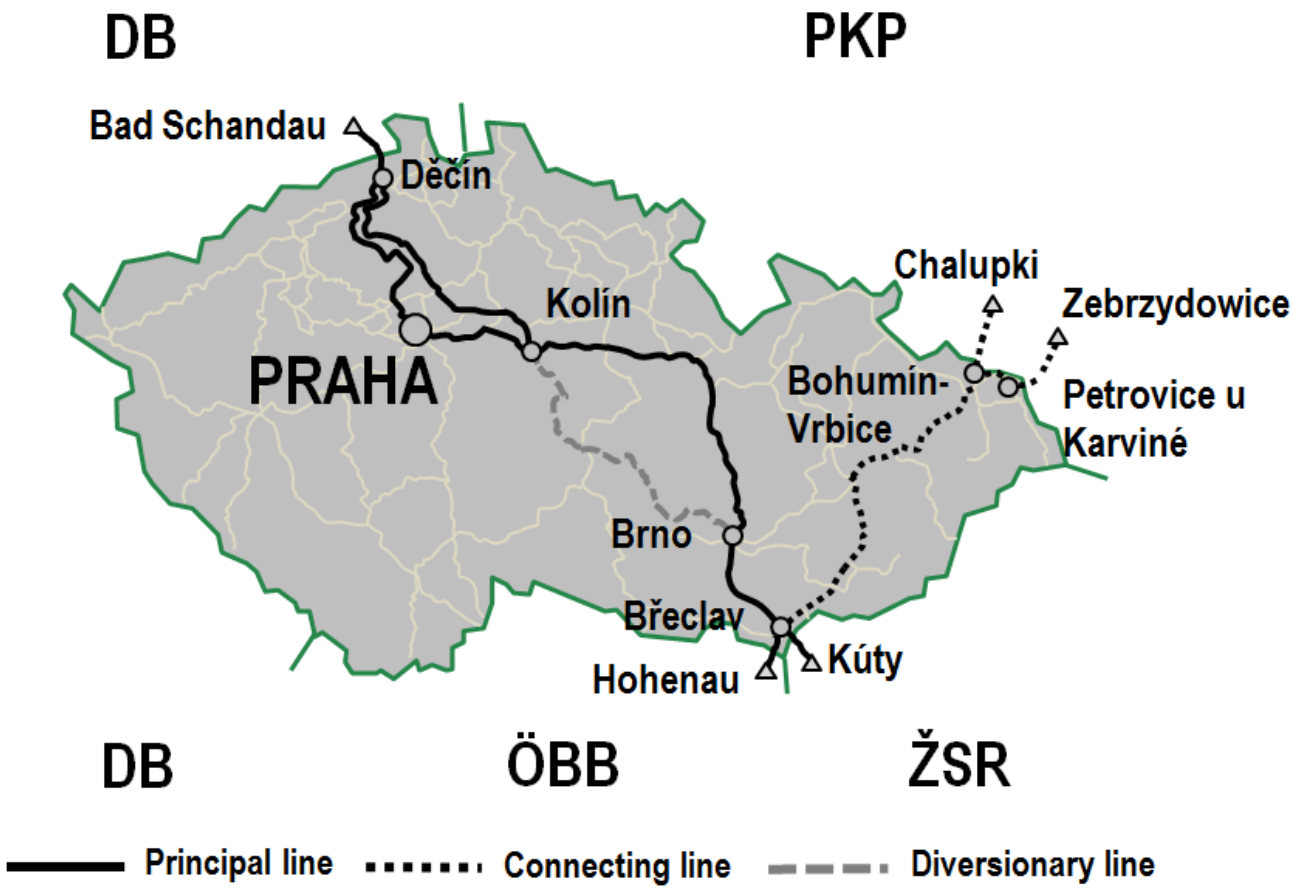



Figure 4: *Graphical represenatation of RFC OEM routes on SŽDC network*

*(Source: József Ádám Balogh, C-OSS manager)*

RFC OEM corridor is connected to RFC 5 corridor in the cities Břeclav and Ústí nad Orlicí (the Czech Republic) while the connecting line of RFC OEM is part of RFC 5. At the same time, RFC OEM in the capital Praha and Česká Třebová is connected to RFC 9. RFC OEM corridor is also connected to RFC 8 in the sities Děčín, Praha and Kolín. Connection of several rail freight

corridors in the Czech Republic creates favourable conditions for cooperation between particular corridors as well as transport and technological effectiveness for railway undertakings.

**Austria**

On ÖBB network, RFC OEM principal line passes through border crossing stations Břeclav (CZ) – Hohenau to the capital of Austria – Vienna and continues to Hungary through the border crossing Nickelsdorf - Hegyeshalom (HU). Diversionary lines are redirected from the principal line in the railway station Gänserndorf to the border crossing Marchegg – Devínska Nová Ves (SK) and from the railway station Parndorf to the border crossing Kittsee - Bratislava Petržalka (SK).

Another principal line is the line from Vienna via Ebenfurth to Sopron (HU). As mentioned in the section on Hungary, in April 2017, negotiations took place on the change of state of the Vienna-Ebenfurth-Sopron line from a diversionary line to a principal line. From Ebenfurt to Vienna, The Potterdorfer (Ebenfurth-Wampersdorf - Vienna Inzersdorf Terminal - Wien Zentralverschiebenahnhof).

Another alternative route is from Vienna via Wiener Neustadt to Sopron. At the same time, RFC OEM in Austria (in Vienna) is connected to RFC 5. The graphical routing of RFC OEM lines in Austria is shown in Figure 5.

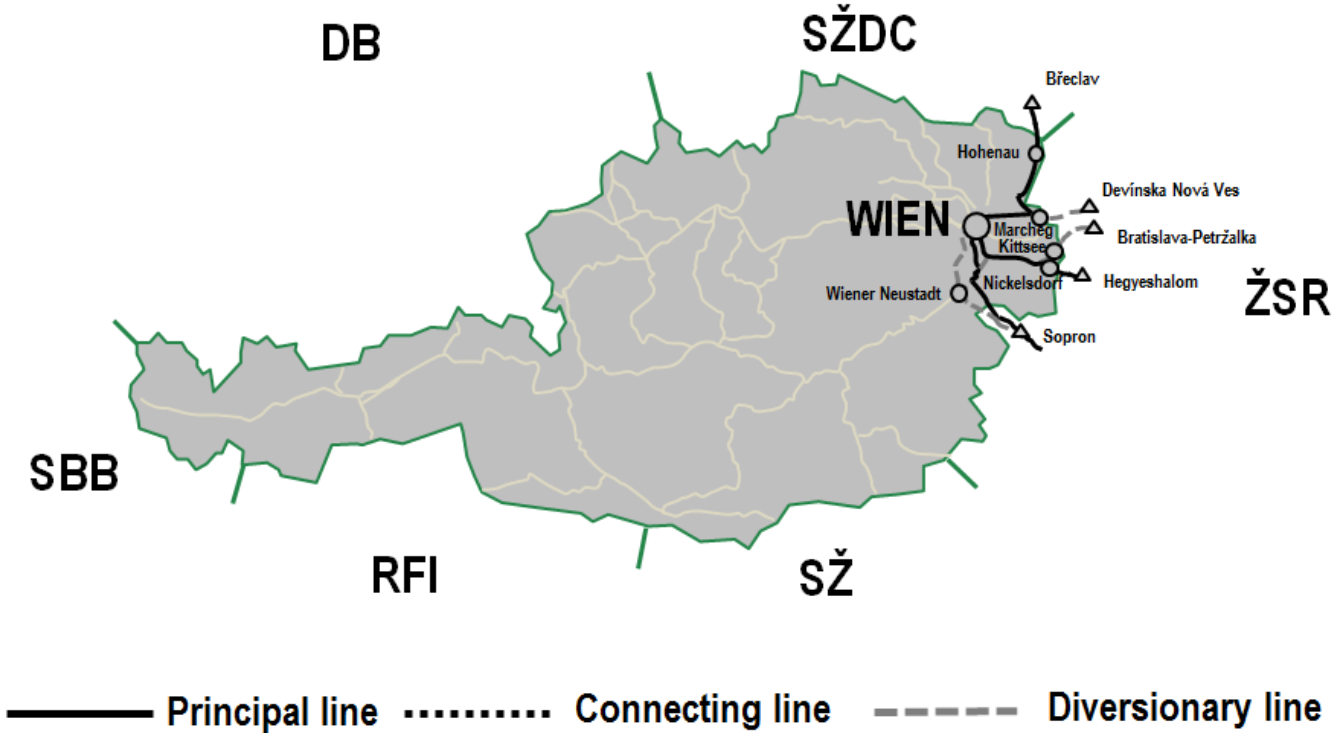



Figure 5: *Graphical representation of RFC OEM routes on* ÖBB network

*(Source: József Ádám Balogh, C-OSS manager)*

**Slovak Republic**

The principal line on ŽSR network runs from the Czech Republic (Lanžhot (CZ) – Kúty) to Hungary through Bratislava in three branches. This includes the following lines:

- Bratislava - Rusovce - Rajka (HU),
- Bratislava – Nové Zámky - Komárno - Komárom (HU),
- Bratislava - Nové Zámky – Štúrovo - Szob (HU).

The first diversionary line included in RFC OEM on ŽSR network is routed Lanžhot (CZ) - Kúty - Trnava towards Bratislava and Galanta with a connection to the principal line. Another diversionary line is the connection of the border stations to the principal line. This includes the border crossings Marchegg (AT) – Devínska Nová Ves and Kittsee (AT) - Bratislava - Petržalka. The line Bratislava – Komárno through Dunajská Streda is classified as a connecting line on ŽSR network. At the same time, RFC OEM in the Slovak Republic, in its capital Bratislava, is connected to RFC 5. The graphical routing of RFC OEM lines in the Slovak Republic is shown in Figure 6.

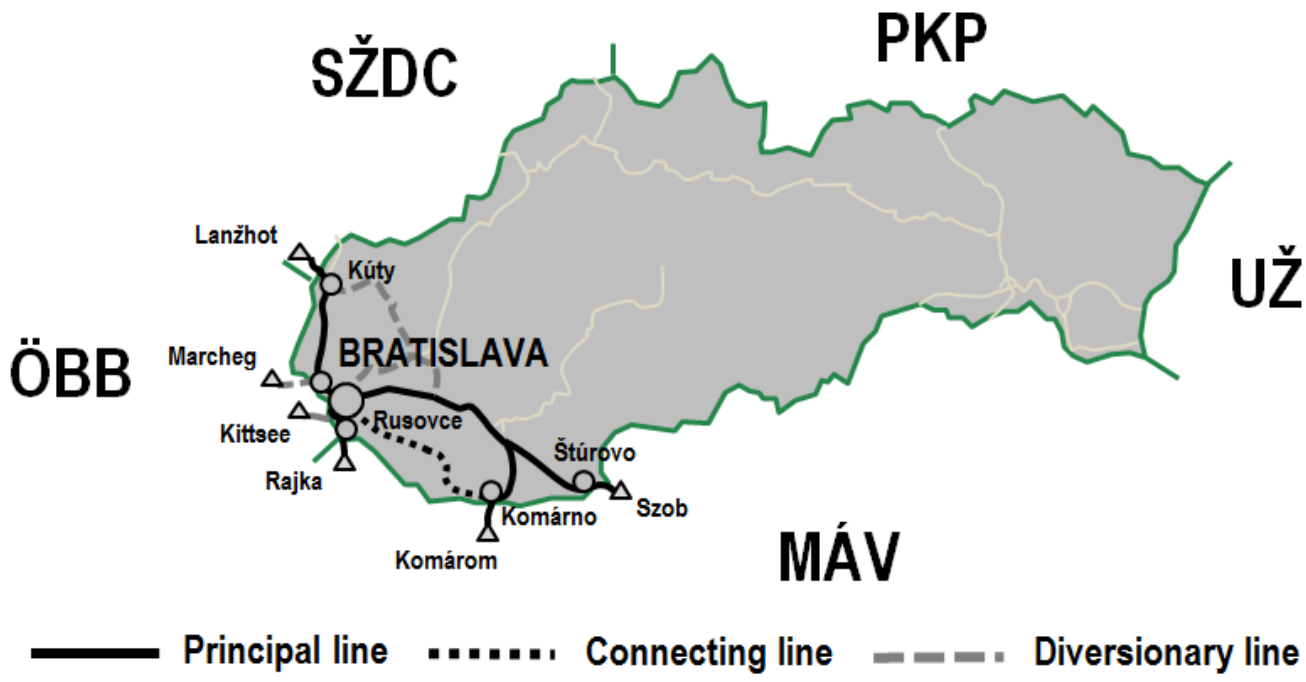



Figure 6: *Graphical representation of RFC OEM routes on ŽSR network*
*(Source: József Ádám Balogh, C-OSS manager)*

**Hungary**

The principal line on MÁV network is routed from ÖBB network (border crossing Nickelsdorf/ Hegyeshalom) and is connected to the second principal line in the city of Győr leading from the city of Sopron (from the Sopron terminal). This principal line from Sopron continuous on GYSEV / Raaberbahn infrastructure on Austrian territory (the border crossing: Baumgarten) to

Ebenfurth. In April 2017, negotiations took place concerning the line status change of the Sopron-Ebenfurth-Vienna route from “diversionary” classification to “principal line”. The exact alignment of the route in Austrian territory is described in the section devoted to Austria. Infrastructure owned by GYSEV / Raaberbahn ends in the middle of the Neufeld an der Leitha bridge (operating up to Ebenfurth), from here further up towards Vienna, ÖBB is the competent Infrastructure Manager.

Routing of principal line from the territory of the Slovak Republic:

- Rusovce (SR) - Rajka - Hegyeshalom - Győr - Komárom- Budapest,
- Komárno (SK) - Komárom- Budapest,
- Štúrovo- Szob - Vác - Budapest.

The Rajka – Hegyeshalom - Győr infrastructure section is managed by GYSEV, following that, MÁV is the competent infrastructure manager towards Lőkösháza.

The subsequent routing of the principal line is in continuation Budapest - /Újszász -/Cegléd-Szolnok - Lőkösháza - Curtici (CFR). Connection of the line from ÖBB network to the border crossing station Sopron then continues as principal line in the direction of Győr - Komárom - Budapest.

Diversionary lines included in RFC OEM on MÁV railway network are:

- Vác - Újszász,
- Budapest- Cegléd- Szolnok,
- Szajol - Biharkeresztes - Oradea (CFR).

RFC OEM is simultaneously connected to RFC 6 in the Hungarian capital Budapest. The graphical routing of RFC OEM routes in Hungary is shown in Figure 7, where GYSEV´s rail lines are coloured in yellow. The remaining tracks are managed by MÁV.

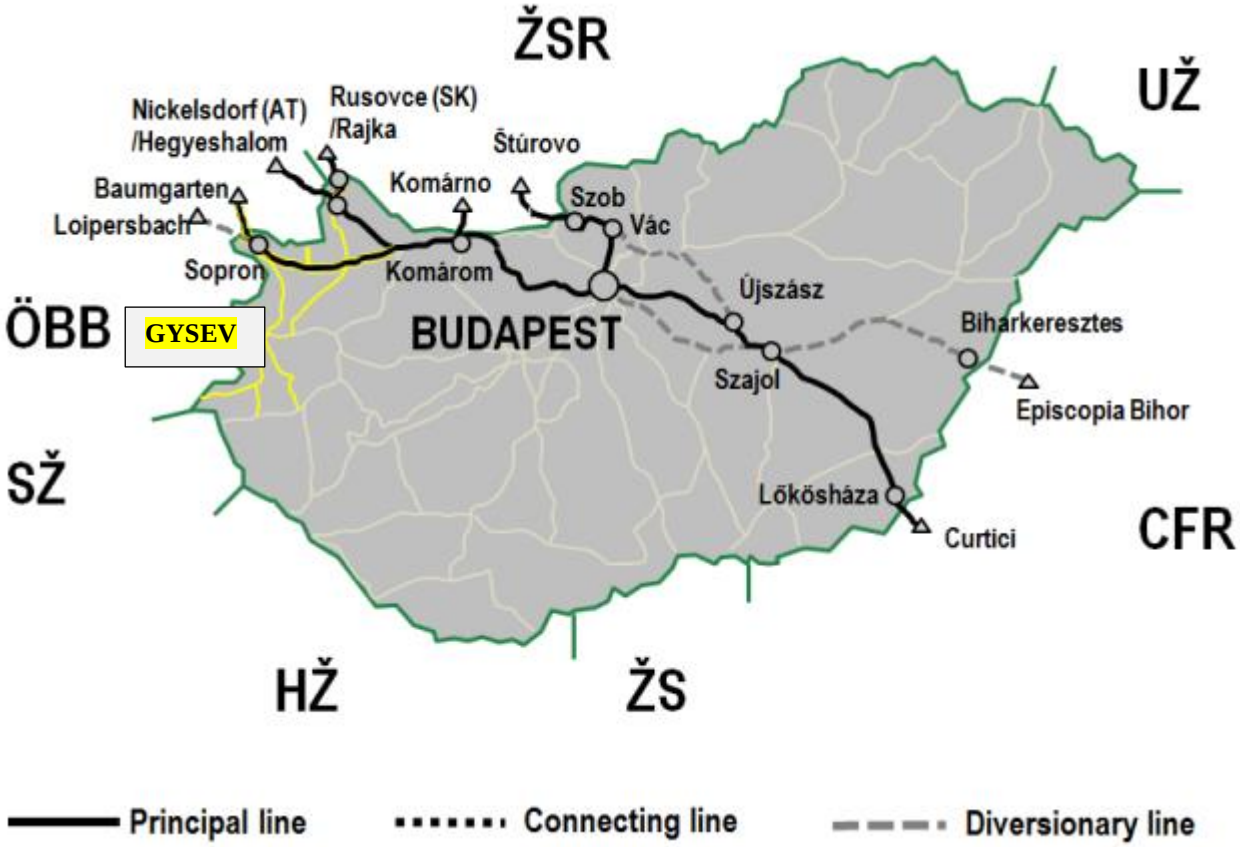



Figure 7: *Graphical representation of RFC OEM routes on* MÁV and GYSEV network
*(Source: József Ádám Balogh, C-OSS manager)*

**Romania**

The principal line from Hungary through the border crossing Lőkösháza (MÁV) - Curtici continues to the station Arad and then divides into two branches:

- Arad - Simeria - Coslariu - Brasov - Bucharest - Constanta,
- Arad - Orsova – Filiasi - Craiova - Calafat - Vidin (NRIC).

Connection of these two branches is provided by the routes Simeria - Filiasi and Craiova - Videle - Bucharest. The border crossing lying on the diversionary line Giurgiu - Ruse (NRIC) is connected from the diversionary line through Videle railway station and from the principal line through Bucharest railway station. The diversionary line from MÁV network from the border point Biharkeresztes (MÁV) - Oradea connects to the principal line in Coslariu railway station. The graphical routing of RFC OEM routes in Romania is shown in Figure 8.

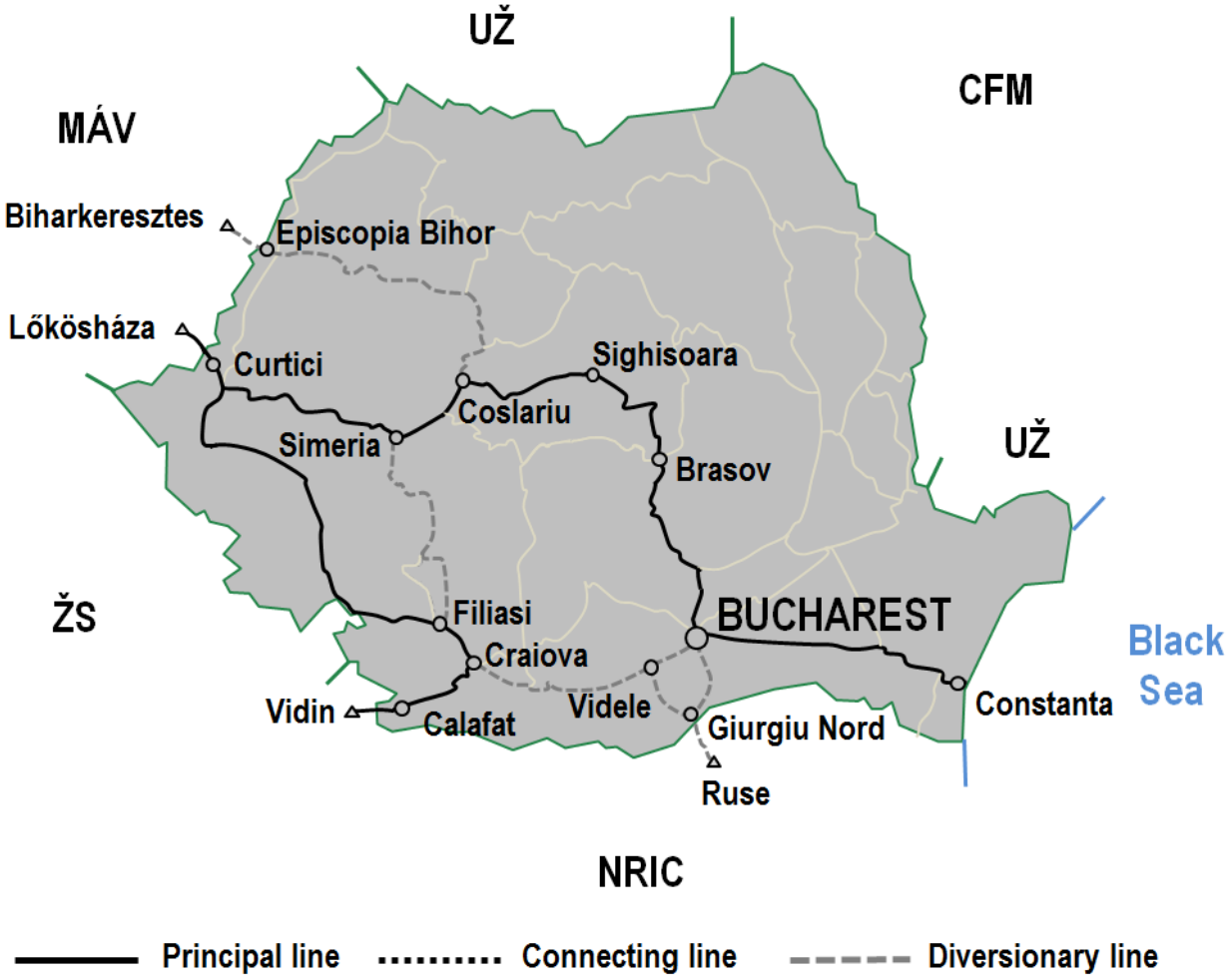



Figure 8: *Graphical representation of RFC OEM routes on* CFR network

*(Source: József Ádám Balogh, C-OSS manager)*

**Republic of Bulgaria**

The principal route of OEM corridor on the territory of Bulgaria passes through its capital Sofia from Romania to Greece in the direction: Golenti (RO) - Vidín - Mezdra - Sofia - Kulata - Promachonas (GR). Following the meeting of the Administrative Board on June 2 2016, the originally diversionary line was reclassified to the principal line in the direction Sofia - Plovdiv - Svilengrad - Ormenio (GR). The diversionary line is led through the border crossing Giurgiu (CFR) - Ruse - Karnobat - /Burgas and in continuation Karnobat and connection to the principal line in three branches in Simeonovgrad, Dimitrovgrad and Plovdiv railway stations. The connection of RFC OEM withTurkey is possible through Svilengrad (BG) railway station and Kapikule in the Turkish border crossing station and then to the Turkish railway network. The graphical routing of RFC OEM routes in the Republic of Bulgaria is shown in Figure 9.

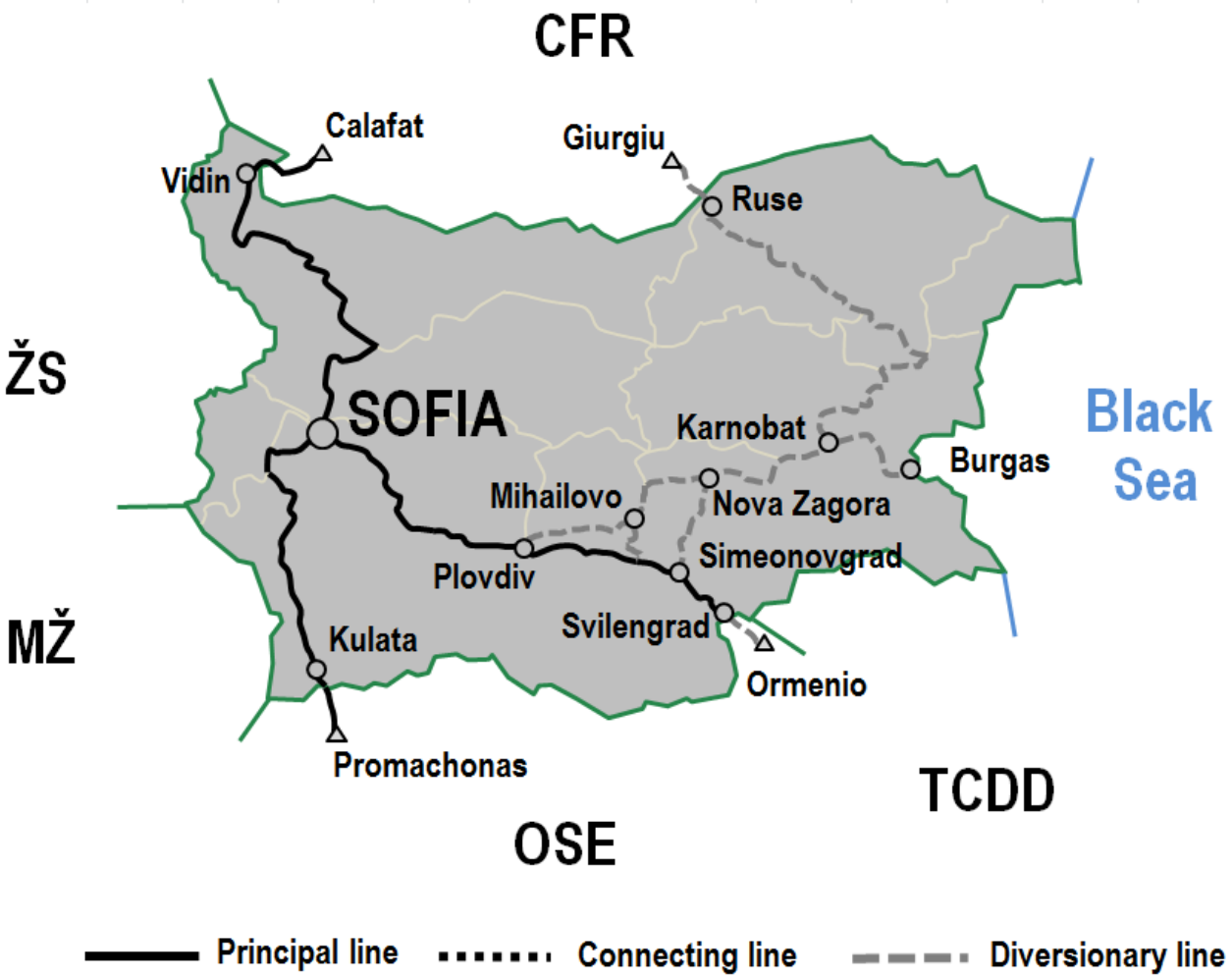



Figure 9: *Graphical representation of RFC OEM routes on* NRIC network

*(Source: József Ádám Balogh, C-OSS manager)*

**Hellenic Republic (Greece)**

The principal line on the territory of the Hellenic Republic starts off the border crossing Kulata (NRIC) - Promachonas and continues to the capital of the Hellenic Republic – Athens with a connecting line to Piraeus. Another connecting line in continuation from the principal line is in Larissa railway station to Volos railway station. The diversionary lines are the continuation of the principal line in the direction Svilengrad (NRIC) - Ormenio – Alexandropolis – Serres.

The connection of RFC OEM with Turkey is possible through Pythion (EL) railway station and Demirköprüin Turkish border crossing station and then to the Turkish railway network. The graphical routing of RFC OEM routes in Greece is shown in Figure 10.

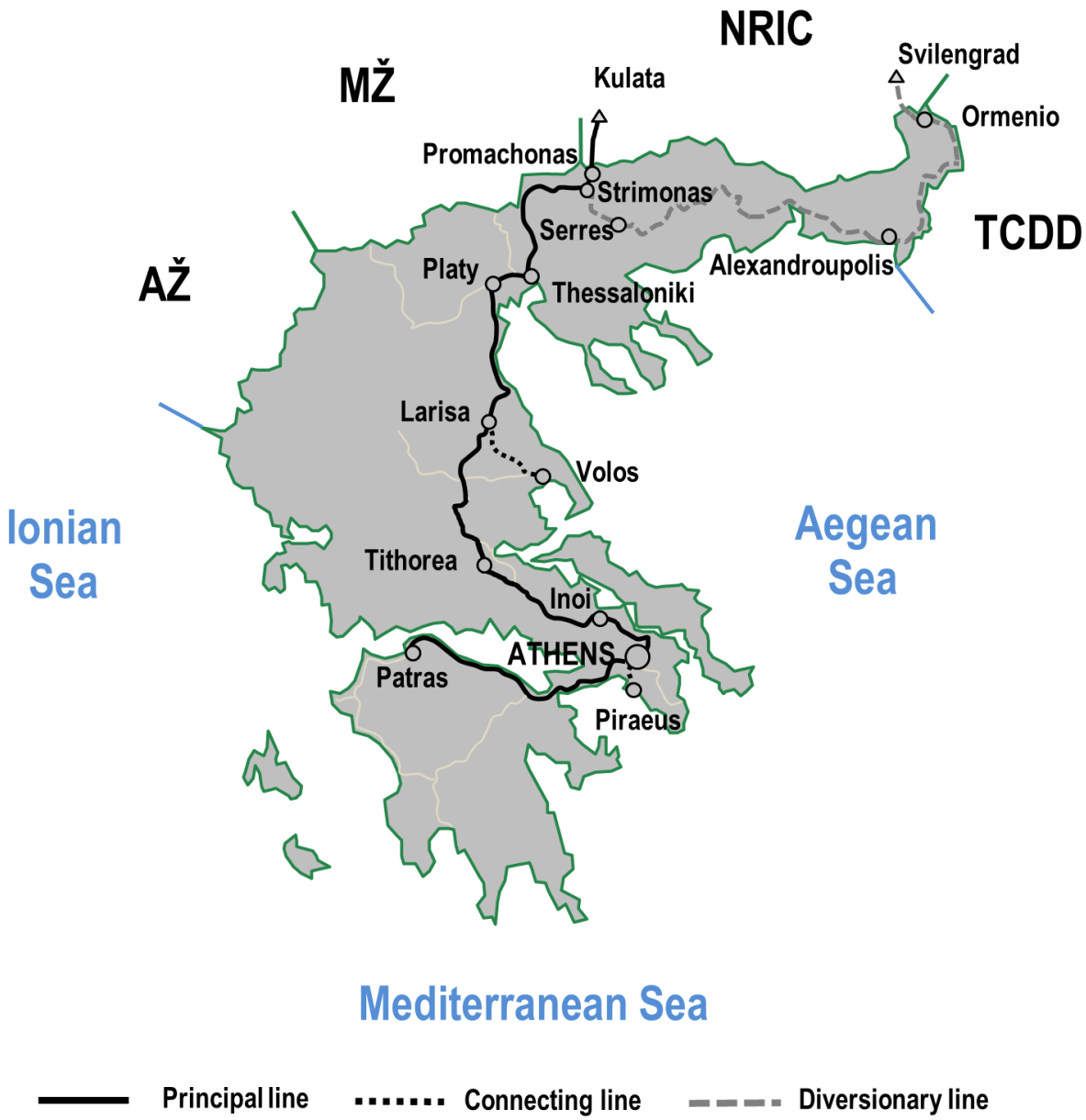



Figure 10: *Graphical representation of RFC OEM routes on OSE network*

*(Source: József Ádám Balogh, C-OSS manager)*

## 4.3 Technical parameters of RFC OEM

For a rapid and graphic-visual representation of the technical parameters of the lines included in RFC OEM, the particular railway lines and terminals in the given countries are shown using the following signs:

**Description of stations:**

| | |
|---|---|
| **Lanžhot** | Border station of neighbouring country on the principal line |
| **Marchegg** | Border station of neighbouring country on the diversionary line |
| **Kúty** | Station lying on a principal line (selected station) |
| **Trnava** | Station lying on a diversionary line (selected station) |
| **Dunajská Streda** | Station lying on a connecting line (selected station) |

**Type of line:**

| | |
|---|---|
| | Corridor double-track line |
| | Corridor single-track line |
| | 3 KV DC |
| | 15 KV AC (16 2/3 Hz) |
| | 25 KV AC (50 Hz) |

**Description of capacity utilization schemes:**

| | |
|---|---|
| | Information not provided |
| | Track capacity use 49 % |
| | Track capacity use 50% - 89 % |
| | Track capacity use above 90 % |
| ● / ▲ | Railway station/ Border station |

**Intermodal freight mode:**

| | |
|---|---|
| 1 | P/C 45/375 |
| 2 | P/C 57/381 |
| 3 | P/C 70/400 |
| 4 | P/C 78/402 |
| 5 | PC 80/402 |
| 6 | PC 80/410 |
| 7 | P/C 59/389 |
| 8 | P/C 59/400 |
| 9 | P/C 55/385 |
| 10 | P/C 45/360 |

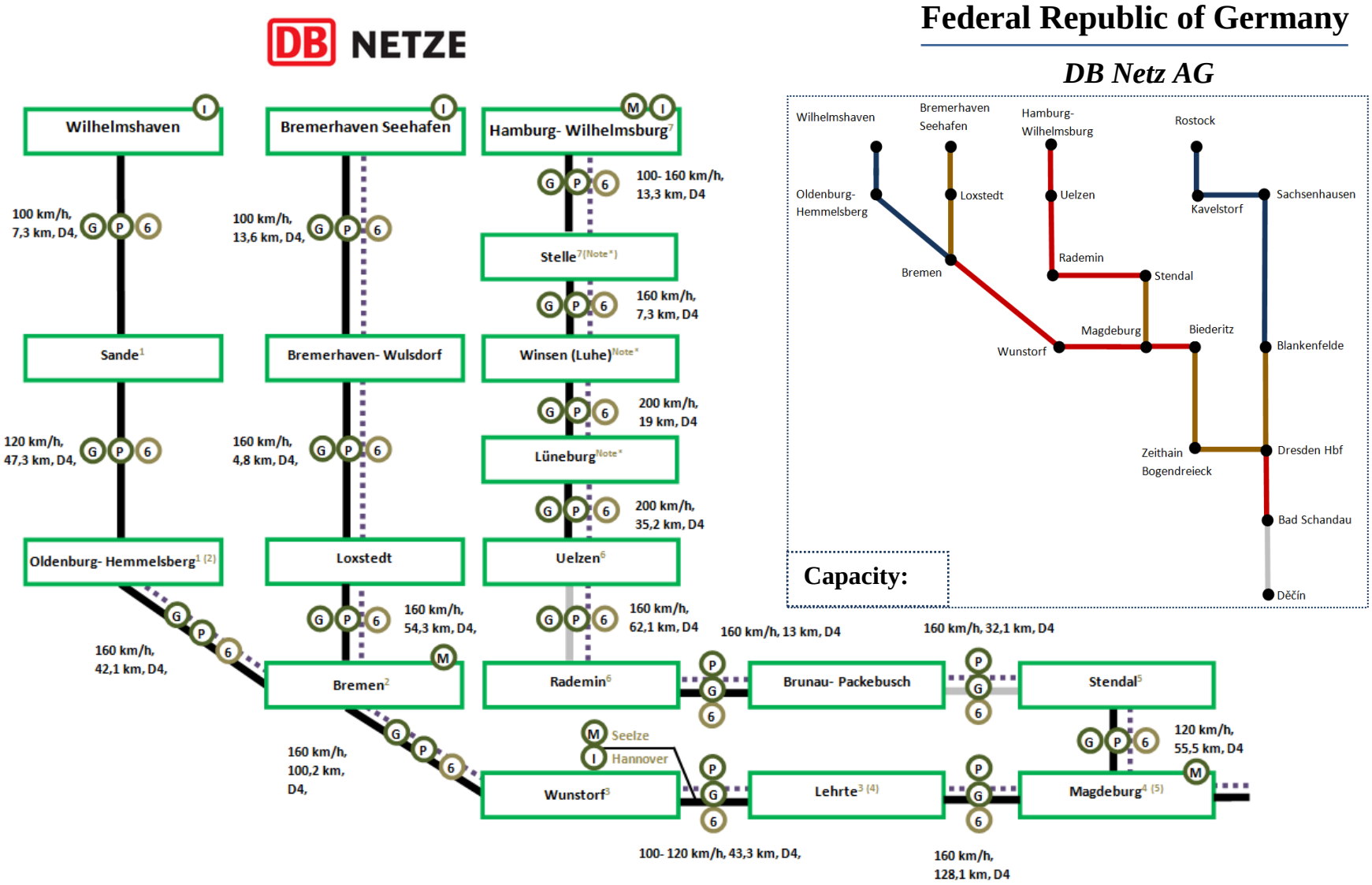
| | |
|---|---|
| M | Marshalling yard |
| I | Intermodal transport terminal |
| G | GSM- R |
| E | ETCS |
| L | LS cap signalling |
| P | PZB/LZB* |

*Note: P- *LZB (Linienzugbeeinflussung)*
*PZB (Punktförmige Zugbeeinflussung)*
*PZB/LZB- Automatic train control used mainly on German and Austrian railway lines*

**Description of technical parameters of line:**

***120 km/h, 10 km, D4, 700 m*** Maximum speed, distance, axle load, maximum length of train

Technical data of the lines are listed in Appendix L: Technical parameters of RFC OEM infrastructure in .xls format.




The scheme continues on the page 34.

**Note:**

***Different technical parameters on line sections:***

[1]Oldenburg-Hemmelsberg – Oldenburg (Oldb) Hbf – 2,3 km, 2 tracks, D4, 120 km/h, P/C 80/410, **AC 15 kV 16,7 Hz**

Ofenerdiek - Oldenburg (Oldb) Hbf - 5,6 km, 2 tracks, D4, **100 km/h**, P/C 80/410,

[2]Bremen- Neustadt- Bremen Hbf- 2,6 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

[3] Wunstorf – Seelze Mitte- 11,5 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

[4] Magdeburg-Sudenburg – Magdeburg Hbf – 2,9 km, 2 tracks, D4, **120 km**, P/C 80/410, AC 15 kV 16,7 Hz

Braunschweig Hbf- Helmstedt – 35,5 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

[5] Magdeburg-Rothensee – Brücke - 2,4 km, 2 tracks, D4, **50 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

Glindenberg – Magdeburg-Rothensee – 3,4 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

[6] Uelzen - Veerßen – 3 km, 2 tracks, D4, **160 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[7] Maschen Rbf - Stelle - 3,7 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Hamburg- Harburg - Maschen Rbf – 4,8 km, 2 tracks, D4, **160 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Hamburg-Wilhelmsburg - Hamburg-Harburg - 4,8 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Note* ***Information tracks:***

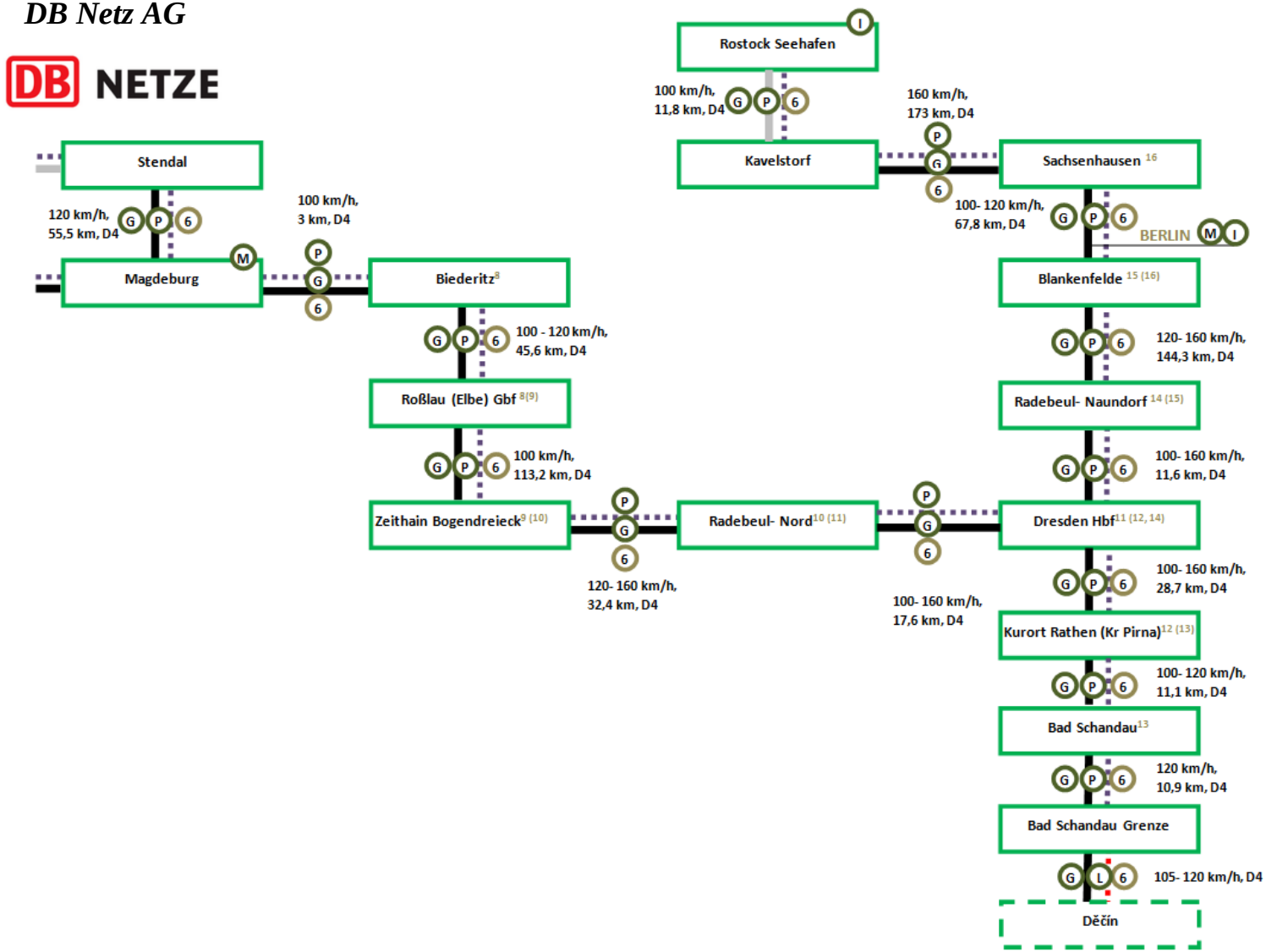
Stelle – Winsen (Luhe) - Lüneburg: 3 tracks (2 lines)

**PZB/LZB**- There is only PZB system without LZB on the lines included in RFC OEM with the exception of the Uelzen- Winsen (Luhe) where LZB L 72 CE (TgrV 0 und 1) is located and Winsen (Luhe)- Stelle where LZB L 72 is located. (Line section Hamburg-Wilhelmsburg- Uelzen)

**For the German corridor network a train length up to 740m is basically possible, due to restrictions in timetabling and operational situations the actually possible train length can be influenced.**

# Federal Republic of Germany

## *DB Netz AG*



**Note:**

***Different technical parameters on line sections:***

[8] Güterglück - Trebnitz Streckenwechsel 6410/6411 - 3,4 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[9] Röderau – Zeithain Bogendreieck - 1,1 km**, 1 track**, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[10] Weißig (b Großenhain) - Leckwitz- 7,3 km, 2 tracks, D4, **160 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Coswig (bei Dresden) - Radebeul- Naundorf (Abzw) – 2 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Coswig (bei Dresden) – Radebeul Nord- 2,8 km, **1 track**, D4, **160 km/h**, P/C 80/410, AC 15 kV 16,7 Hz

[11] Dresden Neustadt- Dresden- Pieschen (Abzw)- 3,1 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Dresden Neustadt- Dresden Hbf- 3,5 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[12] Obervogelgesang (Kr Pirna) – Kurort Rathen (Kr Pirna) – 6,8 km, 2 tracks, D4, **100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[13] Kurort Rathen (Kr Pirna) – Bad Schandau Königstein (Sächs Schweiz) Üst - 2,7 km, 2 tracks, D4**, 100 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[14] Dresden- Kremnitz- Dresden – Stetzsch – 1,4 km, 2 tracks, D4, **50 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

[15] Radebeul Abzw Az - Radebeul-Naundorf (Abzw) - 1,1 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Baruth (Mark)- Golßen (Niederlausitz) - 10,4 km, 2 tracks, D4, **120 km/h**, P/C 80/410, AC 15 kV 16,7 Hz,

Dabendorf- Zossen - 2,1km, 2 tracks, D4, **120 km/h**, AC 15 kV 16,7 Hz,

[16] Glasower Damm Ost - Grüna Blankenfelde (Kr Teltow-Fläming) - 2,6 km, 2 tracks, D4**, 100 km/h**, P/C 80/410, 15 kV 16,7 Hz

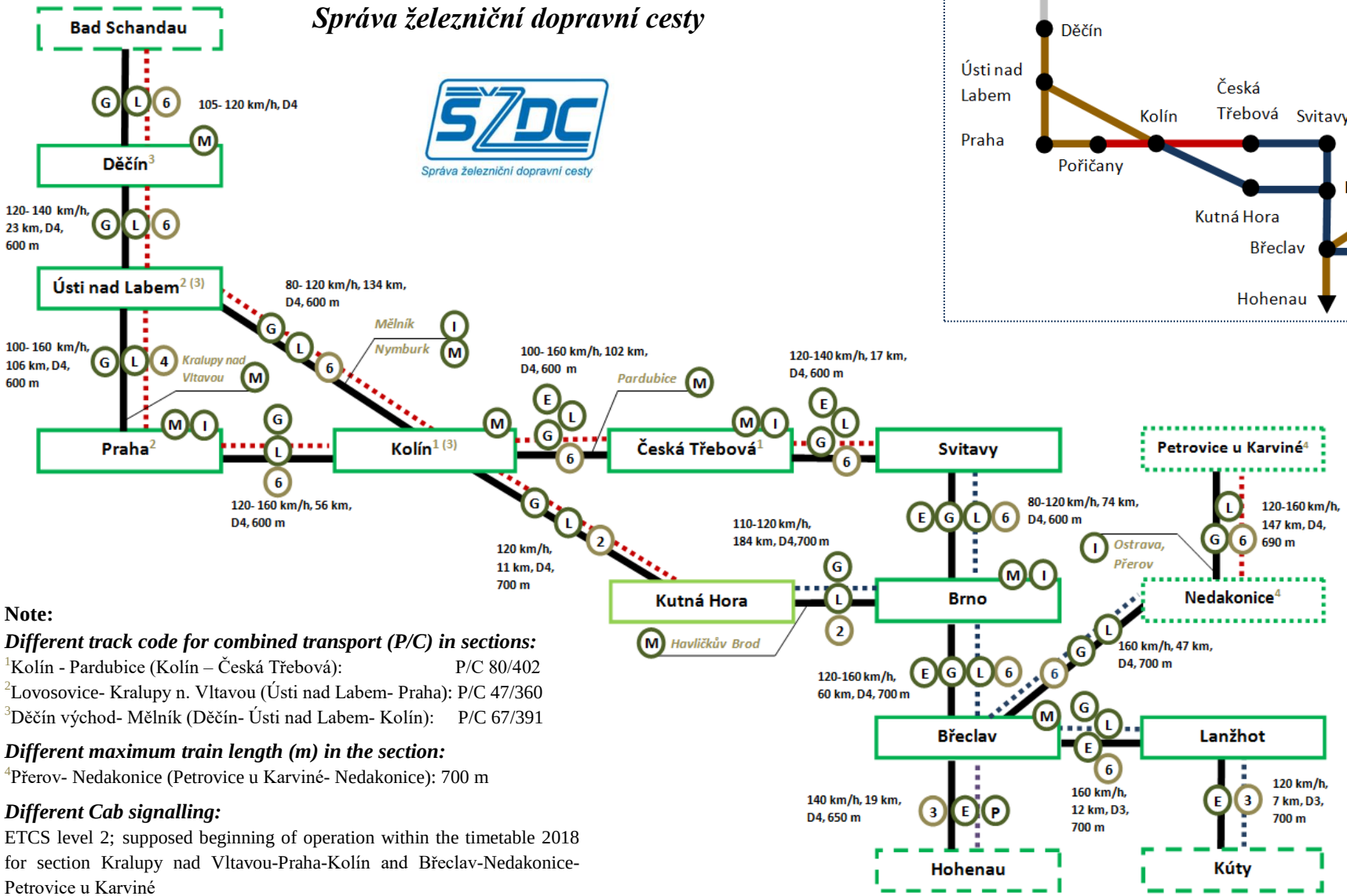
Biesdorfer Kreuz Süd – Grünauer Kreuz Süd - 9,6 km, 2 tracks, D4, **100 km/h**, P/C 80/410, 15 kV 16,7 Hz

Hohen Neuendorf Strw 6088/6090/6092 - Schönfließ West - 5,6 km, **1 track**, D4, **100 km/h**, P/C 80/410, 15 kV 16,7 Hz

**For the German corridor network a train length up to 740m is basically possible, due to restrictions in timetabling and operational situations the actually possible train length can be influenced.**

# Czech Republic

## *Správa železniční dopravní cesty*







**Note:**

***Different track code for combined transport (P/C) in sections:***

[1]Kolín - Pardubice (Kolín – Česká Třebová): P/C 80/402

[2]Lovosovice- Kralupy n. Vltavou (Ústi nad Labem- Praha): P/C 47/360

[3]Děčín východ- Mělník (Děčín- Ústi nad Labem- Kolín): P/C 67/391

***Different maximum train length (m) in the section:***

[4]Přerov- Nedakonice (Petrovice u Karviné- Nedakonice): 700 m

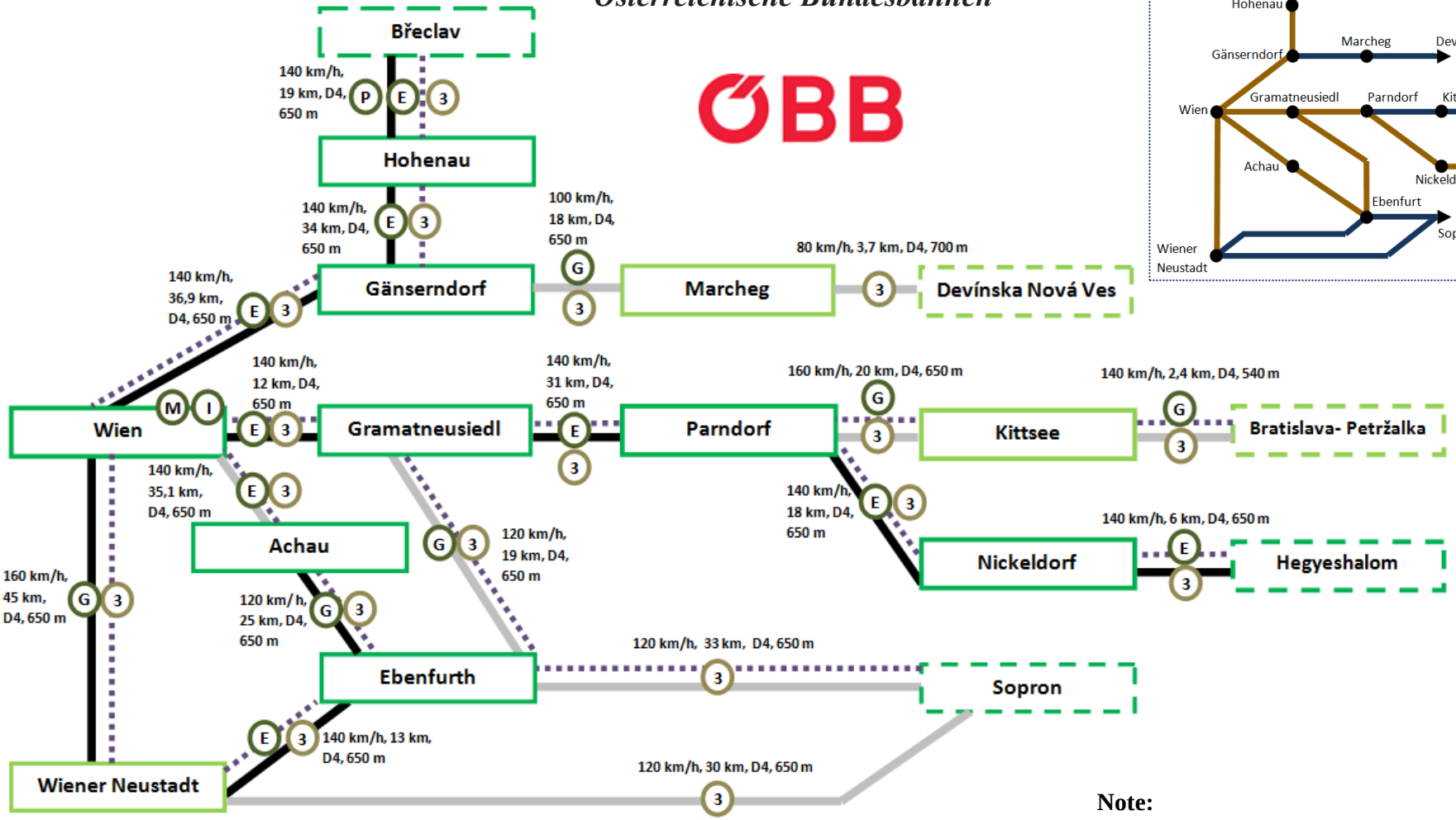
***Different Cab signalling:***

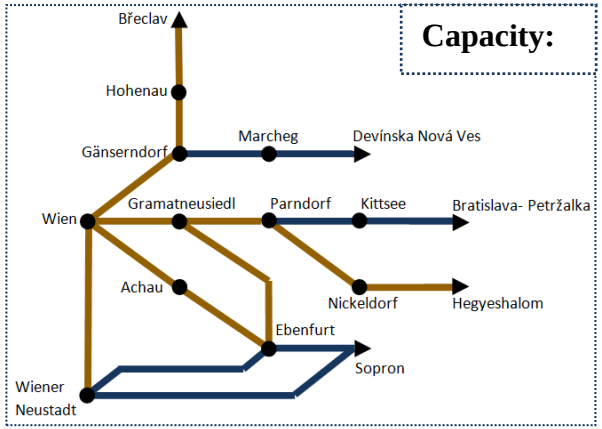
ETCS level 2; supposed beginning of operation within the timetable 2018 for section Kralupy nad Vltavou-Praha-Kolín and Břeclav-Nedakonice-Petrovice u Karviné

Cab signalling INDUSI/PZB for section Břeclav- Hohenau

# Austria

## *Österreichische Bundesbahnen*



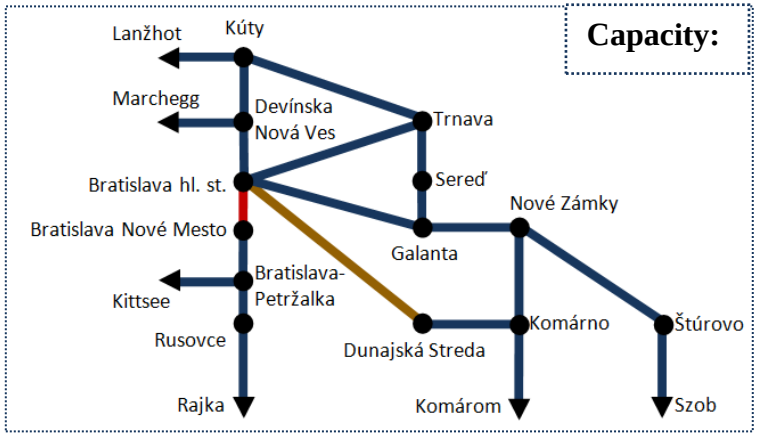




**Note:**

***Different Cab signalling:***
Cab signalling INDUSI/PZB for section Břeclav- Hohenau

# Slovak Republic

***Železnice Slovenskej republiky***

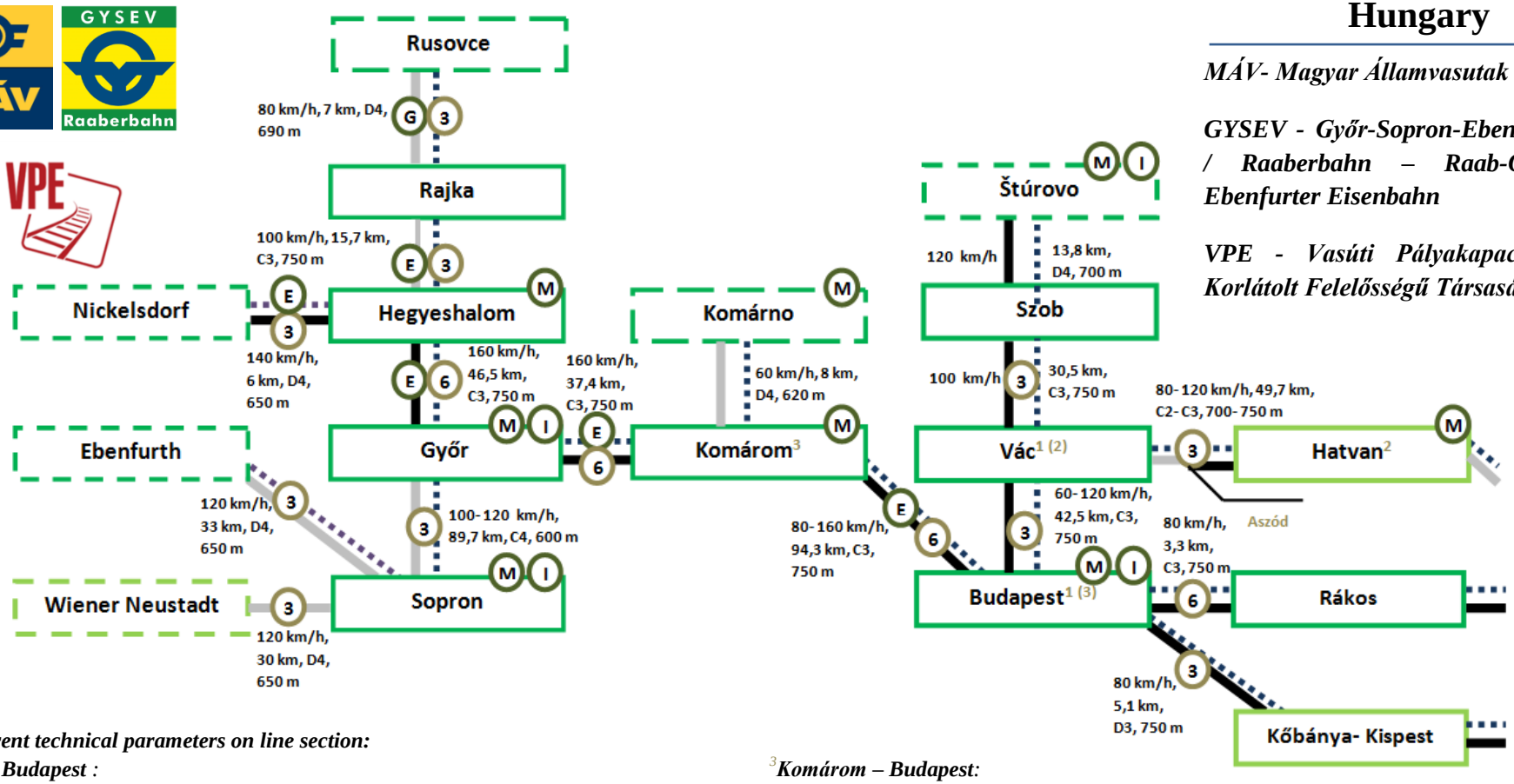






**Note:**

*Data on distances and maximum line speeds in the sections Bratislava- Rusovce- Rajka and Nové Zámky- Komárno- Komárom drawn from the Table of track state (TTP 127, TTP 120)*




**Note:**

***Different technical parameters on line section:***

[1]***Vác- Budapest*** *:*

*Vác - Rákospalota – Újpest: 25,6 km,* ***2 tracks***, ***C3***, ***120 km/h***, *P/C 70/400*

*Rákospalota-Újpest - Angyalföld elágazás: 3,3 km,* ***1 track***, ***C2, 60 km/h***, *P/C 70/400*

*Angyalföld elágazás - Kőbánya felső: 8,9 km,* ***2 tracks***, ***C2***, ***80 km/h***, *P/C 70/400*

*Kőbánya felső – Ferencváros: 4,7 km,* ***2 tracks***, ***C3***, ***60 km/h***, *P/C 80/410*

[2]***Vác- Hatvan***

*Vác- Aszód:* ***1 track****, 33,8 km****, C2****, 700 – 750 m****, 80 km/h***

*Aszód – Hatvan:* ***2 tracks****, 15,9 km,* ***C3****,* ***750 m****,* ***120 km/h***

[3]***Komárom – Budapest:***

*Komárom – Tata:* ***160 km/h***

*Tata – Kelenföld:* ***120- 140 km/h***

*Kelenföld – Budapest:* ***80 km/h***

# Hungary

***MÁV- Magyar Államvasutak***

***GYSEV - Győr-Sopron-Ebenfurti Vasút / Raaberbahn – Raab-Oedenburg-Ebenfurter Eisenbahn***

***VPE - Vasúti Pályakapacitás-elosztó Korlátolt Felelősségű Társaság***

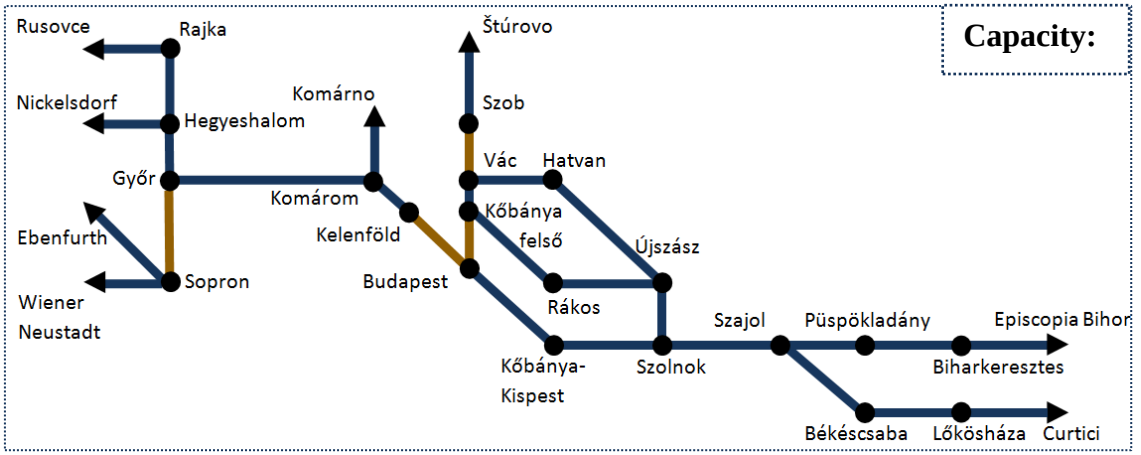
The scheme continues on the page 40.

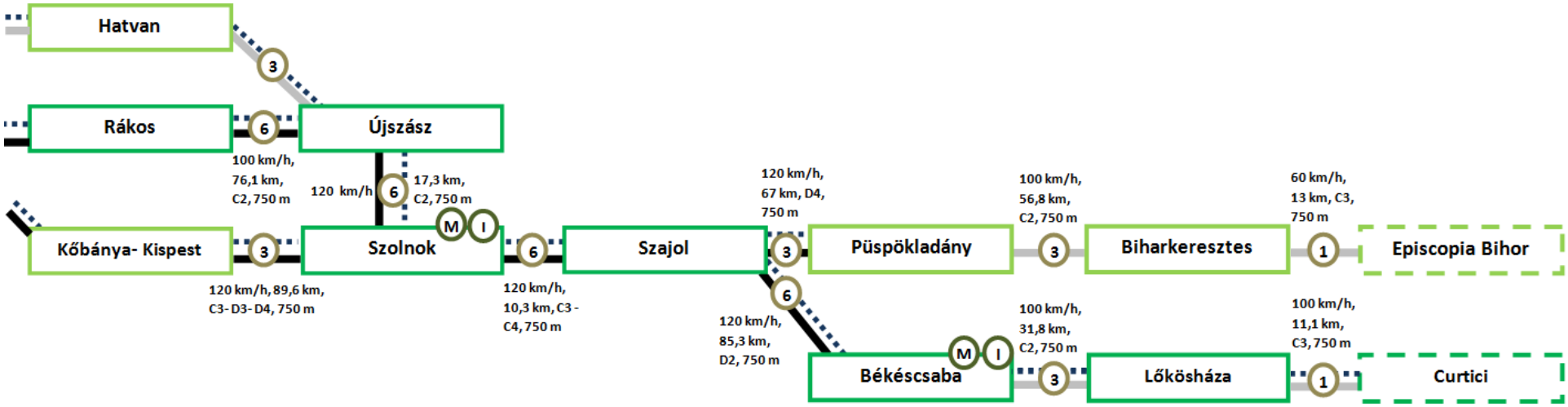
# Hungary

***MÁV- Magyar Államvasutak***

***GYSEV - Győr-Sopron-Ebenfurti Vasút / Raaberbahn – Raab-Oedenburg-Ebenfurter Eisenbahn***

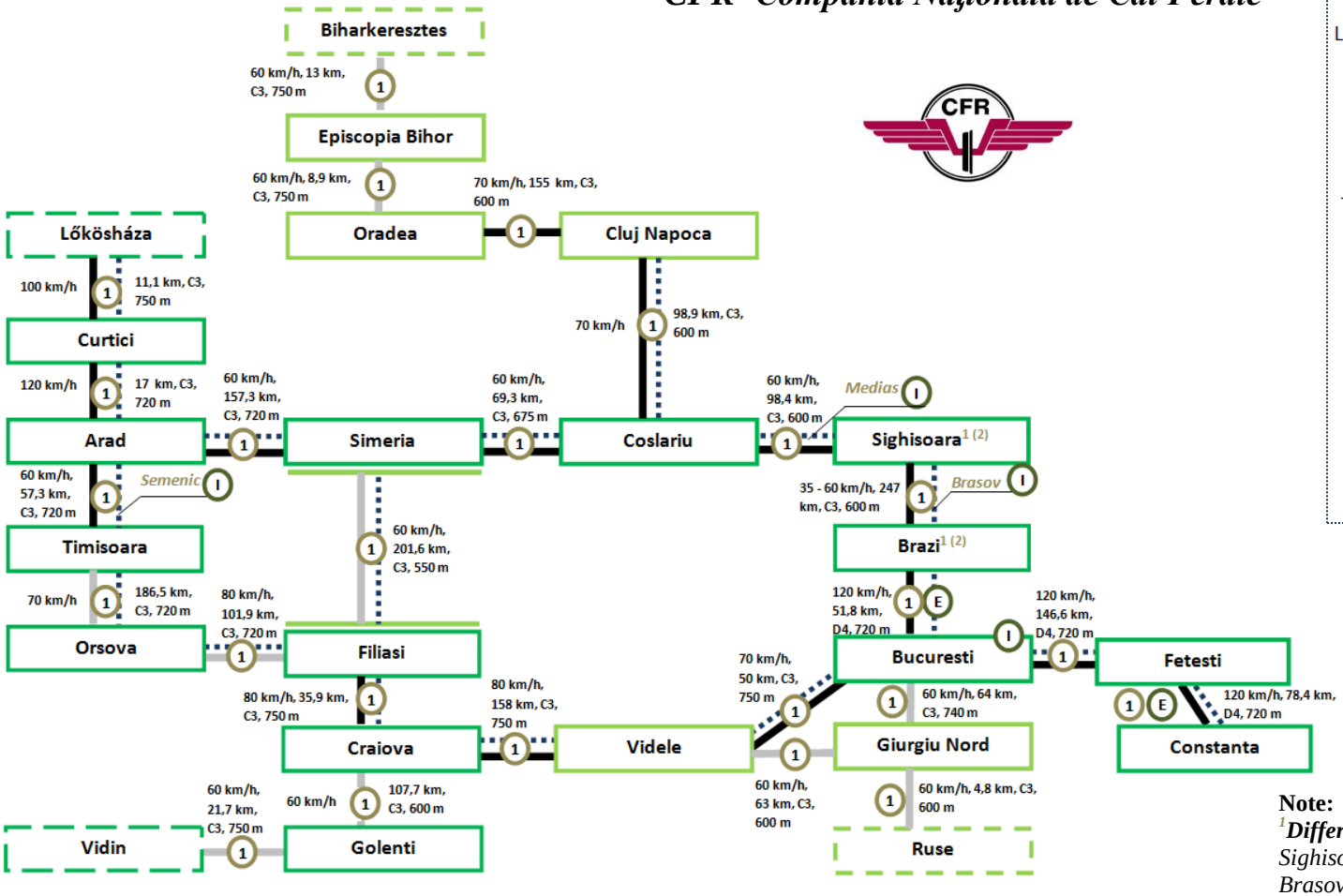
***VPE - Vasúti Pályakapacitás-elosztó Korlátolt Felelősségű Társaság***



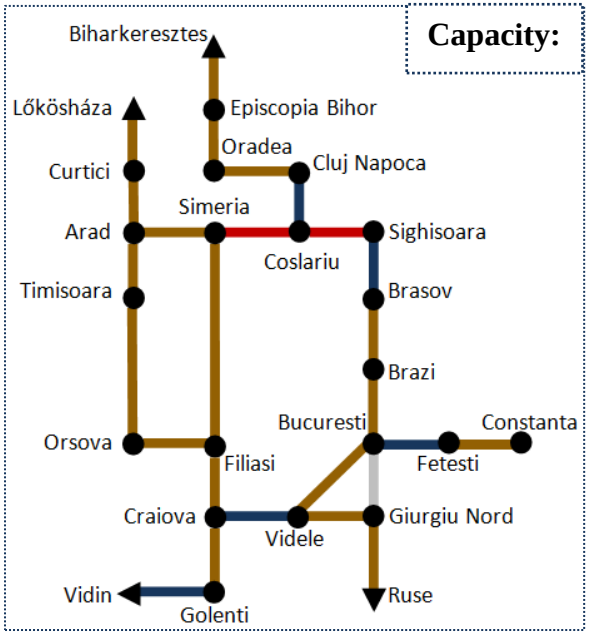



# Romania

## *CFR- Compania Naţională de Căi Ferate*




**Capacity:**




**Note:**

[1]***Different maximum train length (m) in the section***
*Sighisoara – Brasov (Sighisoara – Brazi): 600 m*
*Brasov – Predeal(Sighisoara – Brazi): 650 m*
*Predeal – Brazi (Sighisoara – Brazi): 640 m*

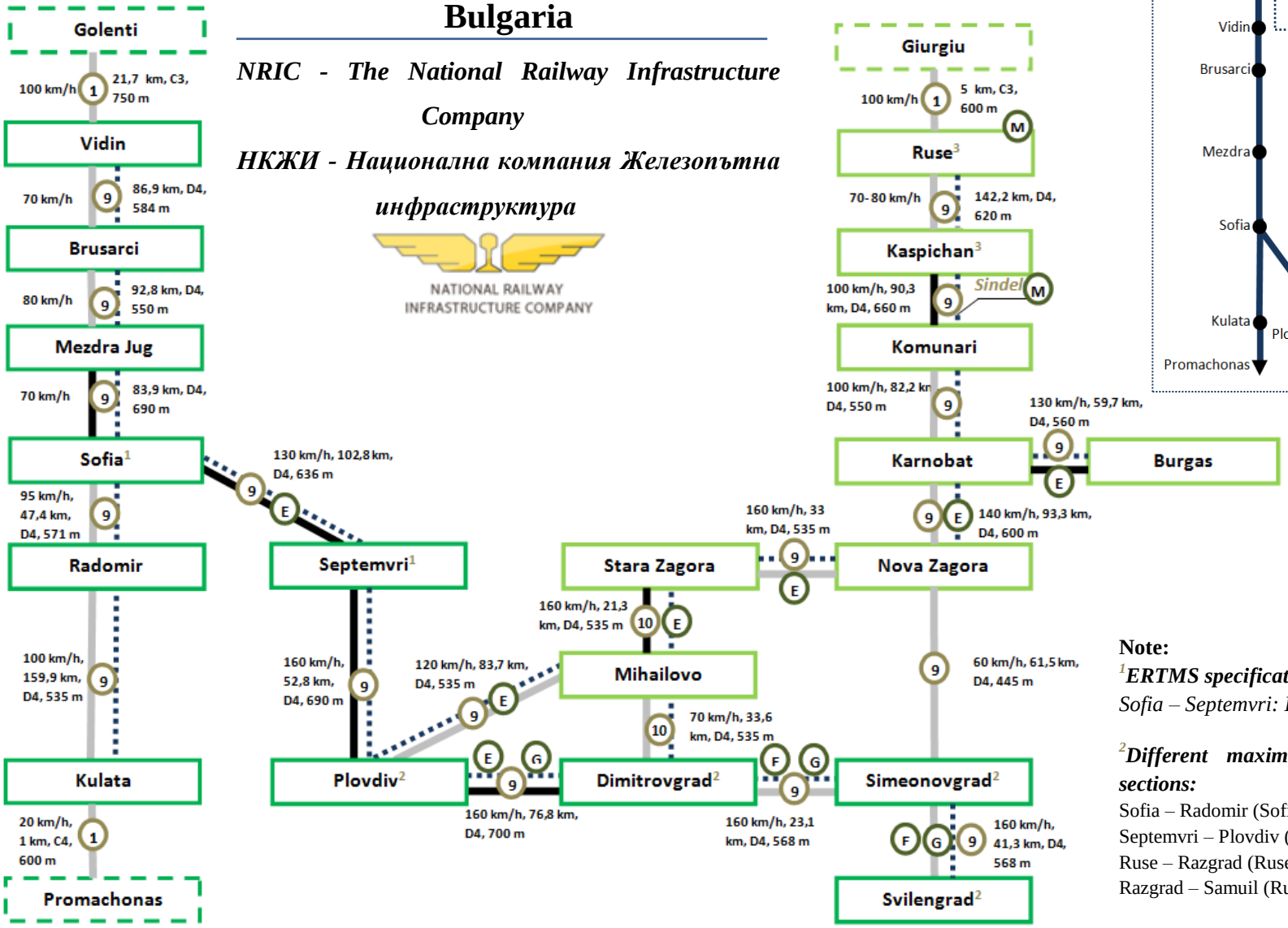
[2]***Different maximum speed (km/h) in the section:***
*Sighisoara – Brasov (Sighisoara – Brazi): 60 km/h*
*Brasov – Predeal (Sighisoara – Brazi): 35 km/h*
*Predeal – Brazi (Sighisoara – Brazi: 60 km*

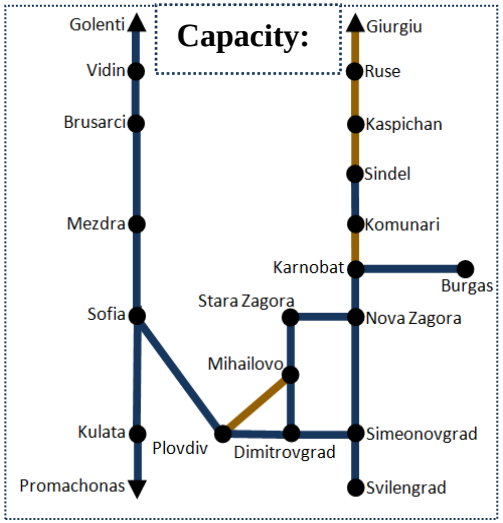
# Bulgaria

***NRIC - The National Railway Infrastructure Company***

***НКЖИ - Национална компания Железопътна инфраструктура***

NATIONAL RAILWAY INFRASTRUCTURE COMPANY




**Note:**

[1]***ERTMS specification:***

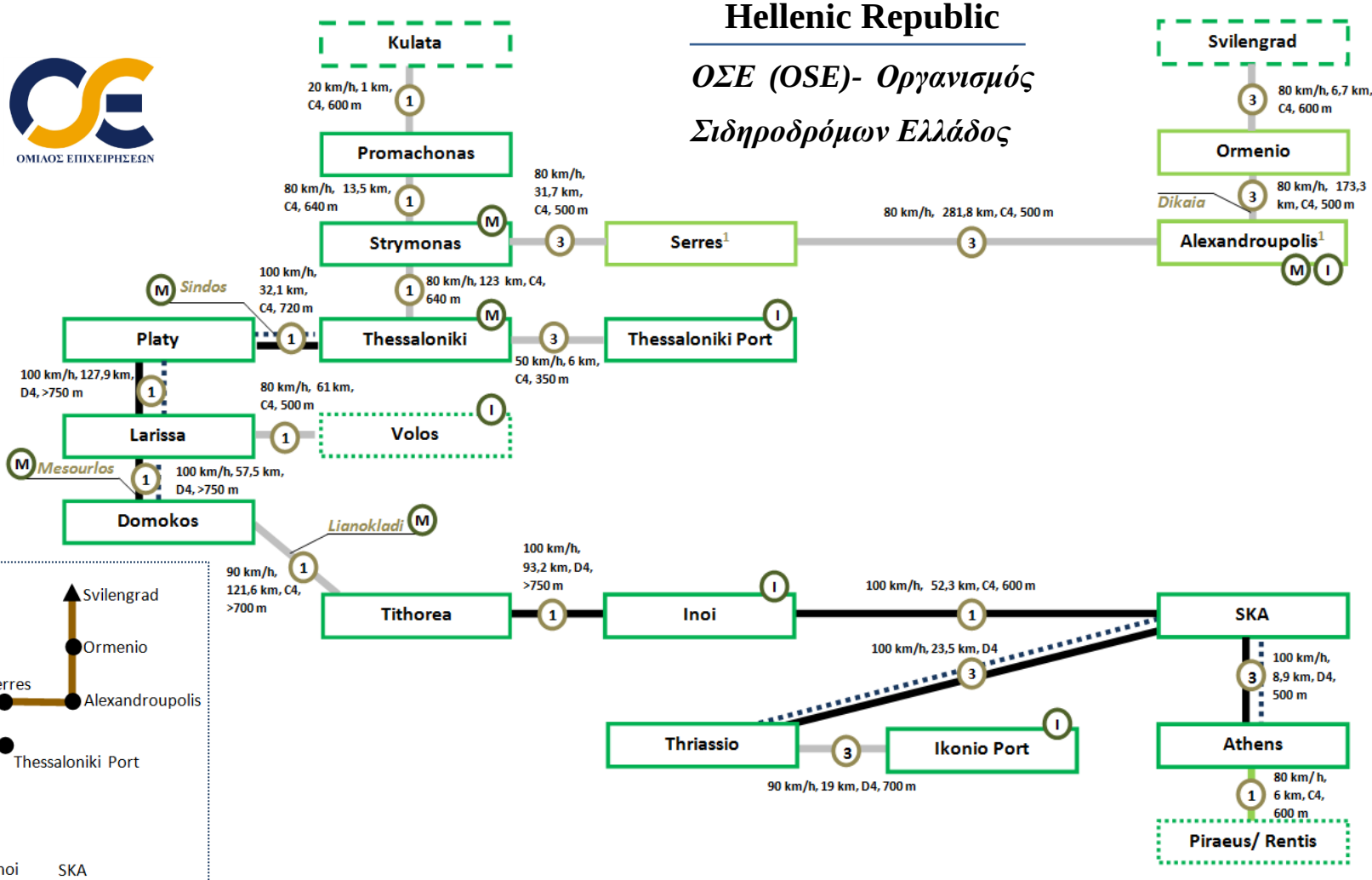
*Sofia – Septemvri: ETCS class B*

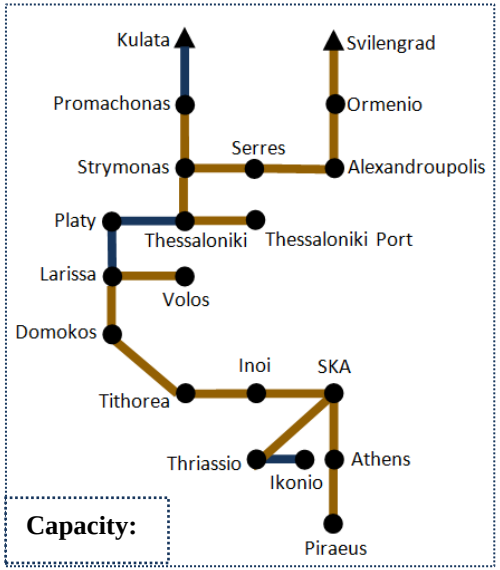
[2]***Different maximum train length (m) in sections:***

Sofia – Radomir (Sofia – Kulata): 571 m
Septemvri – Plovdiv (Sofia – Plovdiv): 690 m
Ruse – Razgrad (Ruse – Kaspichan): 630 m
Razgrad – Samuil (Ruse – Kaspichan): 800 m

# Hellenic Republic

## *ΟΣΕ (OSE)- Οργανισμός Σιδηροδρόμων Ελλάδος*




**Note:**

[1]***Different track code for combined transport (P/C) in sections:***
*Alexandroupolis – Drama (Alexandroupolis – Serres): P/C 32*

## 4.4 Analysis of capacity and bottlenecks

The values of utilized capacity of the lines included in the rail freight corridors are an important indicator of railway infrastructure quality. The analysis of the capacity of the lines included in the rail freight corridor OEM, which was graphically done in subchapter 4.3, revealed that:

- most of the capacity of the lines and line sections is used in the range of 50 - 89 %,
- within the corridor, there are lines with an overload capacity which may adversely affect the qualitative indicators of rail freight transport,
- within the corridor, there are approximately 40 % lines and line sections with a utilized capacity below 50 %, these lines may be effectively used in case of higher capacity demands, or as by-pass and alternative transport routes.

The analysis of the capacity of individual lines at present showed a sufficient provision for the possible and expected growth of transport performances within OEM corridor without a negative effect on the quantitative and qualitative indicators for rail freight services. In case of high demand on infrastructure manager services it is possible to use those lines efficiently, the capacity of which is utilized below 50 % with a minimal impact on the quality of rail system operation. A high increase in transport performances can lead to the overloading of some lines and line sections which can be solved only by construction of new railway infrastructure and changing of the transport organization and signalling systems. However, such measures require high investment costs, so it is necessary for infrastructure managers to be prepared to allocate the investment costs in order to increase the capacity of the lines and line sections concerned.

On the basis of information provided, an analysis of railway infrastructure utilization in the Member States of RFC OEM by rail passenger and freight transport on the whole network and on the lines included in RFC OEM was carried out. The evaluation of railway infrastructure utilization is given in Table 2. The share of rail transport on individual line section of the Member States is shown in Annex L.

*Table 2: Share of rail passenger and freight transport in the member states of RFC OEM*

| Country | Passenger transport | | Freight transport | |
|---|---|---|---|---|
| | Part of the entire rail network (%) | Part on RFC OEM (%) | Part of the entire rail network (%) | Part on RFC OEM (%) |
| **Germany** | 75,55 | 37,58 | 24,45 | 62,42 |
| **Czech Republic** | 77,16 | 72,06 | 22,84 | 27,94 |
| **Austria** | 70,55 | - | 29,45 | - |
| **Slovak Republic** | 70,21 | 64,79 | 29,79 | 35,21 |
| **Hungary** | 82,35 | 75,29 | 17,65 | 24,71 |
| **Romania** | 69,73 | 57,22 | 30,27 | 42,78 |
| **Bulgaria** | 73,19 | - | 26,81 | - |
| **Greece** | 92,27 | 89,01 | 7,73 | 10,99 |

The bottlenecks of railway infrastructure negatively affect, in particular, its quantitative indicators the importance of which has continuously increased in the latest period analysed. The growth of transport performances in rail passenger and freight traffic has an effect on the overloading of the bottlenecks which may lead to a reduction in the quality of rail transport services and a higher risk of accidents. There are bottlenecks on the railway infrastructure included in rail freight corridor OEM, too. The analysis of bottlenecks in the individual countries is given in Appendix A. Appendix A contains the analysis and identification of all current bottlenecks of the corridor and, in case of some bottlenecks, also gives a suggestion for their elimination. The analysis of bottlenecks on the railway infrastructure of OEM corridor showed no decrease compared to the analysis of bottlenecks carried out in 2013. However, this situation can currently be assessed as stable, although an increase in bottlenecks is expected due to the growth of transport performances, the lack of capacity, low level of modernization of railway infrastructure and limited resources allocated to the removal of bottlenecks. In case the bottlenecks are not gradually removed, there is a risk of reducing the required quality of railway infrastructure services, thus rail transport services will not be competitive. The infrastructure managers and member states must therefore pay sufficient attention in the form of measures and investments in the gradual removal of bottlenecks which represent a restriction of reliable, safe, continuous and competitive transport infrastructure.

## 4.5 Description of EU TEN-T corridor Orient/East-Mediterranean

The trans-European transport network (TEN-T) is identified as a network of rail and road corridors, international airports, waterways and ports within Europe, designed primarily for improving the connection of transport infrastructure and increasing its qualitative parameters within EU countries.

**At present, there are within 28 EU member states:**

- 5 M km of roads,
- more than 215 000 km of railway lines,
- 41 000 km of navigable inland waterways.

**The TEN-T network itself includes:**

- 75 200 km of roads,
- 78 000 km of railway lines,
- 330 airports,
- 270 seaports,
- 210 inland ports.

The TEN-T policy over the period 2014 – 2020 foresees an increase in the share of transport funding from EU resources to 26 billion EUR. The focus of funding is mainly on a defined new core network that will form the support axes of transport. The support of the new TEN-T core network will be a comprehensive network with regional and national links.

The TEN-T corridor Orient/East-Mediterranean connects Central Europe with maritime connection of the North Sea, the Baltic Sea, the Black Sea and the Mediterranean Sea which enables to optimize the use of ports concerned and the related sea routes. The corridor supports the development of ports as the main multimodal logistics sites and improves the multimodal connections of the major economic centres of Central Europe with the coast, e.g. Elbe River. The corridor also includes a sea line to the island of Cyprus. The corridor infrastructure as well as its routing is of high strategic importance for transport within the EU and connection to strategic global transport routes.

**The TEN–T corridor Orient/East-Mediterranean includes the following infrastructure:**

- 5 800 km of railway lines,
- 5 400 km of roads,
- 1 700 km of inland waterways,
- Passes through the territory of nine member states,
- 15 major city nodes,
- 13 seaports,

- 15 main airports,
- 17 inland ports,
- 27 terminals road -rail.

Table 3 analyses the traffic points included in TEN-T corridor Orient/East-Mediterranean in the individual countries. This table shows only information as listed in the TEN-T Regulation 1315/2013. A more extensive list of rail ports and terminals can be found at Appendix H.

*Table 3: Traffic points of TEN-T corridor Orient/East-Mediterranean*

| Node name | Airport | Seaport | Inland port | *ITT |
|---|---|---|---|---|
| Germany | Hamburg | Rostock | Braunschweig | Braunschweig |
| | Berlin-Brandenburg | Wilhelmshaven | Berlin | Berlin- Großbeeren |
| | Bremen | Bremen | Magdeburg | Bremen |
| | Hannover | Bremerhaven | Hannover | Bremerhaven |
| | Leipzig - Halle | Hamburg | Hamburg | Hamburg |
| | - | - | - | Hannover |
| | | | | Rostock |
| | | | | Magdeburg |
| Czech Republic | Praha Ruzyně | - | Děčín | Děčín |
| | | | Mělník | Mělník |
| | | | Pardubice | Pardubice |
| | | | Praha Holešovice | Česká Třebová |
| | | | | Brno |
| | | | | Praha |
| Austria | Wien | - | Wien | Wien |
| Slovak Republic | Bratislava | - | Bratislava | Bratislava |
| | | | Komárno | |
| Hungary | Budapest Ferihegy | - | Budapest Csepel | Budapest (Soroksár) |
| | | | Komarom | Metrans Buapest |
| | | | | RCT-BILK |
| Romania | Timișoara | Constanta | Drobeta Turnu Severin | Craiova |
| | | | | Railport Arad |
| | | | Calafat | Timișoara |
| Bulgaria | Sofia | Burgas | Vidin | Sofia |
| | | | | Plovdiv |
| Greece | Athina - El. Venizelos | Athina (Piraeus) | - | Athina (Piraeus) |
| | Heraklion | Heraklion. | | Thessaloniki |
| | Thessaloniki (Makedonia) | Igoumenitsa | | Patras |
| | - | Patras | | - |
| | | Thessaloniki | | |
| Cyprus | Larnaka | Limassol | - | - |

*Source: http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/map/maps.html*
**ITT- Intermodal transport terminal*


Figure 11: *Graphical representation of TEN–T corridor Orient/East-Mediterranean routing*

(Source: *www.ec.europa.eu/tramsport/infrastructure/tentec*)

## 4.6 Summary - basic comparison of RFC infrastructure

RFC corridors have been designed primarily on the basis of routing the main traffic flows of goods within the EU and the whole Europe in order to increase attractiveness, reliability and efficiency of the rail system taking into account the customer requirements as much as possible. Each corridor has its specific role and strategic routing adapted to the transport requirements of customers. In Table 4, a basic comparison of RFC infrastructure is given.

*Table 4: Basic parameters of RFC corridors*

| Corridor name | Number of countries | Length of lines in km | Seaport | Inland port | *ITT |
|---|---|---|---|---|---|
| RFC 1 (Rhine - Alpine) | 5 | 3 900 | 6 | 6 | 100 |
| RFC 2 (North Sea - Mediterranean) | 6 | 4 662 | 19 | 12 | 98 |
| RFC 3 (ScanMed) | 5 | 7 527 | 13 | 2 | 66 |
| RFC 4 (Atlantic) | 3 | 6 200 | 15 | 4 | 52 |
| RFC 5 (Baltic - Adriatic) | 6 | 4 825 | 8 | 3 | 84 |
| RFC 6 (Mediterranean) | 6 | cca 7 000 | 9 | 4 | 90 |
| RFC 7 (Orient/East - Med) | 8 | 7 600 | 8 | 16 | 30 |
| RFC 8 (North Sea - Baltic) | 5 | 6 045 | 6 | 13 | 171 |
| RFC 9 (Czech - Slovak) | 2 | 1 248 | 0 | 2 | 12 |

*Source: Annual reports of RFC corridors*

**ITT- Intermodal transport terminal*

Based on the basic comparison, OEM corridor may be put at the first place as regards the number of participating countries. The highest number of participating countries reflects its strategic and extensive routing and connecting the Orient/East-Mediterranean territory with Central and Northern Europe. The OEM corridor will fulfil an important task in the transport of goods from/to Turkey and the third countries of Asia and from/to EU countries. At the same time, the corridor, due its length of railway lines, belongs to the corridors having more than 7 000 km, which also confirms its extensive and strategic importance within EU transport infrastructure.

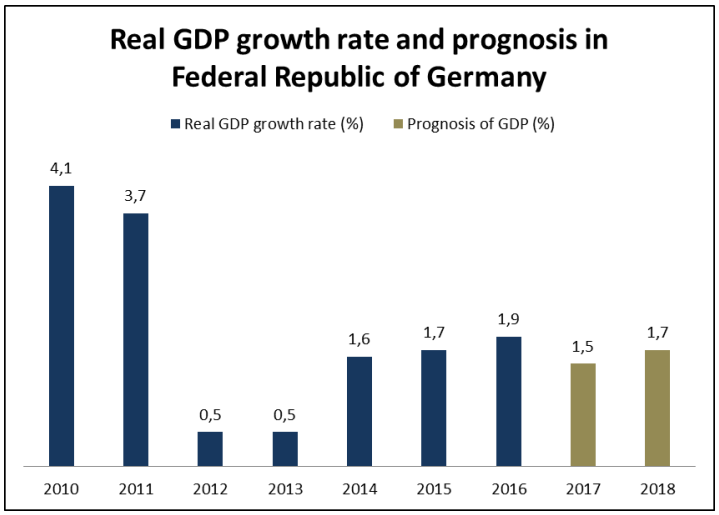
# 5 ANALYSIS OF ECONOMIC, TRANSPORT AND TRAFFIC INDICATORS

This chapter contains an analysis of the development of basic economic and transport indicators in individual countries included in the OEM. An important part of the chapter is the comparison of modal split for the individual countries. The chapter also contains a prognosis of economic growth based on the data from financial institutions of the countries concerned. A part of the chapter is the prognosis of development of transport performances within the railway infrastructure in question.

## 5.1 Federal Republic of Germany

### A) Economy

GDP is an important indicator affecting the quality of life. The Figure below shows the GDP development in the Federal Republic of Germany. At the same time, the analysis of the development of GDP per capita at purchasing power parity is given in Table 5.




Graph 1: *GDP development and prognosis in the Federal Republic of Germany (Source: Eurostat, Statistics of European Commission)*

*Table 5: GDP per capita of the Federal Republic of Germany at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28= 100) | 100 | 100 | 100 |
| Federal Republic of Germany | 124 | 125 | 124 |

*Source: Eurostat, Statistics of European Commission*

GDP growth analysis has shown a gradual increase since 2014. GDP development prognosis also assumes a growth and thus a steady increase in employment and wages.

Table 6 provides an analysis of the development of investments in the whole transport infrastructure and Table 7 analyses the development of investments in OEM infrastructure in the Federal Republic of Germany.

*Table 6: Development of investment in transport infrastructure in the Federal Republic of Germany*

| Investment in infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. €** | | | |
| rail | 10 137 | 9 789 | 10 298 |
| road | 7 655 | 6 600 | 6 463 |
| air | 654 | 697 | 801 |
| water | 1 997 | 2 049 | 2 056 |
| **Non-investment subsidies in mil. € N/A** | | | |

*Source: Traffic in number 2015/2016*

*Table 7: Investment subsidies to railway lines included in RFC OEM*

| Line included in RFC OEM | Investment subsidies in mill. € | |
|---|---|---|
| | Previous years | Total cost |
| **Bad Schandau – Wilhelmshaven** | | |
| ABS Leipzig - Dresden | 1200 | 1450 |
| KLV Lehrte | 25 | 140 |
| Knoten Dresden | 150 | 1000 |
| Elektrifiz. und Ausbau Oldenb. - Wilhelmsh. | 50 | 800 |
| **Bremen – Bremerhaven** | | |
| Anteil "Alpha" | 0 | 120 |
| **Berlin/Magedeburg– Hamburg** | | |
| Knoten Hamburg | 100 | 550 |
| **Dresden – Rostock** | | |
| ABS Berlin - Dresden | 300 | 800 |
| Knoten Berlin | 100 | 800 |
| ABS Berlin - Rostock | 700 | 1000 |

*Source: BVWP 2030 and input of department DB Netzinternfor Federal Transport Infrastructure Plan*

The available data on investment activities of the Federal Republic of Germany shows a decrease in investments in road infrastructure with a slight increase in investments in air, rail and water transport. The investments in lines planned for inclusion in the OEM corridor are at sufficient level compared to the whole railway infrastructure.

Table 8 presents selected charge indicators of railway infrastructure within the Federal Republic of Germany.

*Table 8: Selected economic indicators of rail transport in the Federal Republic of Germany*

| Indicators/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport | 2,67 | 2,73 | 2,80 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport | 4,67 | 4,78 | 4,90 |
| Average price (€) of charge for use of railway infrastructure for standard trains on RFC corridor | N/A | N/A | N/A |

*Source: IRG- rail „Market Monitoring Report"(March 2016), TPS DB Netz AG*

**B) Transport**

Tables 9 and 10 analyse the development of import of goods into EU countries from the Federal Republic of Germany. At the same time, the tables contain a specific analysis of the import of goods development from the Federal Republic of Germany into the countries of the OEM corridor.

*Table 9: Imports of goods into EU from the Federal Republic of Germany in mill. €*

| State/ Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| **TOTAL EU 28 countries** | **609 233,3** | **634 274,2** | **674 199,7** |
| **Austria** | 56 870,0 | 56 595,3 | 58 472,2 |
| **Bulgaria** | 2 793,7 | 3 213,1 | 3 395,4 |
| **Czech Republic** | 32 786,5 | 34 952,4 | 38 081,8 |
| **Greece** | 4 539,8 | 4 841,0 | 4 690,7 |
| **Hungary** | 18 853,8 | 19 982,7 | 21 589,0 |
| **Romania** | 10 242,7 | 11 219,8 | 12 501,5 |
| **Slovakia** | 11 209,6 | 11 559,5 | 12 735,1 |
| **TOTAL RFC OEM countries** | **137 296,1** | **142 363,8** | **151 465,7** |

*Source*: *European Commission – Trade – Export Helpdesk - Statistics*

*Table 10: Imports of goods into EU from the Federal Republic of Germany in thous. tonnes*

| State/ Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| **TOTAL EU 28 countries** | **293 015,1** | **287 747,0** | **283 633,5** |
| **Austria** | 27 896,9 | 27 166,3 | 29 606,8 |
| **Bulgaria** | 579,2 | 836,9 | 758,9 |
| **Czech Republic** | 15 982,5 | 15 772,5 | 17 841,1 |
| **Greece** | 1 263,7 | 1 355,1 | 1 274,6 |
| **Hungary** | 4 077,3 | 4 551,9 | 5 110,5 |
| **Romania** | 2 148,5 | 2 165,2 | 2 464,1 |
| **Slovakia** | 3 155,8 | 3 298,0 | 3 465,9 |
| **TOTAL RFC OEM countries** | **55 103,9** | **55 145,9** | **60 521,9** |

*Source: European Commission – Trade – Export Helpdesk – Statistics*

Tables 11 and 12 analyse the development of the import of goods from EU countries into the Federal Republic of Germany. At the same time, the tables contain a specific analysis of the goods import development into the Federal Republic of Germany from the countries of the OEM corridor.

*Table 11: Imports of goods into the Federal Republic of Germany from EU in mill. €*

| State/ Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| **TOTAL EU 28 countries** | **585 546,13** | **605 226,84** | **631 613,34** |
| **Austria** | 39 077,5 | 39 161,6 | 40 515,1 |
| **Bulgaria** | 2 741,4 | 2 655,2 | 2 893,8 |
| **Czech Republic** | 38 246,7 | 42 176,3 | 45 767,3 |
| **Greece** | 1 793,3 | 1 798,5 | 1 893,9 |
| **Hungary** | 21 081,2 | 23 398,8 | 24 870,2 |
| **Romania** | 9 192,1 | 10 100,7 | 10 770,6 |
| **Slovakia** | 13 392,5 | 14 279,0 | 15 198,4 |
| **TOTAL RFC OEM countries** | **125 524,6** | **133 570,1** | **141 909,4** |

*Source: European Commission - Trade - Export Helpdesk - Statistics*

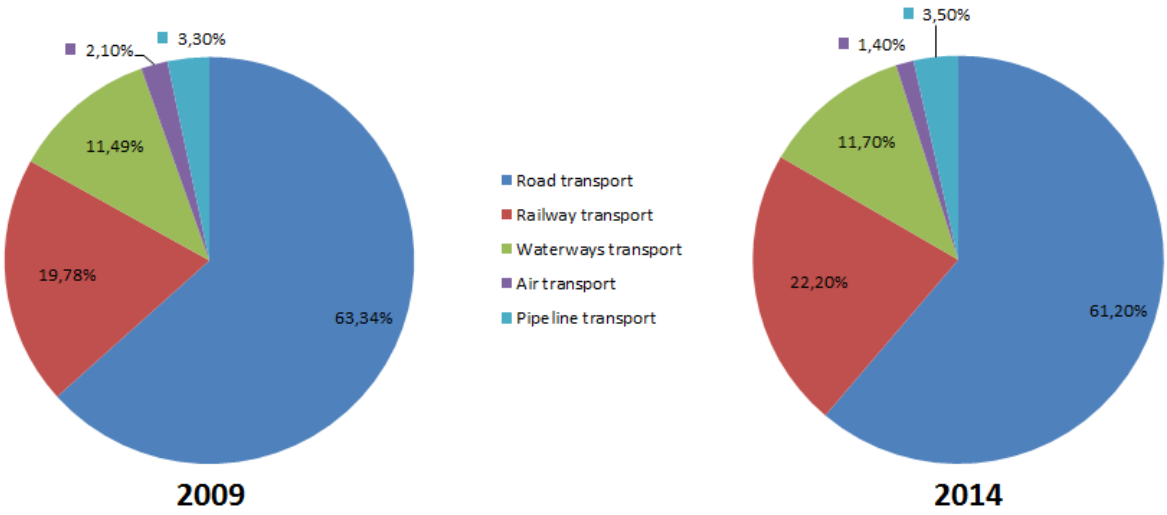
*Table 12: Imports of goods into the Federal Republic of Germany from EU in thous. tonnes*

| Country/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| **TOTAL EU 28 countries** | **378 741,86** | **386 095,42** | **374 436,23** |
| **Austria** | 18 247,79 | 18 438,78 | 18 527,58 |
| **Bulgaria** | 796,82 | 847,33 | 773,82 |
| **Czech Republic** | 17 704,69 | 19 201,10 | 21 127,49 |
| **Greece** | 1 048,71 | 1 040,66 | 1 089,23 |
| **Hungary** | 4 817,52 | 5 392,82 | 5 405,58 |
| **Romania** | 1 657,50 | 1 741,18 | 1 774,02 |
| **Slovakia** | 3 598,57 | 4 095,69 | 4 078,36 |
| **TOTAL RFC OEM countries** | **47 871,60** | **50 757,55** | **52 776,08** |

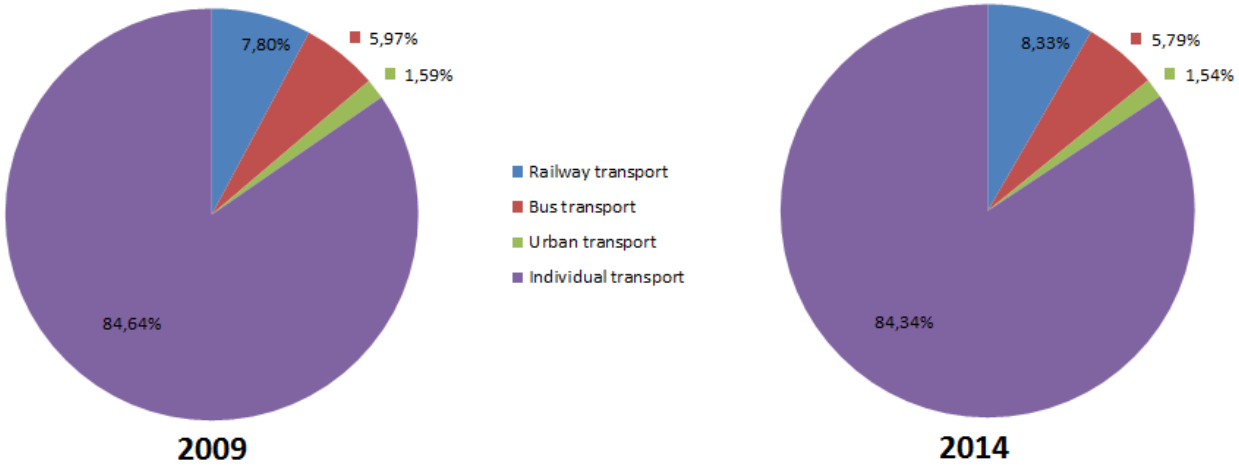
*Source: European Commission – Trade – Export Helpdesk - Statistics*

The international trade analysis carried out in Tables 9 to 12 between the Federal Republic of Germany and EU countries has shown a gradual growth. The gradual increase in international trade has also been demonstrated between the countries of the OEM corridor. Growth in international trade is due to the economic development of the Federal Republic of Germany as well as the development of other EU countries. Growth in international trade has a positive effect on the demand for international rail freight services. The analysis has shown a sufficient potential to maintain rail system performances as well as the prospect of gaining new transports. A higher level of reliability, safety, acceptable transport time and quality of rail system services are required within the demand. The OEM corridor and its services also have a significant impact on the improvement of the quality of international rail freight services.

Graph 2 and Graph 3 show a graphical comparison of the modal split in the Federal Republic of Germany in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes after measures had been taken to support rail transport within EU.




Graph 2: *Comparison of modal split in freight transport in the Federal Republic of Germany (Source: listed in Appendix I)*




Graph 3: *Comparison of modal split in passenger transport in the Federal Republic of Germany (Source: Eurostat, Statistical pocketbook 2016)*

The comparison of modal split in the Federal Republic of Germany shows a change in favour of rail passenger and freight transport.

Table 13 provides an analysis of the development of transport performances in the Federal Republic of Germany in the period of 2013 – 2015. At the same time, Table 14 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in the Federal Republic of Germany.

*Table 13: Transport performances in rail passenger and freight traffic in 2013 - 2015*

| Transport mode | Carrier | Scope | Transp. perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 760 200 | 763 300 | 748 700 |
| | | on RFC OEM | train-km in thous. | 1 355 | 1 346 | 1 361 |
| | Private carrier | total | train-km in thous. | 154 927 | 158 466 | 174 918 |
| | | on RFC OEM | train-km in thous. | 0 | 0 | 0 |
| Freight transport | National carrier | total | train-km in thous. | 196 000 | 193 200 | 187 000 |
| | | | gross ton-km in mill. * | 75,2 | 74,8 | 71 |
| | | on RFC OEM | train-km in thous. | 1 852 | 1 845,0 | 924 |
| | | | gross ton-km in mill. * | N/A | N/A | N/A |
| | Private carrier | total | train-km in thous. | 95 256 | 100 066 | 111 951 |
| | | | gross ton-km in mill. * | 37,4 | 37,8 | 45,6 |
| | | on RFC OEM | train-km in thous. | 534 | 483 | 1 337 |
| | | | gross ton-km in mill. * | N/A | N/A | N/A |

*Source: Data and facts DB Netz, DB Netz – Tool (Remax) and LeiDis*

**Competition report 2016 Deutsche Bahn AG (Mai 2016) aligned with annual report 2015 of Federal Network Agency for electricity, telecommunication, gas, post and railways*

*Table 14: Structure of rail carriers in the territory of the Federal Republic of Germany*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 2 | 3 | **5** | 49 | 2 | **51** | 56 | 2 | 3 | **5** | 50 | 2 | **52** | 57 | 2 | 3 | **5** | 54 | 4 | **58** | 63 |

*Source: Data and facts DB Netz, DB Netz - Tool (Remax) and LeiDis*

*Note:*

*F- Rail freight carrier*

*P- Rail passenger carrier*

The analysis of transport performances of rail transport in the Federal Republic of Germany shows a slight increase. An increase in transport performances can be observed on the lines which will be included in the OEM corridor, too. Following the inclusion of lines in the corridor, a further increase in transport performances in international rail freight transport is expected, which will be influenced also by OEM corridor services. The analysis has shown an increase in transport performances for private carriers which is mainly due to the entry of new carriers into the market of rail services in the Federal Republic of Germany.

Table 15 analyses the bottlenecks of railway infrastructure in the Federal Republic of Germany, included in the OEM corridor.

*Table 15: Bottlenecks in railway infrastructure in the Federal Republic of Germany*

| Line section | Bottlenecks because of technical requirements | Reasons | Suggestions how to move bottlenecks |
|---|---|---|---|
| Bad Schandau - Wilhelmshaven | Oldenburg - Wilhelmshaven | no electric traction | Project ABS Oldenburg - Wilhelmshaven (electrification) |
| Bremen - Bremerhaven | no | - | - |
| Berlin/ Magedeburg - Hamburg | no | - | - |
| Dresden - Rostock | no | - | - |

*Source: Member from the Federal republic of Germany, *Bad Schandau – Dresden several temporarily construction works are planned, section will become a bottleneck at this period*

Table 16 contains data on average running times on the individual analysed lines in the Federal republic of Germany.

*Table 16: Comparison of transport time and transport charge on individual lines*

| Line section | Transport time | | Transport charges |
|---|---|---|---|
| | Average transport time by railΔ (min) premise: no stops* | Average transport time by truck (hour, min) | Access charges for "standard train" (1.600 t and 700 m) price freight transport 2015 (€) |
| Bad Schandau - Wilhelmshaven | ca. 10 h | 9 h 2 m** | 1 722 |
| Bad Schandau - Bremerhaven | ca. 10 h | 8 h 27 m** | 1 722 |
| Bad Schandau - Hamburg | ca. 9 h | 7 h 52 m** | 1 540 |
| Bad Schandau - Rostock | ca. 8 h | 7 h 3 m** | 1 386 |

*Source: Member from the Federal republic of Germany*

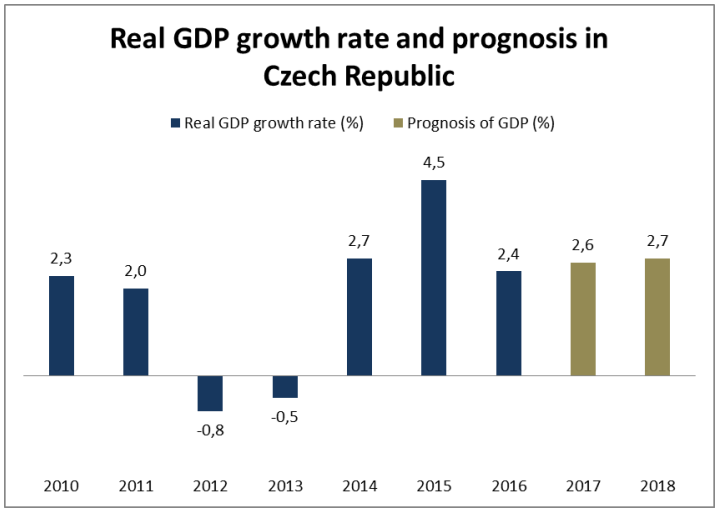
**Assumption for a train with an average speed of 60 km/h (for a train with scheduled speed of 100 km/h) without waiting time*

***Average speed in road goods transport is 70 km/h (in Germany)*

## 5.2 Czech Republic

### A) Economy

Based on the importance of GDP, GDP development in the Czech Republic is shown in the table below. At the same time, Table 17 analyses the GDP development per capita at purchasing power parity.




Graph 4: *GDP development and prognosis in the Czech Republic (Source: Eurostat, Statistics of European Commission)*

*Table 17: GDP per capita of the Czech Republic at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Czech Republic | 84 | 86 | 87 |

*Source: Eurostat, Statistics of European Commission*

The GDP development analysis, including a prognosis for 2017 and 2018 in the Czech Republic, assumes a positive growth rate above 2 %. At the same time, there is a slight positive increase in purchasing power parity, which confirms price stability in the Czech Republic.

The Table 18 provides an analysis of the investment development in € in individual modes of transport in the Czech Republic in the period of 2013 – 2015. The investment development analysis in CZK is given in Appendix B. At the same time, Table 19 analyses the development of investment in the lines included in OEM corridor.

*Table 18: Development of investment in transport infrastructure the Czech Republic in mill. €*

| Investment in infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. €** | **1012,86** | **1136,42** | **2129,70** |
| rail | 322,88 | 473,60 | 1177,20 |
| road | 623,23 | 615,99 | 894,69 |
| air | 53,51 | 36,69 | 36,79 |
| water | 6,89 | 9,74 | 15,28 |
| **Non-investment subsidies in mil. €** | **879,25** | **1047,15** | **1378,12** |
| rail | 363,41 | 432,05 | 668,07 |
| road | 493,86 | 598,76 | 691,66 |
| air | 14,60 | 9,13 | 8,25 |
| water | 4,45 | 4,58 | 7,56 |

*Source: Member of RFC OEM from the Czech Republic*

*Table 19: Investment subsidies to railway lines included in RFC OEM*

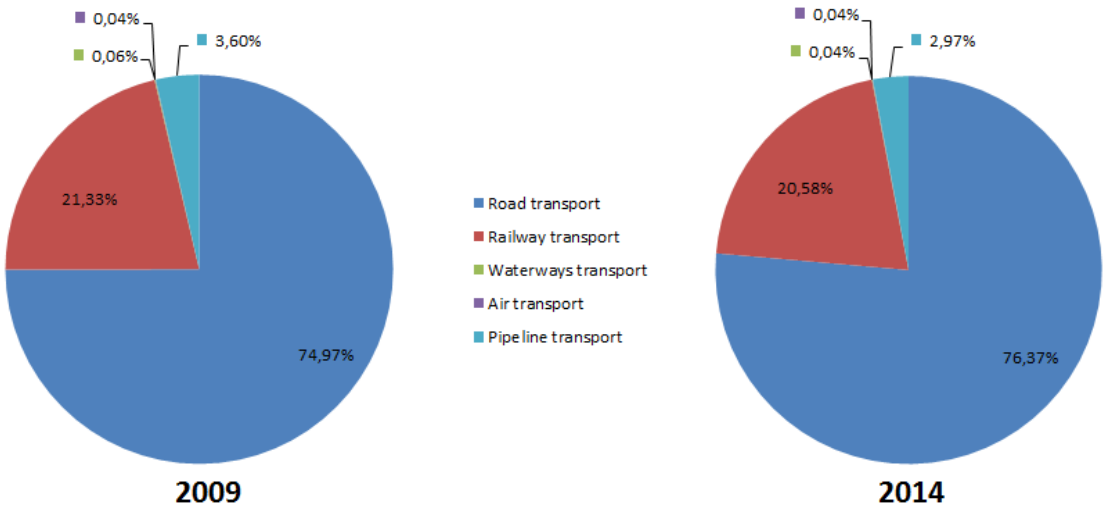
| Lines included in RFC OEM | Investment subsidies in mill. € | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | Expected year |
| Praha – Kolín | 5,81 | 14,72 | 39,18 | 16,53 |
| Kolín - Česká Třebová | 13,41 | 23,68 | 22,29 | 7,63 |
| Česká Třebová – Brno | 2,77 | 3,24 | 22,31 | 7,75 |
| Brno – Lanžhot st.hr. | 15,12 | 20,74 | 15,17 | 0,44 |
| Kolín – Brno (via Havlíčkův Brod) | 2,7 | 16,05 | 83,06 | 39,55 |

*Source: Member of RFC OEM from the Czech Republic*

The analyses carried out in the Czech Republic have shown an increase in investment in rail and road transport. Increase in investment is positively reflected in the modernization and subsequent increase in qualitative and quantitative indicators of railway infrastructure. At the same time, the increase in investment in the railway infrastructure has impact on the reducing the infrastructure charges making the rail sector more cost-competitive in relation to road goods transport.

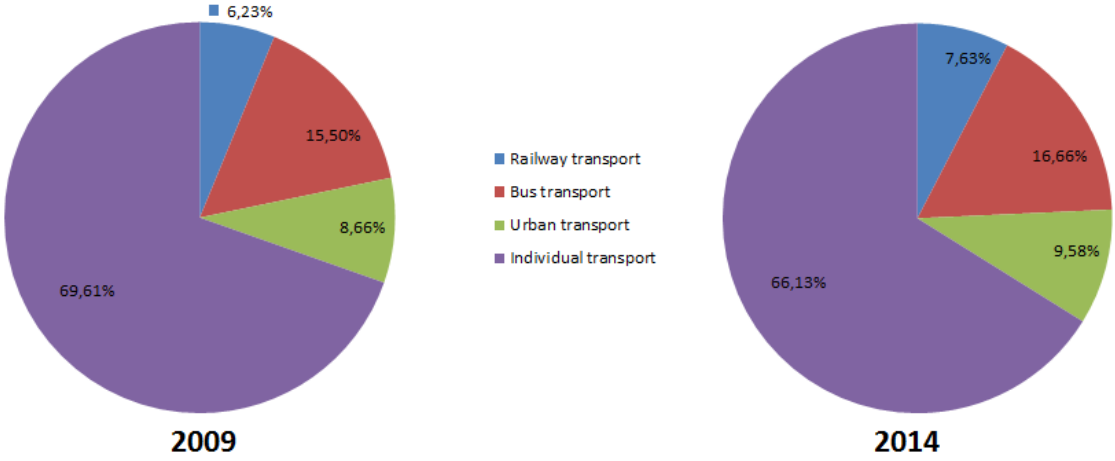
**B) Transport**

Graph 5 and Graph 6 show a graphical comparison of the modal split in the Czech Republic in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes after measures had been taken to support rail transport within the EU.




Graph 5: *Comparison of modal split in freight traffic in the Czech Republic*

*(Source: listed in Appendix I)*




Graph 6: *Comparison of modal split in passenger traffic in the Czech Republic (Source: Eurostat, Statistical pocketbook 2016)*

The modal split comparison in the Czech Republic showed a change in favour of road goods transport compared to rail freight traffic. In rail passenger traffic, the change of the modal split was recorded in favour of rail passenger traffic, particularly at the expense of individual motoring.

Table 20 contains an analysis of transport performance development in the Czech Republic in the period of 2013 – 2015. At the same time, Table 21 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in the Czech Republic.

*Table 20: Transport performances in rail passenger and freight traffic in 2013 - 2015*

| Transport mode | Carrier | Scope | Transp. perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train-km in thous. | 120 217,3 | 118 522,39 | 117 182,94 |
| | | on RFC OEM | train-km in thous. | 19 680,13 | 19 182,01 | 19 000,5 |
| | Private carrier | total | train-km in thous. | 5 505,82 | 5 795,95 | 6 157,26 |
| | | on RFC OEM | train-km in thous. | 1 247,94 | 1 637,8 | 1 882,12 |
| Freight transport | National carriers | total | train-km in thous. | 26 816,04 | 25 129,97 | 24 518,71 |
| | | | gross ton-km in mill. | 25 920,92 | 24 066,79 | 23 063,81 |
| | | on RFC OEM | train-km in thous. | 6 122,45 | 5 616,53 | 5 494,37 |
| | | | gross ton-km in mill. | 6 177,4 | 5 546,12 | 5 305,93 |
| | Private carriers | total | train-km in thous. | 8 625,81 | 10 683,06 | 11 985,04 |
| | | | gross ton-km in mill. | 7 828,58 | 10 196,92 | 11 384,56 |
| | | on RFC OEM | train-km in thous. | 1 598,31 | 2 097,96 | 2 602,51 |
| | | | gross ton-km in mill. | 1 510,61 | 2 012,67 | 2 608,1 |

*Source: Member of RFC OEM from the Czech Republic*

*Table 21: Structure of rail carriers in the territory of the Czech Republic*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 0 | 0 | 2 | 61 | 2 | 20 | 85 | 0 | 0 | 2 | 65 | 2 | 20 | 89 | 0 | 0 | 2 | 70 | 1 | 21 | 94 |

*Source: Member of RFC OEM from the Czech Republic*

The analysis of transport performances in the Czech Republic showed a slight decrease in the total performances of rail passenger traffic. At the same time, an increase in total transport performances on the lines included in the OEM corridor was demonstrated. The analysis showed a positive development of transport performances at private carriers. The increase in these performances was also affected by the successive entry of new carriers into the Czech Republic market.

Table 22 presents the development of the number of individual trains in international rail traffic according to divisions in the period of 2013 – 2015.

*Table 22: Number of international freight trains according to individual divisions*

| International freight trains request type comparison | Annual | Annual Late | Interim | Ad-hoc | Instant |
|---|---|---|---|---|---|
| **Year** | **2013** | | | | |
| Number of international freight trains operated | 494 (128759) | 35 (4501) | 451 (22977) | 4737 (8854) | 33061 (33177) |
| **Year** | **2014** | | | | |
| Number of international freight trains operated | 458 (111787) | 86 (17589) | 442 (29919) | 4961 (10662) | 37802 (37928) |
| **Year** | **2015** | | | | |
| Number of international freight trains operated | 452 (106767) | 51 (9886) | 446 (17577) | 5772 (10139) | 47024 (47143) |

*Source: Member of RFC OEM from the Czech Republic*

**Explanation:**

***Annual*** - All trains which have been requested until X-8.

***Annual late*** - National deadlines may vary, but roughly all trains which have been requested between X-8 and X-2.

***Interim*** - National deadlines may vary but roughly all trains which have been requested between X-2 and 4-5 weeks before the first day of train operation

***Ad hoc*** - National deadlines may vary but roughly all trains which are not included in the categories above and requested at latest 3-7 calendar days before the first day of operation

***Instant*** - All trains which are not included in the categories above.

**Remarks:**

The first number = number of path request

The second number = number of days of running

There are no just only loco trains included

There are no path and days of running if RU cancelled the path during the regular change of annual TT

Ad hoc = more than 3 days before train run

Instant = less than 3 days before train runs

Table 23 analyses the bottlenecks of railway infrastructure in the Czech Republic, included in the OEM corridor.

*Table 23: Bottlenecks in railway infrastructure in the Czech Republic*

| Line section | Bottlenecks | Reasons | Suggestion how to move bottlenecks |
|---|---|---|---|
| Kutná Hora - Havlíčkův Brod | Vlkaneč - Světlá nad Sázavou | Max speed only 70 km/h | - |
| Praha - Česká Třebová | Line capacity consumption | between 5:00-20:00 more than 100% | - |

*Source: Member of RFC OEM form the Czech Republic*

Table 24 contains data on the average running times and charges on individual analysed lines in the Czech Republic.

*Table 24: Comparison of transport time and transport charges in the Czech Republic*

| Line section | Transport time | | Transport charges | |
|---|---|---|---|---|
| | Average transport time by railΔ (min) | Average transport time by truck (hour:min) | Access charges for "standard train" (1.600 t and 700 m*) | Charges for the truck (road) |
| Praha – Libeň – Česká Třebová | 135 | 2 h 55 m** | 630,84 € | N/A |
| Česká Třebová – Brno | 90 | 1 h 29 m** | 353,85 € | N/A |
| Brno – Lanžhot st.hr. | 75 | 1 h 6 m** | 279,97 € | N/A |
| Kolín – Brno | 180 | 2 h 46 m** | 677,01 € | N/A |

*Source: Member of RFC OEM from the Czech Republic*

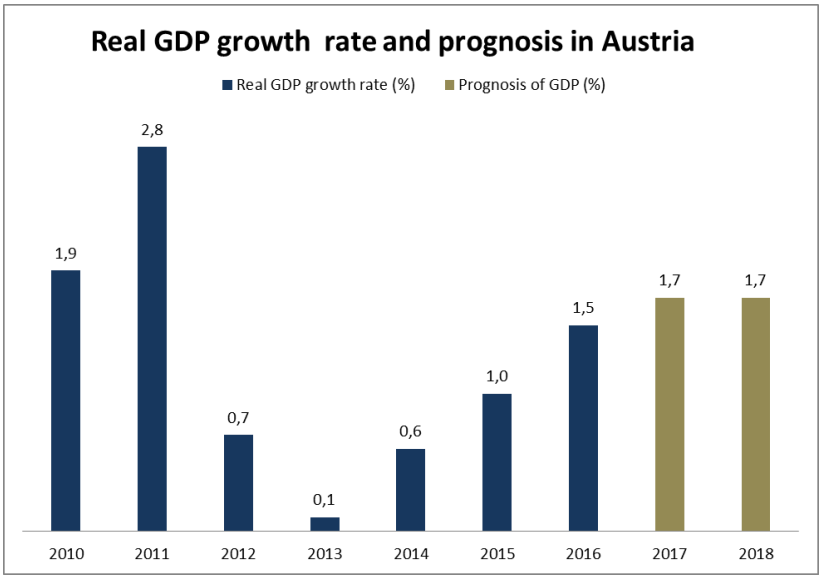
***Average speed in road goods transport is 60 km/h*

Other additional information on the Czech Republic is given in Appendix B.

## 5.3 Austria

### A) Economy

Based on the importance of GDP, GDP development in Austria is shown in the Figure below. At the same time, an analysis of GDP development per capita at purchasing power parity is carried out in Table 25.




Graph 7: *GDP Development and prognosis in Austria*

*(Source: Eurostat, Statistics of European Commission)*

*Table 25: GDP per capita of Austria at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Austria | 131 | 129 | 128 |

*Source: Eurostat, Statistics of European Commission*

The analysis of GDP development, including the prognosis for 2017 and 2018 in Austria, assumes a positive growth rate. At the same time, a slight change of the purchasing power parity is recorded, which confirms a decrease in prices in Austria.

Table 26 shows the development of the number of railway undertakings for the years 2013 – 2015 which have an authorized access to the railway infrastructure managed by ÖBB INFRA.

*Table 26: Number of railway undertakings with authorized access to ÖBB INFRA*

| Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Number of carriers | 31 | 31 | 41 |

Source: ÖBB INFRA annual reports

**B) Transport**

Table 27 shows the development of rail passenger transport performances carried out on the network managed by ÖBB INFRA in the years 2009 – 2015. At the same time, an analysis of the development of rail freight transport performances is carried out in Table 28.

*Table 27: Passenger transport performances for 2013 – 2015*

| Performance/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| National RU in mill. Train-km | 91,2 | 92,1 | 92,7 |
| Other RU mill. Train-km | 4,4 | 4,7 | 4,8 |
| **TOTAL mill. Train-km** | **95,6** | **96,8** | **97,5** |
| National RU mill. Gross ton-km | 26 991,5 | 27 320,7 | 27 606 |
| Other RU mill. Gross ton-km | 1 357 | 1 473 | 1 523 |
| **TOTAL mill. Gross ton-km** | **28 348,5** | **28 794** | **29 129** |

Source: ÖBB INFRA annual reports

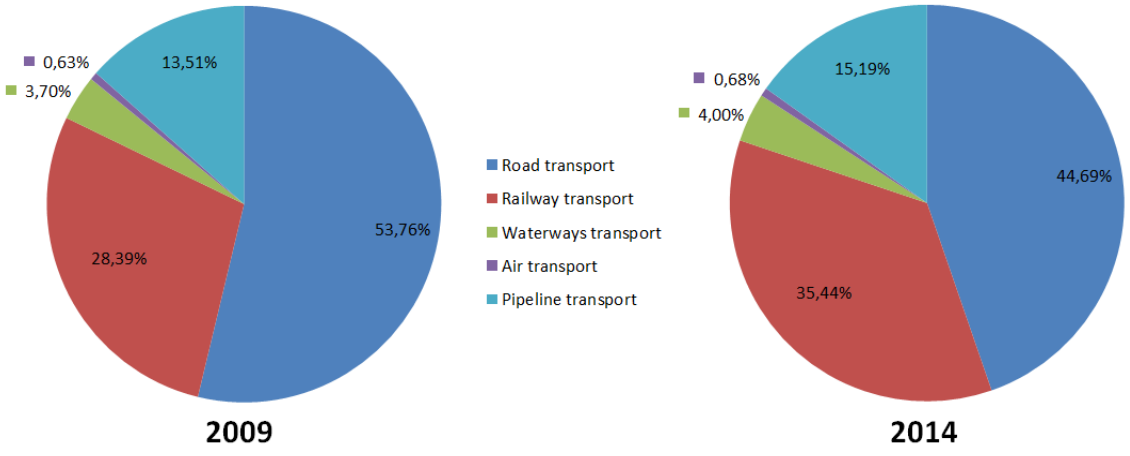
*Table 28: Freight transport performances for 2013 – 2015*

| Performance/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| National RU in mill. Train-km | 33,1 | 33,3 | 32,7 |
| Other RU mill. Train-km | 6,6 | 7,8 | 8 |
| **TOTAL mill. Train-km** | **39,7** | **41,1** | **40,7** |
| National RU mill. Gross ton-km | 35 163 | 35 330 | 34 539 |
| Other RU mill. Gross ton-km | 8 326 | 9 928 | 10 301 |
| **TOTAL mill. Gross ton-km** | **43 489** | **45 258** | **44 849** |

Source: ÖBB INFRA annual reports

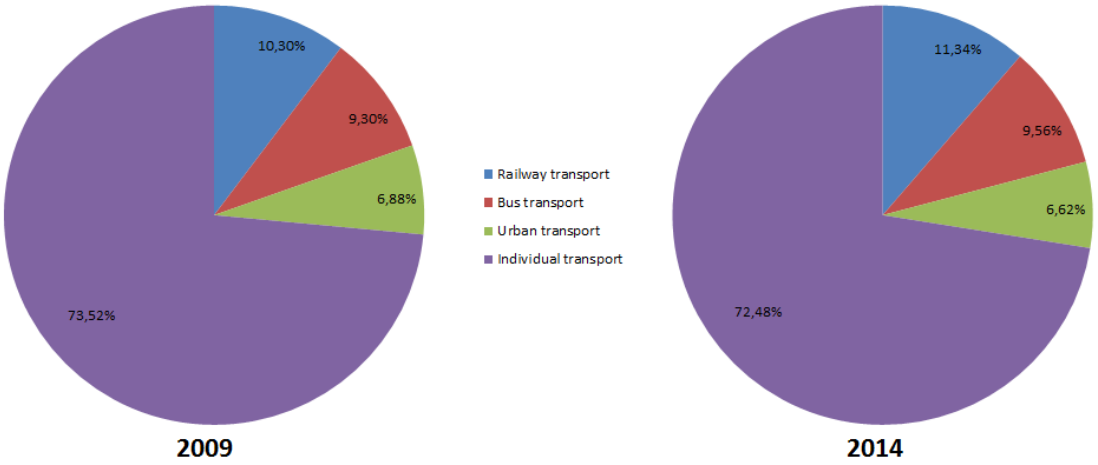
In rail passenger transport, there is a gradual increase in transport performances in the monitored period. The growth in transport performances is also confirmed by national and private carriers. A decrease of transport performances is recorded in 2015 compared to 2014 in freight transport. An increase in transport performances is demonstrated by private carriers.

Graph 8 and Graph 9 show a graphical comparison of the modal split in Austria in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes after measures had been taken to support rail transport within the EU.




Graph 8: *Comparison of modal split in freight transport in Austria*

*(Source: listed in Appendix I)*




Graph 9: *Comparison of modal split in passenger transport in Austria*

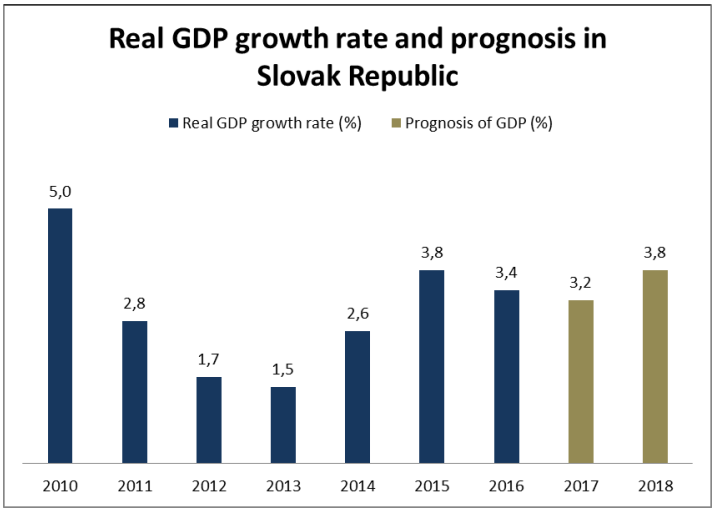
*(Source: Eurostat, Statistical pocketbook 2016)*

The comparison of modal split in Austria confirmed a significant change of the modal split in favour of rail freight transport. This change is mainly affected by the state transport policy, liberalization measures and the quality of transport infrastructure and service. A slight change is also recorded in favour to rail passenger transport.

## 5.4 Slovak Republic

### A) Economy

Based on the importance of GDP, GDP development in the Slovak Republic is shown in Figure below. At the same time, Table 29 analyses the development of GDP per capita at purchasing power parity.




Graph 10: *GDP development and prognosis in the Slovak Republic*

*(Source: Eurostat, Statistics of European Commission)*

*Table 29: GDP per capita of the Slovak Republic at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Slovak republic | 77 | 77 | 77 |

*Source: Eurostat, Statistics of European Commission*

The analysis of GDP development, including the prognosis for 2017 and 2018 in the Slovak Republic, assumes a positive growth rate above 3 %. At the same time, there is no change in purchasing power parity, which confirms the price stability in the Slovak Republic.

Table 30 contains an analysis of the development of investment in € in individual modes of transport in the Slovak Republic in the period of 2013 – 2015. At the same time, an analysis of the development of investment in lines included in the OEM corridor is carried out in Table 31.

*Table 30: Development of investments in transport infrastructure in the Slovak Republic*

| State investment in infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. €:** | | | |
| rail | 330,3 | 283,7 | 285* |
| road | 564,1 | 731,3 | 758,7* |
| air | 5,3 | 5,8 | 6,2* |
| water | 4,4 | 9,6 | 8,6* |
| **Non – investment subsidies in mill. €/year rail** 250/2014,2015 | | | |

*Source: Member of RFC OEM from the Slovak Republic*
**- data from the website of the Ministry of Transport*

*Table 31: Investment subsidies to railway lines included in RFC OEM*

| Line included in RFC OEM | *Investment subsidies in mill. €* | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 + |
| Line included in RFC OEM | 11,69 | 11,46 | 20,62 | 327,88 |

*Source: Member of RFC OEM from the Slovak Republic*

The analysis of the investments in individual modes of transport has shown a successive increase in road and air transport. Investments in rail transport are stagnant. Investments in rail transport are planned in the amount of 2 billion EUR for the period 2014 – 2020. A significant increase in investments is allocated to the lines included in the OEM corridor; a similar trend is expected also in the next planning period.

Table 32 contains an analysis of selected charge indicators of rail transport in the Slovak Republic.

*Table 32: Selected economic indicators of rail transport in the Slovak Republic*

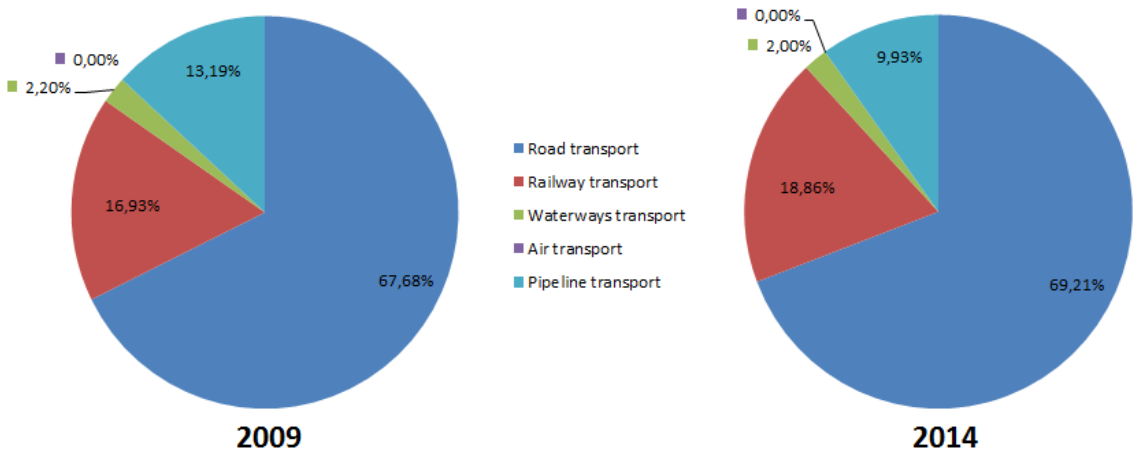
| Indicators/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport | 15 604 | *9 930 | *11 161 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport | 17 050 | *17 164 | *18 028 |
| Average price (€) of charge for use of railway infrastructure for standard freight trains on RFC OEM | 141,5 | *83,3 | *85,6 |
| Average costs (€) per 1 km track with respect to whole infrastructure | 115 137,55 | 115 151,11 | 117 915,58 |
| Average costs (€) per 1 km track on RFC OEM network | 151 536,62 | 140 630,88 | 137 374,75 |
| Non-investment subsidies (€) per 1 km of railway infrastructure | 71 468 | 74 980 | 74 980 |

*Source: Member of RFC OEM from the Slovak Republic*

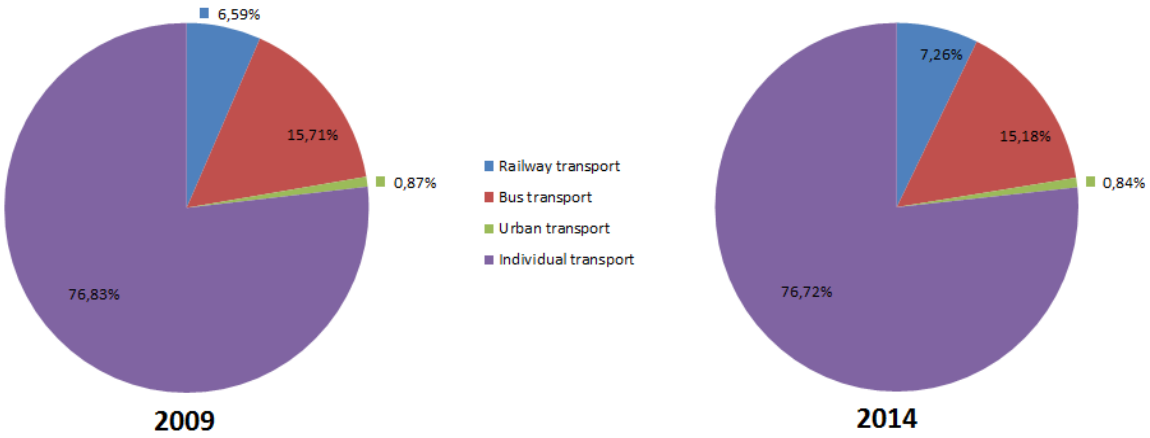
**Applied reduced reimbursement according to Government Resolution no. 390/2013*

**B) Transport**

Graph 11 and 12 show a graphical comparison of the modal split in the Slovak Republic in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes following measures to support rail transport within the EU.




Graph 11: *Comparison of modal split in freight transport in the Slovak Republic (Source: listed in Appendix I)*




Graph 12: *Comparison of modal split in passenger trasnport in the Slovak Republic (Source: Eurostat, Statistical pocketbook 2016)*

The modal split comparison in the Slovak Republic showed a change in favour of rail passenger and freight traffic.

Table 33 contains an analysis of the development of transport performances in the Slovak Republic in the period of 2013 – 2015. At the same time, Table 34 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in the Slovak Republic.

*Table 33: Transport performances in passenger and freight transport in 2013 – 2015*

| Transport mode | Carrier | Scope | Transp. Perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 30 356 | 30 724 | 31 801 |
| | | | gross ton- km in mill. | 8 371 | 8 556 | 9 373 |
| | | on RFC OEM | train- km in thous. | 4 697 | 4 579 | 4 879 |
| | | | gross ton- km in mill | 1 678 | 1 669 | 1 764 |
| | Private carrier | total | train- km in thous. | 1 215 | 1 351 | 2 789 |
| | | | gross ton-km in mill. | 136 | 190 | 803 |
| | | on RFC OEM | train- km in thous. | 1 180 | 1 205 | 1 214 |
| | | | gross ton-km in mill. | 125 | 116 | 129 |
| Freight transport | National carrier | total | train- km in thous. | 11 557 | 11 240 | 11 436 |
| | | | gross ton-km in mill. | 15 256 | 15 186 | 15 210 |
| | | on RFC OEM | train- km in thous. | 1 532 | 1 358 | 1 479 |
| | | | gross ton-km in mill. | 1 539 | 1 341 | 1 477 |
| | Private carrier | total | train- km in thous. | 2 518 | 2 979 | 3 237 |
| | | | gross ton-km in mill. | 2 376 | 2 795 | 3 243 |
| | | on RFC OEM | train- km in thous. | 1 379 | 1 608 | 1 832 |
| | | | gross ton-km in mill. | 1 434 | 1 686 | 1 893 |

*Source: Member of RFC OEM from the Slovak Republic*

*Table 34: Structure of rail carriers on the territory of the Slovak republic*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 1 | 1 | **0** | 42 | 1 | **0** | 45 | 1 | 1 | **0** | 43 | 4 | **0** | 49 | 1 | 1 | **0** | 43 | 5 | **0** | 50 |

*Source: Member of RFC OEM from the Slovak republic*

The analysis of transport performances in the Slovak Republic showed a gradual increase in both rail passenger and freight traffic. At the same time, there is a gradual increase in the number of carriers which is positively demonstrated in increase in transport performances. A gradual increase in transport performances is also recorded on the lines included in the OEM corridor. This increase is mainly caused by international rail transit transport.

Table 35 contains an analysis of the order of performances on the lines included in the OEM corridor. The analysis of capacity utilization of railway infrastructure in the Slovak Republic is carried out in Table 36.

*Table 35: Volume of orders of performances on the lines included in RFC OEM*

| Volume of orders of performances on the lines included in RFC OEM | Transport performance/Year | 2013/2014 | 2014/2015 | 2015/2016 |
|---|---|---|---|---|
| Through C-OSS | train-km in thous. | 0,23 | 0 | 151,78 |
| | gross ton-km in mill. | 0,18 | 0 | 213,79 |
| Out of C-OSS | train-km in thous. | 2911 | 2966 | 3311 |
| | gross ton-km in mill. | 2976 | 3027 | 3370 |

*Source: Member of RFC OEM from the Slovak republic*

*Table 36: Average share of use of offered capacity*

| Indicator description/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average share of (in %) use of maximum offered capacity on all lines | 36,70 | 38,50 | 40,70 |
| Average share of (in %) use of maximum offered capacity on RFC OEM lines | 28,19 | 27,89 | 32,17 |
| Share of (in %) used capacity on RFC OEM lines ordered through C-OSS | * | 0,00 | 37,00 |

*Source: Member of RFC OEM from the Slovak republic*
***November 2013- year of corridor start. Only one promotional route has been carried out.***

The analysis of route orders within the lines included in the OEM corridor showed a significantly low share of order through C-OSS. This is due to the short-term functioning of international freight corridors. Currently, an increase in orders within C-OSS is expected. The capacity analysis showed a sufficient provision for an expected increase in transport performances on the lines included in the OEM corridor due to economic development and the quality of OEM corridor services.

Table 37 provides an analysis of the average charges for the use of railway infrastructure on the lines included in the OEM corridor for selected train types.

*Table 37: Comparison of transport charges in rail freight traffic in the Slovak Republic*

| Line section | Charges | | |
|---|---|---|---|
| | Transport of containers | Transport of chemicals | Transport of standard goods |
| | **Access charges** for intermodal train (ca. 40 x40´containers-600 m, 1200 t,)** | **Access charges** for block train (ca.500 m, 1800 t, chemicals )** | **Access charges** for single loading wagons (ca.500 m, 1500 t,)** |
| Kúty št. hr. - Devínska N.Ves | 190 | 244 | 217 |
| Devínska N. Ves – Bratislava hl. St. | 61 | 73 | 67 |
| Bratislava hl. St.- Dunajská Streda | 130 | 166 | 148 |
| Dunajská Streda – Komárno št. hr. | 144 | 185 | 164 |
| Bratislava hl. St.-Rusovcešt. Hr. | 93 | 124 | 108 |
| Bratislava hl. St.- Nové Zámky | 285 | 371 | 328 |
| Nové Zámky – Komárno št. hr. | 143 | 175 | 159 |
| Nové Zámky – Štúrovo št. hr. | 207 | 249 | 228 |

*Source: Member of RFC OEM from the Slovak republic*

***prices without reduced reimbursements*

Table 38 and 39 give a comparison of the average running times of individual train types on selected transport routes.

*Table 38: Comparison of average transport times by rail traffic*

| Line section | Average transport time (min) on infrastructure manager line | Average transport time (min) between cross-border stations | Average transport time (min) on line included in RFC OEM |
|---|---|---|---|
| Rusovce – Bratislava – Kúty (RFC OEM) | N/A | N/A | 3 h 4 min |
| Dunajská Streda – Komárno (RFC OEM) | N/A | N/A | 1 h 25 min |
| Bratislava – Čierna nad Tisou (cez ZA) | 13 h 44 min* | N/A | N/A |
| Bratislava – Čierna nad Tisou (cez ZV) | 16 h 44 min* | N/A | N/A |
| Rusovce – Bratislava – Kúty | 3 h 20 min* | N/A | N/A |
| Kúty – Štúrovo | 4 h 07 min* | N/A | N/A |
| PPS Kúty – Štúrovo | N/A | 5h 21min** | N/A |
| PPS Devínska NV – Kúty | N/A | 55 min** | N/A |
| PPS Kúty – Rusovce | N/A | 2h 34 min** | N/A |
| PPS Komárno – NZ – Devínska NV | N/A | 2h 18 min** | N/A |
| PPS Komárno – NZ – Kúty (cez Jablonicu) | N/A | 4h 38 min** | N/A |

*Source: Member of RFC OEM from the Slovak Republic*

**Average time including stays (plan) **Real time of trains went through*

*Table 39: Comparison of average speeds of individual type of trains on ŽSR network*

| Line section | Average speed Nex (km/h) | Average speed of block train of combined transport (km/h) | Average speed Pn (km/h) |
|---|---|---|---|
| Rusovce – Bratislava – Kúty (RFC OEM) | 57,75 / 30,36 / 33,87* | N/A | N/A |
| Dunajská Streda – Komárno (RFC OEM) | 49,29 / 27,83 / 34,03* | N/A | N/A |
| ŽSR principal lines | N/A | 60,47 / 36,70** | N/A |
| ŽSR principal lines | N/A | N/A | 56,30 / 31,66 ** |

*Source: Member of RFC OEM from the Slovak Republic*

**Technical/ Line / Real speed of RFC trains **Technical/ Line speed*

Some important additional data on the Slovak Republic is given in Appendix C.

## 5.5 Hungary

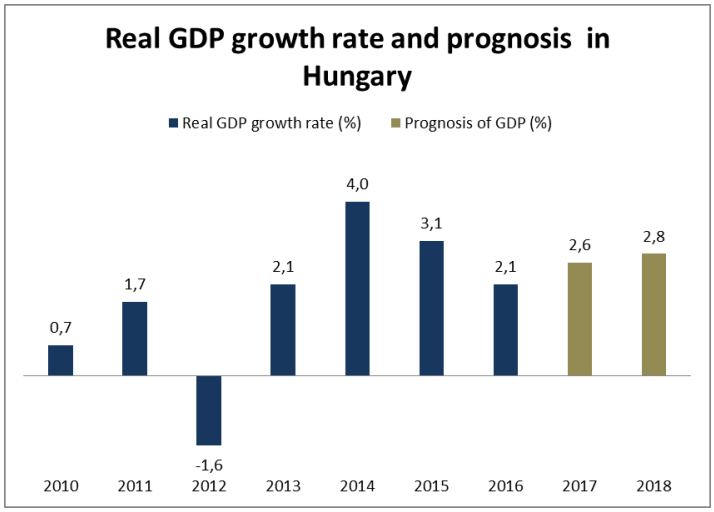
### A) Economy

The analysis of the development of GDP per capita at purchasing power parity in Hungary is carried out in Table 40. GDP development in Hungary is shown in Figure 13.

*Table 40: GDP per capita of Hungary at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Hungary | 67 | 68 | 68 |

*Source: Eurostat, Statistics of European Commission*




Graph 13: *GDP development and prognosis in Hungary*
*(Source: Eurostat, Statistics of European Commission)*

GDP development analysis, including prognosis for 2017 and 2018 in Hungary, assumes a positive growth rate above 2 %. At the same time, there is a slight positive increase in purchasing power parity, which confirms the price stability in Hungary.

Table 41 provides an analysis of the development of investments in € in railway infrastructure in Hungary in the period of 2013 – 2015.

*Table 41: Development of investment in railway infrastructure in Hungary*

| **Investment in infrastructure** | **2013** | **2014** | **2015** |
|---|---|---|---|
| **Investment subsidies in mill. €** | | | |
| rail | 8,288 | 26,388 | 67,895 |
| **Non-investment subsidies in mil. €** | | | |
| Rail – GYSEV | 5,036 | 9,269 | 17,627 |
| Rail – MÁV | 212 | 136 | 144 |

*Source: Members of RFC OEM from Hungary*

The analysis of investments in rail transport in Hungary showed a successive increase. An increase in investment is expected also in the next period, as a significant part of railway infrastructure is included in international corridors.

Tables 42 and 43 contain data on selected economic and charge indicators of railway infrastructure separately for GYSEV and MÁV.

## GYSEV

*Table 42: Selected economic indicators of railway infrastructure on GYSEV network*

| Indicators/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport/year | 15 677,24 | 14 875,11 | 17 923,46 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport/year | 38 422,36 | 30 651,48 | 27 000,75 |
| Average price (€) of charge for use of railway infrastructure for standard trains on RFC corridor | 2,26 | 2,02 | 1,86 |

*Source: Member of RFC OEM for GYSEV from Hungary*

## MÁV

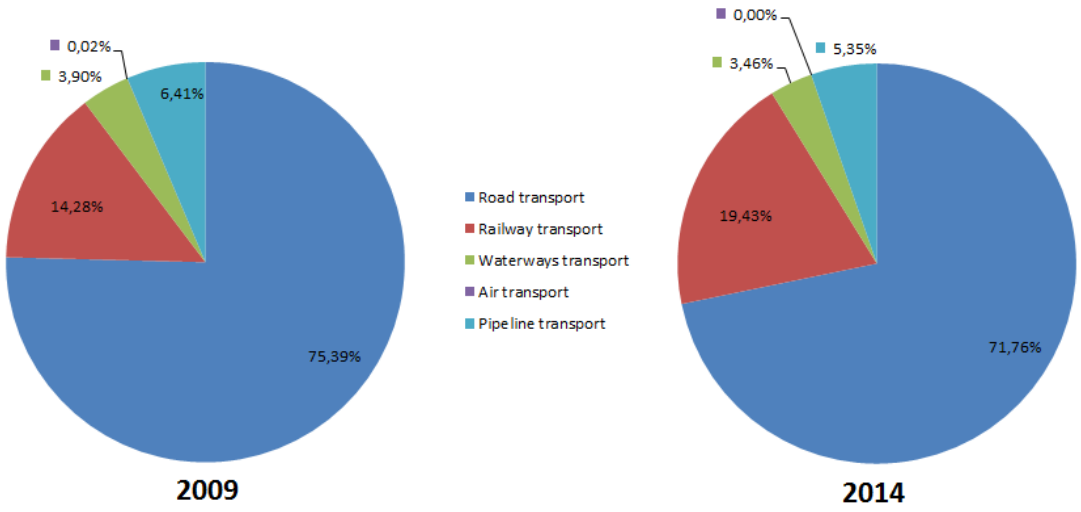
*Table 43: Selected economic indicators of railway infrastructure on MÁV network*

| Indicators/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport | 2,18 | 2,28 | 2,39 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport | 2,01 | 2,04 | 2,1 |
| Average price (€) of charge for use of railway infrastructure for standard trains on RFC corridor | 2,24 | 2,24 | 2,35 |

*Source: Member of RFC OEM for MÁV from Hungary*

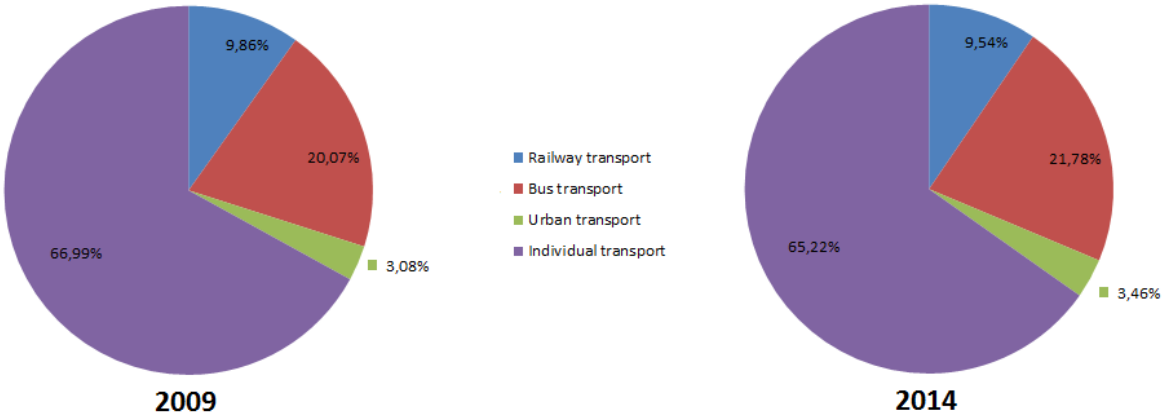
## B) Transport

Graphs 14 and 15 provide a graphical comparison of the modal split in Hungary in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes following measures to support rail transport within the EU.




Graph 14: *Comparison of modal split in freight transport in Hungary*

*(Source: listed in Appendix I)*




Graph 15: *Comparison of modal split in passenger transport in Hungary*

*(Source: Eurostat, Statistical pocketbook 2016)*

The comparison of the modal split in Hungary showed a significant change in favour to rail freight traffic which is due to higher quality and more reliable services. On the contrary, there is a slight change in relation to rail passenger traffic.

Tables 44 and 45 contain an analysis of the development of transport performances in Hungary in the period of 2013 – 2015. Table 46 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in Hungary.

## GYSEV

*Table 44: Transport performances in rail passenger and freight transport on GYSEV network*

| Transport mode | Carrier | Scope | Transp. Perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 13,9 | 14 | 15 |
| | | on RFC OEM | train- km in thous. | 4,6 | 4,5 | 6,4 |
| | Private carrier | total | train- km in thous. | 5004,7 | 4921,9 | 4960,4 |
| | | on RFC OEM | train- km in thous. | 1308,8 | 1295,2 | 1282,1 |
| Freight transport | National carrier | total | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |
| | | on RFC OEM | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |
| | Private carrier | total | train- km in thous. | 1028,7 | 981,7 | 919,2 |
| | | | gross ton-km in mill. * | 1066,9 | 999,1 | 916,4 |
| | | | LOCO train- km in thous. | 362,9 | 446,4 | 444,6 |
| | | on RFC OEM | train- km in thous. | 595,1 | 586,4 | 591,6 |
| | | | gross ton-km in mill. * | 670,6 | 637,2 | 634,9 |
| | | | LOCO train- km in thous. | 158,4 | 185,7 | 205,5 |

*Source: Member of RFC OEM for GYSEV from Hungary*

## MÁV

*Table 45: Transport performances in passenger and freight transport on MÁV network*

| Transport mode | Carrier | Scope | Transp. Perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 76 100 | 78 740,1 | 78 915 |
| | | on RFC OEM | train- km in thous. | 24 988 | 26 354 | 26 956 |
| | Private carrier | total | train- km in thous. | 66,6 | 64,6 | 62,1 |
| | | on RFC OEM | train- km in thous. | 31,6 | 31 | 29,8 |
| Freight transport | National carrier | total | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |
| | | on RFC OEM | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |
| | Private carrier | total | train- km in thous. | 16 180 | 16 976 | 17 079 |
| | | | gross ton-km in mill. * | 19 660 | 20 740 | 20 812 |
| | | | LOCO train- km in thous. | 4 257 | 4 284,5 | 4 372,5 |
| | | on RFC OEM | train- km in thous. | 7 349 | 8 050 | 8 686 |
| | | | gross ton-km in mill. * | 8 999 | 9 930 | 10 787 |
| | | | LOCO train- km in thous. | 1 520 | 1 691 | 1 772 |

*Source: Member of RFC OEM for MÁV from Hungary*

*Table 46: Structure of rail carriers on the territory of Hungary*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 0 | 0 | 2 | 34 | 1 | 0 | 37 | 0 | 0 | 2 | 34 | 1 | 0 | 37 | 0 | 0 | 2 | 39 | 1 | 1 | 43 |

*Source: Members of RFC OEM from Hungary*

The analysis of transport performances in Hungary has shown a successive increase in both rail passenger and freight traffic. At the same time, there is an increase in the number of carriers in 2015 which is positively demonstrated in increase in transport performances. There is also a successive increase in transport performances on the lines included in the OEM corridor. This increase is mainly caused by international rail transit transport.

Table 47 contains an analysis of the order of performances on the lines included in the OEM corridor.

*Table 47: Volume of capacity offer within RFC OEM for Hungary*

| Capacity management by C-OSS on RFC OEM | Transport performance | 2013 | 2014 | 2015 |
|---|---|---|---|---|
| Volume of capacity offer for the annual timetable on RFC OEM | train-km in thous. | 0 | 14 762 | 15 969 |
| Volume of annual capacity requests via C-OSS on RFC OEM | train-km in thous. | 0 | 0 | 1 377 |
| Volume of reserve capacity offer on RFC OEM | train-km in thous. | 10 211 | 7 866 | 8 206 |
| Volume of reserve capacity requests via C-OSS on RFC OEM | train-km in thous. | 0 | 1 329 | 1 386 |

*Source: Members of RFC OEM from Hungary*

Table 48 presents the development of the number of individual trains in international rail traffic according to divisions in the period of 2013 – 2015.

*Table 48: Number of international freight trains according to individual divisions*

| International freight trains request type comparison | Annual | Annual Late | Interim | Ad-hoc | Instant |
|---|---|---|---|---|---|
| **Year** | **2013** | | | | |
| Number of international freight trains operated | 5 787 | 7 279 | 17 832 | 5 918 | 26 201 |
| **Year** | **2014** | | | | |
| Number of international freight trains operated | 13 981 | 5 520 | 13 970 | 5 582 | 24 061 |
| **Year** | **2015** | | | | |
| Number of international freight trains operated | 9 721 | 9 343 | 12 589 | 5 476 | 26 494 |

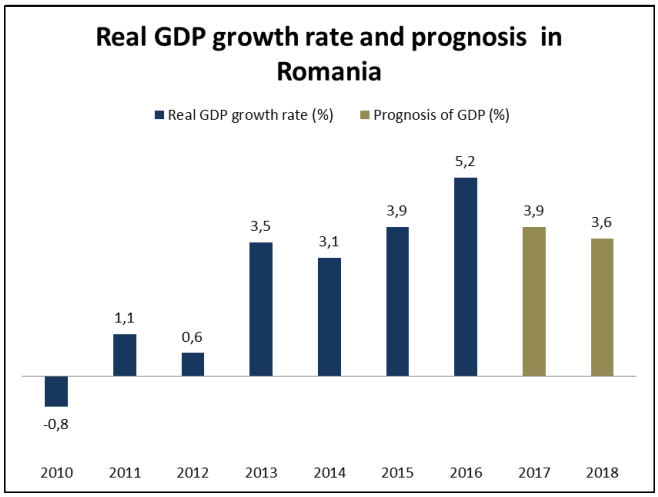
*Source: Members of RFC OEM from Hungary*

A complete analysis of the bottlenecks, the average running times and the charges on GYSEV and MÁV individual lines is given in Appendix D. Data given in the Appendix is based on a large amount of data. At the same time, Appendix D contains other important data provided by GYSEV and MAV infrastructure managers.

## 5.6 Romania

### A) Economy

Based on the importance of GDP, GDP development in Romania is shown in the Figure below. An analysis of the development of GDP per capita at purchasing power parity is given in Table 49.




Graph 16: *GDP development and prognosis in Romania (Source: Eurostat, Statistics of European Commission)*

*Table 49: GDP per capita of Romania at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| **Year** | **2013** | **2014** | **2015** |
| **Index (EU28 = 100)** | ***100*** | ***100*** | ***100*** |
| **Romania** | **55** | **55** | **57** |

*Source: Eurostat, Statistics of European Commission*

The GDP development analysis, including a prognosis for 2017 and 2018 in Romania, assumes a positive growth rate above 3 %. At the same time, there is no significant change in purchasing power parity, which confirms the price stability in Romania.

Table 50 contains an analysis of the development of investments (in €) in rail transport in Romania in the period of 2013 – 2015. An analysis of the development of investments in lines included in the OEM corridor from external sources is carried out in Table 51 and from public resources in Table 52.

*Table 50: Development of investment in railway infrastructure in Romania*

| Investment to infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. €** | | | |
| rail | 343 | 339 | 327 |
| **Non – investment subsidies in mil. €** | | | |
| rail | 100 | 154 | 168 |

*Source: Member of RFC OEM from Romania*

*Table 51: Amount of investment in railway infrastructure from external sources in Romania*

| Line included in RFC OEM | Year | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Frontiera – Curtici – Arad – Km 614 | 67,63 | 79,44 | 43,13 |
| Km 614 – Simeria | 0,06 | 0,00 | 0,00 |
| Simeria – Coslariu | 93,03 | 59,93 | 105,91 |
| Coslariu – Sighisoara | 89,76 | 124,44 | 90,26 |
| Sighisoara – Brasov | 0,00 | 0,00 | 0,03 |
| Brasov – Predeal | 0,61 | 4,11 | 2,02 |
| Predeal – Campina | 2,15 | 14,03 | 2,90 |
| Campina – Bucuresti | 0,00 | 0,00 | 0,00 |
| Bucuresti – Fetesti | 0,00 | 15,89 | 2,62 |
| Fetesti – Constanta | 3,90 | 0,90 | 8,49 |
| Arad – Timisoara | 0,00 | 0,00 | 0,00 |
| Timisoara – Orsova | 0,00 | 0,00 | 0,00 |
| Orsova – Filiasi | 0,00 | 0,00 | 0,00 |
| Filiasi – Craiova | 0,00 | 0,00 | 0,00 |
| Craiova – Calafat | 0,00 | 0,00 | 0,00 |
| Calafat – Frontiera (RO/BG) | 0,00 | 0,00 | 0,00 |
| Frontiera – Episcopia Bihor | 0,00 | 0,00 | 0,00 |
| Episcopia Bihor – Coslariu | 0,00 | 0,00 | 0,00 |
| Simeria – Filiasi | 0,00 | 0,00 | 0,00 |
| Craoiva – Videle | 0,00 | 0,00 | 0,00 |
| Videle – Bucuresti | 0,00 | 0,00 | 0,00 |
| Videle – Giurgiu Nord | 0,00 | 0,00 | 0,00 |
| Giurgiu Nord – Frontiera | 0,00 | 0,00 | 0,00 |
| **Total** | **257,15** | **298,74** | **255,36** |

*Source: Member of RFC OEM from Romania*

*Table 52: Amount of investment in railway infrastructure from state budget*

| Line included in RFC OEM | Year | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Arad – Craiova | 0,07 | 0,40 | 1,18 |
| Episcopia Bihor – Coslariu | 0,02 | 0,14 | 0,05 |
| Simeria – Filiasi | 0,85 | 0,26 | 0,00 |
| Craiova – Caracal – Rosiori – Videle – Bucuresti | 0,01 | 0,00 | 0,00 |
| Videle – Giurgiu Nord | 0,00 | 0,00 | 0,00 |
| Giurgiu Nord – Frontiera | 1,43 | 0,35 | 0,44 |
| **Total from State budget** | **2,38** | **1,15** | **1,66** |

*Source: Member of RFC OEM from Romania*

The analysis of investments in rail traffic indicates stability. A significant increase in investment is allocated to the lines included in the OEM corridor; a similar trend is expected in the next planning period.

Table 53 contains an analysis of selected charge indicators of rail traffic in Romania.

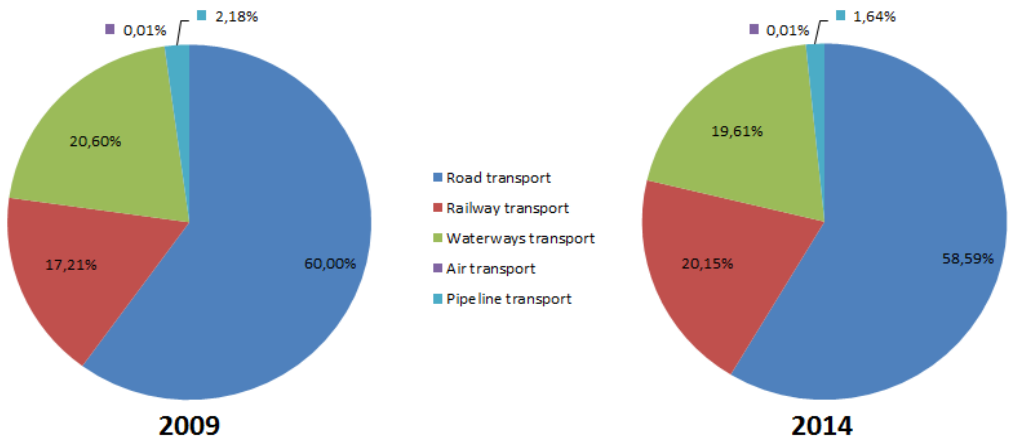
*Table 53: Selected indicators of rail traffic in Romania*

| Indicators/ Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport | 3,55 | 3,55 | 3,55 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport | 2,1 | 2,1 | 2,1 |
| Average price (€) of charge for use of railway infrastructure for standard trains on RFC corridor | 3,48 | 3,48 | 3,48 |

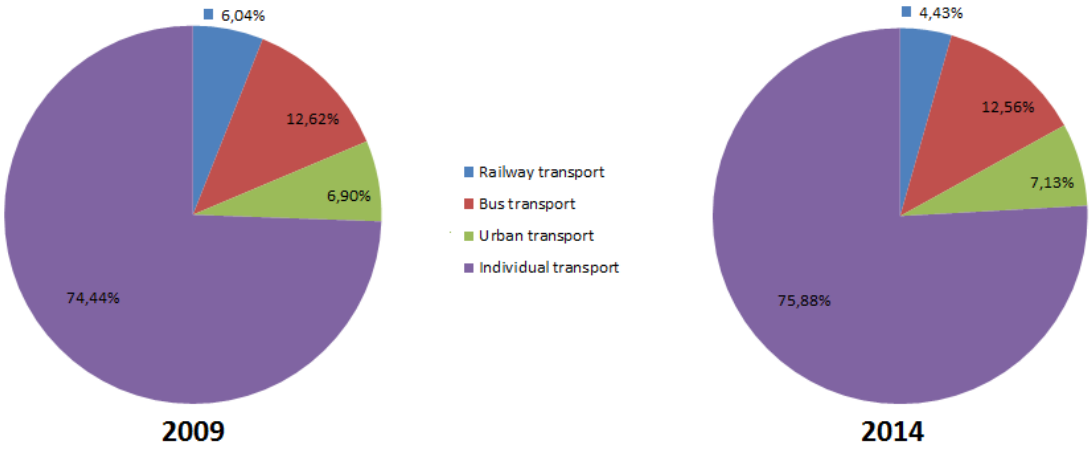
*Source: Member of RFC OEM from Romania*

## B) Transport

Graph 17 and Graph 18 show a graphical comparison of the modal split in Romania in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes following measures to support rail transport within the EU.




Graph 17: *Comparison of modal split in freight traffic in Romania (Source: listed in Appendix I)*




Graph 18: *Comparison of modal split in passenger traffic in Romania (Source: Eurostat, Statistical pocketbook 2016)*

Modal split comparison in Romania showed a change in favour of rail freight traffic. On the contrary, there was a modal split change to the disadvantage of rail passenger traffic.

Table 54 contains an analysis of the development of transport performances in Romania in the period of 2013 – 2015. Table 55 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in Romania.

*Table 54: Transport performances in rail passenger and freight traffic in 2013 – 2015*

| Transport mode | Carrier | Scope | Transp. Perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 53 246 | 51 222 | 51 112 |
| | | on RFC OEM | train- km in thous. | 12 956 | 14 053 | 12 108 |
| | Private carrier | total | train- km in thous. | 3 621 | 4 252 | 3 756 |
| | | on RFC OEM | train- km in thous. | 547 | 462 | 449 |
| Freight transport | National carrier | total | train- km in thous. | 10 326 | 9 814 | 9 482 |
| | | | gross ton-km in mill. * | 12 335 | 11 921 | 12 058 |
| | | on RFC OEM | train- km in thous. | 3 582 | 3 778 | 3 738 |
| | | | gross ton-km in mill. * | 4 309 | 2 383 | 2 425 |
| | Private carrier | total | train- km in thous. | 12 083 | 12 623 | 14 336 |
| | | | gross ton-km in mill. * | 15 197 | 15 219 | 17 611 |
| | | on RFC OEM | train- km in thous. | 4 192 | 4 859 | 5 652 |
| | | | gross ton-km in mill. * | 5 309 | 3 042 | 3 541 |

*Source: Member of RFC OEM from Romania*

*Table 55: Structure of rail carriers on the territory of Romania*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 1 | 1 | 0 | 14 | 3 | 0 | 19 | 1 | 1 | 0 | 18 | 3 | 0 | 23 | 1 | 1 | 0 | 19 | 3 | 0 | 24 |

*Source: Member of RFC OEM from Romania*

The analysis of total transport performances in Romania shows a decrease in 2014 compared to 2013. In 2015, there was a slight increase in transport performances compared to 2014. A significant increase in transport performances is recorded on the OEM corridor lines with private carriers carrying out mainly international rail freight transport. The number of carriers carrying out rail traffic in Romania is slowly increasing. A specific analysis of transport performances on the individual lines in Romania is given in Appendix E.

Table 56 contains data on the number of individual types of freight trains in international rail transport.

*Table 56: Number of international freight trains for 2013 – 2015 years*

| International freight trains request type comparison | Annual | Annual Late | Interim | Ad-hoc | Instant |
|---|---|---|---|---|---|
| **Year** | **2013** | | | | |
| Number of international freight trains operated | 94 236 | 4 832 | 2 416 | 12 081 | 128 064 |
| **Year** | **2014** | | | | |
| Number of international freight trains operated | 91 553 | 6 186 | 2 474 | 11 134 | 136 093 |
| **Year** | **2015** | | | | |
| Number of international freight trains operated | 81 935 | 2 643 | 1 321 | 15 858 | 162 548 |

*Source: Member of RFC OEM from Romania*

Table 57 contains a list of the bottlenecks on the lines included in the OEM corridor in Romania.

*Table 57: Bottlenecks of railway infrastructure in Romania*

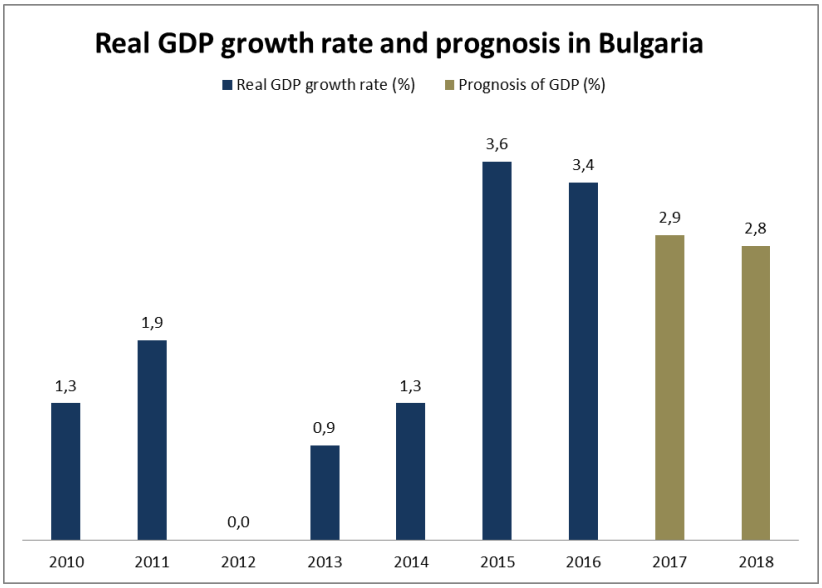
| Line section | Bottlenecks because of technical requirements | Reasons | Suggestions how to move bottlenecks |
|---|---|---|---|
| Simeria – Braşov | Vintu de Jos – Coşlariu | Rehabilitation works | After works finalization |
| Simeria – Braşov | Sighisoara – Aţel | Rehabilitation works | After works finalization |
| Simeria – Braşov | Micăsasa – Coşlariu | Rehabilitation works | After works finalization |
| Simeria – Braşov | Simeria – Vinţu de Jos | Rehabilitation works | After works finalization |
| Bucuresti – Constanta | Feteşti – Medgidia | Rehabilitation works | After works finalization |
| Craiova – Bucuresti | Chiajna- Grădinari | Rehabilitation works | After works finalization |

*Source: Member of RFC OEM from Romania*

## 5.7 Republic of Bulgaria

### A) Economy

Based on the importance of GDP, GDP development in Bulgaria is shown in the Figure below. At the same time, an analysis of GDP development per capita at purchasing power parity is carried out in Table 58.




Graph 19: *GDP Development and prognosis in Bulgaria*

*(Source: Eurostat, Statistics of European Commission)*

*Table 58: GDP per capita of Bulgaria at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Bulgaria | 46 | 46 | 47 |

*Source: Eurostat, Statistics of European Commission*

The GDP development analysis, including a prognosis for 2017 and 2018 in the Republic of Bulgaria, assumes a positive growth rate above 2,5 %. At the same time, there is no significant change in purchasing power parity, which confirms the price stability in the Republic of Bulgaria.

## B) Transport

In the following table, an analysis of transport and traffic performances of rail passenger and freight transport in the Republic of Bulgaria for the period of 2013 – 2015 is carried out.

*Table 59: Analysis of development of transport and traffic performances in Bulgaria*

| Mode of rail transport | Indicator/Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|
| Passenger transport | Train movement (thous. train-km) | 20 042,5 | 20 452,9 | 20 904,5 |
| | Passengers carried (thous. people) | 26 071,5 | 24 627,3 | 22 526,3 |
| | Traffic performance (mill. pkm) | 1 825,8 | 1 702,3 | 1 552,1 |
| Freight transport | Train movement (thous. train-km) | 6 543,5 | 6 879,2 | 7 658,6 |
| | Good carried (thous. tonnes) | 13 538,9 | 13 690,9 | 14 635,1 |
| | Traffic performance (mill. tkm) | 3246,0 | 3439,2 | 3649,8 |

*Source: National Statistical Institute (Bulgaria)*

There is a gradual increase in transport performances in both examined indicators of rail freight transport. There is a decrease in performances in pkm and an increase in performances in train-km in rail passenger transport. A decrease in performances in pkm is affected by the decrease in the number of passengers, despite the gradual increase in transport opportunities.

In Table 60, an analysis of transport performances of rail freight transport on the lines included in the OEM corridor is carried out.

*Table 60: Analysis of transport performances on the lines included in the OEM corridor*

| | | Indicator/Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Freight transport | on RFC OEM | train-km in thous. | 3 548 | 4 020 | 4 360 |
| | | gross ton-km in mill. | 3 800 | 4 331 | 4 741 |

*Source: National Statistical Institute (Bulgaria)*

The analysis of transport performances showed a successive increase in transport performances of rail freight transport on the lines included in the OEM corridor. The increase of performances is positively influenced by the railway infrastructure quality and its inclusion in the OEM corridor.

Table 61 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in Bulgaria.

*Table 61: Structure of rail carriers on the territory of Bulgaria*

| Number of carriers with valid access contract/Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| passenger national | 1 | 1 | 1 | 1 | 1 | 1 |
| passenger private | 0 | 0 | 0 | 0 | 0 | 0 |
| freight national | 1 | 1 | 1 | 1 | 1 | 1 |
| freight private | 5 | 8 | 9 | 9 | 11 | 11 |

*Source: National Statistical Institute (Bulgaria)*

The analysis carried out in Table 61 showed a successive increase of the number of carriers providing rail freight services. At present, there is only one provider of rail passenger services in Bulgaria.

Table 62 provides an analysis of investment and non-investment state subsidies to the railway infrastructure for the period 2013 – 2015 in the Republic of Bulgaria.

*Table 62: Analysis of state subsidies to railway infrastructure in the Republic of Bulgaria*

| State expenses-rail | 2013 | 2014 | 2015 |
|---|---|---|---|
| Investment subsidies in mill. € | 114,859 | 71,476 | 127,106 |
| Non-investment subsidies in mil. € | 66 | 69 | 69 |

*Source: NRIC*

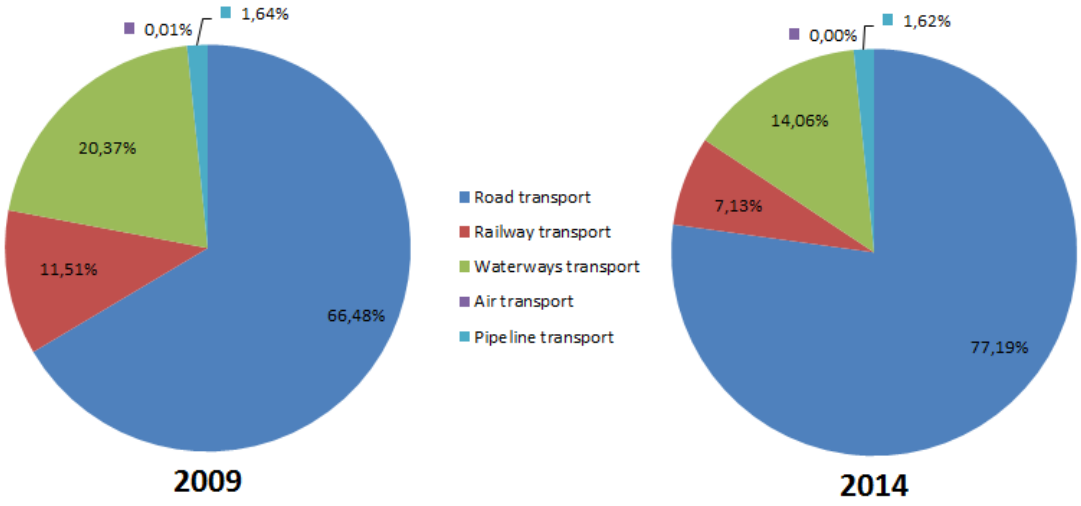
The analysis of selected qualitative indicators of rail freight transport in the Republic of Bulgaria on the individual lines is carried out in Table 63.

*Table 63: Quantitative indicators of rail freight transport on NRIC lines*

| Line sections | Average transport time (min) between cross-border stations | Aveage transport time (min) on line included in RFC OEM | Average speed Nex (km/h) | Average speed of block train of combined transport (km/h) | Average speed Pn (km/h) |
|---|---|---|---|---|---|
| for the line | N/A | N/A | 38,9 | 38,9 | 53,5 |
| Ruse-Karnobat-Svilengrad | 1045 | 1045 | 29,1 | 29,1 | 51,1 |
| Kalotina West-Svilengrad | 746 | 586 | 30 | 30 | 53 |
| Vidin-Sofia-Kulata | 856,4 | 856,4 | 33,7 | 33,7 | 53,15 |

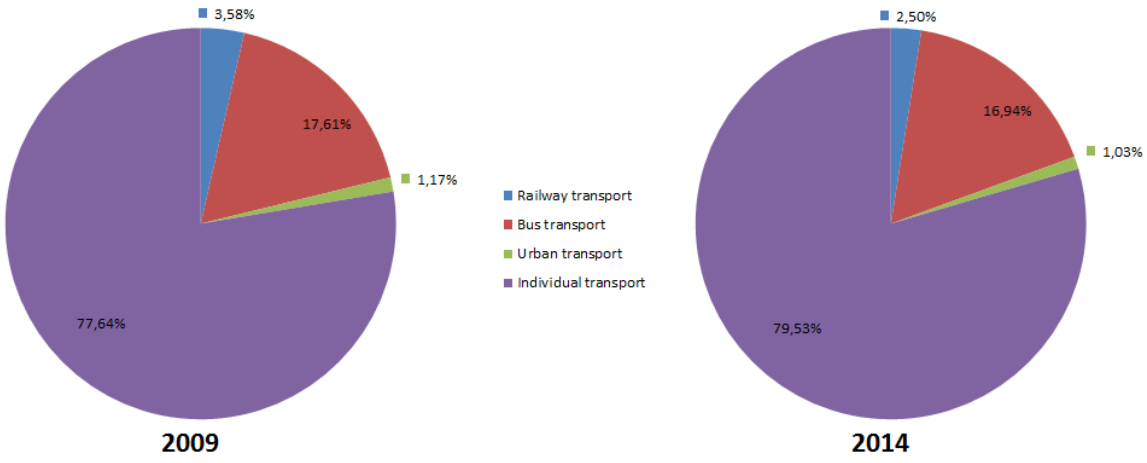
*Source: NRIC*

Graph 20 and Graph 21 show a graphical comparison of the modal split in the Republic of Bulgaria in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes following measures to support rail transport within the EU.




Graph 20: *Comparison of modal split in freight transport in Bulgaria*

*(Source: listed in Appendix I)*




Graph 21: *Comparison of modal split in passenger transport in Bulgaria*

*(Source: Eurostat, Statistical pocketbook 2016)*

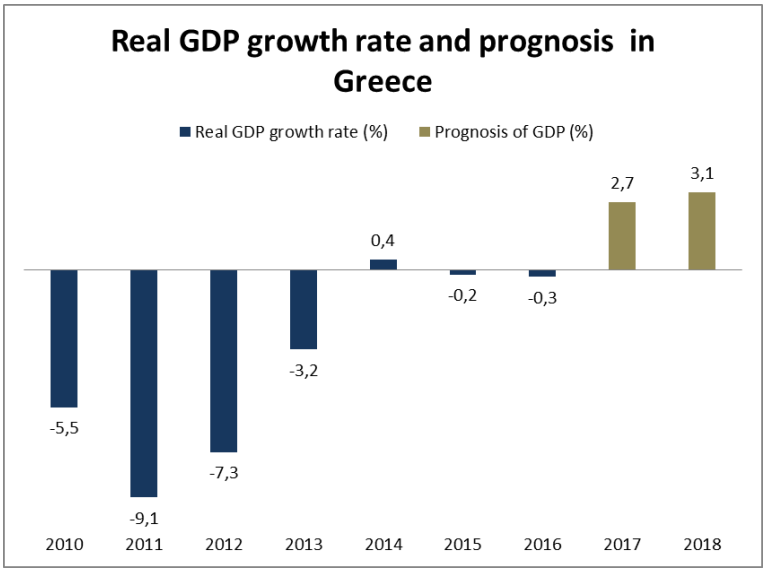
The modal split comparison in the Republic of Bulgaria has demonstrated a change against rail freight and passenger transport in comparison with road transport. After Greece, the Republic of Bulgaria has the second lowest share of rail transport among the OEM corridor countries.

Other specific data concerning rail transport in the Republic of Bulgaria are given in Annex F.

## 5.8 Greece

### A) Economy

Based on the importance of GDP, GDP development in Greece is shown in the Figure below. An analysis of the development of GDP per capita at purchasing power parity is carried out in Table 64.




Graph 22: *GDP development and prognosis in Greece*
*(Source: Eurostat, Statistics of European Commission)*

*Table 64: GDP per capita of Greece at purchasing power parity*

| Description | Reality | | |
|---|---|---|---|
| Year | 2013 | 2014 | 2015 |
| Index (EU28 = 100) | *100* | *100* | *100* |
| Greece | 72 | 70 | 68 |

*Source: Eurostat, Statistics of European Commission*

The analysis of GDP development has shown negative values in the years under examination. However, the Greek economy assumes a growth in 2017 and 2018. At the same time, there is no decrease in purchasing power parity which negatively affects the real prices.

Table 65 contains an analysis of the development of investments (in €) in rail traffic in Greece in the period of 2013 – 2015. An analysis of distribution of investments in railway infrastructure in Greece is carried out in Table 66.

*Table 65: Development of investment in railway infrastructure in Greece*

| Investment to infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. €** | | | |
| rail | 147,06 | 173,29 | 257,4 |
| **Non – investment subsidies in mil. €** | | | |
| rail | 87 | 53 | 45 |

*Source: Member of RFC OEM from Greece*

*Table 66: Distribution of investment in railway infrastructure in Greece*

| Year | State investment | Infrastructure manager investment | European investment | Total |
|---|---|---|---|---|
| **2013** | N/A | 9,06 | 138 | **147,06** |
| **2014** | 2,5 | 0,91 | 172,38 | **173,29** |
| **2015** | 8,5 | 1,66 | 247,24 | **257,4** |

*Source: Member of RFC OEM from Greece*

The analysis of investments in rail traffic in Greece has shown a successive increase. With respect to government's economy and optimization measures a significant decrease was recorded in non-investment subsidies.

There is data on investments within the lines included in the OEM corridor in Greece in Table 67.

*Table 67: Investment subsidies to railway lines included in RFC OEM*

| Line section | Investment subsidies in mill. € | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Athens – Thessaloniki – Promachonas | 70 | 112 | 140 |

*Source: Member of RFC OEM from Greece*

Table 68 contains an analysis of selected charge indicators of rail traffic in Greece.

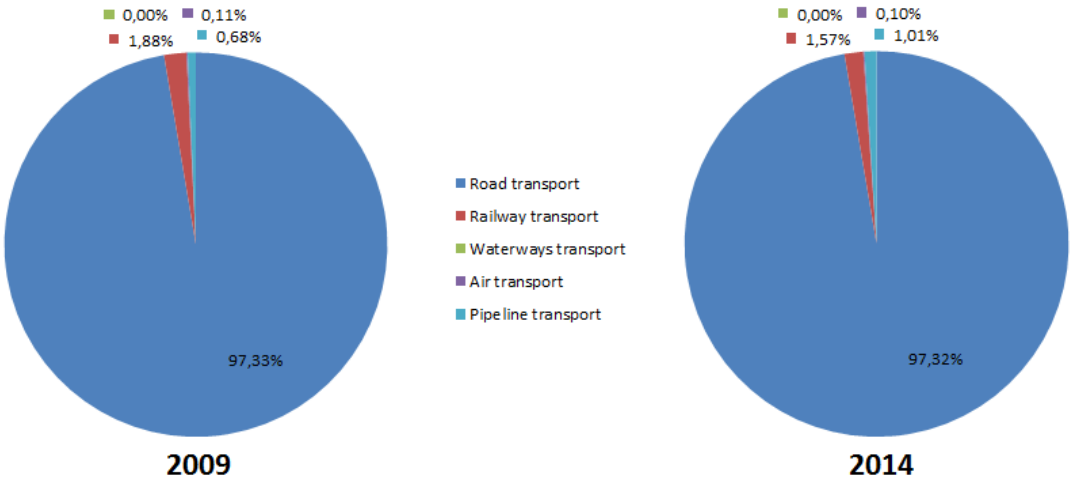
*Table 68: Selected economic indicators of rail traffic in Greece*

| Indicators/Year | 2013 | 2014 | 2015 |
|---|---|---|---|
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for freight transport | N/A | N/A | 677 |
| Average amount of revenues (€) from carriers per 1 km of RFC OEM track for passenger transport | N/A | N/A | 6 882 |
| Average price (€) of charge for use of railway infrastructure for standard trains on RFC corridor | N/A | N/A | N/A |

*Source: Member of RFC OEM from Greece*

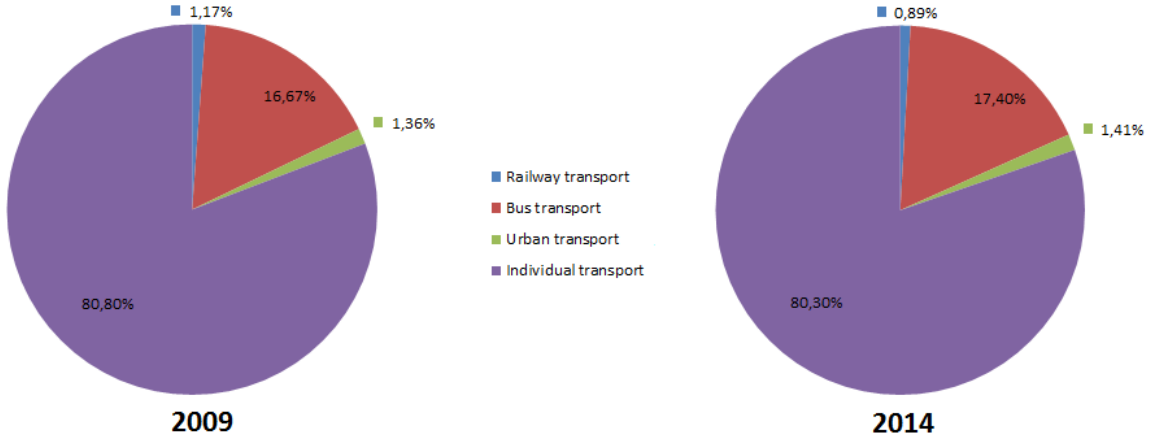
**B) Transport**

Graph 23 and Graph 24 show a graphical comparison of the modal split in Greek in 2014 to 2009. The comparison is made in the period of 5 years giving sufficient time for the market response to modal split changes following measures to support rail transport within the EU.




Graph 23: *Comparison of modal split in freight traffic in Greece*

*(Source: listed in Appendix I)*




Graph 24: *Comparison of modal split in passenger traffic in Greece*

*(Source: Eurostat, Statistical pocketbook 2016)*

Modal split comparison in Greece has shown a change to the disadvantage of rail freight and passenger traffic. The highest share of road goods transport and individual motoring within the OEM corridor countries is in Greece.

Table 69 contains an analysis of the development of transport performances in Greece in the period of 2013 – 2015. Table 70 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in Greece.

*Table 69: Transport performances in rail passenger and freight traffic in 2013 – 2015*

| Transport mode | Carrier | Scope | Transp. Perform./Year | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| Passenger transport | National carrier | total | train- km in thous. | 10 568 | 10 583 | 9 999 |
| | | on RFC OEM | train- km in thous. | 6 026 | 6 235 | 5 290 |
| | Private carrier | total | train- km in thous. | 29 | 0 | 0 |
| | | on RFC OEM | train- km in thous. | 0 | 0 | 0 |
| Freight transport | National carrier | total | train- km in thous. | 619 | 912 | 838 |
| | | | gross ton-km in mill. * | 543 | 842 | 806 |
| | | on RFC OEM | train- km in thous. | 0 | 297 | 653 |
| | | | gross ton-km in mill. * | 0 | 190 | 643 |
| | Private carrier | total | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |
| | | on RFC OEM | train- km in thous. | 0 | 0 | 0 |
| | | | gross ton-km in mill. * | 0 | 0 | 0 |

*Source: Member of RFC OEM from Greece*

*Table 70: Structure of rail carriers on the territory of Greece*

| Structure of RU´s (number of carriers on RFC OEM) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | | | | | | | 2014 | | | | | | | 2015 | | | | | | |
| National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total | National carrier | | | Private carrier | | | Total |
| F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | | F | P | F+P | F | P | F+P | |
| 0 | 0 | **1** | 0 | 0 | **0** | 1 | 0 | 0 | **1** | 0 | 0 | **0** | 1 | 0 | 0 | **1** | 0 | 0 | **0** | 1 |

*Source: Member of RFC OEM from Greece*

The analysis of total transport performances in Greece has shown a decrease in 2015 compared to 2014. The precise analysis of transport performances in Greece is given in Appendix G.

Table 71 provides a comparison of the average transport time by road and by rail on the individual sections.

*Table 71: Average transport times by road and by rail on individual sections*

| Line section | Transport time | |
|---|---|---|
| | Average transport time by railΔ (min) | Average transport time by truck (min) |
| Ikonio Pireas – Thriassio | 57,6 | 25 |
| Thriassio – Athens | 61,2 | 30 |
| Athens – Thessaloniki | 555,6 | 300 |
| Thessaloniki – Strimonas | 129 | 75 |
| Strimonas – Promachonas | 15 | 13 |
| Strimonas – Alexandroupolis | 361,8 | 13 |
| Alexandroupolis – Ormenio | 210 | 120 |

*Source: Member of RFC OEM from Greece*

Table 72 provides a comparison of charges for individual types of transport on the lines included in the OEM corridor.

*Table 72: Comparison of type transports on the lines included in RFC OEM*

| Line section | Length (km) | Container 40' 16,5-22t | Conventional wagons 25t | |
|---|---|---|---|---|
| | | €/UTI 1 | CLASS1 | CLASS2 |
| | | | €/t | €/t |
| Triassio – Kulata | 677,00 | 594 | 37,6 | 32,42 |
| Triassio – Svilengrad | 1 153,00 | 888 | 57,65 | 49,7 |
| Thriassio – Thessaloniki | 532,00 | 501 | 31,5 | 27,17 |
| Thessaloniki – Kulata | 144,00 | 251 | 12,81 | 11,06 |
| Thessaloniki – Svilengrad | 621,00 | 568 | 36 | 30,95 |
| Thessaloniki – Alexandroupolis | 444,00 | 432 | 28 | 24 |

*Source: Member of RFC OEM from Greece*

Additional data concerning rail freight transport by group of goods is given in Appendix J. The graphical representation of gradient in individual member states of RFC OEM and description of gradient in Germany is shown in Appendix K. Summary information on the railway lines included in RFC OEM is given in Appendix L: Technical data on the lines is in xls.

## 5.9 Summary of presented and analysed data

On the basis of the collected and evaluated statistical economic, transport and traffic data in the OEM corridor countries, it is possible to conclude the following:

- GDP growth in individual countries,
- positive economic development, increase in living standards,
- higher movement of population,
- higher demand for transport services,
- requirements for higher level of transport services, e.g. reliability, shorter transport time,
- pressure to modernize the lines,
- pressure to remove bottlenecks of railway infrastructure,
- demand for ecological transport – need for electrification of lines,
- increase in transport performances of the rail system,
- shift of transport performances from road to rail,
- higher performances of international rail transport,
- promotion of intermodal transport,

- need to improve the quality of intermodal transport services,
- fair and non-discriminatory allocation of railway infrastructure capacity,
- increase in rail investment,
- need for harmonisation of charges.

Based on these conclusions, there are the following opportunities and possibilities to meet the objectives of the OEM corridor:

- making maximum use of EU and national funding opportunities for rail investments and ensuring effective and timely absorption of available funding,
- improving planning of infrastructure works and including incentives in tendering of works for minimised impact on traffic operations,
- focusing financial resources on removal of bottlenecks,
- electrification of lines – leading to more efficient train operations and lower social costs of transport,
- market-oriented capacity and capacity products and efficient management of provision and allocation of railway infrastructure capacity,
- huge market potential for modal shift if today's existing problems and shortcomings of the corridor can be solved,
- upgrading of railway infrastructure of the corridor to higher standards with regard to parameters relevant for freight traffic, such as train length, axle and meter load, speed; swift implementation of TEN-T infrastructure minimum requirements or higher on continuous line sections,
- effectively addressing border crossing issues,
- harmonisation of operational rules,
- harmonisation of charges within the countries of the corridor on a competitive level,,
- effective provision of information.

Routing itself and the state of the development of the corridor countries create several possibilities to meet its basic objectives. The analyses carried out have shown sufficient potential to maintain and increase the importance of the corridor within the European transport infrastructure. As an increase in the demand for international rail freight services is expected, it is necessary to continuously improve the quality of railway infrastructure and the services of the OEM corridor.

# 6 PROGNOSIS OF TRANSPORT PERFORMANCE DEVELOPMENT

Transport performances on railway infrastructure are the most important data to explain the demand for rail services. Several aspects affecting infrastructure, quality of services and external costs result from transport performances. It is necessary to know the development of transport performances in order to form the objectives and the subsequent strategy of the OEM corridor. The development of transport performances is assumed on the basis of the prognosis that includes three scenarios for the OEM corridor: realistic, optimistic and pessimistic.

**Bases for prognosis:**

1. Model used for prognosis: AAA algorithm with exponential alignment. AAA algorithm is a software capable for making prognosis based on the provided data.
2. Confidence interval: 95 %.
3. Time span of prognosis: 2018 – 2025 (8 years).
4. Examined indicator: transport performances in rail passenger and freight traffic.
5. Input data: Transport performance (train km, gross ton km) made on the lines of individual infrastructure managers - statistical data of infrastructure managers.
6. Presentation of results: in tabular form for each scenario separately.

**Prognosis risks:**

1. Economic cycle – recession, period of crisis during forecasted period.
2. Inaccuracy of provided data.
3. Insufficient interval of data provided.
4. Low level of investment in railway infrastructure – inadequate state of railway infrastructure required by customers (e.g. capacity, frequent possessions).
5. Decrease in quality of rail system services – e.g. unreliability, rigidity, high prices.
6. Change in transport infrastructure charging – increase in rail charges and decrease in charges for other modes of transport.
7. Significant shift of transport performances to other modes of transport.

**Table description:**

Table 73 – realistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the OEM corridor.

Table 74 – optimistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the OEM corridor.

Table 75 – pessimistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the OEM corridor.

*Table 73: Prognosis – realistic scenario*

| | Trans. Mode | Scope | Transp. Perform./ Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Germany** | FT | total | train-km in thous. | 302324 | 306025 | 309727 | 313429 | 317131 | 320833 | 324534 | 328236 |
| | | | gross ton-km in mill. | 118 | 120 | 122 | 124 | 125 | 127 | 129 | 131 |
| | | on RFC OEM | train-km in thous. | 2200 | 2138 | 2198 | 2257 | 2312 | 2371 | 2430 | 2498 |
| | PT | total | train-km in thous. | 928482 | 932917 | 937353 | 941788 | 946223 | 950658 | 955094 | 959529 |
| | | on RFC OEM | train-km in thous. | 1361 | 1363 | 1365 | 1367 | 1369 | 1371 | 1373 | 1375 |
| **Czech Republic** | FT | total | train-km in thous. | 36993 | 37512 | 38030 | 38548 | 39067 | 39585 | 40103 | 40621 |
| | | | gross ton-km in mill. | 34840 | 35203 | 35565 | 35928 | 36290 | 36653 | 37015 | 37378 |
| | | on RFC OEM | train-km in thous. | 8235 | 8407 | 8580 | 8753 | 8925 | 9098 | 9271 | 9443 |
| | | | gross ton-km in mill. | 7964 | 8058 | 8152 | 8246 | 8340 | 8433 | 8527 | 8621 |
| | PT | total | train-km in thous. | 122094 | 120885 | 119677 | 118468 | 117260 | 116052 | 114843 | 113635 |
| | | on RFC OEM | train-km in thous. | 20838 | 20808 | 20779 | 20749 | 20720 | 20690 | 20661 | 20631 |
| **Austria** | FT | total | train-km in thous. | 41433 | 42004 | 42575 | 43147 | 43718 | 44289 | 44861 | 45432 |
| | | | gross ton-km in mill. | 45811 | 46577 | 47343 | 48110 | 48876 | 49643 | 50409 | 51175 |
| | PT | total | train-km in thous. | 98515 | 99484 | 100454 | 101424 | 102394 | 103364 | 104334 | 105303 |
| | | | gross ton-km in mill. | 29534 | 29929 | 30324 | 30719 | 31114 | 31509 | 31903 | 32298 |
| **Slovakia** | FT | total | train-km in thous. | 14932 | 15219 | 15505 | 15792 | 16079 | 16365 | 16652 | 16939 |
| | | | gross ton-km in mill. | 18848 | 19253 | 19659 | 20064 | 20470 | 20876 | 21281 | 21687 |
| | | on RFC OEM | train-km in thous. | 3474 | 3662 | 3851 | 4039 | 4228 | 4416 | 4605 | 4793 |
| | | | gross ton-km in mill. | 3531 | 3718 | 3905 | 4092 | 4279 | 4466 | 4653 | 4840 |
| | PT | total | train-km in thous. | 35840 | 37269 | 38699 | 40129 | 41559 | 42989 | 44418 | 45848 |
| | | | gross ton-km in mill. | 10857 | 11644 | 12431 | 13218 | 14006 | 14793 | 15580 | 16368 |
| | | on RFC OEM | train-km in thous. | 6149 | 6241 | 6333 | 6425 | 6517 | 6609 | 6701 | 6793 |
| | | | gross ton-km in mill. | 1922 | 1962 | 2002 | 2042 | 2082 | 2122 | 2162 | 2202 |
| **Hungary** | FT | total | train-km in thous. | 18484 | 18907 | 19330 | 19753 | 20176 | 20599 | 21022 | 21444 |
| | | | gross ton-km in mill. | 22361 | 22903 | 23444 | 23985 | 24527 | 25068 | 25609 | 26150 |
| | | on RFC OEM | train-km in thous. | 9951 | 10620 | 11289 | 11957 | 12626 | 13295 | 13964 | 14632 |
| | | | gross ton-km in mill. | 12304 | 13181 | 14059 | 14937 | 15815 | 16693 | 17571 | 18449 |
| | PT | total | train-km in thous. | 85639 | 87115 | 88592 | 90069 | 91545 | 93022 | 94498 | 95975 |
| | | on RFC OEM | train-km in thous. | 29343 | 30344 | 31345 | 32346 | 33347 | 34348 | 35349 | 36349 |
| **Romania** | FT | total | train-km in thous. | 24348 | 24999 | 25649 | 26300 | 26951 | 27602 | 28253 | 28904 |
| | | | gross ton-km in mill. | 30360 | 31313 | 32265 | 33218 | 34171 | 35124 | 36076 | 37029 |
| | | on RFC OEM | train-km in thous. | 10212 | 11025 | 11837 | 12649 | 13462 | 14274 | 15086 | 15899 |
| | | | gross ton-km in mill. | 3528 | 3485 | 3354 | 3287 | 3024 | 2986 | 2911 | 2751 |
| | PT | total | train-km in thous. | 53767 | 52736 | 51705 | 50675 | 49644 | 48613 | 47583 | 46552 |
| | | on RFC OEM | train-km in thous. | 12468 | 12112 | 11757 | 11402 | 11047 | 10692 | 10336 | 9981 |
| **Bulgaria** | FT | total | train-km in thous. | 8159 | 8699 | 9239 | 9779 | 10319 | 10859 | 11399 | 11939 |
| | | | gross ton-km in mill. | 3849 | 4051 | 4252 | 4453 | 4654 | 4856 | 5057 | 5258 |
| | PT | total | train-km in thous. | 21330 | 21760 | 22189 | 22618 | 23048 | 23477 | 23906 | 24336 |
| **Greece** | FT | total | train-km in thous. | 995 | 1119 | 1243 | 1367 | 1491 | 1615 | 1739 | 1863 |
| | | | gross ton-km in mill. | 981 | 1126 | 1270 | 1415 | 1560 | 1705 | 1849 | 1994 |
| | | on RFC OEM | train-km in thous. | 1009 | 1365 | 1721 | 2077 | 2433 | 2789 | 3145 | 3501 |
| | | | gross ton-km in mill. | 1096 | 1549 | 2002 | 2455 | 2908 | 3361 | 3814 | 4267 |
| | PT | total | train-km in thous. | 9774 | 9497 | 9221 | 8944 | 8668 | 8392 | 8115 | 7839 |
| | | on RFC OEM | train-km in thous. | 5071 | 4749 | 4427 | 4104 | 3782 | 3460 | 3138 | 2815 |

FT – Freight transport

PT – Passenger transport

*Table 74: Prognosis – optimistic scenario*

| | Trans. Mode | Scope | Transp. Perform./ Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Germany** | FT | total | train-km in thous. | 304444 | 308187 | 311979 | 315833 | 319755 | 323744 | 327797 | 331906 |
| | | | gross ton-km in mill. | 120 | 122 | 124 | 126 | 128 | 130 | 133 | 135 |
| | | on RFC OEM | train-km in thous. | 2205 | 2134 | 2202 | 2266 | 2330 | 2396 | 2460 | 2521 |
| | PT | total | train-km in thous. | 931244 | 935733 | 940286 | 944920 | 949641 | 954451 | 959343 | 964309 |
| | | on RFC OEM | train-km in thous. | 1375 | 1377 | 1380 | 1383 | 1386 | 1390 | 1394 | 1399 |
| **Czech Republic** | FT | total | train-km in thous. | 37178 | 37700 | 38226 | 38757 | 39295 | 39838 | 40387 | 40940 |
| | | | gross ton-km in mill. | 35030 | 35397 | 35767 | 36143 | 36526 | 36914 | 37308 | 37707 |
| | | on RFC OEM | train-km in thous. | 8459 | 8636 | 8818 | 9007 | 9203 | 9406 | 9616 | 9831 |
| | | | gross ton-km in mill. | 8244 | 8343 | 8449 | 8563 | 8686 | 8817 | 8957 | 9105 |
| | PT | total | train-km in thous. | 122340 | 121136 | 119938 | 118748 | 117565 | 116390 | 115222 | 114061 |
| | | on RFC OEM | train-km in thous. | 20936 | 20909 | 20884 | 20861 | 20842 | 20826 | 20813 | 20802 |
| **Austria** | FT | total | train-km in thous. | 42471 | 43063 | 43678 | 44324 | 45003 | 45715 | 46459 | 47230 |
| | | | gross ton-km in mill. | 47067 | 47858 | 48678 | 49535 | 50431 | 51368 | 52342 | 53350 |
| | PT | total | train-km in thous. | 98803 | 99779 | 100761 | 101751 | 102751 | 103760 | 104777 | 105803 |
| | | | gross ton-km in mill. | 29598 | 29994 | 30391 | 30791 | 31192 | 31596 | 32001 | 32408 |
| **Slovakia** | FT | total | train-km in thous. | 15111 | 15401 | 15695 | 15995 | 16300 | 16611 | 16927 | 17248 |
| | | | gross ton-km in mill. | 18919 | 19326 | 19734 | 20145 | 20558 | 20973 | 21391 | 21810 |
| | | on RFC OEM | train-km in thous. | 3641 | 3833 | 4028 | 4229 | 4435 | 4646 | 4862 | 5083 |
| | | | gross ton-km in mill. | 3698 | 3888 | 4082 | 4281 | 4486 | 4695 | 4910 | 5129 |
| | PT | total | train-km in thous. | 37000 | 38452 | 39932 | 41445 | 42995 | 44582 | 46203 | 47856 |
| | | | gross ton-km in mill. | 11544 | 12344 | 13161 | 13998 | 14856 | 15737 | 16638 | 17557 |
| | | on RFC OEM | train-km in thous. | 6381 | 6478 | 6580 | 6688 | 6804 | 6928 | 7058 | 7195 |
| | | | gross ton-km in mill. | 1994 | 2036 | 2079 | 2124 | 2172 | 2222 | 2274 | 2328 |
| **Hungary** | FT | total | train-km in thous. | 18893 | 19324 | 19764 | 20217 | 20682 | 21160 | 21650 | 22152 |
| | | | gross ton-km in mill. | 22951 | 23504 | 24071 | 24654 | 25257 | 25878 | 26517 | 27172 |
| | | on RFC OEM | train-km in thous. | 9980 | 10650 | 11320 | 11991 | 12663 | 13335 | 14009 | 14683 |
| | | | gross ton-km in mill. | 12328 | 13207 | 14086 | 14965 | 15846 | 16727 | 17609 | 18491 |
| | PT | total | train-km in thous. | 86991 | 88494 | 90028 | 91602 | 93218 | 94878 | 96578 | 98315 |
| | | on RFC OEM | train-km in thous. | 29783 | 30793 | 31812 | 32845 | 33891 | 34952 | 36025 | 37111 |
| **Romania** | FT | total | train-km in thous. | 25128 | 25794 | 26479 | 27185 | 27917 | 28674 | 29454 | 30255 |
| | | | gross ton-km in mill. | 32045 | 33031 | 34055 | 35129 | 36257 | 37438 | 38669 | 39946 |
| | | on RFC OEM | train-km in thous. | 10276 | 11089 | 11904 | 12721 | 13540 | 14361 | 15184 | 16009 |
| | | | gross ton-km in mill. | 6259 | 5899 | 5402 | 5284 | 5185 | 5071 | 4932 | 4875 |
| | PT | total | train-km in thous. | 54221 | 53199 | 52188 | 51190 | 50206 | 49237 | 48281 | 47338 |
| | | on RFC OEM | train-km in thous. | 14181 | 13859 | 13577 | 13345 | 13167 | 13045 | 12973 | 12947 |
| **Bulgaria** | FT | total | train-km in thous. | 8415 | 8960 | 9511 | 10069 | 10635 | 11210 | 11792 | 12382 |
| | | | gross ton-km in mill. | 3859 | 4061 | 4263 | 4464 | 4667 | 4869 | 5072 | 5275 |
| | PT | total | train-km in thous. | 21354 | 21784 | 22214 | 22645 | 23077 | 23510 | 23943 | 24377 |
| **Greece** | FT | total | train-km in thous. | 1207 | 1335 | 1468 | 1607 | 1753 | 1906 | 2065 | 2230 |
| | | | gross ton-km in mill. | 1174 | 1323 | 1476 | 1634 | 1799 | 1970 | 2147 | 2329 |
| | | on RFC OEM | train-km in thous. | 1009 | 1365 | 1721 | 2077 | 2433 | 2789 | 3145 | 3501 |
| | | | gross ton-km in mill. | 1096 | 1549 | 2002 | 2455 | 2908 | 3361 | 3814 | 4267 |
| | PT | total | train-km in thous. | 10102 | 9833 | 9570 | 9317 | 9075 | 8843 | 8621 | 8408 |
| | | on RFC OEM | train-km in thous. | 5737 | 5428 | 5134 | 4859 | 4606 | 4374 | 4162 | 3968 |

FT – Freight transport

PT – Passenger transport

*Table 75: Prognosis – pessimistic scenario*

| | Trans. Mode | Scope | Transp. Perform./ Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Germany** | FT | total | train-km in thous. | 300204 | 303864 | 307475 | 311025 | 314507 | 317921 | 321272 | 324566 |
| | | | gross ton-km in mill. | 116 | 118 | 119 | 121 | 123 | 124 | 126 | 127 |
| | | on RFC OEM | train-km in thous. | 2194 | 2132 | 2183 | 2235 | 2287 | 2334 | 2386 | 2441 |
| | PT | total | train-km in thous. | 925720 | 930102 | 934419 | 938656 | 942805 | 946866 | 950844 | 954749 |
| | | on RFC OEM | train-km in thous. | 1347 | 1349 | 1350 | 1351 | 1352 | 1352 | 1352 | 1351 |
| **Czech Republic** | FT | total | train-km in thous. | 36809 | 37324 | 37834 | 38339 | 38838 | 39332 | 39819 | 40302 |
| | | | gross ton-km in mill. | 34650 | 35009 | 35363 | 35712 | 36055 | 36392 | 36723 | 37049 |
| | | on RFC OEM | train-km in thous. | 8011 | 8179 | 8342 | 8498 | 8648 | 8790 | 8926 | 9055 |
| | | | gross ton-km in mill. | 7685 | 7773 | 7855 | 7929 | 7994 | 8050 | 8097 | 8137 |
| | PT | total | train-km in thous. | 121847 | 120634 | 119415 | 118189 | 116955 | 115714 | 114465 | 113209 |
| | | on RFC OEM | train-km in thous. | 20739 | 20708 | 20674 | 20637 | 20598 | 20555 | 20509 | 20460 |
| **Austria** | FT | total | train-km in thous. | 40394 | 40945 | 41472 | 41969 | 42433 | 42863 | 43263 | 43635 |
| | | | gross ton-km in mill. | 44554 | 45296 | 46009 | 46685 | 47321 | 47917 | 48476 | 49001 |
| | PT | total | train-km in thous. | 98226 | 99190 | 100148 | 101097 | 102037 | 102968 | 103890 | 104804 |
| | | | gross ton-km in mill. | 29471 | 29864 | 30257 | 30647 | 31035 | 31421 | 31806 | 32188 |
| **Slovakia** | FT | total | train-km in thous. | 14753 | 15036 | 15315 | 15589 | 15857 | 16120 | 16377 | 16629 |
| | | | gross ton-km in mill. | 18777 | 19181 | 19583 | 19984 | 20382 | 20778 | 21172 | 21564 |
| | | on RFC OEM | train-km in thous. | 3306 | 3491 | 3673 | 3849 | 4020 | 4186 | 4347 | 4503 |
| | | | gross ton-km in mill. | 3364 | 3548 | 3728 | 3903 | 4073 | 4237 | 4397 | 4552 |
| | PT | total | train-km in thous. | 34680 | 36087 | 37467 | 38813 | 40123 | 41395 | 42633 | 43840 |
| | | | gross ton-km in mill. | 10170 | 10943 | 11701 | 12439 | 13155 | 13849 | 14523 | 15178 |
| | | on RFC OEM | train-km in thous. | 5917 | 6005 | 6087 | 6162 | 6230 | 6291 | 6345 | 6392 |
| | | | gross ton-km in mill. | 1849 | 1888 | 1925 | 1959 | 1992 | 2022 | 2050 | 2076 |
| **Hungary** | FT | total | train-km in thous. | 18076 | 18491 | 18896 | 19290 | 19670 | 20037 | 20393 | 20737 |
| | | | gross ton-km in mill. | 21771 | 22301 | 22817 | 23316 | 23796 | 24257 | 24701 | 25129 |
| | | on RFC OEM | train-km in thous. | 9921 | 10590 | 11257 | 11924 | 12590 | 13254 | 13918 | 14581 |
| | | | gross ton-km in mill. | 12279 | 13156 | 14033 | 14909 | 15784 | 16659 | 17533 | 18406 |
| | PT | total | train-km in thous. | 84287 | 85737 | 87156 | 88536 | 89872 | 91165 | 92418 | 93635 |
| | | on RFC OEM | train-km in thous. | 28904 | 29896 | 30878 | 31847 | 32803 | 33744 | 34672 | 35588 |
| **Romania** | FT | total | train-km in thous. | 23567 | 24203 | 24820 | 25415 | 25985 | 26530 | 27052 | 27553 |
| | | | gross ton-km in mill. | 28675 | 29595 | 30475 | 31307 | 32085 | 32809 | 33483 | 34112 |
| | | on RFC OEM | train-km in thous. | 10149 | 10960 | 11770 | 12577 | 13383 | 14187 | 14989 | 15789 |
| | | | gross ton-km in mill. | 797 | 707 | 657 | 549 | 638 | 601 | 578 | 518 |
| | PT | total | train-km in thous. | 53313 | 52273 | 51223 | 50160 | 49082 | 47990 | 46884 | 45766 |
| | | on RFC OEM | train-km in thous. | 10754 | 10366 | 9937 | 9459 | 8926 | 8339 | 7700 | 7015 |
| **Bulgaria** | FT | total | train-km in thous. | 7903 | 8438 | 8967 | 9488 | 10002 | 10507 | 11005 | 11495 |
| | | | gross ton-km in mill. | 3839 | 4040 | 4241 | 4442 | 4642 | 4842 | 5041 | 5241 |
| | PT | total | train-km in thous. | 21306 | 21735 | 22164 | 22591 | 23018 | 23444 | 23870 | 24295 |
| **Greece** | FT | total | train-km in thous. | 783 | 903 | 1018 | 1127 | 1229 | 1324 | 1413 | 1497 |
| | | | gross ton-km in mill. | 788 | 929 | 1065 | 1196 | 1321 | 1439 | 1552 | 1660 |
| | | on RFC OEM | train-km in thous. | 1009 | 1365 | 1721 | 2077 | 2433 | 2789 | 3145 | 3501 |
| | | | gross ton-km in mill. | 1096 | 1549 | 2002 | 2455 | 2908 | 3361 | 3814 | 4267 |
| | PT | total | train-km in thous. | 9445 | 9162 | 8872 | 8572 | 8261 | 7940 | 7609 | 7270 |
| | | on RFC OEM | train-km in thous. | 4405 | 4070 | 3719 | 3349 | 2958 | 2546 | 2113 | 1663 |

FT – Freight transport

PT – Passenger transport

**Based on the prognosis, the following main conclusions can be stated:**

- increase in the performances of international rail freight transport by about 3-4% per year, mainly due to higher quality of services provided, flexibility, reliability and economic development,
- increase in rail passenger transport performances, affected primarily by economic development and an increase in the quality of services,
- resulting savings in social costs,
- increase in transport performances on lines included in the OEM corridor, in particular on the principal line sections following the implementation of the projects aiming at improving the infrastructure standards,
- higher quality of communication and information technologies required in particular on the cross-border sections having longer waiting times for freight trains than 2 hours,
- higher reliability of rail system following the achievement of TEN-T minimum infrastructure requirements and elimination of hindering factors for seamless interoperability, including cross-border sections whereby the target of 2 hours' waiting time is desired to be achieved as per the Action Programme of 2016,
- it is necessary to put some pressure on the harmonisation of charges for rail and road in order to achieve the desired modal shift to rail.

# 7 COMPARATIVE ANALYSIS OF RAIL AND ROAD FREIGHT TRANSPORT WITHIN THE OEM CORRIDOR

The comparison serves to compare the transport time and charges within the transport routes of the OEM corridor parallel to the TEN-T routes. The comparison of these two indicators will provide information on charge and time competitiveness of international rail freight transport. These indicators contribute significantly to transport service quality and its price.

**Input assumptions of comparative analysis:**

- legislative restrictions on running time and following equivalent period of rest according to the European Agreement concerning work of crews of vehicles engaged in international road transport,
- average speed in international road goods transport,
- average speed of trains in international rail freight transport (OEM),
- average railway infrastructure charges (OEM),
- 4 model transport routes,
- charging systems of individual countries in road goods transport,
- distances in kilometres of individual model routes.

Table 76 provides a comparative analysis of the average running time between international rail and road freight transport for proposed model transport routes. In addition to the running time itself, the average running time includes other technological, border and forwarding times required by individual modes of transport.

*Table 76: Comparative analysis of average running times*

| Route | km in road transport | km in rail transport | Average transport time by truck | Average transport time by rail |
|---|---|---|---|---|
| Pardubice – Burgas* | 1 616 | 1 740 | 46 h 39 min | 46 h 48 min |
| Sopron – Plovdiv* | 1 128 | 1 391 | 28 h 48 min | 36 h 48 min |
| Bratislava – Volos** | 1 391 | 1 816 | 42 h 42 min | 47 h 18 min |
| Rostock – Trnava | 959 | 951 | 26 h | 25 h |

*road transport route passes through the territory of the Republic of Serbia

**road transport route passes through the territory of the Republic of Serbia and the FYROM

The comparative analysis of the average running time showed a shorter technological time of transport in international road freight transport, except for the last model route. However, the analysis showed that the total technological time of transport in rail freight transport is approaching road freight transport. Such an approach results from several measures of the EU and national

governments in the process of liberalization of rail freight services market. At the same time, the services and measures of the OEM freight corridor contribute to the shortening of the total running time. It is very important to continue with removing barriers that hinder faster transport in international rail transport. Shortening technological transport times reduces the social costs of transport and contributes to the higher competitiveness of rail freight. The process of interoperability of the rail system within EU countries helps remove barriers, too. In case of transport of bulk substrates, rail freight can be considered to be competitive in total transport time as the road infrastructure does not have sufficient capacity for the individual transport of bulk substrates.

Table 77 provides a comparative analysis of transport infrastructure charges between rail and road freight transport for proposed model transport routes. The charge is calculated for road freight vehicle with a total weight of 40 t and weight of goods of 22 t, for freight train with a total weight of 1 600 t and weight of goods of 1 000 t. The analysis does not include any supplementary charges in road and rail transport.

*Table 77: Comparative analysis of charges*

| Route | Road freight transport | | | Rail freight transport | | |
|---|---|---|---|---|---|---|
| | charge 40 t vehicle | charge in €/km | charge in €/km/tonne | charge 1 600t train | charge in €/km | charge in €/km/tonne |
| Pardubice – Burgas* | 157,182 | 0,118 | 0,0054 | 4383,3 | 2,519 | 0,0025 |
| Sopron – Plovdiv* | 145,128 | 0,165 | 0,0075 | 3250,2 | 2,337 | 0,0023 |
| Bratislava – Volos** | 181,975 | 0,146 | 0,0066 | 5205,7 | 2,867 | 0,0029 |
| Rostock – Trnava | 184,896 | 0,217 | 0,0099 | 2883,7 | 3,032 | 0,0031 |

*road transport route passes through the territory of the Republic of Serbia

**road transport route passes through the territory of the Republic of Serbia and the FYROM

The comparative analysis of charge burden in Table 77 showed higher charges per 1 km of route for rail freight. However, charge comparison per one tonne of goods transported/route km showed a lower charge burden for international rail freight. Lower charges in rail freight per one tonne of goods transported occur only in case of larger amount of goods transported as the charges in road freight transport are less dependent on weight. With a decrease in the amount of goods, the charges per tonne of goods in rail transport are significantly increasing. The positive result of the analysis was influenced by EU and national measures. The main measures were the liberalization of transport infrastructure charges and the reduction of charges based on marginal costs. The charge comparison showed sufficient competitiveness of international rail freight transport against road freight transport, particularly in the transport of larger amount of goods.

The Figure below shows a comparison of some challenges rail freight transport faces compared to road freight transport.

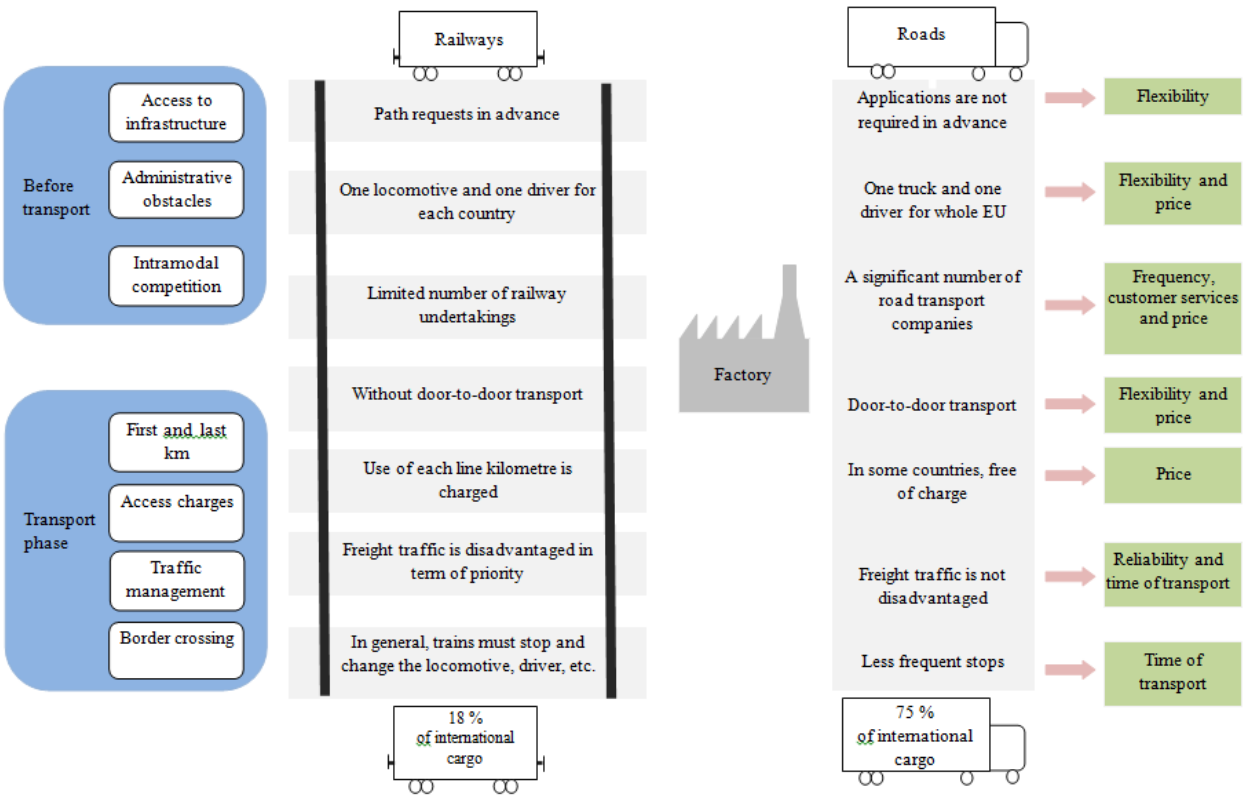



Figure 12: *Comparison of challenges of rail freight to road transport*

*(Source: European Court of Auditors)*

# 8 ANALYSIS OF CONNECTING RFC OEM TO TURKEY

Based on the Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, it is necessary, within RFC OEM, to evaluate the inclusion of the relevant railway lines of Turkey in RFC OEM.

Turkey is an Eurasian country that lies in Asia Minor and on part of the Balkan Peninsula. Most of the country is located in Asia. Turkey is washed by four seas and it is adjacent to several countries. In the European part it is adjacent to Greece and Bulgaria and in the Asian part it is adjacent to Armenia, Azerbaijan, Georgia, Iran, Iraq and Syria.

## 8.1 Transport-economic analysis

**Area:** 783 562 km²

**Population:** 74 816 000 (estimate 2009)

**Capital city:** Ankara, population 5 045 083 (2013)

**Currency:** Turkish Lira (TRY)/100 kuruş, 1 € = about 3,3424 TRY

**Human Development Index:** 0,750 (2014), 94. Place/world =Medium Human Development Index

It is necessary to examine the connection of the Turkish railway infrastructure to rail freight corridor OEM with regard to transport potential, taking into account EU policy towards third countries. It is possible to evaluate the transport potential from and to Turkey based on the macroeconomic and transport analyses of Turkey.

*Table 78: GDP development and production in Turkey*

| Year | 2000 | 2005 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| **GDP (in billions USD)** | 267 | 483 | 731 | 775 | 789 | 823 | 799 | 718 |
| **GDP growth rate (%)** | 6,77 | 8,4 | 9,16 | 8,77 | 2,13 | 4,19 | 2,91 | 4 |
| **GDP production (inter-year growth in %):** | | | | | | | | |
| **Agriculture** | 7,08 | 7,18 | 2,36 | 6,05 | 3,12 | 3,48 | -2,05 | N/A |
| **Industry** | 6,23 | 8,82 | 13,88 | 10,03 | 1,6 | 4,08 | 3,53 | N/A |
| **Services** | 6,61 | 8,57 | 7,64 | 8,76 | 2,55 | 5,54 | 4,08 | N/A |
| **Production** | 6,88 | 8,21 | 13,83 | 10 | 1,72 | 3,72 | 3,65 | N/A |
| **GDP production (% GDP):** | | | | | | | | |
| **Agriculture** | 11,31 | 10,8 | 9,46 | 9,01 | 8,84 | 8,33 | 8,01 | 8,6 |
| **Industry** | 31,33 | 28,46 | 26,39 | 27,47 | 26,67 | 26,61 | 27,11 | 26,5 |
| **Services** | 57,36 | 60,74 | 64,15 | 63,52 | 64,49 | 65,06 | 64,88 | 64,9 |
| **Import of goods and services (% GDP)** | 23,1 | 25,4 | 26,8 | 32,6 | 31,5 | 32,2 | 32,1 | 30,8 |
| **Export of goods and services (% GDP)** | 20,1 | 21,9 | 21,2 | 24 | 26,3 | 25,6 | 27,9 | 28 |

*Source: International Bank for Reconstruction and Development*

The data on GDP development in Turkey, listed in Table 78, confirmed a decline in GDP since 2013 whereby GDP in 2013 was on the highest level for the whole monitored period. The expected GDP growth rate has always been in positive values whereby the estimated GDP growth was not actually achieved. Failure to achieve GDP growth was mainly caused by lower production and agriculture production. The services have the largest share in GDP in Turkey that form more than 60 % of GDP since 2005.This fact is primarily due to the significant global tourism of Turkey. The lowest share is recorded in agriculture where it reaches a level slightly above 8 % of GDP. The import of goods has been decreasing with respect to the GDP since 2011 and the export of goods and services is increasing with slight variations. Despite these facts, Turkey imports more than it exports, which negatively affects the GDP.

A forecast of GDP development in Turkey according to the International Monetary Fund for the period 2016 – 2021 is shown in Table 79.

*Table 79: Forecast of GDP development in Turkey according to International Monetary Fund*

| YEAR | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|
| GDP (in billions USD) | 751 | 791 | 834 | 883 | 935 | 986 |
| GDP growth rate (%) | 3,8 | 3,4 | 3,5 | 3,5 | 3,5 | 3,5 |

*Source: International Monetary Fund*

Based on the forecast of GDP by 2021 according to the International Monetary Fund we can assume a gradual growth of GDP in the individual years. The expected economic growth would result in a higher demand for goods and services thereby the growth of transport performances will be directly affected.

The assessment of the connection of Turkish railways and freight corridor requires an analysis of the import and export of goods to EU member states. In the analysis, it is particularly important to mention the import and export of goods to and from countries whose railway lines are included in the RFC OEM, including the Federal Republic of Germany. Such analysis will provide a view of the transport and economic flows between Turkey and EU countries, whereby it will be possible to partially evaluate, the transport potential.

The analysis of the import of goods to EU countries from Turkey for the period 2002 – 2015 in millions € is shown in Table 80.

*Table 80: Import of goods to the EU from Turkey in millions €*

| Country/Year | 2002 | 2005 | 2008 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| **TOTAL EU 28 countries** | 24 662 | 36 230 | 46 288 | 48 820 | 48 822 | 50 654 | 54 440 | 61 603 |
| **Austria** | 635 | 1 140 | 1 376 | 1 586 | 1 448 | 1 341 | 1 373 | 1 423 |
| **Bulgaria** | 415 | 887 | 1 396 | 1 107 | 1 189 | 1 510 | 1 468 | 1 496 |
| **Czech Republic** | 248 | 252 | 421 | 641 | 616 | 635 | 778 | 851 |
| **Germany** | 6 577 | 7 443 | 8 757 | 10 513 | 10 650 | 10 946 | 11 892 | 12 821 |
| **Greece** | 645 | 958 | 1 727 | 1 157 | 1 108 | 1 127 | 1 206 | 1 331 |
| **Hungary** | 259 | 370 | 417 | 411 | 456 | 602 | 569 | 749 |
| **Romania** | 592 | 1 574 | 2 762 | 1 903 | 1 837 | 1 871 | 1 953 | 2 284 |
| **Slovakia** | 84 | 119 | 224 | 310 | 412 | 368 | 454 | 475 |
| **TOTAL RFC OEM countries** | **9 454** | **12 744** | **17 080** | **17 627** | **17 716** | **18 400** | **19 693** | **21 430** |

*Source: European Commission – Trade – Export Helpdesk – Statistics*

The analysis of goods import to EU countries from Turkey for the period 2002 – 2015 in thousands tons is shown in Table 81.

*Table 81: Import of goods to EU from Turkey in thousands tons*

| Country/Year | 2002 | 2005 | 2008 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| **TOTAL EU 28 countries** | **35 400** | **25 522** | **27 198** | **25 598** | **22 450** | **24 408** | **24 884** | **27 334** |
| **Austria** | 377 | 516 | 573 | 591 | 484 | 458 | 433 | 465 |
| **Bulgaria** | 4 012 | 1 010 | 1 359 | 1 279 | 1 241 | 1 562 | 1 484 | 1 542 |
| **Czech Republic** | 879 | 71 | 118 | 236 | 149 | 158 | 186 | 198 |
| **Germany** | 1 677 | 1 682 | 2 059 | 2 413 | 2 262 | 2 314 | 2 505 | 2 644 |
| **Greece** | 1 306 | 1 135 | 2 220 | 1 629 | 1 392 | 1 368 | 1 358 | 1 546 |
| **Hungary** | 898 | 152 | 196 | 149 | 145 | 175 | 175 | 200 |
| **Romania** | 5 319 | 1 163 | 2 393 | 1 716 | 1 553 | 1 487 | 1 554 | 1 554 |
| **Slovakia** | 428 | 52 | 90 | 87 | 92 | 95 | 93 | 91 |
| **TOTAL RFC OEM countries** | **14 896** | **5 781** | **9 010** | **8 100** | **7 317** | **7 617** | **7 788** | **8 240** |

*Source: European Commission – Trade – Export Helpdesk – Statistics*

The analysis of goods import to EU from Turkey listed in Tables 80 and 81 demonstrated a progressive increase in goods import from Turkey to EU countries. The progressive increase is primarily due to the economic growth of EU countries which becomes evident by the increased demand of consumers and EU countries for goods produced also in Turkey. The progressive increase of goods import to the EU from Turkey in million€ was recorded also in RFC OEM member states. The highest value of goods is exported to the Federal Republic of Germany and the least to the Slovak Republic. The analysis also showed a gradual decrease in goods import to RFC OEM member states from Turkey in thousands tons. The most tons of goods were directed at the Federal Republic of Germany and the least at the Slovak Republic. The different trend in goods

import to RFC OEM member states from Turkey, listed in Tables 80 and 81, is due to the import of goods with higher added value and lower weights.

The analysis of goods import to Turkey from the EU for the period 2002 – 2015 in million € is listed in Table 82.

*Table 82: Goods import to Turkey from EU in millions €*

| Country/Year | 2002 | 2005 | 2008 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| **TOTAL EU 28 countries** | **26 633** | **44 620** | **54 476** | **73 275** | **75 489** | **77 683** | **74 719** | **79 129** |
| **Austria** | 578 | 788 | 1 034 | 1 306 | 1 274 | 1 290 | 1 256 | 1 464 |
| **Bulgaria** | 565 | 988 | 1 339 | 1 733 | 1 958 | 2 004 | 2 058 | 1 977 |
| **Czech Republic** | 289 | 420 | 563 | 975 | 1 323 | 1 664 | 1 625 | 1 721 |
| **Germany** | 7 502 | 12 398 | 15 014 | 20 066 | 20 022 | 21 378 | 19 490 | 22 801 |
| **Greece** | 368 | 743 | 903 | 1 882 | 2 952 | 3 208 | 3 266 | 1 711 |
| **Hungary** | 278 | 747 | 920 | 1 350 | 1 212 | 1 346 | 1 289 | 1 455 |
| **Romania** | 611 | 1 761 | 2 195 | 2 787 | 2 454 | 2 545 | 2 361 | 2 155 |
| **Slovakia** | 93 | 246 | 631 | 768 | 851 | 986 | 767 | 791 |
| **TOTAL RFC OEM countries** | **10 284** | **18 092** | **22 598** | **30 868** | **32 046** | **34 421** | **32 112** | **34 074** |

*Source: European Commission – Trade – Export Helpdesk – Statistics*

The analysis of goods import to Turkey from the EU for the period 2002 – 2015 in thousands tons is listed in Table 83.

*Table 83: Goods import to Turkey from EU in thousands tons*

| Country/Year | 2002 | 2005 | 2008 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| **TOTAL EU 28 countries** | **109 136** | **30 588** | **32 409** | **41 740** | **45 715** | **46 717** | **47 048** | **44 938** |
| **Austria** | 232 | 326 | 415 | 508 | 497 | 500 | 487 | 538 |
| **Bulgaria** | 48 115 | 2 806 | 2 892 | 3 273 | 3 534 | 3 782 | 4 118 | 4 008 |
| **Czech Republic** | 763 | 160 | 129 | 181 | 257 | 289 | 257 | 289 |
| **Germany** | 2 509 | 3 091 | 3 245 | 4 473 | 4 580 | 4 384 | 3 924 | 4 006 |
| **Greece** | 611 | 1 393 | 1 331 | 2 485 | 3 785 | 4 590 | 5 113 | 3 058 |
| **Hungary** | 4 820 | 396 | 221 | 329 | 282 | 348 | 316 | 318 |
| **Romania** | 31 516 | 5 207 | 4 747 | 5 168 | 4 361 | 4 362 | 4 293 | 3 695 |
| **Slovakia** | 2 651 | 314 | 422 | 288 | 384 | 506 | 378 | 257 |
| **TOTAL RFC OEM countries** | **91 216** | **13 694** | **13 402** | **16 705** | **17 680** | **18 761** | **18 885** | **16 169** |

*Source: European Commission – Trade – Export Helpdesk – Statistics*

The analysis of goods import to Turkey from EU countries carried out in Table 82 showed an increase in goods import in mill. €. For the whole monitored period the goods in the highest value in total were imported in 2015. The value increase of goods import to Turkey was recorded from RFC OEM member states, too. The analysis of goods import to Turkey in thousands tons carried

out in Table 83 showed a significant decrease in 2015 compared to 2002. The analysis of goods import to Turkey in thousands tons from RFC OEM member states showed a decrease. Most of the goods were imported to Turkey from the Federal Republic of Germany and the Republic of Bulgaria. The least of goods were imported to Turkey from the Slovak Republic. The different trend in goods import from RFC OEM member states to Turkey, listed in Tables 82 and 83, is due to the import of goods with higher added value and with lower weights.

Based on the analysis of imports and exports of goods between Turkey and the RFC OEM Member States, we can conclude:

- increasing the added value of imported and exported goods between Turkey and the EU countries,
- decreasing the transport performances of freight transport between Turkey and the EU countries,
- Demand for fast, reliable and safe international transport, in particular on the route between Turkey and the Federal Republic of Germany.

## 8.2 Transport infrastructure and international transport

In addition to the analysis of macroeconomics and transport indicators, the analysis of transport infrastructure in the territory of Turkey is necessary, too. The selected indicators concerning the railway infrastructure and the border crossings as well as the infrastructure of other transport modes will be shown in the following sections. At the same time, an analysis of modal split, transport performances and international rail freight transport will be carried out. The Turkish State Railways have 1 435 mm standard gauge and except the railway lines of independent traction of 8 947 km length they have railway lines of dependent traction with 25 kV, 50 Hz AC power supply system of 3 854 km length. Figure 13 is the graphical representation of part of the Turkish State Railways network with parts of the railway network in neighbouring countries – Greece and Bulgaria. The railway border crossing between Turkey and Bulgaria is between the border crossing stations Kapikule (TR) – Svilengrad (BG). The maximum line speed between these border crossing stations is 85 km/h. The distance from state border of Turkey with Bulgaria to the railway border crossing station is 1.27 km and from the railway border crossing station it is 19.4 km. The rail border crossing between Turkey and Greece is between the border crossing stations Uzunköprű (TR) – Pythion (EL). In Figure 13, the electrified lines are shown in blue and non-electrified lines are shown in green. Thin lines in the Figure represent single track lines while thicker lines double track and multiple track lines.


Figure 13: *Graphical representation of railway border crossings*

*(Source: www.trainsofturkey.com)*

Important projects for the development of rail transport include the Marmaray tunnel linking the rail network in the European and the Asian part of Turkey under the Bosphorus strait. Construction of the Murmaray tunnel is part of the Murmaray project, which begins in Halkali in the European part of Istanbul, passes through the Marmaray tunnel and ends at Gebze in the Asian part of Istanbul. This route has a total length of 76 km with 13 km under the surface of which the tunnel tube under the Bosphorus strait has a length of 1.4 km. The tunnel was opened on October 29, 2013. It is a double-track tunnel with three-track extension. The tunnel is intended for high-speed trains, suburban trains, passenger trains and freight trains, except for the transport of dangerous goods and the carriage of goods in open wagons. The freight trains run through the tunnel when the suburban trains do not run. The graphical representation of the Marmaray project is shown in Figure 14.


Figure 14: *Graphical representation of Marmaray project*

*(Source: www.Railturkey.org)*

For Turkey, as maritime country, maritime transport is a strategic and important mode of transport. There are several ports in Turkey. The port of Tekirdağ lies in the European part of Turkey while the Port of Haydarpaşa lies in the Asian part of Istanbul. It is important to link the transport infrastructure with the ports. In addition to the above mentioned ports, the terminals of intermodal transport are of great importance, such as at Kapikule, Corlu, Halkali and Cerkezkoy in the European part of Turkey. The graphical representation of the north-western part of Turkey with its capital and the mentioned ports marked with a red dot and terminals of combined transport marked with an orange dot are shown in Figure 15.


Figure 15: *Graphical representation of logistics centres and ports in northwest Turkey*

*(Source: www.trainsofturkey.com)*

### Tekirdağ

The port of Tekirdağ is located on the northern coast of the Marmara Sea. The port operator is TDI (Turkish Maritime Facilities Inc.). The length of the pier for ship loading/unloading is in the range of 176 m – 356 m for the container terminal and for the main freight terminal the piers have a length of 327 m and 343 m. The net storage area of the Container terminal is 35 000 $m^2$. The distance of this terminal to the borders of Turkey with the Republic of Bulgaria (Kapikule/ Svilengrad) is 169 km and the distance to the borders of Turkey with Greece (Uzunköprü / Pythion) is 132 km.

*Table 84: Amount of loaded and unloaded goods in tonnes and number of containers at Tekirdağ*

| Year | 2012 | | 2013 | | 2014 | |
|---|---|---|---|---|---|---|
| **Description** | **loaded** | **unloaded** | **loaded** | **unloaded** | **loaded** | **unloaded** |
| **Bulk goods (t)** | 140 159 | 1 229 510 | 114 643 | 1 353 197 | 33 576 | 545 322 |
| **Liquid goods (t)** | 0 | 0 | 80 | 146 814 | 0 | 51 980 |
| **General type of goods (t)** | 91 409 | 104 393 | 52 439 | 100 139 | 3 893 | 30 060 |
| **Total (t)** | **231 568** | **1 333 903** | **167 162** | **1 600 150** | **37 469** | **627 362** |
| **Container (quantity)** | **0** | **0** | **3 278** | **3 432** | **2 068** | **2 390** |

*Source: Republic of Turkey Prime Ministry Privatization Administration 2016*

At the Port of Tekirdağ, during the years 2012 – 2014, the unloading volume significantly exceeded the loading volume. In 2014, the volume of unloaded goods was 627 362 t, i.e. a decrease of 706 541 t compared to 2012. The loaded goods have a decreasing trend. In 2014, the loading volume was 37 469 t, which is a reduction of 194 099 t compared to 2013. The amount of loaded and unloaded containers has also a decreasing trend. In 2014, 1 210 containers less were loaded than in the previous year and 1 042 containers less were unloaded in 2014 compared to 2013. An overview of the amount of loaded and unloaded goods in tonnes is given in the previous table.

### Haydarpaşa

The Port of Haydarpaşa is located in the Asian part of Istanbul and in the northeast of the Marmara Sea. The port operator is the General Directorate of the Turkish State Railways. There are two train ferries, tow boats for servicing the heavier ships in the port. Container handling is performed by 4 quayside gantry cranes, mobile gantry cranes and stackers. The storage capacity of containers is 426 000 TEU per year and the maximum capacity of equipment is 655 000 TEU per year. The port of Haydarpaşa occupies an area of land of 343 420 $m^2$.

*Table 85: Amount of loaded and unloaded goods in 1000 t in Port of Haydarpaşa*

| Year | 2012 | | 2013 | | 2014 | | 2015 | |
|---|---|---|---|---|---|---|---|---|
| Description | loaded | unloaded | loaded | unloaded | loaded | unloaded | loaded | unloaded |
| General type of goods (1000 t) | 605 | 1033 | 1912 | 1682 | 2128 | 1961 | 1415 | 1876 |
| Total (1000 t) | 1638 | | 3594 | | 4089 | | 3291 | |

*Source: Turkish State Railways, Annual Statistics, 2011- 2015*

The port of Haydarpaşa observed an increasing trend in 2012 – 2014, which was changed by a sudden decrease in 2015. Compared to 2014, the total volume of loaded and unloaded goods decreased by 798 thousand tonnes in 2015. A significant decrease was recorded in the volume of loaded goods when the amount of loaded goods decreased by 703 thousand tonnes in 2015 compared to 2014. Within the volume of unloaded goods, there was a decrease by 85 thousand tonnes in 2015 compared to the previous year. Detailed information on unloading and loading in the port of Haydarpaşa is given in table above.

**Selected intermodal transport terminals**

**Kapikule**

The intermodal transport terminal and the Kapikule border station are the most important connecting points at the Turkish-Bulgarian border as they link Europe with Turkey. All container trains as well as most rail transport pass through the Kapikule terminal. The border crossing between Turkey and the Republic of Bulgaria passes just through the Kapikule terminal and is connected with the cross-border station and also with the intermodal transport terminal on the Bulgarian side of Svilengrad. The distance to the Turkish-Bulgarian border is 2 km. The distance from the terminal to the railway crossing with Greece (Uzunköprű (TR) / Pythion (EL)) is 98 km by rail. The terminal has 15 tracks and no container storage area.

**Corlu**

The Corlu Terminal is located at the 154 km of the Istanbul – Kapikule railway. Due to its unfavourable location, this terminal is mainly used for loading/unloading of dangerous goods. The distance of this terminal to the Turkish-Bulgarian border is 166 km and to the Turkish-Greek border 128 km. The terminal has 15 tracks and no open storage area.

**Halkali**

The Halkali Terminal is one of the most important freight terminals located in the European side of Istanbul. The distance of this terminal to the Turkish-Bulgarian border is 278 km and to the Turkish-Greek border 240 km. The Halkali terminal has 29 tracks, a container storage area and closed warehouses.

### Cerkezkoy

The Cerkezkoy Terminal is located at the 115 km of the Istanbul – Kapikule railway. It substituted the Halkali Terminal when it was closed. The distance of this terminal to the Turkish-Bulgarian border is 190 km and to the Turkish-Greek border 152 km. There is no open storage area in the terminal.

Table 86 shows the development of railway infrastructure construction as well as transport performances achieved on the Turkish State Railways network for the period 2002 – 2015.

*Table 86: Selected indicators of railway transport in Turkey*

| Indicators/Year | 2002 | 2005 | 2008 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|
| **Length of railway lines in km** | **10 925** | **10 973** | **11 005** | **12 008** | **12 097** | **12 485** | **12 532** |
| Non-electrified lines | 8 843 | 8 699 | 8 723 | 8 792 | 8 793 | 8 737 | 8 678 |
| Electrified lines | 2 082 | 2 274 | 2 282 | 3 216 | 3 304 | 3 748 | 3 854 |
| High-speed trains | N/A | N/A | N/A | 888 | 888 | 1 213 | 1 213 |
| **Principal lines in km** | **8 671** | **8 697** | **8 699** | **9 642** | **9 718** | **10 087** | **10 131** |
| Non-electrified lines | 6 919 | 6 777 | 6 771 | 6 802 | 6 796 | 6 757 | 6 708 |
| Electrified lines | 1 752 | 1 920 | 1 928 | 2 840 | 2 922 | 3 330 | 3 423 |
| **Transport performances thousands train-km** | **39 085** | **45 395** | **42 760** | **35 332** | **28 945** | **43 006** | **41 873** |
| passenger trains | 24 408 | 26 284 | 23 339 | 17 319 | 14 585 | 21 196 | 22 173 |
| mixed trains | 589 | 520 | 677 | 526 | 292 | 585 | 656 |
| freight trains | 13 795 | 18 129 | 18 455 | 17 244 | 13 918 | 20 596 | 18222 |
| service trains | 293 | 462 | 289 | 243 | 150 | 629 | 822 |
| **Transport performances in mill. Tkm** | **7 224** | **9 152** | **10 739** | **11 670** | **11 177** | **11 992** | **10 474** |
| national | 6 613 | 7 996 | 9 185 | 10 473 | 10 241 | 11 106 | 9736 |
| international | 553 | 1 081 | 1 367 | 750 | 509 | 495 | 442 |
| Baggage freight | 3 | 1 | 1 | N/A | N/A | N/A | N/A |
| Administrative freight | 55 | 74 | 186 | 447 | 427 | 391 | 296 |
| **Amount of goods in thousands tonnes** | **14 616** | **19 195** | **23 491** | **25 666** | **26 597** | **28 747** | **25 878** |
| **Ports and piers in thousands tonnes** | **36 252** | **44 649** | **30 406** | **12 934** | **16 074** | **17 758** | N/A |
| loaded | 17 882 | 19 904 | 14 386 | 7 182 | 8 978 | 9 434 | N/A |
| unloaded | 18 370 | 24 745 | 16 020 | 5 752 | 7 096 | 8 324 | N/A |

*Source: Turkish State Railways*

The development of the length of operated railway lines on the Turkish State Railways network, listed in Table 86, shows an increasing trend. In 2015, the total length of railway lines was 12 532 km, which represents an increase by 14.7 % compared to the year 2002. Of the total length of lines, non-electrified lines in 2015 represent 69.2 %.

A variable development was recorded for non-electrified lines in the monitored period. The length development of electrified lines has an increasing trend in the analysed period.

The transport performances, listed in Table 86 in thousands train-km, achieved on the Turkish State Railways network, had a variable trend. In 2015, an increase in total transport performances in thousands train-km by 7.1 % was shown compared to 2002.A significant increase in performances occurred in 2014 and 2015, compared to 2013. The transport performance in rail freight transport in 2015 was at the level of 18 222 thousands train-km, thus reached the level of the performances of the years 2005 and 2008. Nevertheless, a decrease in transport performances by 11.5% occurred compared to 2014.

The analysis of transport performances development in millions tonne-km has shown an increasing trend from 2002 to 2014, while a decrease in these performances was noticed in 2015. In partial split, domestic transport had the greatest share. From 2008 to 2015, a gradual decrease in performances was noticed in international transport. The analysis of the amount of goods transported in tonnes confirmed about the same development as the analysis of transport performances in tonne-km. The development of handling operations port – rail transport confirmed a growth of handling operations from 2012 to 2014. However, compared to 2005, there is a decrease of handling operations by 39.8 %.

In Tables 87 and 88, an analysis of modal split development in Turkey for the years 2000-2013 is carried out.

*Table 87: Modal split of passenger transport in millions passenger-km in Turkey*

| Year | Road | | Rail | | Maritime | | Air | | Total pkm |
|---|---|---|---|---|---|---|---|---|---|
| | pkm | % | pkm | % | pkm | % | pkm | % | |
| **2000** | 185681 | **95,9** | 4240 | **2,2** | 56 | **0,03** | 3555 | **1,84** | 193532 |
| **2002** | 163327 | **96,1** | 3939 | **2,3** | 39 | **0,02** | 2706 | **1,59** | 170011 |
| **2005** | 182152 | **95,3** | 3661 | **1,9** | 1240 | **0,65** | 3992 | **2,09** | 191045 |
| **2012** | 258874 | **91,5** | 3006 | **1,1** | 1459 | **0,52** | 19731 | **6,97** | 283070 |
| **2013** | 268178 | **90,5** | 3020 | **1,0** | 1667 | **0,56** | 23357 | **7,88** | 296222 |
| **2014** | 276073 | **89,8** | 3458 | **1,1** | 1806 | **0,59** | 26204 | **8,52** | 307541 |
| **2015** | 290734 | **89,2** | 3708 | **1,1** | 1836 | **0,56** | 29790 | **9,14** | 326068 |

*Note: pkm- passenger kilometres*

*Source: TURKSTAT, Summary transport statistics*

*Table 88: Modal split of freight transport in millions tonne-km in Turkey*

| Year | Road | | Rail | | Maritime | | Air | | Total tkm |
|---|---|---|---|---|---|---|---|---|---|
| | tkm | % | tkm | % | tkm | % | tkm | % | |
| **2001** | 151421 | **86,9** | 7558 | **4,3** | 15001 | **8,61** | 285 | **0,16** | 174265 |
| **2005** | 166831 | **91,3** | 9152 | **5,0** | 6439 | **3,52** | 392 | **0,21** | 182814 |
| **2012** | 216123 | **88,6** | 11670 | **4,8** | 16223 | **6,65** | N/A | N/A | 244016 |
| **2013** | 224048 | **88,7** | 11177 | **4,4** | 17312 | **6,86** | N/A | N/A | 252537 |
| **2014** | 234492 | **89,5** | 11992 | **4,6** | 15572 | **5,94** | N/A | N/A | 262056 |
| **2015** | 244329 | **89,8** | 10474 | **3,9** | 17204 | **6,32** | N/A | N/A | 272007 |

*Note: tkm- tonne kilometres*

*Source: TURKSTAT, Summary transport statistics*

The modal split in passenger transport showed the largest share of road transport with 89.2% in 2015. In comparison of the year 2000 with the year 2015, the share of road transport decreased by 6.7 %. The share of road transport decreased as a result of the change of the modal split in favour of air transport. The share of air transport is higher by 7.3% in 2015 than in 2000 when the share of air transport reached 1.84 %. The share of rail transport in 2015 was 1.1 %, which represents a decrease by 1.1% compared to 2000. In the period 2012 – 2015, the share of rail transport did not change significantly. The lowest share of modal split was recorded in maritime transport at the level around 0.56 % during the years 2012 – 2015. Globally, an increase in transport performances of passenger transport is recorded in the monitored period.

The modal split of freight transport confirmed a high share of road goods transport at the level of 89.8 % in 2015. The transport performance in road goods transport did not change significantly in the monitored period and it varies around the share level of 89 %. The share of modal split in rail freight transport is 3.9 % in 2015 and it has a rather decreasing trend. The comparison of modal split of freight transport in Turkey has shown a variable share of maritime transport. The analysis of the transport performance of freight transport confirmed a gradually increasing trend.

Within Turkey, it is necessary, in addition to railway infrastructure, to analyse also the development of infrastructure of other modes of transport. Transport infrastructure development in Turkey for the period 2007 – 2014 is shown in Table 89.

*Table 89: Transport infrastructure of Turkey*

| Indicator/Year | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|
| **Length of roads** | **350 708** | **362 660** | **367 263** | **370 276** | **385 748** | **388 666** | **236 671** |
| national roads | 31 333 | 31 271 | 31 395 | 31 372 | 31 375 | 31 341 | 31 280 |
| provincial road | 30 579 | 30 948 | 31 390 | 31 558 | 31 880 | 32 155 | 32 474 |
| municipal roads | 286 888 | 298 405 | 302 398 | 305 227 | 320 366 | 323 043 | 170 762 |
| highways | 1908 | 2 036 | 2 080 | 2 119 | 2 127 | 2 127 | 2 155 |
| **Length of pipelines:** | **13 218** | **14 750** | **14 944** | **15 566** | N/A | N/A | N/A |
| petroleum pipeline | 3 065 | 3 065 | 3 038 | 3 038 | N/A | N/A | N/A |
| for transport of natural gas | 10 153 | 11 685 | 11 906 | 12 528 | N/A | N/A | N/A |
| **Number of seaports** | 178 | 179 | 182 | 181 | N/A | N/A | N/A |
| **Number of airports** | 43 | 45 | 46 | 47 | N/A | N/A | N/A |

*Source: TURKSTAT, Summary transport statistics*

The total length of roads in Turkey in 2014 was 236 671 km. Compared to 2007 when the total length was 350 708 km, the total length reduced by 114 037 km, which represents a reduction by 32.5 %. The municipal roads, that have been cancelled or reclassified to another category, are the main reason for such a significant reduction of the total length. In the same period, an increase by 1 895 km occurred in the provincial roads. The total length of highways increased from 2007 to 2014 by 247 km. The condition of municipal roads decreased in 2014 by 116 126 km compared to 2007. An opposite trend – reduction of road length – is recorded in road infrastructure compared to rail transport. The development of pipelines length has an increasing trend which is affected by the construction of gas pipelines. The development of airports was affected primarily by the growing demand for air transport services due to an expanding tourism.

The performances in international rail freight transport in thousands tonnes and thousands tonne-km are shown in the following Table 90. The analysis of performances is aimed at international transport between Turkey and TEA members (Europe – Asia tariff for Freight Transportation) and international transport between Turkey and CMO members (Conference of Middle East Railways).

*Table 90: International rail transport performances in Turkey*

| International rail freight transport in thousands tonnes | | | | | | |
|---|---|---|---|---|---|---|
| **Transport/Year** | | **2011** | **2012** | **2013** | **2014** | **2015** |
| **TEA** | **Export** | 602 | 481 | 419 | 429 | 579 |
| | **Import** | 1 273 | 1 091 | 1 015 | 871 | 1051 |
| **CMO** | **Export** | 581 | 402 | 159 | 246 | 222 |
| | **Import** | 84 | 138 | 98 | 105 | 100 |
| **Total** | **Export** | 1 183 | 883 | 578 | 675 | 801 |
| | **Import** | 1 357 | 1 229 | 1 113 | 976 | 1151 |
| | **Transit** | 15 | 11 | 21 | 28 | 12 |
| **International rail freight transport in thousands tonne-km** | | | | | | |
| **Transport/Year** | | **2011** | **2012** | **2013** | **2014** | **2015** |
| **TEA** | **Export** | 206 587 | 112 026 | 8 5774 | 75 564 | 111 545 |
| | **Import** | 347 156 | 230 342 | 183 714 | 129 067 | 174 001 |
| **CMO** | **Export** | 389 590 | 353 384 | 182 996 | 217972 | 118 908 |
| | **Import** | 33 077 | 42 542 | 31 340 | 34 072 | 22 774 |
| **Total** | **Export** | 596 177 | 465 410 | 268 770 | 293 536 | 230 453 |
| | **Import** | 380 233 | 272 884 | 215 054 | 163 139 | 196 775 |
| | **Transit** | 15 002 | 11 206 | 24 867 | 38 170 | 15 006 |

*Note: TEA – Traffic between Turkey and member countries of the Europe – Asia Tariff for Freight Transportation*

*CMO – Traffic between member countries of the Conference of MIDDLE East Railways*

*Source: Turkish State Railways, http://en.tcdd.gov.tr/files/istatistik/20112015yillik.pdf*

The TEA members include railway infrastructure managers of the countries of Romania, the Republic of Bulgaria, the Syrian Arab Republic, the Republic of Albania, the Republic of Iraq, the FYROM, the Islamic Republic of Iran, the Republic of Turkey, Greece, Montenegro, the Republic of Bosnia and Herzegovina and the Republic of Serbia. Import predominates within international rail freight transport between Turkey and TEA members. The transport performances of import in thousands tonnes decreased by 17.4% from 2011 to 2015. The export between TEA members and Turkey listed in thousands tonnes recorded a slighter decrease as the performances in 2015 decreased by 3.8 % compared to 2011.

The Middle East area includes Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yemen. The transport performances in international rail freight transport in thousands tonnes between the member states of the Conference of Middle East Railways and Turkey are in export comparable to export with TEA members in the years 2011 and 2012. The transport performances in thousands tonnes within export decreased in 2015 compared to 2011 by 61.8 %.The decrease may be the result of processing from own resources and a minimization of import or supply from other countries which are not members of the mentioned associations.

The analysis of transport performances of international rail transport between Greece and Turkey is listed in Table 91.

*Table 91: Transport performances by rail between Greece and Turkey*

| Mode of transport | 2011 | | | 2013 | | | 2014 | | | 2015 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | freight wagons | tonnes | tonne-km | freight wagons | tonnes | tonne-km | freight wagons | tonnes | tonne-km | freight wagons | tonnes | tonne-km |
| **Transit** | 8 144 | 236 262 | 17 308 838 | 3 | 142 | 90 041 | 7 | 394 | 250 413 | 1 | 36 | 23 056 |
| **to Turkey** | N/A | N/A | N/A | 51 | 2 435 | 258 899 | 25 | 492 | 273 230 | N/A | N/A | N/A |
| **from Turkey** | 17 | 280 | 130 761 | N/A | N/A | - N/A | 106 | 3 067 | 3 169 194 | 164 | 8 195 | 8 157 639 |
| **Total** | 8 161 | 236 542 | 17 439 599 | 54 | 2 577 | 348 940 | 138 | 3 953 | 3 692 837 | 165 | 8 231 | 8 180 695 |

*Source: OSE*

The transport performances carried out in international rail transport showed a largely variable trend. Maximum performances were recorded in 2011; these were the performances of international transit transport. In 2015, 8231 tonnes were transported from Turkey to Greece and transit was only at the level of 36 tonnes. The analysis of transport performances of international rail transport between the Greece and Turkey showed very low transport performances.

Based on the analytical findings in Tables 78 – 91 we can conclude the following concerning the connectivity of Turkey with RFC OEM:

- Turkey upgrades and electrifies its railway network and plans further transport infrastructure development in the future,
- high transport potential has been identified in Turkey,
- achieved high share of freight transport by road,
- low share of transport performances of rail freight,
- potential for rail freight is not used,
- perspective of growth of transport performances in international rail transport,
- the cross-border connection between Turkey and Bulgaria is a single-track,
- the lines included in RFC OEM, which connect the railway infrastructure with the Turkish railway infrastructure, are currently not electrified, however electrification of the line from Plovdiv to the Bulgarian border station Svilengrad in ongoing.
-

## 8.3 Agreements between EU and Turkey

In 1963, the European Union and Turkey signed an Association Agreement which was aimed to promote trade and economic relations. From 31.12.1995, based on the decision of the Association Council, a customs union between the EU and Turkey was set up. Although the customs union covers trade with industry goods but it does not include agricultural products (except

for processed agricultural commodities), services and public procurement. Moreover, Turkey should, under the rules of the customs union, harmonize several key areas with the acquis communautaire, especially industry standards. Turkey is also part of the EUROMED group. The Turkish legislation is currently partially harmonized while all customs and quantitative restrictions on imports of industrial products from EU countries were cancelled. The single internal market, however, will cancel still existing non-tariff barriers as well as other technical barriers to the movement of goods, particularly in the agriculture sector.

**The right to free transit**

The right to free trade also includes the right to free transit through the territory of the EU, EEA and Turkey. After joining the EU, products, even non-European productions, can be transported freely throughout its territory.

The accession of Turkish to the EU is uncertain at present.

## 8.4 Formulation of conclusions and recommendations

Based on the overall assessment of the RFC OEM connection to the Turkish railway infrastructure there are several benefits and opportunities for international rail freight transport:

- possibility of changing the modal split in favour of rail freight transport and to the disadvantage of road goods transport,
- potential especially in the development of intermodal transport,
- shorter waiting time at the border,
- overall shorter transport time,
- rail can be used as depot during transport,
- lower social costs in case of transport by rail,
- reduction of negative external costs of transport,
- lower congestion due to the shift of transport performances to rail,
- increase in revenues for the use of railway infrastructure,
- increase in revenues for other services provided by the infrastructure manager,
- investment in railway infrastructure,
- higher interest in rail services from consignors, forwarders and carriers.

The benefits of the RFC OEM connection to the Turkish railway infrastructure are based on research findings listed in the sub-chapters 8.1, 8.2 and 8.3. On the basis of the research of the problems in question we can state that the connection of the RFC OEM railway infrastructure to the Turkish railway infrastructure may bring several benefits for the Member States, society, transport,

customers, railway undertakings and the RFC OEM itself. Therefore, we recommend the improvement of the cross-border railway infrastructure and a more effective cooperation. A priority should be a reduction of the waiting time at the border.

A wish for enhancement of the cooperation between Turkish IM and RFC OEM has also been signalled by the Railway Advisory Group of RFC OEM.

. In order to achieve the benefits we propose to take the following measures and procedures:

- to reduce the charges for trains transporting goods from and to Turkey,
- in operational management to prefer trains transporting goods from and to Turkey,
- to examine the possibility of introducing and subsidizing regular freight trains of combined transport system RO – LA (technological, technical and economic evaluation),
- to electrify railway infrastructure belonging to RFC OEM relevant for traffic form and to Turkey. On Bulgarian territory NRIC is working on the electrification of the section between Plovdid and Svilengrad.
- to ensure integration of information systems,
- to develop activities aiming to generate and attract more traffic between RFC OEM and Turkey,
- integration of signalling systems,
- to adapt the railway infrastructure to 740 m train length,
- Establishing procedures for regular reporting to the RFC OEM Management and Executive Boards by a bilateral Bulgarian-Turkish cooperation group between the IMs, Ministries and authorities of both countries aimed at initiating measures to solve the problems at the BG/TK border and taking measures to promote, where appropriate, an exchange between TCDD and RFC OEM Management Board on issues related to traffic between Turkey and RFC OEM. Article 14 of Directive 2012/34/EU shall be always respected as regards of bilateral cooperation.
- to take measures to promote, where appropriate, an exchange between TCDD and RFC OEM Management Board on issues related to traffic between Turkey and RFC OEM
- Closely cooperate with the Railway Advisory Group of RFC OEM in order to better address the hindering factors for the traffic crossing the BG/TK border.

# 9 TRANSPORT POTENTIAL OF THIRD COUNTRIES

An important aspect of the development and transport importance of the OEM corridor is the acquisition of new transports. New transport opportunities need to be acquired also from countries outside the corridor and EU member states. A significant potential within new transports was demonstrated from/to Turkey. Based on the acquisition of new transports, an analysis of transport potential of the countries of Central Asia and Caucasus region, so-called third countries belonging to TRACECA (Transport Corridor Europe – Caucasus – Asia) corridor, was carried out. The TRACECA corridor includes:

- Armenia,
- Azerbaijan,
- Bulgaria – OEM member,
- Georgia,
- Iran,
- Kazakhstan,
- Kyrgyzstan,
- Moldova,
- Romania – OEM member,
- Tajikistan,
- Turkey – separate chapter,
- Ukraine,
- Uzbekistan.

Table 92 contains a summary of the basic data on the analysed countries of Central Asia and the Caucasus region.

*Table 92: Overview of Basic Data*

| Country | Total area ($km^2$) | Population | Currency | Currency rate to EUR | Human Development Index | Total length of railways in km (gauge in mm) | Total length of roads |
|---|---|---|---|---|---|---|---|
| Armenia | 29 800 | 3 009 800 | AMD (Dram) | 539,194 | 0,743 | 845 (1 520) | 7 637 |
| Azerbaijan | 86 600 | 3 651 000 | AZN (Manat) | 1,902 | 0,759 | 2 918 (1 520) | abo 29 000 |
| Georgia | 64 420 | 3 729 635 | GEL (Lari) | 2,682 | 0,769 | 1 576 (1 520), 100 (914) | ca 20 000 |
| Iran | 1 648 195 | 79 110 000 | IRR (Rial) | 36 262,9 | 0,774 | 12 998 (1 435) | 192 685 |
| Kazakhstan | 2 717 300 | 17 540 000 | KZT (Tenge) | 348,861 | 0,794 | 15 333 (1 520) | 189 000 |
| Kyrgyzstan | 199 951 | 6 019 480 | KGS (Som) | 75,934 | 0,664 | 417 (1 520) | ca 34 000 |
| Moldova | 33 843 | 3 986 000 | MDL (Lei) | 20,4301 | 0,699 | 1 151 (1 520) | 12 730 |
| Tajikistan | 143 100 | 8 482 000 | TJS (Somoni) | 9,8917 | 0,627 | 621 (1 520) | ca 30 000 |
| Ukraine | 603 628 | 45 426 200 | UAH (Hrivna) | 29,3925 | 0,743 | 21 640 (1 520), 201 (1 435) | 172 400 |
| Uzbekistan | 448 978 | 31 025 500 | UZS (Sum) | 4 292,2 | 0,701 | 4 669 (1 520) | 84 400 |

*Source: Available statistical data – scientific research*

Table 93 provides an analysis of GDP development in the analysed countries in the period of 2000 – 2016.

*Table 93: Overview of GDP development*

| | Year | 2000 | 2005 | 2010 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| **Armenia** | GDP (in billions USD) | 1,9 | 4,9 | 9,3 | 11,6 | 10,5 | 10,5 |
| | GDP growth rate (%) | 5,9 | 13,9 | 2,2 | 3,6 | 3,0 | 0,2 |
| | Import of goods and services (% GDP) | 50,5 | 43,2 | 45,3 | 47,0 | 42,0 | N/A |
| | Export of goods and services (% GDP) | 23,4 | 28,8 | 20,8 | 28,6 | 29,8 | N/A |
| **Azerbaijan** | GDP (in billions USD) | 5,3 | 13,2 | 52,9 | 75,2 | 53,0 | 37,6 |
| | GDP growth rate (%) | 11,1 | 26,4 | 4,9 | 2,0 | 1,1 | -3,8 |
| | Import of goods and services (% GDP) | 38,9 | 52,9 | 20,7 | 26,2 | 34,8 | N/A |
| | Export of goods and services (% GDP) | 39,0 | 62,9 | 54,3 | 43,3 | 37,8 | N/A |
| **Georgia** | GDP (in billions USD) | 3,1 | 6,4 | 11,6 | 16,5 | 14,0 | 14,2 |
| | GDP growth rate (%) | 1,8 | 9,6 | 6,3 | 4,6 | 2,8 | 2,7 |
| | Import of goods and services (% GDP) | 39,7 | 51,6 | 52,8 | 60,5 | 64,9 | N/A |
| | Export of goods and services (% GDP) | 23,0 | 33,7 | 35,0 | 42,9 | 45,0 | N/A |
| **Iran** | GDP (in billions USD) | 109,6 | 219,8 | 467,8 | 415,0 | 374,3 | 376,8 |
| | GDP growth rate (%) | 5,8 | 4,2 | 6,6 | 4,3 | -1,6 | 6,5 |
| | Import of goods and services (% GDP) | 19,8 | 24,8 | 20,3 | 18,9 | N/A | N/A |
| | Export of goods and services (% GDP) | 21,5 | 31,2 | 25,4 | 24,2 | N/A | N/A |
| **Kazakhstan** | GDP (in billions USD) | 18,3 | 57,1 | 148,0 | 221,4 | 184,4 | 133,76 |
| | GDP growth rate (%) | 9,8 | 9,7 | 7,3 | 4,2 | 1,2 | 1,1 |
| | Import of goods and services (% GDP) | 49,1 | 44,6 | 29,9 | 25,6 | 24,7 | N/A |
| | Export of goods and services (% GDP) | 56,6 | 53,2 | 44,2 | 39,3 | 28,5 | N/A |
| **Kyrgyzstan** | GDP (in billions USD) | 1,4 | 2,5 | 4,8 | 7,5 | 6,6 | 6,6 |
| | GDP growth rate (%) | 5,4 | -0,2 | -0,5 | 4,0 | 3,5 | 3,8 |
| | Import of goods and services (% GDP) | 47,6 | 56,8 | 81,7 | 87,7 | 72,2 | N/A |
| | Export of goods and services (% GDP) | 41,8 | 38,3 | 51,6 | 37,4 | 36,2 | N/A |
| **Moldova** | GDP (in billions USD) | 1,3 | 3,0 | 5,8 | 8,0 | 6,6 | 6,8 |
| | GDP growth rate (%) | 2,1 | 7,5 | 7,1 | 4,8 | -0,5 | 4,0 |
| | Import of goods and services (% GDP) | 75,4 | 91,7 | 78,5 | 78,5 | 74,2 | N/A |
| | Export of goods and services (% GDP) | 49,8 | 51,1 | 39,2 | 41,5 | 43,3 | N/A |
| **Tajikistan** | GDP (in billions USD) | 0,9 | 2,3 | 5,6 | 9,2 | 7,9 | 6,9 |
| | GDP growth rate (%) | 8,3 | 6,7 | 6,5 | 6,7 | 6,0 | 6,9 |
| | Import of goods and services (% GDP) | 100,9 | 52,8 | 52,6 | 44,8 | 42,3 | N/A |
| | Export of goods and services (% GDP) | 98,8 | 26,0 | 15,3 | 9,1 | 10,5 | N/A |
| **Ukraine** | GDP (in billions USD) | 31 | 86 | 136 | 133 | 91 | 93 |
| | GDP growth rate (%) | 5,9 | 2,7 | 4,2 | -6,55 | -9,87 | 2,3 |
| | Import of goods and services (% GDP) | 57,4 | 50,6 | 51,1 | 52,1 | 54,8 | N/A |
| | Export of goods and services (% GDP) | 62,4 | 51,5 | 47,05 | 48,6 | 52,8 | N/A |
| **Uzbekistan** | GDP (in billions USD) | 13,8 | 14,3 | 39,3 | 62,6 | 66,7 | 66,5 |
| | GDP growth rate (%) | 3,8 | 7,0 | 8,5 | 8,1 | 8,0 | 7,8 |
| | Import of goods and services (% GDP) | 21,5 | 28,7 | 28,5 | 27,3 | 22,2 | N/A |
| | Export of goods and services (% GDP) | 24,6 | 37,9 | 31,7 | 23,2 | 20,7 | N/A |

*Source: Available statistical data – scientific research*

GDP analysis carried out in Table 93 showed an overall upward trend in most countries. The highest GDP was recorded in Iran and Kazakhstan, on the contrary, the lowest in Kyrgyzstan, Moldova and Tajikistan. Based on the analysis it is possible to assume a GDP growth with different growth rates in the individual countries.

The analysis of the import of goods to EU countries from the analysed countries in the period of 2005 – 2016 is carried out in Tables 94 and 95.

*Table 94: Import of goods to the EU in millions €*

| Country | Year | 2005 | 2010 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|
| **Armenia** | TOTAL EU 28 countries | 514 | 260 | 275 | 261 | 274 | 305 | 335 |
| | TOTAL RFC OEM countries | 246 | 117 | 97 | 71 | 106 | 137 | 110 |
| **Azerbaijan** | TOTAL EU 28 countries | 2 508 | 10 045 | 14 287 | 14 370 | 13 206 | 10 696 | 7 605 |
| | TOTAL RFC OEM countries | 1 018 | 2 366 | 3 565 | 4 674 | 4 624 | 3 769 | 2 340 |
| **Georgia** | TOTAL EU 28 countries | 276 | 567 | 583 | 667 | 659 | 736 | 551 |
| | TOTAL RFC OEM countries | 105 | 266 | 375 | 429 | 346 | 357 | 269 |
| **Iran** | TOTAL EU 28 countries | 11 538 | 14 528 | 5 652 | 783 | 1 158 | 1 235 | 5 494 |
| | TOTAL RFC OEM countries | 2 202 | 2 494 | 1 992 | 319 | 346 | 380 | 1 316 |
| **Kazakhstan** | TOTAL EU 28 countries | 10 275 | 15 909 | 24 555 | 23 865 | 23 859 | 16 247 | 12 773 |
| | TOTAL RFC OEM countries | 4 588 | 7 431 | 9 390 | 9 536 | 11 317 | 6 477 | 5 798 |
| **Kyrgyzstan** | TOTAL EU 28 countries | 17,5 | 198,7 | 54,3 | 77,5 | 79,5 | 50,5 | 72,8 |
| | TOTAL RFC OEM countries | 7,2 | 8,5 | 21,5 | 19,2 | 24,8 | 20,2 | 20,8 |
| **Moldova** | TOTAL EU 28 countries | 439 | 585 | 944 | 963 | 1 160 | 1 223 | 1 317 |
| | TOTAL RFC OEM countries | 200 | 277 | 530 | 535 | 620 | 753 | 826 |
| **Tajikistan** | TOTAL EU 28 countries | 107,6 | 56,8 | 120,1 | 89,5 | 61,1 | 58,4 | 94,2 |
| | TOTAL RFC OEM countries | 31,1 | 22,1 | 60,7 | 55,7 | 3,3 | 2,1 | 2,9 |
| **Ukraine** | TOTAL EU 28 countries | 8 718 | 11 547 | 14 643 | 13 882 | 13 731 | 12 833 | 13 080 |
| | TOTAL RFC OEM countries | 3 802 | 5 329 | 5 790 | 5 703 | 5 606 | 5 107 | 5 302 |
| **Uzbekistan** | TOTAL EU 28 countries | 637,4 | 346,9 | 260,2 | 246,8 | 233,2 | 245,9 | 174,5 |
| | TOTAL RFC OEM countries | 206,8 | 68,7 | 40,4 | 28,8 | 38,4 | 26,2 | 30,0 |

*Source: Available statistical data – scientific research*

*Table 95: Import of goods to the EU in thousands tons*

| Country | Year | 2005 | 2010 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|
| **Armenia** | TOTAL EU 28 countries | 30 | 41 | 63 | 52 | 62 | 75 | 140 |
| | TOTAL RFC OEM countries | 13 | 12 | 11 | 11 | 15 | 21 | 21 |
| **Azerbaijan** | TOTAL EU 28 countries | 7 498 | 22 060 | 21 098 | 22 616 | 22 475 | 27 681 | 24 754 |
| | TOTAL RFC OEM countries | 3 363 | 5 221 | 5 275 | 7 336 | 7 747 | 9 540 | 7 624 |
| **Georgia** | TOTAL EU 28 countries | 577 | 846 | 663 | 775 | 772 | 1166 | 591 |
| | TOTAL RFC OEM countries | 165 | 297 | 430 | 517 | 428 | 540 | 331 |
| **Iran** | TOTAL EU 28 countries | 37 481 | 32 137 | 8 248 | 531 | 1 475 | 1 726 | 16 304 |
| | TOTAL RFC OEM countries | 6 633 | 5 254 | 2 789 | 129 | 202 | 159 | 3 388 |
| **Kazakhstan** | TOTAL EU 28 countries | 30 336 | 32 809 | 35 580 | 36 748 | 40 569 | 39 809 | 38 737 |
| | TOTAL RFC OEM countries | 13 756 | 15 622 | 13 713 | 14 836 | 19 011 | 16 472 | 18 292 |
| **Kyrgyzstan** | TOTAL EU 28 countries | 11,2 | 14,2 | 16,5 | 20,7 | 19,6 | 22,7 | 22,6 |
| | TOTAL RFC OEM countries | 5,9 | 9,2 | 14,1 | 13,0 | 10,4 | 13,3 | 13,9 |
| **Moldova** | TOTAL EU 28 countries | 546 | 545 | 698 | 733 | 1 344 | 1 395 | 1 803 |
| | TOTAL RFC OEM countries | 346 | 347 | 424 | 442 | 669 | 950 | 1 138 |
| **Tajikistan** | TOTAL EU 28 countries | 61,8 | 29,1 | 63,3 | 45,9 | 31,1 | 26,2 | 50,4 |
| | TOTAL RFC OEM countries | 23,1 | 13,3 | 34,7 | 33,1 | 1,4 | 0,9 | 1,7 |
| **Ukraine** | TOTAL EU 28 countries | 44 335 | 46 407 | 51 882 | 52 641 | 56 513 | 54 655 | 54 945 |
| | TOTAL RFC OEM countries | 21 518 | 22 521 | 21 638 | 23 227 | 23 673 | 22 966 | 24 567 |
| **Uzbekistan** | TOTAL EU 28 countries | 875,2 | 348,1 | 79,9 | 84,6 | 77,0 | 56,9 | 68,6 |
| | TOTAL RFC OEM countries | 137,3 | 98,2 | 27,6 | 15,4 | 29,3 | 17,2 | 12,3 |

*Source: Available statistical data – scientific research*

The analysis of the export of goods from EU countries to the analysed countries in the period of 2005 – 2016 is carried out in Tables 96 and 97.

*Table 96: Goods import from EU in millions €*

| Country | Year | 2005 | 2010 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|
| **Armenia** | TOTAL EU 28 countries | 420 | 556 | 683 | 717 | 713 | 629 | 600 |
| | TOTAL RFC OEM countries | 162 | 250 | 276 | 312 | 273 | 243 | 231 |
| **Azerbaijan** | TOTAL EU 28 countries | 1 496 | 2 348 | 2 994 | 3 729 | 3 478 | 3 450 | 1 880 |
| | TOTAL RFC OEM countries | 533 | 1 027 | 1 126 | 1 228 | 1 173 | 1 036 | 613 |
| **Georgia** | TOTAL EU 28 countries | 684 | 1 228 | 2 069 | 2 031 | 1 910 | 1 840 | 1 965 |
| | TOTAL RFC OEM countries | 378 | 730 | 1 274 | 1 164 | 1 108 | 987 | 946 |
| **Iran** | TOTAL EU 28 countries | 12 994 | 11 319 | 7 379 | 5 446 | 6 424 | 6 454 | 8 250 |
| | TOTAL RFC OEM countries | 5 086 | 4 438 | 3 099 | 2 237 | 2 855 | 2 750 | 3 420 |
| **Kazakhstan** | TOTAL EU 28 countries | 3 584 | 5 236 | 6 925 | 7 472 | 6 748 | 6 194 | 5 201 |
| | TOTAL RFC OEM countries | 1 398 | 1 969 | 2 884 | 3 112 | 2 679 | 1 970 | 1 685 |
| **Kyrgyzstan** | TOTAL EU 28 countries | 109,8 | 210,8 | 421,7 | 399,1 | 400,8 | 270,0 | 236,9 |
| | TOTAL RFC OEM countries | 47,8 | 67,3 | 134,2 | 124,0 | 126,3 | 86,5 | 78,9 |
| **Moldova** | TOTAL EU 28 countries | 1 082 | 1 563 | 2 038 | 2 280 | 2 352 | 2 070 | 2 026 |
| | TOTAL RFC OEM countries | 605 | 995 | 1 342 | 1 447 | 1 559 | 1 403 | 1 339 |
| **Tajikistan** | TOTAL EU 28 countries | 87,6 | 145,0 | 163,1 | 195,8 | 216,3 | 165,5 | 174,8 |
| | TOTAL RFC OEM countries | 22,9 | 51,5 | 46,2 | 56,6 | 65,9 | 63,8 | 55,2 |
| **Ukraine** | TOTAL EU 28 countries | 13 299 | 17 413 | 23 865 | 23 899 | 16 986 | 14 039 | 16 505 |
| | TOTAL RFC OEM countries | 5 968 | 8 448 | 11 265 | 11 346 | 7 787 | 6 290 | 7 362 |
| **Uzbekistan** | TOTAL EU 28 countries | 591,7 | 1244,6 | 1222,2 | 1404,1 | 1562,1 | 1590,7 | 1625,7 |
| | TOTAL RFC OEM countries | 309,0 | 687,7 | 626,3 | 651,2 | 752,2 | 660,1 | 613,0 |

*Source: Available statistical data – scientific research*

*Table 97: Goods import from EU in thousands tons*

| *Country* | Country/Year | 2005 | 2010 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|
| **Armenia** | TOTAL EU 28 countries | 112 | 159 | 150 | 149 | 167 | 124 | 123 |
| | TOTAL RFC OEM countries | 53 | 82 | 52 | 47 | 58 | 40 | 40 |
| **Azerbaijan** | TOTAL EU 28 countries | 324 | 354 | 486 | 517 | 800 | 477 | 351 |
| | TOTAL RFC OEM countries | 124 | 169 | 224 | 217 | 381 | 169 | 179 |
| **Georgia** | TOTAL EU 28 countries | 763 | 960 | 1 200 | 1 349 | 1 314 | 1 300 | 1 448 |
| | TOTAL RFC OEM countries | 569 | 760 | 936 | 987 | 998 | 950 | 1 061 |
| **Iran** | TOTAL EU 28 countries | 5 405 | 2 888 | 4 115 | 3 521 | 5 427 | 2 902 | 2 562 |
| | TOTAL RFC OEM countries | 1 966 | 1 163 | 2 047 | 1 543 | 3 185 | 2 104 | 1 556 |
| **Kazakhstan** | TOTAL EU 28 countries | 980 | 897 | 1 001 | 1 028 | 1 070 | 1 024 | 1 093 |
| | TOTAL RFC OEM countries | 338 | 298 | 338 | 335 | 335 | 254 | 221 |
| **Kyrgyzstan** | TOTAL EU 28 countries | 63,1 | 106,3 | 271,2 | 219,8 | 219,9 | 81,2 | 52,4 |
| | TOTAL RFC OEM countries | 13,7 | 26,2 | 45,6 | 32,8 | 48,5 | 20,4 | 14,2 |
| **Moldova** | TOTAL EU 28 countries | 948 | 1 131 | 1 269 | 1 568 | 1 789 | 1 757 | 1 715 |
| | TOTAL RFC OEM countries | 656 | 878 | 1 014 | 1 305 | 1 520 | 1 513 | 1 460 |
| **Tajikistan** | TOTAL EU 28 countries | 115,9 | 114,2 | 101,9 | 114,3 | 97,3 | 58,7 | 45,6 |
| | TOTAL RFC OEM countries | 13,3 | 16,7 | 9,6 | 8,4 | 9,7 | 10,6 | 8,1 |
| **Ukraine** | TOTAL EU 28 countries | 5 961 | 7 990 | 9 771 | 11 079 | 8 896 | 9 531 | 9 436 |
| | TOTAL RFC OEM countries | 2 341 | 3 159 | 3 702 | 4 562 | 3 368 | 3 991 | 3 476 |
| **Uzbekistan** | TOTAL EU 28 countries | 240,6 | 251,6 | 298,4 | 332,9 | 306,7 | 263,5 | 235,1 |
| | TOTAL RFC OEM countries | 59,3 | 86,9 | 109,4 | 95,0 | 96,3 | 81,2 | 55,8 |

*Source: Available statistical data – scientific research*

Based on the analysis of import and export of goods between EU countries and the countries of Central Asia and Caucasus region, carried out in Tables 94 – 97, it is possible to conclude and assume:

- goods of the highest value were imported into EU countries from Azerbaijan, Iran and Ukraine,
- goods from other countries were exported in lower values not relevant for rail freight,
- the largest amount of goods was imported into EU countries from Azerbaijan, Iran, Kazakhstan and Ukraine,
- negligible amount of goods, which does not create significant rail transport opportunities, was imported into EU countries from other countries,
- import of goods into EU countries from the countries concerned has an overall upward trend and such trend can be expected in the future, based on GDP development in the countries concerned,
- import of goods into the countries concerned from the EU has an overall downward trend,
- within the import of goods into the countries concerned from the EU, rail freight transport has there are good possibilities for rail freight transport in Iran and Ukraine,
- approximately one third of the imported and exported goods were made between the countries included in the OEM corridor and the countries concerned,
- transport potential for rail freight can be expected in Ukraine, Iran and Kazakhstan,
- other countries do not currently export and import a significant amount of goods that would significantly increase the demand for rail freight services.

For the OEM corridor, there are only small possibilities of new transports within the countries of Central Asia and the Caucasus region. New transport opportunities that would be suitable for transport by rail can be expected in Kazakhstan, Iran and Ukraine. As far as the transport flows are concerned, directional inequality can be assumed. The analysis showed that up to a third of the goods are exchanged between the countries concerned and the OEM corridor countries creating opportunities for providing effective and reliable rail freight services. A more important aspect for the growth and development of the OEM corridor is, in particular, the transit through the countries of Central Asia and the Caucasus region to EU countries via OEM corridor railway infrastructure from China and India. This creates opportunities for international cooperation and the subsequent provision of comprehensive transport services through, in particular, intermodal transport.

Apart from the potential provided by third countries, following the completion of the infrastructure works concerning the railway connection between Athens and Patras, the sea links between the port of Patras and the ports of the Ionian Sea and the Adriatic Sea are expected to significantly enhance the intermodal efficiency of the Corridor, providing a considerable boost to its flows.

# 10 MARKETING SURVEY OF OEM USER SATISFACTION

One of the key objectives of the OEM corridor is the satisfaction of customers using the corridor services. A suitable method to determine the criterion of customer satisfaction is a questionnaire survey that is carried out on the basis of a marketing survey. To determine customer satisfaction, marketing surveys were carried out within the OEM corridor since it has become operational. This duty was performend also following the requirements stemming from Article 19(3) of the RFC-Regulation. The summary and the result of the satisfaction survey of 2016 are demonstrated hereby to reflect the latest feedback from those customers experienced in using the corridor

Customers' feedback is substantial information for further development, in addition Rail Freight Corridors (RFCs) are obliged by Regulation (EU) No 913/2010 to conduct a user satisfaction survey on yearly basis and publish the main results, what a picture can be drawn based on users' opinion and experience in connection with development of RFCs.

Orient East-Med Corridor has been a member of RNE Satisfaction Survey Platform since its establishment (2014). This common surface enables us to conduct a standardized research, which works with a harmonised questionnaire elaborated by RNE-RFCs Satisfaction Working Group and is carried out by an independent market research company (marketmind) with the help of CAWI (Computer Assisted Web Interview) system. This platform provides a European framework for the comparison and a complex European view.

For the time being the target population was not extensive, as a consequence the number of respondents cannot be numerous either. Thus the work was conducted with a small sample size, therefore the analysis was based on main trends, main shifts paying careful attention to the extent of data significance power. However the results reflect real market phenomena, which validate the survey, thus it provides a good base to reveal the main changes in OEM performance.

The fieldwork of the third wave was conducted in September and October, 2016. OEM kept the number of full interviews, which shows the commitments of our partners. This is a virtue which should be kept in the future as well.

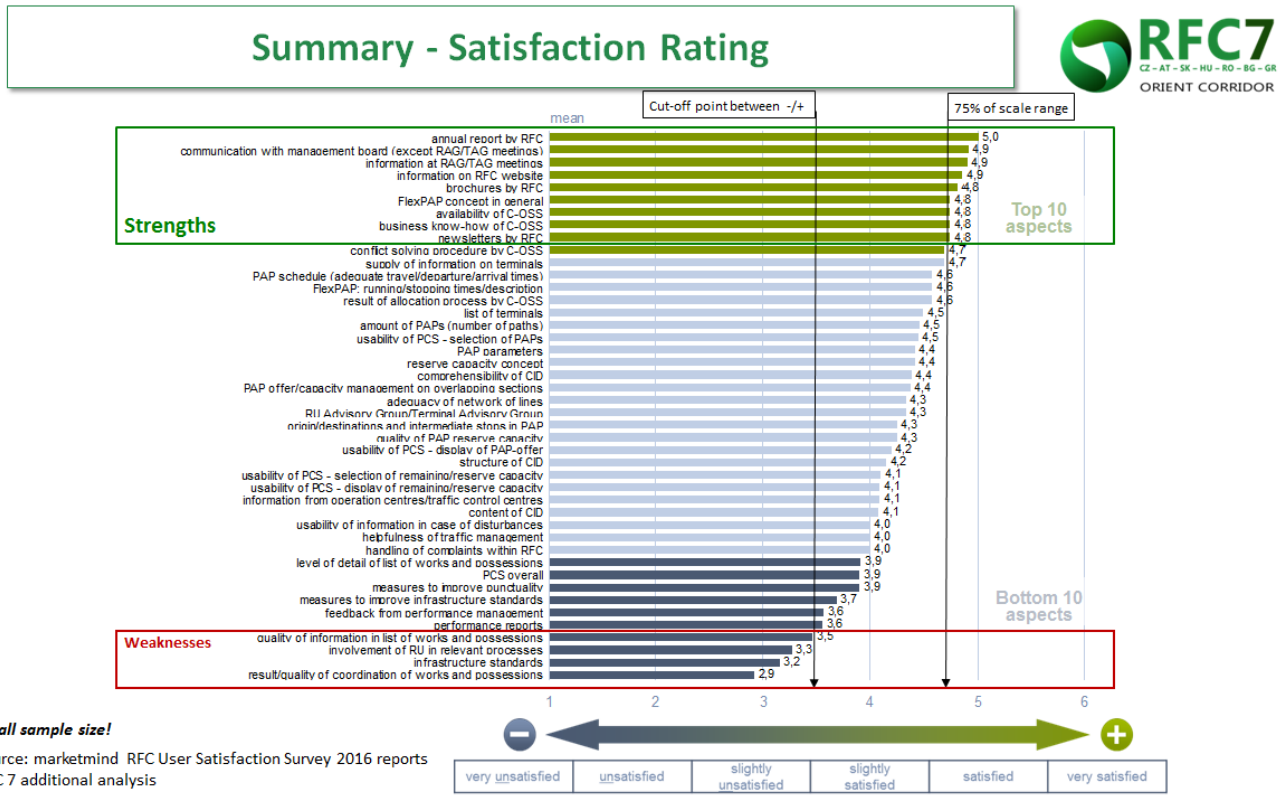



Figure 16: *Graphical representation of summarized results of marketing survey*

With the help of our suggested interpretation[1] a positive change was revealed: OEM could keep the number of its strengths compared to 2015, while it could decrease the number of its weaknesses.

The most successful key activities of RFC OEM were Path Allocation and Communication, whereas the weakest items identifed Infrastructure as such, as one of the most problematic areas, however which is an outer circumstance and does not lay in the hands of the RFC operative management, but rather a strong signal to the political decision makers for more attention for further necessary investments

Traffic management and Overall Communication showed a strongly developing tendency and it was especially welcomed in case of Traffic management where measures aiming at the improvement of this activity were accomplished, and the results verify OEM RFC's efforts absolutely clearly: performance average score of Traffic management as an area increased from 3,4 to 4,0.

[1]Analytical point of view the cut-off point at the middle of the scale, at the turning point between Dissatisfied/Satisfied indicates the crucial aspects, and these show OEM RFC's weaknesses, while those items which exceed the rigorous, but progressive line at 75% of scale, where the "significantly best range" begins, can be considered as OEM RFC's strengths.

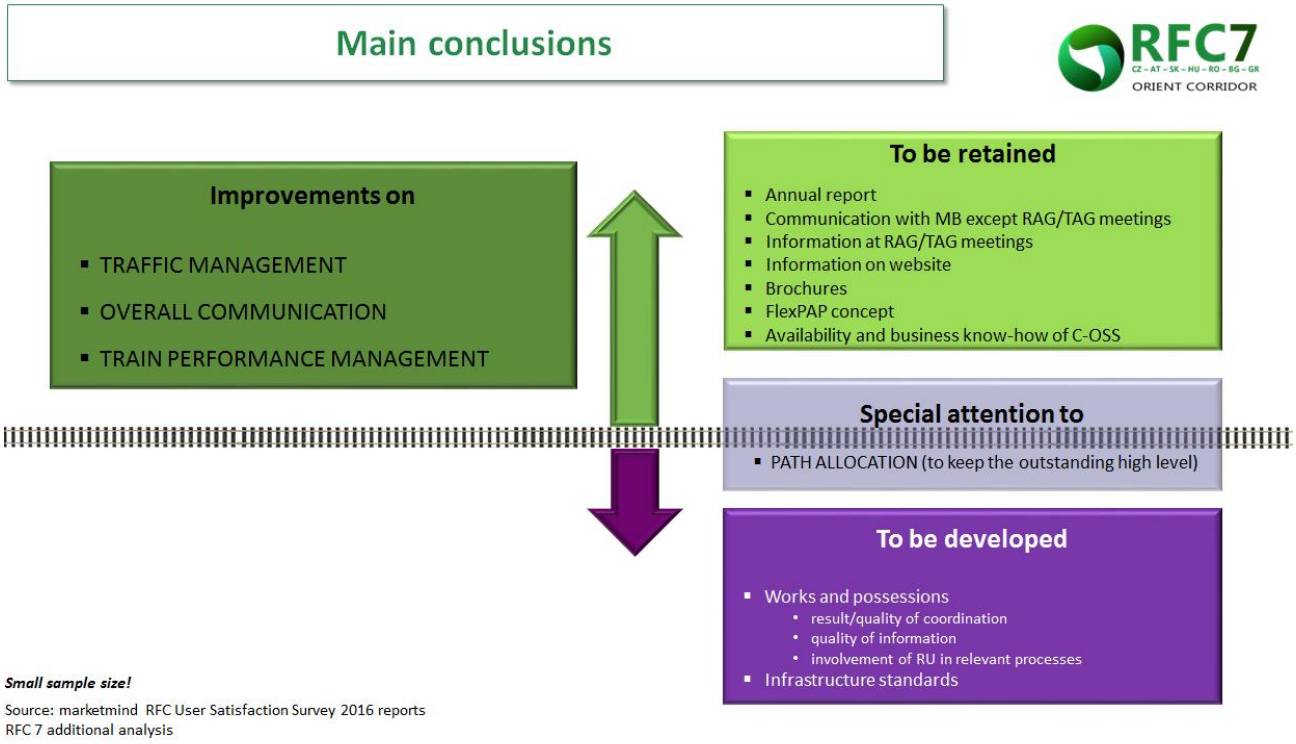



Figure 17: *Graphical representation of main conclusions of Marketing survey*

Comparison to Corridors' Overall results OEM has a distinguished advantage in Path Allocation, and roughly summarizing it is better than or almost the same as the overall in every item asked. Orient/East-Med RFC had in 2016 more steps forward, than backwards, but that certainly indicated that there are still targets to achive and work for, mainly concerning those items which reached a score below 3.7. In addition to that, further special attention should be paid at the improvement of:

- Infrastructure standards ('Condition of infrastructure; Train parameters; Electrification'[2])
- Works and possessions ('Coordination; Quality and time of information; Keeping to plans; Alternatives')

However, it must be emphasized that a growing trend in the customer responses can be deceted and a positive tendency is shown in 2 years in a row, thus, based on the results, we can state that Orient East-Med corridor is on a right track.

[2] 'Based on open-ended answers'

More information: http://www.rfc7.eu/public

# 11 SWOT ANALYSIS OF RFC OEM

The Rail Freight Corridor RFC OEM was put into operation on 08.11.2013. For its further development it is important to evaluate its current state as objectively as possible. Several methods and instruments deal with strategic planning, of which the SWOT analysis will be used for this purpose.

## 11.1 Characteristics of the SWOT analysis process

The method of the SWOT analysis consists in identifying the internal environment of the studied subject using its strengths and weaknesses and in identifying the impact of the external environment using opportunities and threats. Based on the recognized results a review of the internal and external environment analysis will be obtained, while the most appropriate strategy for the studied subject will be made up based on given scores. Elaboration of the SWOT analysis is conditioned by the completion of the collection and subsequent evaluation of all available data collected. Then, the created basis of the SWOT analysis is qualitatively and quantitatively assessed by independent experts and stakeholders, in this case by individual members of RFC OEM and furthermore by the customers who use the RFC (contacted via the Railway Advisory Group – RAG). Without the assessment of several experts and stakeholders, the SWOT analysis has only a subjective character of its compiler and cannot serve as a basis for the adoption of a strategic direction and decision-making.

It is very important to take the results of the annual Satisfaction Surveys into consideration which have been already carried out two times by marketmind, an independent market research company, under the coordination of Rail Net Europe (RNE) for the years 2015 and 2016. The annual Satisfaction Survey is demanded by the Art. 19(3) of the Regulation 913/2010 according to which the Management Board shall organise a satisfaction survey of the users of the rail freight corridor and shall publish the results of it once a year.

The findings of the aforementioned satisfaction surveys provide key indicators from mainly those customers' point of view who are already users of the RFC (mainly those customers who are represented in the RAG). It is very important to incorporate these results as well when defining the future strategic directions with respect to the fact that the main goal of the rail freight corridors should be the provision of services in order to satisfy the customers as much as possible.

In the case of RFC OEM the results of the 2016 Satisfaction Survey clearly show a developing tendency with regard to certain indicators which were lower in the previous year, right after the first operational year of the RFC.

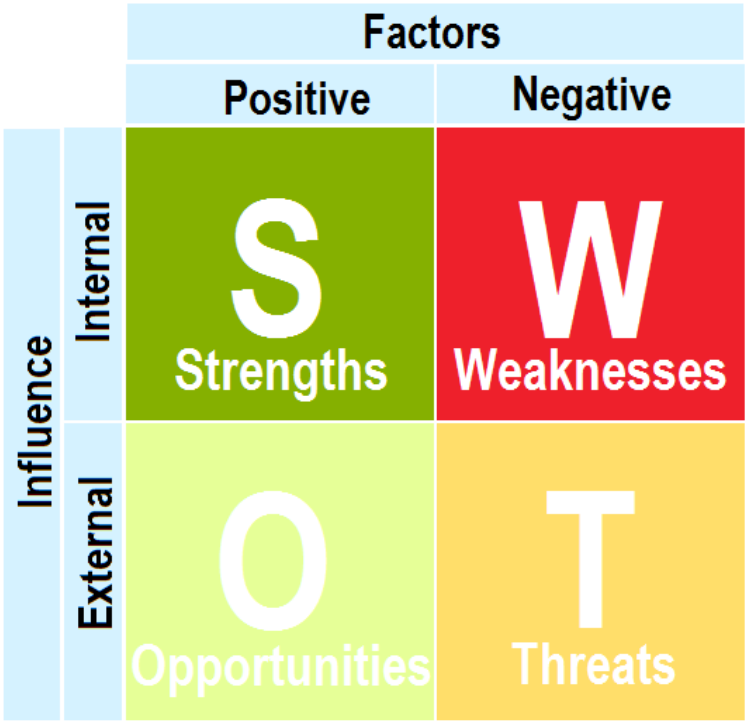



Figure 18: *Theoretical graphical representation of SWOT analysis*

**Internal environment analysis S-W**

The goal of the internal environment analysis is to identify the main strengths and weaknesses of the studied subject. Following their analysis, the quantitative scores are assigned to their qualitative weight. It is necessary, as priority, to build the strategy on the recognized strengths through which competitive advantage is achieved. In case the assessed subject has insignificant and negligible strengths, its strategy is to be aimed at reducing the value of weaknesses which may be a potential threat for the subject.

Among the most influential strengths we can include:

- such strengths which are specific for the studied subject and it is difficult to implement them for other subjects,
- tradition of a particular subject,
- qualified personnel,
- positive image of the subject perceived by customers via annual satisfaction surveys,
- product quality or service quality,
- developing research and development, etc.

On the other hand, the subject's weaknesses are characterized as critical factors which should be minimized to the lowest possible level. Among the weaknesses we can include:

- high prices that do not correspond to the product/service quality,

- negative image perceived by customers,
- poor organization and organizational skills of management,
- insufficient adaption of service portfolio to market needs, etc.

**External environment analysis O – T**

Finding the possibilities for new opportunities is one of the main reasons of the external environment analysis. The market opportunities are defined by three possibilities:

- Enforcing on the market with entirely new product/service (general possibility not directly applicable to RFC OEM).
- Enforcing on the market with existing product/service in innovative way.
- Enforcing on the market with scarce product/service.

Since the opportunities may have different forms on the market, the subject has to ensure their early and correct identification in the methodology of SWOT analysis elaboration. Among the opportunities we can include:

- streamline business processes in the market using available technologies,
- maximum use of offered infrastructure capacities and public resources,
- product innovation using state of the art technologies and customisation according to customer needs,
- drawing subsidies, etc.

The threats (risks) are the opposite of opportunities in the external environment that may have adverse effects on the direction of the studied subject and its development. Among the threats that may affect the company we include, in particular:

- legislative changes or lack of adequate legislative measures,
- lack of harmonised measures in the necessary procedures,
- political, economic, social, cultural, environmental and demographic changes,
- embargoes, tariffs, sanctions.
- new entrants into the market under consideration,
- management of overlapping sections, etc.

## 11.2 SWOT analysis of RFC OEM

The following four tables give the strengths, weaknesses, opportunities and threats of the internal and external environment of RFC OEM.

*Table 98: Strengths of RFC OEM*

| S (Strengths) |
|---|
| Existing cooperation between infrastructure managers within RFC OEM countries; |
| Permanent dialogue with customers in RAG and TAG; |
| One-stop-shop for orders of RFC OEM railway infrastructure; |
| Interconnection of railway infrastructure within RFC OEM countries; |
| Efficient transport of bulk substrates; |
| Entry of new corridor member – Germany; |
| Reliability; |
| Availability of C-OSS; |
| Conflict solving procedure by C-OSS; |
| Flex PaP concept in general; |
| Business know-how of C-OSS; |
| Communication with Management Board (except RAG/TAG); |
| Information at RAG-TAG meetings; |
| Information on RFC website; |
| Annual Report by RFC; |
| Brochures by RFC; |
| Newsletters by RFC; |
| Available information on lines included in corridor; |

*Table 99: Weaknesses of RFC OEM*

| W (Weaknesses) |
|---|
| Higher transportation time compared to road goods transport; |
| Lower flexibility compared to road goods transport; |
| Long cross-border waiting times at certain borders of the RFC OEM; |
| Difference in charging and costs of infrastructure managers; |
| Language barriers; |
| Traffic disturbances due to work-related temporary capacity restrictions; |
| Lack of implementation of TEN-T minimum infrastructure standards; |
| Involvement of RU into relevant processes at the case of lately announced capacity restrictions; |
| Possibility of ordering the routes through C-OSS is not used; |
| Not all relevant lines included as principal lines in the corridor; |
| Enforcement of various interests of member states; |
| Lower level of publicity of services provided on RFC OEM; |

*Table 100: Opportunities set for SWOT analysis of RFC OEM*

| **O (Opportunities)** |
|---|
| Complete modernization of lines which limit the increase of line capacity; |
| Speeding up the modernization process; |
| Favourable economic growth of countries included in corridor RFC OEM resulting in increase of import/export; |
| Improving mutual cooperation between corridors; |
| Increase in impact of transport policy of individual countries in favour of rail; |
| Improvement of cross-border cooperation of rail system subjects; |
| Good technical conditions of railway infrastructure; |
| Safety of railway infrastructure; |
| Available free capacity; |
| Operative traffic control gives priority to Corridor trains; |
| Increase in costs of road goods transport, e.g. toll charges; |
| Business investment in railway sidings; |
| Shift of transport of dangerous goods and extraordinary consignments to rail; |
| Improve the quality of information in list of works and possessions; |
| Trend of using more environmentally friendly mode of transport (opportunity for rail transport); |
| Support of intermodal transport and sidings by the state; |
| Progressing favourable development of import/export from/to Turkey using rail transport; |

*Table 101: Threats set for SWOT analysis of RFC OEM*

| **T (Threats)** |
|---|
| Unfavourable economic development within RFC OEM countries followed by stagnation or decrease in transport volumes; |
| Bad technical condition in some sections of railway lines; |
| Locations of railway infrastructure restriction resulting in increase in transport time; |
| Very lengthy cross-border times at certain borders due to unnecessary technical or administrative requirements, which could be eliminated; |
| Lack of capacity; |
| Reduction in quality of rail freight services on RFC OEM; |
| Reducing investment subsidies for rail transport; |
| Reducing non-investment subsidies for rail transport; |
| Tendency of transport policy of individual countries to rail transport disadvantage; |
| Reducing transport volumes of mass transportation; |
| Dates of corridor modernization not observed; |
| Reduce in competitiveness of transport by long-distance trains; |
| Increasing transportation time because of non-harmonized possessions; |
| Lack of qualified personnel in operation; |
| Building logistic centres without connecting to railway infrastructure; |
| Exit of member states from the EU; |

| Disruption of rail freight services at border crossings due to migrant crises; |
|---|

Based on the SWOT analysis, it is necessary to take the following measures for the RFC OEM into account:

- segmentation of services and customers,
- agreements and contracts with carriers,
- increase the awareness to the corridor's services and products,
- improve planning and management of infrastructure works with the aim to reduce impact on traffic,
- promote improvement of infrastructure standard in order to allow more efficient train operations (leading to increased competitiveness of rail transport), in particular train length,
- develop and implement mitigating measures to avoid disruption of train services at border crossings for too long times,
- harmonisation of operational procedures and elimination of unnecessary rules (for example harmonise the number of buffer wagons), taking into account the Action Programme of 2016.
-

# 12 LAST MILE

The term „Last mile" is, for the purposes of TMS, contrary to the general use of this term, characterized as the last or the first part of the start of transport by rail freight. The term may include, for example, the loading platform, the railway siding or another part of the rail freight transport chain. It may also include the whole part of infrastructure needed to connect the loading platform, the railway siding and the terminal. In order to provide information on the possibilities of rail freight services it is necessary to make up a list of primary information of Last mile along the OEM corridor. This list serves for the needs of all participating and potential subjects of the transport chain. These points can be characterized as the first customer contact points and therefore they create an offer of transport services. Without sufficient offer from the Last mile infrastructure, the demand for rail system services will decrease. Last mile should fulfil the conditions of safety, accessibility and appropriate location along the territory of OEM corridor.

The following Figure shows the Last mile components and the relevant Last mile infrastructure according to HaCon.

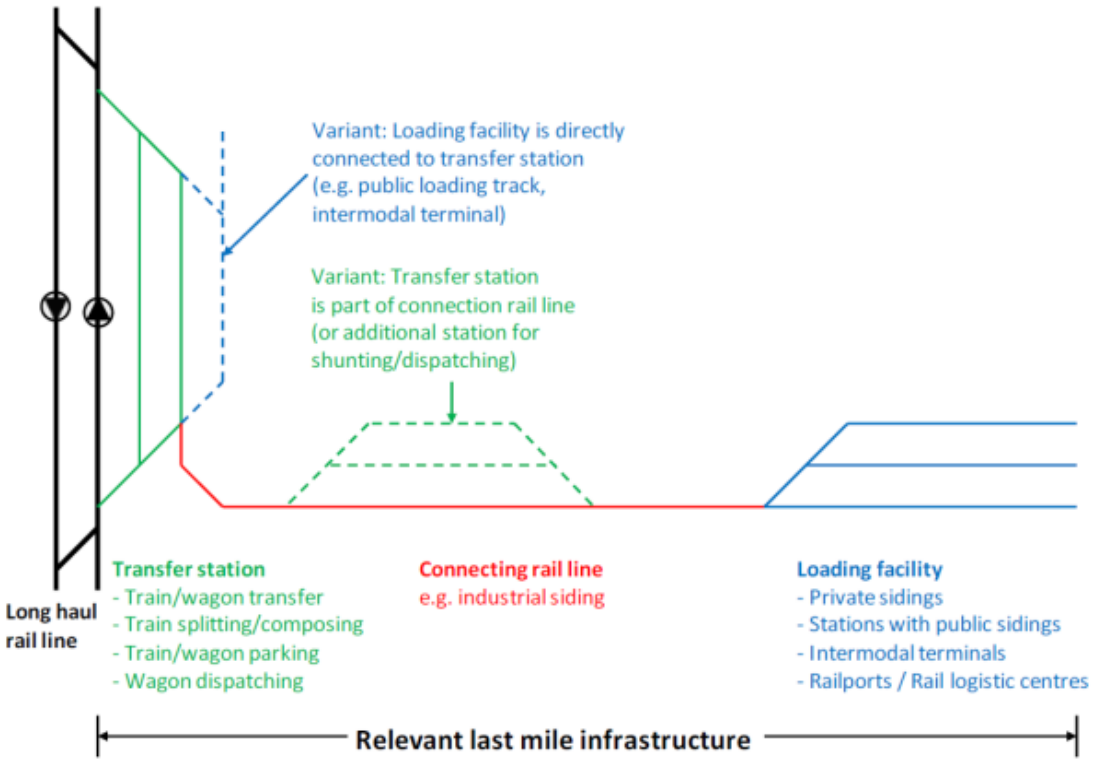



Figure 19: *Components of „Last- mile infrastructure“ (Source: HaCon)*

In order to better meet the demands of international transport customers and due to the strong position of road transport, it is very important to provide reliable and transparent information services within rail freight transport in the short term. Insufficient access to information on Last mile infrastructure is a significant obstacle to rail freight transport in effective planning, especially in cross-border transport.

Based on these requirements, DG MOVE has entrusted HaCon and UIC, supported by UIRR, TRION and IT Kreativa, with developing the web portal, within the whole EU, with GIS functions capable of presenting in a transparent manner all important information for the different types of Last mile infrastructure. The Study: „User-friendly access to information about Last mile infrastructure for rail freight“ began to be elaborated in January 2015 and was completed in March 2016. It identifies 4 basic groups of Last mile infrastructure: private siding, public siding, and intermodal transport terminal and rail logistic centres.

The current version of the portal is running on the Internet domain www.railfreightlocations.eu. The home screen of the domain displays the search map and a left-hand filtering feature, the legends and the list can be viewed on the right. An initial view of the website set up for Last mile is shown in Figure 20.

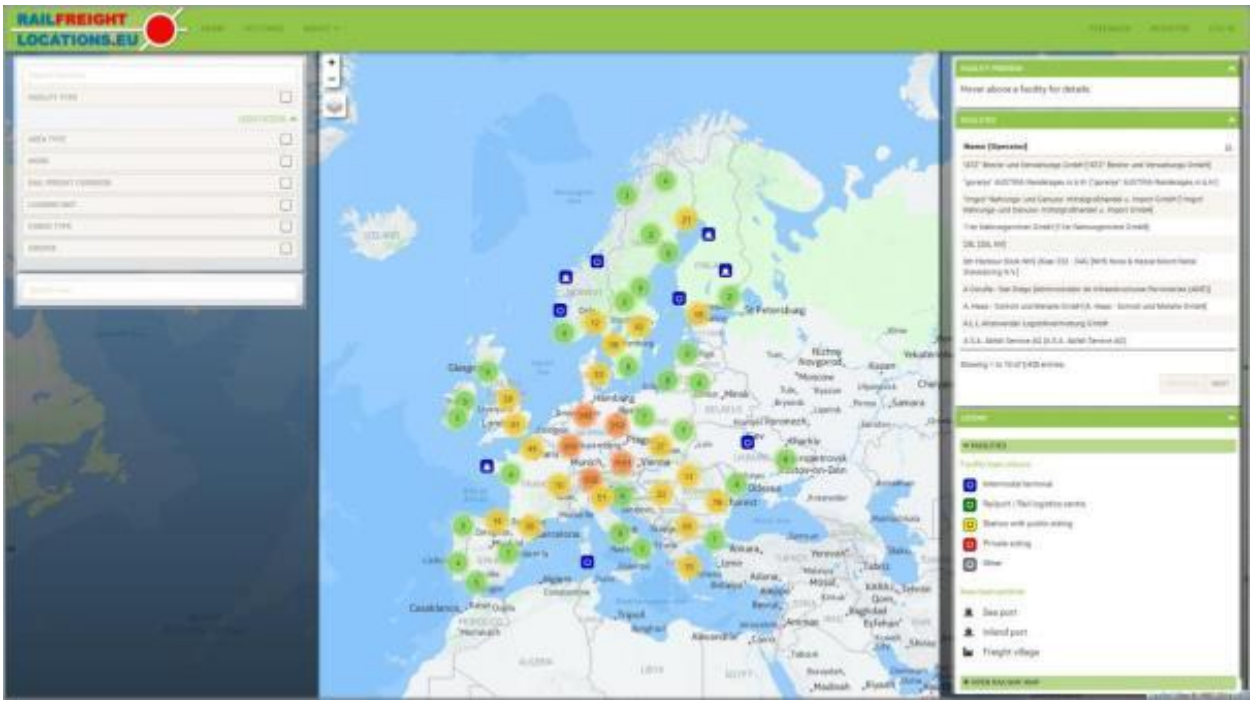



Figure 20: *Current version of Last mile portal*

*(Source: HaCon)*

It is possible to search by more detailed criteria, zooming the map or direct search from the list on the website. By searching the endpoint on the map the available detail information on the relevant part of Last mile infrastructure is displayed. Detailed information on the relevant part of Last mile infrastructure illustrated by satellite image currently includes:

- basic data: Last mile infrastructure type, address, specific data, opening time, etc.,
- technical parameters of railway infrastructure,
- accessibility of modes of transport provided,
- availability of services provided,
- links to websites that can be another source of information.

**Abbreviations:**

HaCon Ingenieurgesellschaft mbH, Hannover (DE) – Lead Partner

UIC – Union Internationale Des Chemins De Fer, Paris (FR)

UIRR – Union Internationale des sociétés de transport combiné Rail-Route (BE) – Subcontractor

Triona AB (SE) subcontractor

IT Kreativa (MK) subcontractor

**The List of Last mile for the OEM corridor is given in Appendix H.**

# 13 STRATEGICAL MAP OF THE RFC OEM (PROPOSED BY VVÚZ)

In order to fulfil the basic objectives of the OEM corridor it is necessary to set out the strategic steps for their fulfilment. One of the appropriate methods for creating strategic processes is the Balanced Score Card – BSC. BSC is a complex strategic method that looks at the subject surveyed through four perspectives and their mutual relationships. It is a financial, customer, process, learning and growth perspective. BSC is based on the vision and strategy of the object surveyed and on that basis for each perspective the mission and strategic objectives, to which certain metrics and their target values are assigned, will be determined. All perspectives are logically connected and linked and this method, therefore, provides a complex view of the object surveyed and its performance.

**According to the proposed strategical map the RFC OEM main visions are:**

- being a competent and highly appreciated partner and service provider to rail freight undertakings, shippers and cooperation partners and stakeholders,
- maintaining a strong position in the outstanding performances such as C-OSS services and further development of RFC product as a response to the market demand,
- continuously improving on indicators where customer satisfaction is not yet satisfying,
- growth of rail freight performances,
- strengthening rail freight position within the EU, development of cross border rail interoperability in order to reach the goals laid down in the White Book for Transport of the European Commission,
- progressive reduction of social costs of transport such as reduction of $CO_2$ emission with the shifting of more and more traffic to rail,
- expand cooperation with rail carriers and individual rail infrastructure managers through increased range of services.

**According to the proposed strategical map the RFC OEM mission consists particularly of:**

- providing smooth, reliable and high quality services for rail freight undertakings, terminals and end customers,
- increasing awareness and facilitating the use of RFC OEM's services through progressive deployment of customer-friendly IT-tools such as PCS system of RNE,

- developing effective procedures in removing bottlenecks (infrastructural, administrative or else),
- stability of rail system status and tradition by minimizing impact of works on traffic operations and ensuring a good state of infrastructure maintenance,
- good responsiveness to customer requirements at the highest levels,
- maintaining a good cooperation with the Core Network Corridor Coordinator of the CNC OEM in order to be able to effectively contribute to the development and modernization of railway infrastructure with regard to the specific needs of rail freight,
- facilitation of intermodal transport (RO-LA and Unaccompanied Combined Traffic),
- promoting rail as an environmentally friendly mode of transport among prospective shippers and political decision-makers,
- continuously contributing to the development of the rail system within the EU and the network of EU Rail Freight Corridors.
- .

The following figure shows the BSC strategic map for the OEM corridor. The strategic map is based on the vision and mission of the OEM corridor and its four perspectives.

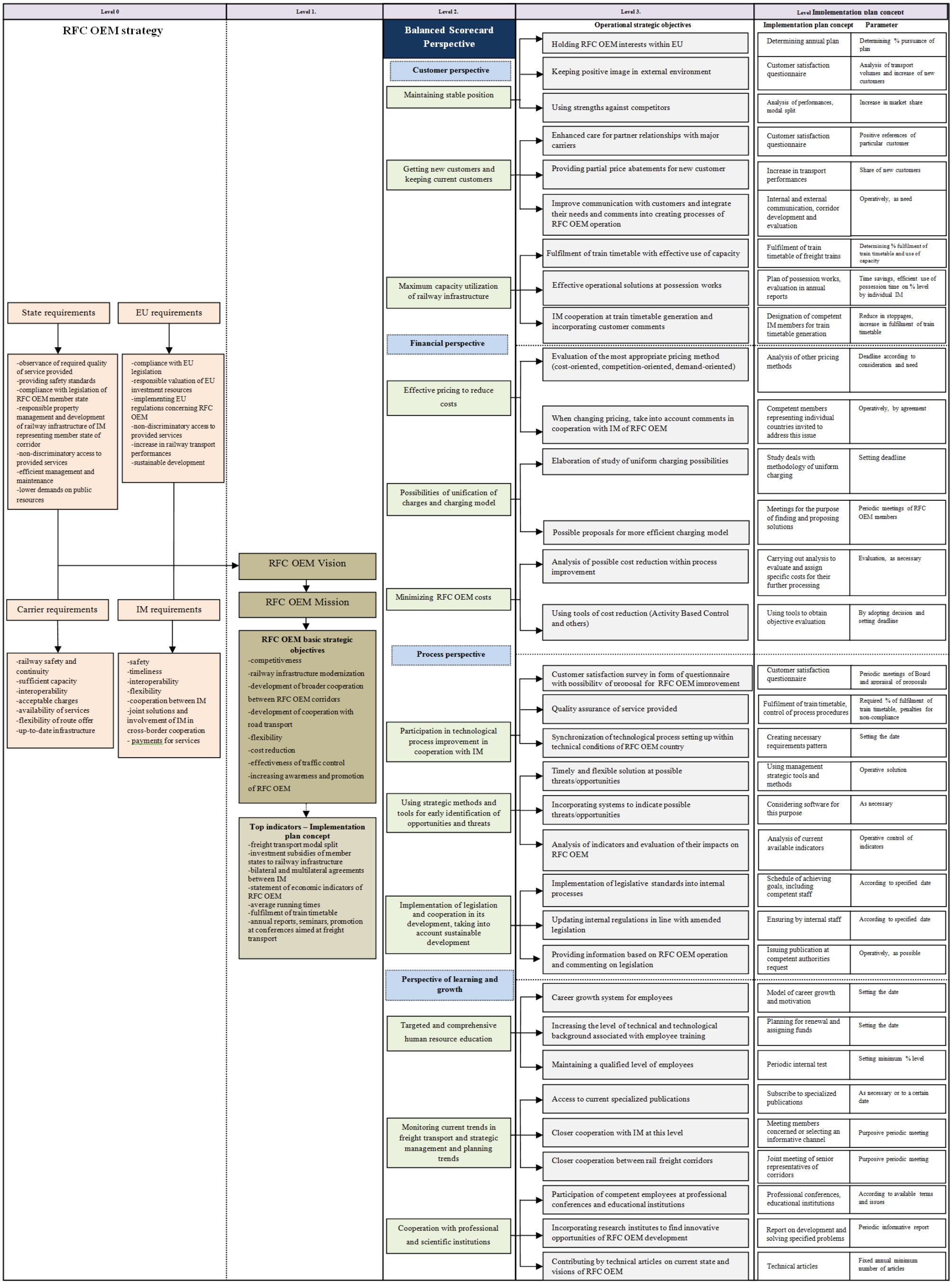



Figure 21: *Map Balanced Score Card of corridor OEM*

# 14 CONCLUSIONS AND RECOMMENDATIONS

The international rail freight corridor OEM was established in 2013 in order to ensure coordination between the Parties concerned, more effective transport management by introducing the concept of the one-stop shop, fulfilment of the requirements of the RFC-Regulation, and to boost some increase in transport performances as well as to improve transport continuity across the Member States concerned aiming at a sufficient prioritization of rail freight. Based on the analyses carried out, marketing survey, comparison of modal split and other important qualitative and quantitative transport indicators, we can state that even if there are lots of challenges the RFC OEM seems to be on the right track. This conclusion can precisely be backed by the latest results of the User Satisfaction Survey of 2016 which are inter alia the improvement in the field of traffic management issues, overall communication procedures between the customers and the operative management of the corridor and last but not least the results of the Train Performance Management showed growing tendency in comparison with that of the survey of 2015. It is important to stress that these results stem from customers who actually use the corridor's services. The real strengths of the corridor proved to be in the field of path allocation and the services provided by the C-OSS. Customers highly valued the customer orientation, newsletters, business know-how and availability of the C-OSS Manager and welcomed the Flex-PaP concept in general.

Thanks to the corridor's route alignment, geographical position and developing economic indicators, a definitive growing tendency regarding traffic potentials between the Member States of the RFC OEM as well as new transport opportunities between Turkey, Kazakhstan, Iran and China can be forecasted. In order to better serve this progress, RFC OEM's operative management developed new initiatives aiming at the improvement of the corridor's offer which were welcomed by our customers. One good example could be that for the first time in 2016, the path-construction process was preceded by a new, service-oriented initiative offered by the C-OSS Manager, inviting all potential applicants into a preliminary consultation in order to improve the quality of PaPs for timetable 2017 and Reserve Capacity for timetable 2016 by collecting their needs. As a result, the PaP-catalogue of 2016 offered to our Customers 13.9 million path-kilometers (km*running days) of high-quality paths for international traffic. Regarding the annual requests for international paths 14% of the available corridor capacity, i.e. 1.92 million path kilometers, was pre-allocated which was a major increase compared to the 9% in 2015. Furthermore, it is worth to mention that the total requested running days were 1662 with an average 138,5 per request. The longest requested PaP distance was 1643.9 km with an average of 1010 km per request. These numbers show us a clear interest in utilizing corridor-capacity mainly by the long-distance traffic between Germany and

Turkey. When it comes to the assessment of the need for Reserve Capacity, there had been 8.2 million path-kilometers provided to serve the interim needs of RFC OEM customers out of which 1.38 million requested and allocated through the C-OSS, which showed also an increase compared to the timetable year of 2015. Following strong request from the market, the C-OSS started to examine the feasibility to significantly lower the deadlines for requesting reserve capacity before the train's running day (results are expected to 2017/2018).

The accession of Germany scheduled to 2018 will contribute to the further growth and development of the corridor. Furthermore, following the completion of the infrastructure works concerning the railway connection between Athens and Patras, the sea links between the port of Patras and the ports of the Ionian Sea and the Adriatic Sea are expected to significantly enhance the intermodal efficiency of the corridor, providing a considerable boost to its flows.

Due to its strategical importance, the RFC OEM could have further potentials for extension, but any future modification in its current alignment needs to be underpinned by significant increase in demand for international rail freight services.

Based on the comprehensive results of the TMS for RFC OEM, the following measures for ensuring further development and fulfilling the strategic objectives resulting from the corridor's mission and vision are recommended:

| | **Recommendation** | **Recommended responsible** |
|---|---|---|
| 1 | Adaptation of priority rules to the needs of rail freight transport. | Infrastructure Managers of RFC OEM (IMs) |
| 2 | Increase the number and the quality of train paths for the international rail freight transport. | Corridor-One Stop Shop office (C-OSS), IMs |
| 3 | Regularly evaluate the satisfaction of Railway Undertakings (RUs) and other users of the whole railway network in order to ensure and promote quality rail services. | European Commission (EC), RFC OEM, IMs |
| 4 | Proceed towards the creation of a European-wide harmonised regime for infrastructure charges. | EC, IMs |

| | | |
|---|---|---|
| 5 | Internalization of negative external costs in transport sector. | EC, European Parliament (EP), European Council, Member States (MSs) |
| 6 | Increase, adapt and regularly monitor investments for the removal of bottlenecks along the corridor. | MSs, EC, IMs, TEN-T Core Network Corridor (CNC) |
| 7 | Increase, adapt and monitor investments in modernization of basic and connecting transport infrastructure including last-mile within the corridor. | EC, CNC, IMs |
| 8 | Coordinate the investment plan regarding the transport infrastructure of the corridor. | EC, CNC, MSs (national investment plans), IMs |
| 9 | Ensure proper and effective maintenance of railway infrastructure of the corridor. | IMs |
| 10 | Ensure proper and effective traffic management rules and stable and reliable coordination process for temporary capacity restrictions (TCRs) along the corridor. | IMs, C-OSS, RUs |
| 11 | Actively cooperate with other RFCs | MSs, IMs, RFC Network, RNE-RFC High-Level meeting |
| 12 | Extend the network of local and regional intermodal terminals that can provide high-quality and competitive intermodal transport services. | EC, MSs |
| 13 | Permanent and effective cooperation with intermodal transport operators, Railway Undertakings and Authorized Applicants. | Intermodal Terminals, Terminal Advisory Group of RFC OEM (TAG), RUs, Railway Advisory Group of |

| | | |
|---|---|---|
| | | RFC OEM (RAG) |
| 14 | Continuously improve the quality of market surveys and overall communication between the RFC bodies (as defined by the RFC-Regulation) in order to succeed problem solving. | RFC OEM Executive Board (EB), Management Board (MB), RAG, TAG, RFC OEM Working Groups (WGs); EC, CNC Coordinator and Consultants for CNC OEM |
| 15 | Establishing procedures for regular reporting to the RFC OEM Management and Executive Boards by a bilateral Bulgarian-Turkish cooperation group between the IMs, Ministries and authorities of both countries aimed at initiating measures to solve the problems at the BG/TK border and taking measures to promote, where appropriate, an exchange between TCDD and RFC OEM Management Board on issues related to traffic between Turkey and RFC OEM. Article 14 of Directive 2012/34/EU shall be always respected as regards of bilateral cooperation. | Bilateral cooperation of competent bodies of Bulgaria and Turkey; MSs, IMs, EB and MB of RFC OEM |

These recommendations are based on the results of the TMS, the empirical knowledge of IM's experts working with the corridor, OEM corridor staff, railway undertakings, marketing research and customer satisfaction surveys. The recommendations aim at the achievement of a modal increase for international freight services to rail and the improvement of long-distance cross-border rail services. Well-set and customer-oriented services will contribute to a higher demand for rail freight services, effective modal split, savings in negative external costs of transport and sustainable development. This will contribute to fulfil the vision and mission of the OEM corridor as well as to the achievement of the main goals adopted by the European Commission in its White Book on Transport of 2011 towards a competitive and resource efficient transport system. These recommendations should be considered as the challenges for further improvement of the OEM corridor, although several of them cannot be directly implemented through the OEM corridor alone but with the cooperation and involvement of all respective stakeholders.

# LIST OF APPENDICES

## Appendix A

### *Analysis of OEM corridor bottlenecks*

| Country | Line section | Bottlenecks | Reasons | Suggestions how to remove bottlenecks |
|---|---|---|---|---|
| **Germany** | Bad Schandau – Wilhelmshaven | Technical requirements | no electric traction | Project ABS Oldenburg – Wilhelmshaven (electrification) |
| | Bremen – Bremerhaven | - | - | - |
| | Berlin/ Magedeburg – Hamburg | - | - | - |
| | Dresden – Rostock | - | - | - |
| **Czech Republic** | Praha – Česká Třebová | Line capacity consumption | between 5:00 – 20:00 more than 100% | - |
| **Austria** | Břeclav – Gänserndorf | No bottlenecks | | |
| | Gänserndorf – Wien Zvbf | No bottlenecks | | |
| | Gänserndorf – Marchegg Gr. | Not electrified | | |
| | Wien Zvbf – Hegyeshalom | No bottlenecks | | |
| | Wien Zvbf – Wiener Neustadt (über Baden) | No bottlenecks | | |
| | Wiener Neustadt – Sopron via Loipersbach – Schattendorf | Not electrified, short passing tracks in stations hampering the handling of longer trains | | |
| | Gramatneusiedl – Wampersdorf | No bottlenecks | | |
| | Parndorf – Bratislava-Petrzalka | No bottlenecks | | |
| | Wien Zvbf – Ebenfurth | No bottlenecks | | |
| | Ebenfurth – Wiener Neustadt | No bottlenecks | | |
| | Ebenfurth – Sopronn border | No bottlenecks | | |
| **Slovakia** | Kúty border - Devinska N.Ves | 1. two bridges in section Veľké Leváre – Malacky-Zohor, 2. Devínska N. Ves | 1. reduced speed on bridges (80 km/h, 120 km/h) 2. Lack of tracks due to: A. change of loco type (electric/ diesel) towards Austria, | 1. recontstruction of bridges for speed 140 km/h, 2. Building of the seconds track to Austria |
| | Devínska N. Ves – Bratislava hl.st. | 1. tunnel Bratislava Lamač – Bratislava hl.st., 2. Bratislava (all stations) | 1. often maintenance → mostly only 1 line track available → lack of capacity, 2. Limiting of some locomotives | 1. complex tunnel reconstruction, 2. Removal of 25 Hz track circuits |
| | Bratislava hl.st. – Dunajská Streda – Komárno border | 1. Bratislava hl.st.- Bratislava Nové Mesto, 2. Bratislava Nové Mesto – Komárno | 1. one track line → lack of capacity (strong 138uilding138 + freight transport today, expectation of next increasing in the future ), 2. One track line → lack of capacity (strong 138uilding138 transport, connection to intermodal terminal) | 1. 138 building of 2. Line track (Bratislava hl.st. – Bratislava Nové Mesto), 2. Electrification, building of 2. Line track (Bratislava Nové Mesto – Komárno) |
| | Bratislava hl.st. – Rusovce border | Bratislava Petržalka | limited lenghth of trains towards Austria 620 m for trains with electric locos, 690 m for trains with diesel locos), change of traction (SK/AT) | building of trolley line over the connecting line |
| | Bratislava hl.st.- Nove Zamky | - | - | - |
| | Nove Zamky – Komrano border | - | - | - |
| | Nove Zamky – Sturovo border | Kamenica n.Hronom | reduced speed in Kamenica n.hronom (40 km/h) | reconstruction of line tracks in kamenica n. Hronom for speed 120 km/h |
| **Hungary** | Rusovce border – Hegyeshalom | | | |
| | Hegyeshalom border – Hegyeshalom | - | - | - |
| | Hegyeshalom – Győr | - | - | - |
| | Sopron border – Sopron | all section | single track+long distance between stations+at least hourly regular interval suburban trains | paralellisation project between 2015 and 2020 |
| | Ágfalva border – Sopron | - | - | - |
| | Sopron – Győr | Sopron station and Sopron – Ágfalva section | single track+long distance between stations+at least hourly regular interval suburban trains | paralellisation project between 2015 and 2020 |

| | | | | |
|---|---|---|---|---|
| **Hungary** | Győr – Komárom | - | - | - |
| | Komárno border – Komárom | - | - | - |
| | Komárom – Ferencváros | Ferencváros station | level crossing of transit and shunting yard traffic just at the Budapest southern Danube bridge (almost only rail link between the Eastern and Western part of Hungary) | there is no accepted plan to solve the problem |
| | Stúrovo border – Vác | No bottlenecks | | |
| | Vác – Újszász | - | - | - |
| | Vác – Ferencváros | Rákospalota – Újpest station | outworn station with manual switching+node of high frequency suburban trains | planned reconstruction of station between 2014 and 2020 |
| | Ferencváros – Soroksár-Terminál | 100 % capacity utalization- | - | Construction of track No. VI, Second tum- out track for shunting in Soroksár-Terminál |
| | Ferencváros – Újszász | - | - | - |
| | Újszász – Szolnok | - | - | - |
| | Ferencváros – Szolnok | - | - | - |
| | Szolnok – Szajol | - | - | - |
| | Szajol – Biharkeresztes border | - | - | - |
| | Szajol – Lőkösháza border | - | - | - |
| **Romania** | Border (RO/HU) – Curtici | Finalised works in operational tests | | |
| | Curtici – Arad | Finalised works in operational tests | | |
| | Curtici | 9 tracks are available for transit trains, remaing tracks are used for shunting, train formation and storage | | |
| | Arad – Simeria | Arad-km 614 Finalised works in operational tests Tender procedure for the section km 614-Simeria | | |
| | Simeria – Coslariu | Congested capacity | Modernization works | Current state up to the works completion |
| | Coslariu – Sighişoara | Congested capacity | Modernization works | Current state up to the works completion |
| | Sighişoara – Braşov | - | | |
| | Braşov – Predeal | - | | |
| | Predeal – Brazi | - | | |
| | Brazi – Bucureşti | - | | |
| | Bucureşti – Feteşti | - | | |
| | Feteşti – Constanţa | Bottleneck on the section Fetesti – Medgidia, rehabilitation works, Current state up to the works completion | | |
| | Arad – Timişoara | - | | |
| | Timişoara – Orsova | - | | |
| | Orsova – Filiaşi | - | | |
| | Filiaşi – Craiova | - | | |
| | Craiova – Calafat | - | | |
| | Calafat – Border RO/BG | - | | |
| | Border (RO/HU) – Episcopia Bihor | - | | |
| | Episcopia Bihor –Coslariu | - | | |
| | Simeria – Gura Motru | - | | |
| | Craiova - Bucuresti | Bottleneck on the section Chiajna – Gradinari, rehabilitation works, Current state up to the works completion | | |
| | Videle - Giurgiu | Electrification of section Videle – Giurgiu, Bucuresti – Giurgiu, Giurgiu-border is justified and highly recommended. | | |
| | Bucuresti – Giurgiu | | | |
| | Giurgiu – Border | | | |
| **Bulgaria** | Vidin – Brusartsi | Dimovo – Oreshec and Dimovo-Sracimir | Max gradients:29%0 / 28%0 | 2020 after reconstruction and modernization of the Corridor |
| | Brusartsi – Mezdra | Brusartsi-Medkovec and Mezdra-Vraca | Max gradients:24%0 / 18%0 | - |
| | Mezdra –Sofia | Zverino-Lakatnik and Iliyanci-Kurilo | Max gradients:12%0 / 3%0 | - |
| | Sofia – Radomir | Hrabursko-Razmenna and Batanovci-Razmenna | Max gradients:13‰ / 16‰ | - |
| | Radomir – Kulata | Gulubnik-Delyan and Dyakovo-Delyan | Max gradients:15‰/ 22‰ | - |
| | Sofia – Septemvri | Pobit Kamak – Vakarel and Kostenec – Nemirovo | Max gradients:29‰ / 29‰ | Some of the projects for reconstruction and modernization are under way and some other projects will be commenced during the second period of the Operational Program of Transportation |

| | | | | |
|---|---|---|---|---|
| **Bulgaria** | Septemvri – Plovdiv | Pazardjik – Ognjnovo and Stamboliiski – Ognjnovo | Max gradients:5‰/ 7‰ | - |
| | Plovdiv – Dimitrovgrad | Popovica – Parvomai and Dimitrovgrad – Sadovo | Max gradients:5‰/ 5‰ | - |
| | Dimitrovgrad – Svilengrad | Simeonovgrad – Svilengrad and Ljubimec – Harmanli | Max gradients:8‰/ 10‰ | - |
| **Greece** | Kulata – Promachon | Single Line in poor condition | No electrification, no ERTMS, <22.5t, < 100km/h | Railway line upgrading with electrification |
| | Promachon – Thessaloniki Port | Single Line in poor condition. Strymonas bridge. | The bridge on the Strymonas River does not allow for a direct movement of trains in the direction to Promahonas/Kulata. Need for reversal of trains moving towards Bulgaria in the Strymonas station. No electrification, no ERTMS, <22.5t, < 100km/h, <740m | Railway line upgrading, construction of an additional Strymonas bridge with electrification. |
| | Thessaloniki – Platy | A number of old bridges restrict axle load | C4, no ERTMS | Plans for reconstruction or replacing old bridges |
| | Platy – Larisa | - | No ERTMS | - |
| | Larisa – Domokos | - | No ERTMS | - |
| | Domokos – Tithorea | Single Line in a mountainous area. | No electrification, no ERTMS <22.5t, < 100km/h | New high speed double railway line with electrification under construction. |
| | Tithorea – Inoi | | No electrification, no ERTMS | Electrification reinstitution project under development |
| | Inoi – SKA | A number of old bridges restrict axle load. Restrictions due to old Ag. Stefanos Tunnel | No electrification, no ERTMS, <22.5t, <740m | Plans for general upgrading of the line and reconstruction of bridges and Ag. Stefanos Tunnel |
| | SKA – Athens | - | No ERTMS, <740m | - |
| | SKA – Thriassio | - | No ERTMS | - |
| | Thriassio – Ikonio | - | No electrification, no ERTMS (Line is part of Comprehensive Network) | Plans for electrification and GSM-R |
| | Svilengrad – Ormenio | - | No electrification, no ERTMS (Line is part of Comprehensive Network) | Plans for the upgrade, electrification and signalling of the line (if funds are found) |
| | Ormenio – Pithio | - | | |
| | Pithio – Alexandroupolis | - | No electrification, no ERTMS, <22.5t, < 100km/h, <740m | |
| | Alexandroupolis – Xanthi | - | No electrification, no ERTMS, <22.5t, < 100km/h, <740m | Plans for the upgrade, electrification and signalling of the line (if funds are found) |
| | Xanthi – Drama | Temporary speed restrictions due to maintenance works | No electrification, no ERTMS (Line is part of Comprehensive Network) | |
| | Drama – Serres | - | | |
| | Serres – Strymonas | - | | |
| | Athens –Rentis/ Piraeus | - | No electrification, no ERTMS, <22.5t, < 100km/h, <740m | Plans for general upgrade and electrification |
| | Larisa – Volos Port | - | No electrification, no ERTMS (Line is part of Comprehensive Network) | Electrification works and ERTMS implementation under development |

**Appendix B**

*Table 102: Development of investment in transport infrastructure in the Czech Republic in mill. CZK*

| Investment in infrastructure | 2013 | 2014 | 2015 |
|---|---|---|---|
| **Investment subsidies in mill. CZK** | **27347,2** | **30683,2** | **57501,8** |
| rail | 8717,7 | 12787,3 | 31784,5 |
| road | 16827,3 | 16631,7 | 24156,6 |
| air | 1444,8 | 990,5 | 993,3 |
| water | 186,1 | 263,1 | 412,5 |
| **Non-investment subsidies in mil. €** | **23739,8** | **28273** | **37209,3** |
| rail | 9812,1 | 11665,3 | 18038 |
| road | 13334,3 | 16166,5 | 18674,8 |
| air | 394,3 | 246,6 | 222,8 |
| water | 120,1 | 123,7 | 204 |

*Source: Member of RFC OEM from the Czech Republic*

*Table 103: Transport performance in train-km in passenger traffic in the Czech Republic*

| Line section | Passenger traffic (in train- km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Praha – Kolín | 5 253 082 | 5 104 555 | 4 873 866 |
| Kolín – Česká Třebová | 7 070 169 | 6 930 551 | 7 047 065 |
| Česká Třebová – Brno | 3 439 689 | 3 354 723 | 3 381 379 |
| Brno – Lanžhot st. hr. | 2 211 439 | 2 193 740 | 2 208 169 |
| Kolín – Brno (via Havlíčkův Brod) | 3 514 970 | 3 452 538 | 3 366 298 |
| **Total** | **21 489 348** | **21 036 106** | **20 876 777** |

*Source: Member of RFC OEM from the Czech Republic*

*Table 104: Transport performances in rail freight transport in the Czech Republic*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2014 | | | 2015 | | |
| | number of trains | train km | gross ton | number of trains | train km | gross ton | number of trains | train km | gross ton |
| Praha – Kolín | 19 517 | 897 832 | 17 386 658 | 16 711 | 759 018 | 13 640 337 | 16 050 | 707 752 | 12 946 878 |
| Kolín – Česká Třebová | 51 863 | 2 787 239 | 56 132 806 | 53 426 | 2 945 057 | 58 242 611 | 55 859 | 3 353 862 | 60 724 560 |
| Česká Třebová – Brno | 44 451 | 914 777 | 38 483 537 | 42 655 | 1 013 506 | 31 400 001 | 45 308 | 1 258 844 | 37 976 301 |
| Brno – Lanžhot st.hr. | 39 143 | 1 120 455 | 40 544 119 | 39 228 | 1 135 865 | 38 988 525 | 40 778 | 1 216 126 | 42 807 548 |
| Kolín – Brno (via Havlíčkův Brod) | 22 020 | 1 990 201 | 26 108 754 | 20 703 | 1 860 753 | 24 529 748 | 19 889 | 1 559 988 | 21 158 487 |
| **Total** | **176 994** | **7 710 504** | **178 655 874** | **172 723** | **7 714 198** | **166 801 222** | **177 884** | **8 096 572** | **175 613 774** |

*Source: Member of RFC OEM from the Czech Republic*

*Table 105: Comparison for type modes of transport in the Czech Republic*

| Line section | Charges (€) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Containers (optional) | | Chemicals (optional) | | | | Standard good (optional) | |
| | **Access charges** for intermodal train (ca. 40 x40´containers-600 m, 1200 t,) | Average **transport charges** for 1x40´ctr./20 t by train | **Access charges** for block train (ca.500 m, 1800 t, chemicals ) | Average **transport charges** for 40 t of chemicals-RID by train | Average **transport charges** for 40 t chemicals – ADR by tank truck | Average **transport charges** for 40t chemicals - AND-D by boat * | **Access charges** for single loading wagons (ca.500 m, 1500 t,) | Average **transport charges** for 30 t single loading by train |
| Praha-Libeň – Česká Třebová | 316,00 | N/A | 707,52 | N/A | N/A | N/A | 168,42 | N/A |
| Česká Třebová – Brno | 177,25 | N/A | 396,87 | N/A | N/A | N/A | 94,47 | N/A |
| Brno – Lanžhot st.hr. | 140,24 | N/A | 314,00 | N/A | N/A | N/A | 74,74 | N/A |
| Kolín – Brno | 339,13 | N/A | 759,31 | N/A | N/A | N/A | 180,74 | N/A |

*Source: Member of RFC OEM from the Czech Republic*

## Appendix C

*Table 106: Transport performance in train-km in passenger transport on the lines included in RFC OEM*

| Line section | Passenger traffic (in train- km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Kúty št. hr. - Devínska N. Ves | 1 102 870 | 1 049 637 | 1 125 158 |
| Devínska N. Ves – Bratislava hl. St. | 445 889 | 414 041 | 453 549 |
| Bratislava hl. St.- Dunajská Streda | 786 240 | 834 800 | 823 166 |
| Dunajská Streda – Komárno št. hr. | 444 859 | 417 333 | 422 933 |
| Bratislava hl. St.-Rusovcešt. Hr. | 139 989 | 148 087 | 139 431 |
| Bratislava hl. St.- NovéZámky | 2 265 758 | 2 266 934 | 2 471 962 |
| Nové Zámky – Komárno št. hr. | 259 422 | 257 948 | 256 797 |
| Nové Zámky – Štúrovo št. hr. | 674 686 | 659 812 | 657 934 |
| **Total** | **6 119 713** | **6 048 593** | **6 350 931** |

*Source: Member of RFC OEM from the Slovak Republic*

*Table 107: Transport performances in rail freight traffic in the Slovak Republic*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2014 | | | 2015 | | |
| | number of trains | train km | gross ton | number of trains | train km | gross ton | number of trains | train km | gross ton |
| Kúty št. hr. - Devínska N. Ves | 19 952 | 911 561 | 10 878 267 | 22 902 | 931 270 | 13 184 297 | 24 870 | 1 014 390 | 14 344 301 |
| Devínska N. Ves – Bratislava hl. St. | 16 412 | 204 218 | 245 006 | 16 586 | 209 978 | 280 985 | 17 320 | 218 113 | 375 583 |
| Bratislava hl. St.- Dunajská Streda | 9 203 | 162 088 | 1 758 251 | 8 627 | 163 768 | 1 899 503 | 8 232 | 164 754 | 1 800 149 |
| Dunajská Streda – Komárno št. hr. | 3 587 | 90 669 | 2 082 624 | 4 369 | 126 775 | 2 883 529 | 5 179 | 164 010 | 3 838 167 |
| Bratislava hl. St.-Rusovcešt. Hr. | 25 964 | 371 005 | 5 641 384 | 26 354 | 363 822 | 6 747 019 | 28 837 | 384 029 | 8 215 367 |
| Bratislava hl. St.- NovéZámky | 14 990 | 824 371 | 1 195 450 | 15 016 | 796 053 | 1 738 751 | 17 165 | 912 682 | 1 879 811 |
| Nové Zámky – Komárno št. hr. | 4 004 | 90 153 | 1 600 230 | 4 893 | 101 441 | 2 079 735 | 5 690 | 103 337 | 2 701 228 |
| Nové Zámky – Štúrovo št. hr. | 8 078 | 303 666 | 5 387 321 | 8 525 | 314 895 | 5 892 423 | 10 505 | 389 367 | 7 641 489 |

*Source: Member of RFC OEM from the Slovak republic*

**Appendix D**

## GYSEV

*Table 108: Transport performance in train-km in passenger traffic on GYSEV network*

| Line section | Passenger traffic (in train-km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Hegyeshalom – Rajka HU/ SK state border | 61 662 | 59 496 | 65 779 |
| Győr (MÁV/ GYSEV infra border) – Sopron HU/AT state border | 1 251 733 | 1 240 187 | 1 222 703 |
| Sopron HU/AT state border – Ebenfurth | N/A | N/A | N/A |

*Source: Member of RFC OEM for GYSEV from Hungary*

*Table 109: Transport performances in rail freight traffic on GYSEV network*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2014 | | | 2015 | | |
| | number of trains | train km | gross ton | number of trains | train km | gross ton | number of trains | train km | gross ton |
| Hegyeshalom – Rajka HU/SK state border | 4 863 | 76 187 | 87 729 764 | 4 913 | 77 007 | 90 798 065 | 5 135 | 80 478 | 96 013 816 |
| Győr (MÁV/GYSEV infra border) – Sopron HU/AT state border | 7 114 | 518 899 | 582 862 251 | 6 968 | 509 421 | 546 406 718 | 7 057 | 511 096 | 547 359 532 |
| Sopron HU/AT state border – Ebenfurth | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Source: Member of RFC OEM for GYSEV from Hungary*

## MÁV

*Table 110: Transport performance in train-km in passenger traffic on MÁV network*

| Line section | Passenger traffic (in train- km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Hegyeshalom oh. ~~ Győr; Hegyeshalom pvh. 950+04 szelvény ~~ Hegyeshalom; Győr ~~ Győr-Rendező; Győr pvh.8+34 szelvény ~~ Győr | 1 205 706 | 1 235 939 | 1 338 990 |
| Győrszentiván ~~ Gönyű | 20 | | |
| Győr – Rendező ~~ Kelenföld; Komárom oh. ~~ Komárom; Kelenföld ~~ Ferencváros | 4 183 537 | 4 723 539 | 4 989 707 |
| Komárom oh. ~~ Komárom | 6 | 0 | 114 |
| Ferencváros ~~ Rákos; Kőbánya felső ~~ Rákos | 337 971 | 334 448 | 332 223 |
| Ferencváros ~~ Soroksári út rendező | 36 620 | 36 763 | 36 714 |
| Ferencváros ~~ Kőbánya-Kispest; Kőbánya – Kispest ~~ Szolnok | 4 707 873 | 4 830 266 | 4 984 818 |
| Soroksári út ~~ Soroksár – Terminál | 144 414 | 145 003 | 144 805 |
| Rákospalota – Újpest ~~ Városliget elágazás | 299 545 | 303 277 | 302 909 |
| Kőbánya-Kispest ~~ Városliget elágazás | 597 479 | 613 899 | 588 590 |
| Szob oh. ~~ Rákos | 2 128 685 | 2 253 559 | 2 263 996 |
| Rákos ~~ Szolnok | 4 318 178 | 4 221 729 | 4 091 369 |
| Szolnok ~~ Szajol | 126 982 | 513 987 | 506 882 |
| Szajol ~~ Lőkösháza oh. | 1 912 303 | 1 961 215 | 1 981 004 |
| Lőkösháza ~~ Lőkösháza oh. | 9 226 | 10 025 | 10 773 |
| Szajol ~~ Püspökladány | 1 550 650 | 1 809 164 | 1 793 037 |
| Püspökladány ~~ Biharkeresztes oh. | 508 074 | 461 226 | 509 034 |
| Vác ~~ Aszód; Vácrátót ~~ Rákospalota – Újpest | 707 758 | 711 501 | 756 982 |
| Rákos ~~ Hatvan A elágazás | 2 315 302 | 2 309 491 | 2 302 454 |
| Hatvan A elágazás ~~ Újszász | 487 664 | 491 642 | 570 553 |
| **Total** | **25 577 993** | **26 966 674** | **27 504 952** |

*Source: Member of RFC OEM for MÁV from Hungary*

*Table 111: Transport performances in rail freight traffic on MÁV network*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2013 | | | 2013 | | |
| | number of trains | train km | gross tone | number of trains | train km | gross tone | number of trains | train km | gross tone |
| Hegyeshalom oh. ~~ Győr; Hegyeshalom pvh. 950+04 szelvény ~~ Hegyeshalom; Győr ~~ Győr – Rendező; Győr pvh.8+34 szelvény ~~ Győr | 24 441 | 830 499 | 956 730 383 | 26 146 | 919 766 | 1 080 050 223 | 27 030 | 928 959 | 1 108 866 136 |
| Győrszentiván ~~ Gönyű | 63 | 617 | 329 564 | 214 | 2 097 | 1 640 491 | 183 | 1 793 | 1 317 414 |
| Győr – Rendező ~~ Kelenföld; Komárom oh. ~~ Komárom; Kelenföld ~~ Ferencváros | 39 500 | 2 651 866 | 3 141 845 414 | 41 729 | 3 033 702 | 3 596 285 962 | 42 374 | 3 326 254 | 3 932 815 111 |
| Komárom oh. ~~ Komárom | 2 411 | 7 260 | 7 638 756 | 2 945 | 8 850 | 9 416 571 | 3 645 | 10 965 | 11 930 073 |
| Ferencváros ~~ Rákos; Kőbánya felső ~~ Rákos | 13 367 | 101 045 | 120 501 368 | 14 074 | 106 768 | 130 438 973 | 14 433 | 108 750 | 131 030 201 |
| Ferencváros ~~ Soroksári út rendező | 11 906 | 25 406 | 26 633 821 | 13 486 | 28 759 | 30 950 327 | 13 219 | 28 246 | 30 064 158 |
| Ferencváros ~~ Kőbánya-Kispest; Kőbánya-Kispest ~~ Szolnok | 13 229 | 1 092 860 | 1 392 767 399 | 13 491 | 1 114 203 | 1 381 553 315 | 13 847 | 1 137 492 | 1 401 876 018 |
| Soroksári út ~~ Soroksár-Terminál | 8 774 | 72 526 | 78 658 399 | 9 986 | 82 381 | 91 464 612 | 9 730 | 81 637 | 88 270 400 |
| Rákospalota – Újpest ~~ Városliget elágazás | 388 | 2 527 | 3 698 456 | 373 | 2 303 | 2 509 076 | 441 | 2 695 | 3 531 880 |
| Kőbánya-Kispest ~~ Városliget elágazás | 411 | 2 818 | 3 859 952 | 346 | 2 407 | 2 573 258 | 438 | 3 063 | 3 762 771 |
| Szob oh. ~~ Rákos | 5 394 | 295 109 | 369 539 567 | 5 741 | 308 083 | 394 140 839 | 6 874 | 385 459 | 509 519 120 |
| Rákos ~~ Szolnok | 5 196 | 350 111 | 421 786 491 | 5 585 | 340 488 | 472 650 688 | 6 206 | 428 764 | 594 687 571 |
| Szolnok ~~ Szajol | 12 060 | 30 155 | 39 413 708 | 13 858 | 137 153 | 174 179 852 | 15 333 | 150 410 | 195 378 321 |
| Szajol ~~ Lőkösháza oh. | 10 347 | 921 516 | 1 144 233 333 | 9 757 | 951 526 | 1 201 423 443 | 11 050 | 1 107 599 | 1 468 758 121 |
| Lőkösháza ~~ Lőkösháza oh. | 7 030 | 18 986 | 24 219 348 | 7 375 | 19 918 | 25 687 822 | 8 487 | 22 915 | 30 654 499 |
| Szajol ~~ Püspökladány | 38 891 | 2 057 805 | 1 040 674 067 | 37 417 | 2 330 596 | 1 083 314 630 | 5 931 | 386 944 | 520 541 860 |
| Püspökladány ~~ Biharkeresztes oh. | 2 183 | 115 873 | 145 498 110 | 1 609 | 80 614 | 102 965 708 | 1 826 | 94 851 | 129 660 857 |
| Vác ~~ Aszód; Vácrátót ~~ Rákospalota – Újpest | 138 | 540 | 239 406 | 111 | 347 | 79 700 | 91 | 396 | 120 433 |
| Rákos ~~ Hatvan A elágazás | 7 158 | 387 757 | 521 065 407 | 8 299 | 449 798 | 601 285 542 | 7 649 | 414 833 | 540 731 087 |
| Hatvan A elágazás ~~ Újszász | 2 062 | 75 048 | 103 326 328 | 2 698 | 100 682 | 146 900 563 | 2 194 | 96 334 | 124 140 527 |
| Total | **204 949** | **9 040 321** | **9 542 659 277** | **215 240** | **10 020 438** | **10 529 511 594** | **190 981** | **8 718 359** | **10 827 656 557** |

*Source: Member of RFC OEM for MÁV from Hungary*

## GYSEV

*Table 112: Bottlenecks on GYSEV railway infrastructure*

| Line section | Bottlenecks because of technical requirements | Reasons | Suggestions how to move bottlenecks |
|---|---|---|---|
| HU Sopron border – Sopron – Győr (MÁV/GYSEV infra border) | Single track + long distance between stations + at least minimum hour intervals of suburban trains, insufficient capacity, lack of ERTMS, low axle weight of 21 t, insufficient train length of 600 m (insufficient for interoperability for 740 m long corridor trains) | There is single track between Győr – Sopron. There is no ERTMS with respect to the fact that the track, as well as its technical parameters are out of date. | The need of second track and reconstruction of Sopron – Győr track, as well as increase the maximum train length to 740 m |
| Sopron HU/AT state border – Ebenfurth | - | - | - |

*Source: Member of RFC OEM for GYSEV from Hungary*

## MÁV

*Table 113: Bottlenecks on MÁV railway infrastructure*

| Line section | Bottlenecks because of technical requirements | Suggestions how to move bottlenecks |
|---|---|---|
| HU Sopron border-Sopron | - | - |
| HU Győr - Sopron | Single track + long distance between stations + at least hourly regular interval suburban trains | Second track for section Sopron- Győr |
| HU Komárom - Ferencváros | Level crossing of transit and shunting yard traffic just at the Budapest southern Danube bridge (almost the only one rail link between the Eastern and Western part of Hungary) | - |
| HU Stúrovo border – Vác | Single track+ long distance between stations + high frequency of suburban and international trains | - |
| HU Vác- Ferencváros | outworn station with manual switching+ node of high frequency suburban and international trains | - |

*Source: Member of RFC OEM for MÁV from Hungary*

## GYSEV

*Table 114: Comparison of transport time and transport charges on GYSEV network*

| Line section | Transport time | | Transport charges | |
|---|---|---|---|---|
| | Average transport time by railΔ (min) premise: no stops* | Average transport time by truck (hour:min)** | Access charges for "standard train" (1.600 t and 700 m) price freight transport 2015 | Charges for the truck (road) |
| Hegyeshalom - Rajka HU/SK state border | N/A | 13 m** | 52,59 | N/A |
| Győr (MÁV/GYSEV infra border) - Sopron HU/AT state border | N/A | 1 h 29 m** | 227,52 | N/A |

*Source: Member of RFC OEM for GYSEV from Hungary*

***Average speed in road goods transport is 60 km/h*

*Table 115: Comparison of charges for type modes of transport on GYSEV network*

| Line section | Charges | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Transport of containers | | Transport of chemicals | | | | Transport of standard goods | |
| | **Access charges** for intermodal train (ca. 40 x40´containers- 600 m, 1200 t,) | Average **transport charges** for 1x40´ctr./20 t by train | **Access charges** for block train (ca.500 m, 1800 t, chemicals ) | Average **transport charges** for 40 t of chemicals- RID by train | Average **transport charges** for 40 t chemicals - ADR by tank truck | Average **transport charges** for 40t chemicals - ADN-D by boat * | **Access charges** for single loading wagons (ca.500 m, 1500 t,) | Average **transport charges** for 30 t single loading by train |
| Hegyeshalom - Rajka HU/SK state border | 47,88 | 1,2 | 54,95 | 1,22 | N/A | N/A | 51,41 | 1,03 |
| Győr (MÁV/GYSEV infra border) - Sopron HU/AT state border | 200,89 | 5,02 | 240,84 | 5,35 | N/A | N/A | 220,86 | 4,42 |

*Source: Member of RFC OEM for GYSEV from Hungary*

## MÁV

*Table 116: Comparison of transport time and transport charges on MÁV network*

| Line section | Transport time | | Transport charges | |
|---|---|---|---|---|
| | Average transport time by rail (min) | Average transport time by road (hour:min)** | Access charges for "standard train" (1.600 t a 700 m*) | Charges for the truck (road) |
| Hegyeshalom - Győr | N/A | 50 m | 148,55 | N/A |
| Győr - Komárom | N/A | 40 m | 130,74 | N/A |
| Komárom - Tata | N/A | 22 m | 72,32 | N/A |
| Tata - Kelenföld | N/A | 1 h 7 m | 196,49 | N/A |
| Kelenföld - Ferencváros | N/A | 6 m | 38,12 | N/A |
| Szob oh - Vác | N/A | 30 m | 98,42 | N/A |
| Vác - Rákospalota - Újpest | N/A | 25 m | 85,16 | N/A |
| Rákospalota-Újpest - Angyalföld elágazás | N/A | 4 m | 20,03 | N/A |
| Angyalföld elágazás - Kőbánya felső | N/A | 10 m | 35,18 | N/A |
| Kőbánya felső - Ferencváros | N/A | 6 m | 35,42 | N/A |
| Kőbánya felső - Rákos | N/A | 4 m | 24,80 | N/A |
| Rákos - Újszász | N/A | 1 h 41 m | 221,83 | N/A |
| Újszász - Szolnok | N/A | 17 m | 69,52 | N/A |
| Szolnok - Szajol | N/A | 12 m | 50,57 | N/A |
| Szajol - Békéscsaba | N/A | 1 h 38 m | 253,56 | N/A |
| Békéscsaba - Lőkösháza | N/A | 38 m | 108,76 | N/A |
| Ferencváros - Soroksári út | N/A | 8 m | 27,57 | N/A |
| Soroksári út - Soroksár | N/A | 2 m | 35,09 | N/A |
| Soroksár - Soroksár-Terminál | N/A | 2 m | 31,91 | N/A |
| Ferencváros - Kőbánya-Kispest | N/A | 6 m | 36,50 | N/A |
| Kőbánya-Kispest - Szolnok | N/A | 1 h 42 m | 265,19 | N/A |
| Szajol - Püspökladány | N/A | 1 h 11 m | 197,20 | N/A |
| Püspökladány - Biharkeresztes | N/A | 58 m | 165,38 | N/A |
| Vác - Aszód | N/A | 42 m | 96,57 | N/A |
| Aszód - Hatvan | N/A | 16 m | 65,73 | N/A |
| Hatvan - Újszász | N/A | 1 h 5 m | 160,36 | N/A |

*Source: Member of RFC OEM for MÁV from Hungary*

***Average speed in road goods transport is 60 km/h*

*Table 117: Comparison of charges for type modes of transport on MÁV network*

| Line section | Charges (€) | | | | | |
|---|---|---|---|---|---|---|
| | Containers (optional) | | Chemicals (optional) | | Standard good (optional) | |
| | **Access charges** for intermodal train (ca. 40 x40´containers- 600 m, 1200 t,) | Average **transport charges** for 1x40´ctr./20 t by train | **Access charges** for block train (ca.500 m, 1800 t, chemicals ) | Average **transport charges** for 40 t of chemicals-RID by train | **Access charges** for single loading wagons (ca.500 m, 1500 t,) | Average **transport charges** for 30 t single loading by train |
| Hegyeshalom – Győr | 134,15 | 3,35 | 155,75 | 3,46 | 144,95 | 2,90 |
| Győr –Komárom | 119,16 | 2,98 | 136,53 | 3,03 | 127,85 | 2,56 |
| Komárom– Tata | 66,10 | 1,65 | 75,43 | 1,68 | 70,77 | 1,42 |
| Tata – Kelenföld | 175,28 | 4,38 | 207,10 | 4,60 | 191,19 | 3,82 |
| Kelenföld - Ferencváros | 36,36 | 0,91 | 39,01 | 0,87 | 37,68 | 0,75 |
| Szob oh – Vác | 88,97 | 2,22 | 88,97 | 2,22 | 96,06 | 1,92 |
| Vác - Rákospalota – Újpest | 77,23 | 1,93 | 77,23 | 1,93 | 83,17 | 1,66 |
| Rákospalota-Újpest - Angyalföld elágazás | 19,01 | 0,48 | 19,01 | 0,48 | 19,77 | 0,40 |
| Angyalföld elágazás - Kőbánya felső | 32,43 | 0,81 | 32,43 | 0,81 | 32,28 | 0,65 |
| Kőbánya felső - Ferencváros | 33,96 | 0,85 | 36,14 | 0,80 | 35,05 | 0,70 |
| Kőbánya felső - Rákos | 23,78 | 0,59 | 25,31 | 0,56 | 24,55 | 0,49 |
| Rákos – Újszász | 198,27 | 4,96 | 233,62 | 5,19 | 215,94 | 4,32 |
| Újszász – Szolnok | 64,16 | 1,60 | 72,20 | 1,60 | 68,18 | 1,36 |
| Szolnok – Szajol | 47,38 | 1,18 | 52,17 | 1,16 | 49,78 | 1,00 |
| Szajol - Békéscsaba | 227,14 | 5,68 | 266,76 | 5,93 | 246,95 | 4,94 |
| Békéscsaba – Lőkösháza | 98,91 | 2,47 | 113,69 | 2,53 | 106,30 | 2,13 |
| Ferencváros - Soroksári út | 27,01 | 0,68 | 27,85 | 0,62 | 27,43 | 0,55 |
| Soroksári út –Soroksár | 32,89 | 0,82 | 36,19 | 0,80 | 34,54 | 0,69 |
| Soroksár - Soroksár-Terminál | 30,83 | 0,77 | 32,45 | 0,72 | 31,64 | 0,63 |
| Ferencváros - Kőbánya-Kispest | 34,92 | 0,87 | 37,29 | 0,83 | 36,10 | 0,72 |
| Kőbánya-Kispest – Szolnok | 237,45 | 5,94 | 279,07 | 6,20 | 258,26 | 5,17 |
| Szajol - Püspökladány | 176,45 | 4,41 | 207,58 | 4,61 | 192,02 | 3,84 |
| Püspökladány – Biharkeresztes | 147,79 | 3,69 | 174,18 | 3,87 | 160,99 | 3,22 |
| Vác - Aszód | 86,11 | 2,15 | 101,81 | 2,26 | 93,96 | 1,88 |
| Aszód – Hatvan | 60,81 | 1,52 | 68,19 | 1,52 | 64,50 | 1,29 |
| Hatvan – Újszász | 144,17 | 3,60 | 168,46 | 3,74 | 156,31 | 3,13 |

*Source: Member of RFC OEM for MÁV from Hungary*

**Appendix E**

*Table 118: Transport performance in train-km in passenger traffic in Romania*

| Line section | Passenger traffic (in train- km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Border - Curtici | 38 435 | 32 861 | 37 161 |
| Curtici - Arad | 182 520 | 139 502 | 148 225 |
| Arad - Simeria | 1 943 445 | 1 757 475 | 1 687 289 |
| Simeria - Coslariu | 1 021 745 | 801 985 | 632 714 |
| Coslariu – Sighisoara | 1 117 778 | 741 629 | 698 992 |
| Sighisoara – Brasov | 1 104 484 | 939 854 | 840 562 |
| Brasov – Predeal | 374 680 | 485 006 | 467 860 |
| Predeal – Brazi | 1 289 899 | 1 719 227 | 1 710 423 |
| Brazi – Bucuresti | 1 180 855 | 1 593 298 | 156 112 |
| Bucuresti – Fetesti | 1 134 757 | 1 557 520 | 1 487 542 |
| Fetesti – Constanta | 680 622 | 1 073 717 | 977 407 |
| Arad – Timisoara | 555 833 | 686 744 | 758 197 |
| Timisoara – Orsova | 1 244 543 | 1 403 456 | 1 342 015 |
| Orsova – Filiasi | 576 801 | 558 289 | 547 079 |
| Filiasi – Craiova | 479 263 | 561 886 | 650 557 |
| Craiova – Calafat | 229 087 | 299 237 | 357 161 |
| Calafat – Border | 0 | 3 047 | 4 669 |
| **Total** | **13 154 747** | **14 354 733** | **12 503 965** |

*Source: Member of RFC OEM from Romania*

*Table 119: Transport performances in rail freight traffic in Romania*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2014 | | | 2015 | | |
| | number of trains | train km | gross ton | number of trains | train km | gross ton | number of trains | train km | gross ton |
| Border - Curtici | 8 078,80 | 67 861,92 | 51 858 899,82 | 10 350,00 | 86 940,00 | 34 900 269,60 | 10 856,00 | 99 976,00 | 47 339 771,00 |
| Curtici - Arad | 7 061,35 | 125 294,08 | 103 001 249,40 | 9 346,00 | 158 779,80 | 63 201 138,00 | 9 326,00 | 174 959,00 | 84 525 669,00 |
| Arad - Simeria | 8 984,15 | 958 557,60 | 1 214 954 543,00 | 9 198,00 | 1 041 407,40 | 634 261 996,40 | 10 048,00 | 1 199 700,00 | 788 280 644,00 |
| Simeria - Coslariu | 5 748,45 | 295 149,71 | 332 054 468,20 | 6 056,00 | 335 446,40 | 198 060 234,40 | 6 576,00 | 362 130,00 | 186 451 728,00 |
| Coslariu - Sighisoara | 6 074,30 | 561 926,81 | 749 170 794,60 | 5 422,00 | 497 944,20 | 407 315 485,40 | 5 336,00 | 489 366,00 | 354 850 542,00 |
| Sighisoara - Brasov | 7 424,25 | 794 993,54 | 974 992 003,90 | 6 610,00 | 688 509,80 | 508 291 837,60 | 6 842,00 | 697 050,00 | 456 004 033,00 |
| Brasov - Predeal | 10 829,05 | 217 383,56 | 190 240 803,20 | 12 030,00 | 240 687,80 | 99 590 955,60 | 10 082,00 | 202 894,00 | 91 958 224,00 |
| Predeal - Brazi | 12 399,40 | 742 978,47 | 805 102 856,80 | 13 370,00 | 713 098,40 | 411 913 224,80 | 13 038,00 | 782 493,00 | 400 360 010,00 |
| Brazi - Bucuresti | 7 058,50 | 269 889,97 | 325 195 952,70 | 9 836,00 | 377 699,80 | 210 446 823,00 | 10 052,00 | 386 824,00 | 257 911 697,00 |
| Bucuresti - Fetesti | 7 645,60 | 872 872,07 | 1 252 038 659,00 | 11 612,00 | 1 303 987,80 | 856 581 764,40 | 12 580,00 | 1 474 524,00 | 1 026 063 344,0 |
| Fetesti - Constanta | 17 747,90 | 1 206 135,96 | 1 591 275 968,00 | 21 008,00 | 1 454 419,00 | 972 512 470,20 | 20 612,00 | 1 418 530,00 | 1 000 168 316,0 |
| Arad - Timisoara | 3 612,00 | 152 176,00 | 155 732 295,00 | 5 268,00 | 154 115,00 | 66 321 958,00 | 5 678,00 | 202 136,00 | 82 246 589,00 |
| Timisoara - Orsova | 4 324,00 | 626 359,00 | 730 484 934,00 | 6 214,00 | 637 984,00 | 337 412 401,00 | 5 910,00 | 715 481,00 | 371 284 610,00 |
| Orsova - Filiasi | 10 119,00 | 495 648,00 | 610 909 788,00 | 10 732,00 | 498 493,00 | 307 416 956,00 | 10 584,00 | 567 286,00 | 347 791 449,00 |
| Filiasi - Craiova | 11 970,00 | 365 515,00 | 514 669 604,00 | 14 362,00 | 379 218,00 | 291 877 264,00 | 16 222,00 | 525 051,00 | 438 649 914,00 |
| Craiova - Calafat | 4 729,00 | 21 165,00 | 15 586 819,00 | 11 446,00 | 68 600,00 | 25 093 848,00 | 13 038,00 | 87 736,00 | 28 788 475,00 |
| Calafat - Border | 0,00 | 0,00 | 0,00 | 47,00 | 150,40 | 23 137,00 | 131,00 | 419,00 | 82 719 |
| **Total** | **133 805,75** | **7 773 906,66** | **9 617 269 639** | **162 907,00** | **8637480,80** | **5 425 221 763,00** | **166 911,00** | **9 386 555,00** | **5 962 757 734** |

*Source: Member of RFC OEM from Romania*

**Appendix F**

*Table 120: Analysis of charges on NRIC lines*

| | | Charges | | |
|---|---|---|---|---|
| | | Containers | Chemicals | Standard good |
| **Country** | Line section | **Acess charges** for intermodal train (ca. 40 x40´containers-600 m, 1200 t,) | **Acess charges** for block train (ca.500 m, 1800 t, chemicals ) | **Acess charges** for single loading wagons (ca.500 m, 1500 t,) |
| **Bulgaria** | Vidin - Brusarci | 162,46 | 244,03 | 210,69 |
| | Brusarci - Boichinovci | 70,11 | 105,31 | 90,92 |
| | Boichinovci - Mezdra | 103,01 | 154,72 | 133,59 |
| | Mezdra jug - Sofia | 160,85 | 241,60 | 208,59 |
| | Sofia - Pernik | 105,02 | 157,75 | 136,20 |
| | Pernik - Radomir | 27,93 | 41,95 | 36,22 |
| | Radomir - General Todorov | 279,07 | 419,17 | 361,91 |
| | General Todorov - Kulata | 19,74 | 29,65 | 25,60 |
| | Sofia - Septemvri | 192,12 | 288,56 | 249,14 |
| | Septemvri - Plovdiv | 98,15 | 147,42 | 127,28 |
| | Plovdiv - Dimitrovgrad | 143,53 | 215,59 | 186,14 |
| | Dimitrovgrad - Svilengrad | 120,39 | 180,83 | 156,13 |
| | Ruse - Kaspichan | 266,01 | 399,55 | 344,97 |
| | Kaspichan - Varna | 157,95 | 237,25 | 204,84 |
| | Sindel - Karnobat | 227,65 | 341,94 | 295,23 |
| | Nova Zagora - Simeonovgrad | 114,89 | 172,57 | 148,99 |
| | Karnobat - Zimnica | 63,35 | 95,15 | 82,15 |
| | Zimnica - Stara Zagora | 172,69 | 259,39 | 223,95 |
| | Stara Zagora - Plovdiv | 196,22 | 294,73 | 254,47 |
| | Mihailovo - Dimitrovgrad | 62,72 | 94,21 | 81,34 |
| | Karnobat - Burgas | 111,51 | 167,49 | 144,61 |

*Source: Member of RFC OEM from Bulgaria*

**Appendix G**

*Table 121: Transport performance in train-km in passenger traffic in Greece*

| Line section | Passenger traffic (in train- km) | | |
|---|---|---|---|
| | 2013 | 2014 | 2015 |
| Pireas- Athina- Thessaloniki/ Volos- Promachon | 4 705 842 | 4 560 000 | 4 594 981 |
| Thess- Promachon- Alexandroupolis- Pithio- Ormenio | 1 320 000 | 1 675 000 | 695 019 |
| **Total** | **6 025 842** | **6 235 000** | **5 290 000** |

*Source: Member of RFC OEM from Greece*

*Table 122: Transport performances in rail freight traffic in Greece*

| Line section | Freight traffic | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013 | | | 2014 | | | 2015 | | |
| | number of trains | train km | gross ton | number of trains | train km | gross ton | number of trains | train km | gross ton |
| Pireas- Athina- Thessaloniki/ Volos- Promachon | N/A | N/A | N/A | 2 810 | 228 765 | 1 943 364 | 8 253 | 590 783 | 6 093 900 |
| Thessaloniki- Promachon- Alexandroupolis- Pithio- Ormenio | N/A | N/A | N/A | 414 | 68 553 | 186 048 | 472 | 62 217 | 398 694 |
| **Total** | N/A | N/A | N/A | **3 224** | **297 318** | **2 129 412** | **8 725** | **653 000** | **6 492 594** |

*Source: Member of RFC OEM from Greece*

## Appendix H

## List of Last mile for OEM corridor

### Germany

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Wilhelmshaven** | | | |
| **Wilhelmshaven Eurogate** | Intermodal terminal | Ozean-Pier 1,<br>26388 Wilhelmshaven,<br>Germany | EUROGATE Container Terminal Wilhelmshaven GmbH & Co. KG ,<br>T +49 4421 77440,<br>info@eurogate.eu |
| **Rail Terminal Wilhelmshaven GmbH** | Intermodal terminal | Ozean-Pier 1,<br>26388 Wilhelmshaven,<br>Germany | Rail Terminal Wilhelmshaven GmbH ,<br>T +49 4421 7744 0,<br>F +49 4421 7744 4977 |
| **NORDFROST Seehafen-Terminal** | Intermodal terminal | Pazifik 25-45<br>26388 Wilhelmshaven<br>Germany | Nordfrost<br>Mario Albers<br>T +'04421 7749 740<br>mario.albers@nordfrost.de |
| **Sande** | Station with public siding | 26452 Sande<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Bremerhaven** | | | |
| **Bremerhaven RTB** | Intermodal terminal | Senator-Borttscheller-Str. 14, 27568 Bremerhaven, Germany | RTB Rail Terminal Bremerhaven GmbH ,<br>Andreas Rußler,<br>T +49 471 94464151,<br>F +49 471 9446429,<br>a.russler@ntb.eu |
| **Bremerhaven NTB** | Intermodal terminal | Senator-Borttscheller-Str. 14, 27568 Bremerhaven, Germany | North Sea Terminal Bremerhaven GmbH & Co.<br>T +49 471 9446400<br>sekretariat@ntb-bremerhaven.de |
| **Bremerhaven CTB** | Intermodal terminal | Senator-Borttscheller-Str. 1, 27568 Bremerhaven, Germany | EUROGATE Container Terminal Bremerhaven GmbH,<br>T+49 471 142502<br>ctb@eurogate.eu |
| **Bremerhaven MSC Gate** | Intermodal terminal | Senator-Borttscheller-Str. 1, 27568 Bremerhaven, Germany | MSC Gate Bremerhaven GmbH & Co. KG<br>T+49 471 142502<br>http://www.mscgate.eu/ |
| **Oldenburg** | Station with public siding | Güterstraße 17<br>26122 Oldenburg (Old)<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Brake J.MÜLLER BBT** | Intermodal terminal | Nordstr. 2<br>26919 Brake<br>Germany | J. MÜLLER Break Bulk Terminal GmbH & Co. KG<br>Jürgen Huntgeburth<br>T+49 4401 914204<br>juergen.huntgeburth@jmueller.de<br>www.jmueller.de |
| **Bremen** | | | |
| **Hansakai** | Intermodal terminal | Rigaer Str. 2<br>28217 Bremen<br>Germany | Hansakai Umschlagbetriebe GmbH & Co. KG<br>Peter Viet<br>T+49 421 39930<br>F+49 421 3993246<br>viet@hansakai.de<br>www.hansakai.de |

| | | | |
|---|---|---|---|
| **Bremen-Sebaldsbrück** | Station with public siding | Zum Sebaldsbrücker Bahnhof<br>28309 Bremen<br>Germany | |
| **Verden (Aller) Süd** | Station with public siding | Moorstraße 4<br>27283 Verden (Aller)<br>Germany | Verden-Walsroder-Eisenbahn<br>T+49 4231 9227 10<br>www.vwebahn.de |
| **Hanover** | | | |
| **Hannover Nordhafen** | Station with public siding | Hansastr. 16-18<br>30419 Hannover<br>Germany | Hafen Hannover |
| **Hannover Nordhafen** | Intermodal terminal | Hansastraße 38<br>30419 Hannover<br>Germany | Städtische Häfen Hannover<br>(Nordhafen)<br>T +49 511 16842695<br>F +49 511 16845082<br>info@hannover-hafen.de<br>www.hannover.de |
| **Hannover Brinker Hafen** | Station with public siding | Am Brinker Hafen 5<br>30179 Hannover<br>Germany | Hafen Hannover |
| **Rhenus AG** | Railport/ Rail logistics centre | Am Lindener Hafen 26<br>30453 Hannover<br>Germany | T +49 (0)511 2105818 |
| **Hannover-Leinetor** | Intermodal terminal | Bartweg 12<br>30453 Hannover<br>Germany | Städtische Häfen Hannover<br>Rolf Hesse<br>T +49 511 16842695<br>F +49 511 16845082<br>info@hannover-hafen.de<br>www.hannover.de |
| **Hannover Linden Hafen** | Station with public siding | Bartweg 12<br>30453 Hannover<br>Germany | Hafen Hannover |
| **DUSS-Terminal Hannover-Linden** | Intermodal terminal | Harryweg 9<br>30453 Hannover<br>Germany | DUSS mbH<br>Gernold Berg<br>T +49 511 2864576<br>F +49 511 2864578<br>duss-hannover@deutschebahn.com<br>www1.deutschebahn.com |
| **Hann-Linden** | Station with public siding | 30449 Hann-Linden<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Hannover Misburger Hafen** | Station with public siding | Am Hafen 3<br>30629 Hannover<br>Germany | Hafen Hannover |
| **Megahub Lehrte** | Intermodal terminal | Eisenbahnlängsweg<br>31275 Lehrte<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Braunschweig** | | | |
| **Railport Braunschweig** | Railport/ Rail logistics centre | 38126 Braunschweig<br>Germany | DB Schenker Rail<br>www.dbschenker.hafas.de |
| **Braunschweig Hgbf** | Station with public siding | 38126 Braunschweig<br>Germany | DB Netz AG<br>www.dbnetz.de |

| | | | |
|---|---|---|---|
| **Braunschweig Hafen** | Intermodal terminal | Hafenstraße 34<br>38112 Braunschweig<br>Germany | Hafenbetriebsgesellschaft Braunschweig mbH<br>Jens Hohls<br>T +49 531 2103410<br>F +0531 2103470<br>hohls@braunschweig-hafen.de<br>www.braunschweig-hafen.de/ |
| **Magdeburg** | | | |
| **Magdeburg-Rothensee** | Station with public siding | Oebisfelder Straße<br>39126 Magdeburg<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Magdeburg Hanse-Terminal** | Intermodal terminal | Am Hansehafen 20<br>39126 Magdeburg<br>Germany | Magdeburger Hafen GmbH<br>Jürgen Michaelis<br>T +49 391 5939311<br>F +49 391 593<br>logistik@magdeburg-hafen.de<br>www.magdeburg-hafen.de |
| **Roßlau** | Intermodal terminal | Industriehafen 3<br>06862 Dessau-Roßlau<br>Germany | Industriehafen Roßlau GmbH<br>Lutz Wiesel<br>T +49 34901 66013<br>lutz_wiesel@binnenhafen-sachsen.de<br>http://www.binnenhafen-sachsen.de/ |
| **Dessau Hbf** | Station with public siding | Antoinetten Strasse<br>06844 Dessau<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Lutherstadt-Wittenberg** | Station with public siding | 06886 Lutherstadt-Wittenberg<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Fermerswalde** | Station with public siding | Am Bahnhof<br>04895 Fermerswalde<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Falkenberg (Elster)** | Station with public siding | Bahnhostrasse<br>04895 Falkenberg (Elster)<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Riesa Hafen** | Intermodal terminal | Paul-Greifzu-Str. 8a<br>01591 Riesa<br>Germany | Sächsische Binnenhäfen Oberelbe GmbH<br>Tino Adam<br>T +49 3525 721234<br>tino_adam@binnenhafen-sachsen.de<br>www.binnenhafen-sachsen.de/ |
| **Riesa** | Station with public siding | 01587 Riesa<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Hamburg** | | | |
| **Railport Hamburg 1** | Railport/ Rail logistics centre | 1. Hafenstraße 13<br>21079 Hamburg<br>Germany | TRANSA<br>T +49 (0)40 / 30 37 439-41<br>www.dbschenker.hafas.de |
| **Container Terminal Tollerort (CTT)** | Intermodal terminal | Am Vulkanhafen 30<br>20457 Hamburg<br>Germany | HHLA Container Terminal Tollerort GmbH<br>T +49 40 740010<br>F +49 40 74001100<br>info@hhla.de<br>www.hhla.de |

| | | | |
|---|---|---|---|
| **DUSS-Terminal Hamburg-Billwerder** | Intermodal terminal | Halskestraße 67<br>22113 Hamburg<br>Germany | DUSS mbH<br>Manfred Schuster<br>T +49 40 3918 6464<br>F +49 40 3918 6473<br>duss-hamburg-terminalleitung@deutschebahn.com<br>www1.deutschebahn.com |
| **Eurocargo Container Freight Station and Warehouse GmbH** | Railport/ Rail logistics centre | Antwerpenstraße 3<br>21129 Hamburg<br>Germany | |
| **Hamburg Eurokombi** | Intermodal terminal | Köhlfleetdamm 5<br>21129 Hamburg<br>Germany | EUROKOMBI Terminal GmbH<br>Thorsten Resse<br>T +49 40 74051905<br>thorsten.reese@gmx.de<br>http://www.eurokombi.de |
| **Hamburg** | Station with public siding | Antwerpenstraße<br>21129 Hamburg<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **EUROGATE Container Terminal Hamburg (CTH)** | Intermodal terminal | Kurt-Eckelmann-Straße 1<br>21129 Hamburg<br>Germany | EUROGATE Container Terminal Hamburg GmbH<br>T +49 40 74050<br>ct-hamburg@eurogate.eu<br>www1.eurogate.de |
| **Container Terminal Burchardkai (CTB)** | Intermodal terminal | Bei St. Annen 1<br>20457 Hamburg<br>Germany | HHLA Container Terminal Burchardkai GmbH<br>T +49 40 30880<br>info@hhla.de<br>www.hhla.de |
| **Hamburg Altenwerder CTA** | Intermodal terminal | Am Balinkai 1<br>21129 Hamburg<br>Germany | HHLA Container Terminal Altenwerder GmbH<br>T +49 40 533090<br>F +49 40 533092129<br>info@hhla.de<br>www.hhla.de |
| **Hamburg Wallmann** | Intermodal terminal | Pollhornweg 31-39<br>21107 Hamburg<br>Germany | Wallmann & Co. (GmbH & Co. KG)<br>H.-D. Wilde<br>T +49 40 75207230<br>F +49 40 751276<br>h.wilde@wallmann-hamburg.de<br>www.wallmann-hamburg.de |
| **Schenken Deutschland AG** | Railport/ Rail logistics centre | Eversween 29<br>21107 Hamburg<br>Germany | |
| **Hamburg BUSS Hansa Terminal** | Intermodal terminal | Am Travehafen<br>20457 Hamburg<br>Germany | Buss Hansa Terminal GmbH & Co. KG<br>Peter Geest<br>T +49 40 751933031<br>F +49 40 751933100<br>p.geest@buss-ports.de<br>www.buss-port-services.de |
| **AMB Steinwerder Distribution Center B.V.** | Railport/ Rail logistics centre | Nordersand 2<br>20457 Hamburg<br>Germany | |
| **PCH Packing Center Hamburg GmbH** | Railport/ Rail logistics centre | Indiastraße 4<br>20457 Hamburg<br>Germany | |
| **Hamburg Süd-West-Terminal** | Intermodal terminal | Am Kamerunkai 5<br>20457 Hamburg<br>Germany | C. Steinweg GmbH & Co. KG<br>T +49 40 789500<br>F +49 40 78950193<br>info@csteinweg.de<br>www.hamburg.steinweg.com |

| | | | |
|---|---|---|---|
| **Hamburg O´Swaldkai** | Intermodal terminal | Dessauer Straße 10<br>20457 Hamburg<br>Germany | Unikai Lagerei & Speditionsgesellschaft mbH<br>Michael Sieck<br>T +49 40 72002100<br>F +49 40 72002101<br>nfo@unikai.de<br>www.unikai.de |
| **Maschen Rbf** | Station with public siding | Hörstener Straße<br>21220 Maschen<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Winsen (Luhe) Süd** | Station with public siding | An der Kleinbahn 39<br>21423 Winsen (Luhe)<br>Germany | Osthannoversche Eisenbahnen AG (OHE)<br>T +49 5141 276 0<br>www.ohe-transport.de |
| **Lüneburg** | Station with public siding | Pirolweg<br>21337 Lüneburg<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Uelzen** | Station with public siding | 29525 Uelzen<br>Germany | Osthannoversche Eisenbahnen AG (OHE) |
| **Salzwedel** | Station with public siding | 29410 Salzwedel<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Stendal** | Station with public siding | Lüderitzer Straße<br>39576 Stendal<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Tangerhütte** | Station with public siding | Germany | DB Netz AG<br>www.dbnetz.de |
| **Rostock** | | | |
| **GTC Rostock** | Intermodal terminal | Am Hansakai 14<br>18147 Rostock<br>Germany | Euroports General Cargo Terminal GmbH<br>T + 49 381 6662 320<br>F + 49 381 6662 525<br>gct.info@euroports.de<br>www.portofrostock.de |
| **Rostock Trimodal-RTM** | Intermodal terminal | Am Skandinavienkai 7<br>18147 Rostock<br>Germany | Rostock Trimodal GmbH<br>Gudrun Schümann<br>T +49 381 6662 200<br>F +49 381 6662 355<br>rtm@portofrostock.de<br>rtm-terminal@portofrostock.de<br>www.rostock-port.de |
| **Rostock Seehafen Süd** | Station with public siding | Petersdorfer Str.<br>18147 Rostock<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Railport Rostock** | Railport/ Rail logistics centre | 18147 Rostock<br>Germany | DB Schenker Rail<br>www.dbschenker.hafas.de |
| **Laage** | Station with public siding | 18299 Laage<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Waren (Müritz)** | Station with public siding | Bahnhofsplatz<br>17192 Waren (Müritz)<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Neustrelitz Süd** | Station with public siding | 17235 Neustrelitz Hafen<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Oranienburg** | Station with public siding | 16515 Oranienburg<br>Germany | DB Netz AG<br>www.dbnetz.de |

| | | | |
|---|---|---|---|
| **Birkenwerder (b Berlin)** | Station with public siding | Unter den Ulmen<br>16547 Birkenwerder<br>Germany | DB Netz AG<br>T +49(0)30 297-40173<br>www.dbnetz.de |
| **Berlin** | | | |
| **Berlin Weshafen** | Intermodal terminal | Westhafenstraße 1<br>13353 Berlin<br>Germany | BEHALA Berliner Hafen- und Lagerhausgesellschaft mbH<br>Kevin Lietz<br>T +49 30 39095326<br>F +49 30 39095327<br>k.lietz@behala.de<br>www.behala.de |
| **Berlin Nordost** | Station with public siding | Wassergrundstraße<br>13053 Berlin Nordost<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Berlin-Grünau** | Station with public siding | Gründerstraße<br>12527 Berlin-Grünau<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Baruth (Mark)** | Station with public siding | 15837 Baruth (Mark)<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **LDZ Elsterwerda** | Intermodal terminal | Roland-Schmid-Straße<br>04910 Elsterwerda<br>Germany | Hans Peter Hofmann<br>Denis Hofmann<br>T +49 151 17112397 / 03533 48140<br>F +49 3533 481481<br>d.hofmann@ldz-hofmann.de<br>www.ldz-hofmann.de |
| **Dresden** | | | |
| **Dresden-Friedrichstadt** | Station with public siding | 01067 Dresden<br>Germany | DB Netz AG<br>www.dbnetz.de |
| **Dresden-Friedrichstadt GVZ** | Intermodal terminal | Potthoffstr. 6<br>01159 Dresden<br>Germany | DB Intermodal Services GmbH<br>Ingo Schmidt<br>T +49 351 6529910<br>F +49 351 6529939<br>gerald.seifert@db-intermodal-services.de<br>www.db-intermodal.com |
| **Alberthafen Dresden-Friedrichstadt** | Intermodal terminal | Magdeburger Str. 58<br>01067 Dresden<br>Germany | Sächsische Binnenhäfen Oberelbe GmbH<br>Christine Kucklick<br>T +49 351 4982248<br>christine_kucklick@binnenhafen-sachsen.de<br>www.binnenhafen-sachsen.de/ |

## Czech Republic

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Děčín** | | | |
| **Prístav Děčín** | Intermodal terminal | Loubská 704/9<br>40501 Decin<br>Czech republic | Cesko-saske pristavy s.r.o.<br>Jiri Duben<br>T +00 420412589140<br>Jiri.duben@csp-labe.cz<br>www.binnenhafen-sachsen.de |
| **Děčín** | Marshalling yard | | www.szdc.cz |
| **TSC Lovosovice** | Intermodal terminal | Lukavecka 1<br>41002 Lovosice<br>Czech Republic | Trans-Sped-Consult s.r.o.<br>Jan Zidka<br>T +420 777 344 003<br>jan.zidka@telecom.cz<br>www.trans-sped-consult.eu |

| | | | |
|---|---|---|---|
| **CP Container Terminal Mělník** | Intermodal terminal | Celní 144<br>27601 Mělník<br>Czech republic | České přístavy, j.s.c.<br>Pavel Nemnemec@czechports.cz<br>T +42 0315643101<br>www.czechports.cz |
| **Havlíčkův Brod** | Marshalling yard | | www.szdc.cz |
| **Praha** | | | |
| **CSKD Terminal Praha Žížkov** | Intermodal terminal | Jana Želivského 2<br>13000 Praha<br>Czech Republic | Rail Cargo Operator- CSKD s.r.o.<br>Jirí Vlcek<br>T +420 220193200<br>vlcek@intrans.cz<br>http://www.railcargooperator.cz/ |
| **Terminal Praha-Uhříněves** | Intermodal terminal | Podleska 926/5<br>104 00 Praha<br>Czech Republic | METRANS a.s.<br>Martin Horinek<br>T +420 267 293136<br>horinek@metrans.cz<br>www.metrans.eu |
| **Praha Libeň** | Marshalling yard | | www.szdc.cz |
| **Česká Třebová** | | | |
| **Rail Hub- Terminal Česká Třebová** | Intermodal terminal | Rybník 276<br>560 02Česká Třebova<br>Czech Republic | METRANS a.s.<br>Mr. Kotrba<br>T +420 267 293 401<br>kotrba@metrans.cz<br>www.metrans.eu |
| **Česká Třebová** | Marshalling yard | | |
| **Brno** | | | |
| **CSKD Terminal Brno** | Intermodal terminal | K terminálu 614/11<br>61900 Brno<br>Czech republic | Rail Cargo Operator- CSKD s.r.o.<br>T +420 220 19 32 00<br>F +420 20 19 32 20<br>cskd@intrans.cz<br>www.intrans.cz |
| **Brno Maloměřice** | Marshalling yard | | www.szdc.cz |
| **CSKD Terminal Přerov** | Intermodal terminal | Horní Moštěnice<br>75117 Přerov-Horní Moštěnice<br>Czech Republic | Rail Cargo Operator- CSKD s.r.o.<br>Josef Orsulik<br>T +420 581 224 108<br>F +421 581 224 106<br>kpprerov@railcargooperator.cz<br>www.intrans.cz |
| **Terminal Ostrava-Senov** | Intermodal terminal | Tesinska 1816<br>73934 Senov<br>Czech Republic | METRANS, a.s.<br>Jiri Bruna<br>T +420 267 293 102<br>bruna@metrans.cz<br>www.metrans.eu |
| **Kolín seř.n.** | Marshalling yard | | www.szdc.cz |
| **Pardubice** | Marshalling yard | | www.szdc.cz |
| **Kralupy nad Vltavou** | Marshalling yard | | www.szdc.cz |
| **Nymburk** | Marshalling yard | | www.szdc.cz |

## Austria

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Wien Nordwestbahnhof CCT** | Intermodal terminal | Taborstrasse 95-97<br>1200 Wien<br>Austria | Mainu<br>Leopold Schafhauser<br>T +43 1 9300034785<br>F +43 1 9300032644<br>loepold.schafhauser@oebb.at<br>www.oebb.at |
| **Wien Cont Container Terminal GmbH** | Intermodal terminal | Freudenauer Hafenstr. 12<br>1020 Wien<br>Austria | Wiencont Container Terminal GmbH<br>Robert Groiß<br>T +43 1 7277210<br>groiss@wiencont.com<br>www.wiencont.com |
| **Wien Zentralverschiebebahnhof** | Marshalling yard | | www.oebb.at |
| **Wien Inzersdorf (under construction)** | | | www.oebb.at |

## Slovakia

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Bratislava** | | | |
| **Bratislava Palenisko** | Intermodal terminal | Pribinova 24<br>82109 Bratislava<br>Slovakia | SPaP a.s.<br>T +421 2 58271 111<br>F +421 2 58271 114<br>spap@spap.sk<br>www.spap.sk |
| **Bratislava UNS/ Slovnaft** | Terminal | Vlečka Slovnaft, a.s.<br>Vlčie hrdlo 1<br>824 12 Bratislava<br>Slovakia | Slovnaft a.s., Bratislava<br>Ing. Ján Čerepán<br>jan.cerepan@slovnaft.sk |
| **UKV Terminal Bratislava ÚNS** | Intermodal terminal | Lúčna ul. 12<br>82109 Bratislava<br>Slovakia | Rail Cargo Operator - CSKD s.r.o.<br>František Papuga<br>T +421 903 744 857<br>F +421 903 744 857<br>papuga@intrans.sk<br>www.railcargo.com |
| **Bratislava východ** | Marshalling yard | | www.zsr.sk |
| **Devínska Nova Ves** | Marshalling yard | | www.zsr.sk |
| **CY Green Sládkovičovo** | Intermodal terminal | Košútska cesta 1663<br>92521 Sládkovičovo<br>Slovakia | Green Integrate Logistics<br>Norbert Schaffer<br>Jan Dvorecky<br>T +421 911 500 494<br>F +421 317842341<br>nschaffer@eu.green-logistics.com<br>jdvorecky@eu.green-logistics.com<br>www.green-logistics.com |
| **Dunajská Streda** | Intermodal terminal | Povodská 18<br>92901 Dunajská Streda<br>Slovakia | Metrans (Danubia) a.s.<br>Mr. Jiri Samek<br>T +420 267 293 102<br>samek@metrans.cz<br>www.metrans.eu |

| | | | |
|---|---|---|---|
| **Štúrovo** | Intermodal terminal | Továrenská 1<br>943 03 Štúrovo<br>Slovakia | BPŠ Railway<br>Zoltán Nagy<br>T Tel. + 421 (0) 36 756 1103<br>zoltan18@gmail.com<br>www.sturovorailway.sk |
| **Nové Zámky** | Marshalling yard | | www.zsr.sk |
| **Komárno zr.st.** | Marshalling yard | | www.zsr.sk |
| **Štúrovo** | Marshalling yard | | www.zsr.sk |

## Hungary

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Sopron** | | | |
| **Sopron Terminal** | Intermodal terminal | Ipar krt. 21<br>9400 Sopron<br>Hungary | Gysev Cargo Zrt<br>Tóth Péter<br>T 0036 99 577161<br>F 0036 99 577334<br>toth.peter@gysevcargo.hu<br>www.gysevcargo.hu |
| **Railport Sopron** | Railport/Rail logistic centre | Sopron<br>Hungary | DB Schenker Rail dbschenker.hafas.de |
| **Logistics Service Centre Sopron** | Railport/Rail logistic centre | Ipar körút 21<br>9400 Sopron<br>Hungary | Gysev Cargo<br>László Cseh<br>T +36(99)517 267 or 427<br>F +36(99)517 314<br>cseh.laszlo@gysevcargo.hu<br>www.gysevcargo.hu |
| **Győr** | | | |
| **Terminal ÁTI Győr** | Intermodal terminal | Kandó K. u. 17<br>9025 Győr<br>Hungary | ÁTI DEPO ZRt.<br>T +36 96 512 991<br>www.atidepot.hu |
| **Port of Győr-Gőnyű** | Intermodal terminal | Kikötö 1<br>H-9011 Györ-Károlyháza<br>Hungary | Kikötö Zrt.<br>Mr. Ákos Pintér<br>T +36 96 544 200<br>F +36 96 544 204<br>pinterportofgyor.hu |
| **Railport Győr** | Railport/Rail logistic centre | Győr<br>Hungary | DB Schenker Rail dbschenker.hafas.de |
| **Győr** | Marshalling yard | | www.vpe.hu |
| **Szolnok** | | | |
| **Szolnok Logistics Service Centre** | Terminal | Téglagyári út. 36<br>5000 Szolnok<br>Hungary | T +36 56 500 100<br>F +36 56 344 524<br>logiszol@logiszol.t-online.hu |
| **MÁV Kombiterminál Szolnok** | Intermodal terminal | Jubileum tér 1-3<br>5002 Szolnok<br>Hungary | MÁV Kombiterminál Kft.<br>Béláné Nagy<br>T +36 56 423 015<br>F +36 56 423 015<br>terminal.szolnok@mavkombi.hu |
| **Szolnok** | Marshalling yard | | www.vpe.hu |

| | | | |
|---|---|---|---|
| **Railport Szajol** | Railport/Rail logistic centre | Szajol Hungary | DB Schenker Rail dbschenker.hafas.de |
| **Székesfehérvár Terminal** | Intermodal terminal | Vásárhelyi út 7.<br>8000 Székesfehérvár<br>Hungary | Kombisztar<br>Szekesfehervar<br>T +36 22 502 810<br>F +36 22 502 811<br>kombisztar@axelero.hu<br>www.logsped.hu/kszkont.htm |
| **Hegyeshalom** | Marshalling yard | | www.vpe.hu |
| **Komárom** | Marshalling yard | | www.vpe.hu |
| **Budapest** | | | |
| **Budapest Szabadkikötő** | Terminal | Weiss Manfréd út 5-7<br>H-1211 Budapest<br>Hungary | T +36 1 278 3102<br>F + 36 1 276 3978<br>info@bszl.hu |
| **Budapest BILK** | Intermodal terminal | Európa útca. 4<br>1239 Budapest<br>Hungary | BILK Kombiterminal Co. Ltd.<br>Mr. Istvan Huszti<br>T +36 1 289 6000<br>F +36 1 289 6060<br>bilkkombi@bilkkombi.hu<br>www.railcargobilk.hu |
| **Ferencváros** | Marshalling yard | | www.vpe.hu |
| **TransSped Debrecen** | Terminal | | www.transmecgroup.com |
| **Békésczaba** | Marshalling yard | | www.vpe.hu |

## Romania

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Oradea** | | | |
| **Railport Oradea** | Railport/ Rail logistics centre | Oradea<br>Romania | DB Schenker Rail<br>dbschenker.hafas.de |
| **Oradea Est Terminal** | Intermodal terminal | Strada Peţei 2<br>410035 Oradea<br>Romania | SC INTERCARPATIA S.R.L.<br>Leon Petric<br>T +40 725 561 223<br>F +40 359 802 303<br>leon@intercarpatia.ro<br>www.intercarpatia.ro |
| **Transmec Intermodal Vest Oradea** | Terminal | | www.transmecgroup.com |
| **Allianso - Ploieşti (Crangul lui Bot)** | Terminal | | T + 40 (0)344228200<br>www.alliansoterminal.eu |
| **Coşlariu** | Marshalling yard | | www.cfr.ro |

| | | | |
|---|---|---|---|
| **Arad** | | | |
| **Railport Arad SRL** | Railport | 315200 Curtici FN<br>Arad County<br>Romania | T+40 357100189<br>F+40 357100190<br>office@railportarad.ro |
| **Arad** | Marshalling yard | | www.cfr.ro |
| **Semenic** | Intermodal terminal | Calea Timisoara 2<br>300383 Timisoara<br>Romania | CFR Marfă S.A.<br>Elena Paier<br>T +40 256204832<br>F +40 256204832<br>office@cfrmarfa.com<br>www.cfrmarfa.cfr.ro |
| **Ronaț Triaj** | Marshalling yard | | www.cfr.ro |
| **Ploiești Triaj** | Marshalling yard | | www.cfr.ro |
| **Caransebeș Triaj** | Marshalling yard | | www.cfr.ro |
| **Craiova** | | | |
| **Craiova** | Intermodal terminal | Aleea Garlesti 1<br>200778 Craiova<br>Romania | CFR Marfă S.A.<br>Simona Ilie, Mihaela Craciun<br>T +40 251419197<br>F +40 251419360<br>office@cfrmarfa.com<br>www.cfrmarfa.cfr.ro |
| **Craiova** | Marshalling yard | | www.crf.ro |
| **Brasov** | | | |
| **Brasov** | Intermodal terminal | str. Timis Triaj nr. 1<br>500240 Brasov<br>Romania | Rofersped S.A.<br>Sorin Zbengheci<br>sorin.zbengheci@rofersped.ro<br>www.rofersped.ro |
| **Brasov Triaj** | Marshalling yard | | www.cfr.ro |
| **Tibbett Logistics București (Chiajna)** | Terminal | SC Tibbett Logistics SRL<br>1-7 Italia Street, Unit 13<br>P3 Logistics Park<br>RO 077040 Chiajna<br>Ilfov<br>Romania | T + 40 31 229 2700<br>F + 40 31 229 27 64<br>www.tibbettlogistics.com |
| **Terminalul Mediaş** | Intermodal terminal | Strada Gării, nr.29,<br>Mediaş<br>Romania | T +40 21 224 14 67/68<br>F +40 21 224 39 05<br>www.rofersped.ro<br>www.cfrmarfa.com |

| | | | |
|---|---|---|---|
| **Bucuresti** | | | |
| **Bucurestii Noi** | Intermodal terminal | Str. Drumul Sabarenilor No.1<br>060646 Bucharest<br>Romania | CFR Marfă S.A.<br>Lucica Constantin<br>T +40 212126197<br>F +40 212126197<br>office@cfrmarfa.com<br>www.cfrmarfa.cfr.ro |
| **Bucuresti Triaj** | Marshalling yard | | www.cfr.ro |
| **Constanta** | | | |
| **Railport Constanta** | Railport/ Rail logistics centre | Constanta<br>Romania | www.dbschenker.hafas.de |
| **Constanta Port** | Intermodal terminal | Incinta Port Constanta<br>Gara Maritima<br>900900 Constanta<br>Romania | T +40 241611540<br>F +40 241619512<br>www.portofconstantza.com |
| **DP World Constanta** | Intermodal terminal | Administrative Bldg. Pier II-S<br>900900 Constanta<br>Romania | DP World Constanta<br>Rowan Bullock<br>T +40 241 70 01 00<br>F +40 241 60 22 54<br>commercial@csct.ro<br>www.dpworld.ro |

## Bulgaria

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Russe** | | | |
| **Railport Russe** | Railport/ Rail logistics centre | Russe<br>Bulgaria | www.dbschenker.hafas.de |
| **Ruse-Center Port Terminal** | Intermodal terminal | № 22 "Pristanishtna"<br>Street 7000 Russe<br>Bulgaria | Port Complex Rousse<br>T +359 82 880 999<br>F +359 82 825 148<br>office@port-ruse-bg.com<br>www.port-ruse-bg.com |
| **Sofia** | | | |
| **Yana Sofia Intermodal terminal** | Intermodal terminal | 1A Sv. Georgi Pobedonosets Str.<br>1849 Sofia<br>Bulgaria | Ecologistics Ltd.<br>Lyubomir Syarov<br>T +359 2 421 95 13<br>F +359 2 421 95 14<br>l.syarov@ecologistics.bg<br>www.ecologistics.bg |
| **Co-modal Terminal Voluyak** | Railport/Rail logistics centre | Sofia-Voluyak<br>Bulgaria | Trans Express<br>Ivan Petrov<br>T +359 2 91977<br>F +359 2 943 4777<br>transexpress@transexpress.bg<br>www.transexpress.bg |
| **Railport Sofia** | Railport/Rail logistics centre | Sofia<br>Bulgaria | www.dbschenker.hafas.de |

| | | | |
|---|---|---|---|
| **Stara Zagora** | Intermodal terminal | Stara Zagora Railway Station<br>6000 Stara Zagora<br>Bulgaria | Metalimpex<br>T +359 42 626 752 |
| **Port of Burgas** | Intermodal terminal | 1 Prince Alexander Battenberg Str.<br>8000 Bourgas<br>Bulgaria | Port of Burgas Authority<br>Nikolay Tishev<br>T +359 56 822 222<br>nikolay_tishev@port-burgas.com<br>www.port-burgas.bg |

## Greece

| Object | Facility type | Facility address | Facility contact data |
|---|---|---|---|
| **Promachonas Kulata** | Marshalling yard | | www.ose.gr |
| **Komotini** | Station with public siding | 69100 Komotini<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@osenet.gr<br>www.trainose.gr |
| **Xanthi** | Station with public siding | 67100 Xanthi<br>Greece | TRAINOSE<br>T +302310 599293<br>info@trainose.gr<br>www.trainose.gr |
| **Drama** | Station with public siding | 66100 Drama<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@trainose.gr<br>www.trainose.gr |
| **Serres** | Station with public siding | 62125 Serres<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@trainose.gr<br>www.trainose.gr |
| **Thessaloniki** | | | |
| **Thessaloniki Port Sempo** | Intermodal terminal | ΤΘ 104 67<br>54110 Thessaloniki<br>Greece | THPA - Container Terminal<br>D. Tsitsamis<br>T +30 2310 593 620<br>F +30 2310 593 650<br>dtsitsamis@thpa.gr<br>www.thpa.gr |
| **Thessaloniki Port B** | Station with public siding | Port of Thessaloniki B<br>54110 Thessaloniki<br>Greece | THPA<br>C.Stagos<br>T +30 2310 593 340<br>F +30 2310 593 400<br>sfassa@thpa.gr<br>www.thpa.gr |

| | | | |
|---|---|---|---|
| **Thessaloniki Terminal** | Intermodal terminal, Station with public siding | Old Station Thessaloniki<br>54645 Thessaloniki<br>Greece | TRAINOSE<br>T +30 2310 599293<br>ics@trainose.gr<br>www.ics.trainose.gr |
| **Port of Thessaloniki** | Intermodal terminal | P.O.Box 10467<br>54110 Thessaloniki<br>Greece | Thessaloniki Port Authority SA<br>T +302310593601<br>F +302310593647<br>info@thpa.gr<br>www.thpa.gr |
| **Thesaloniki railway yard** | Marshalling yard | | www.ose.gr |
| **SRS-Sindos Railcontainer Sevices** | Intermodal terminal | P.O. Box 1099, Industrial Area<br>57022 Sindos,<br>Thessaloniki<br>Greece | GARTNER Hellas Ltd.<br>Dimitri Ladopoulos<br>T +30 2310 570 740<br>F +30 2310 576 998<br>info@gartnerhellas.com<br>www.gartnerkg.com |
| **Logistics center Sindos** | Station with public siding | OIK. Tetragono 61<br>57022 Sindos,<br>Thessaloniki<br>Greece | Schenker Logistic<br>Klaus Kraetzschmar<br>T +302310 572 572<br>F +302310 572 592<br>info.greece@dbschenker.com<br>www.dbschenker.gr |
| **Rail Cargo Logistic** | Railport/Rail logistics centre | DA 13<br>57022 Sindos,<br>Thessaloniki<br>Greece | Rail Cargo Logistics Goldair<br>T +30 211 1804246<br>info@railcargolg.com<br>www.railcargolg.com |
| **Makios** | Intermodal terminal | 5th klm. Thessaloniki-Kalochori<br>54628 Gefyra<br>Greece | MAKIOS LOGISTICS<br>Thrasyvoulos T. Makios<br>T +30 2310 573100<br>F +30 2310 573132<br>thr_makios@makios.gr<br>www.makios.com.gr |
| **Platy** | Station with public siding | 59032 Platy<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@osenet.gr<br>www.trainose.gr |
| **Katerini** | Station with public siding | 60100 Katerini<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@osenet.gr<br>www.trainose.gr |
| **Larissa** | Station with public siding | Paleologou 47-53<br>41223 Larissa<br>Greece | TRAINOSE<br>T +30210 5297269<br>F +302105297334<br>info@osenet.gr<br>www.trainose.gr |
| **Valestinon** | Station with public siding | 37500 Valestino<br>Greece | TRAINOSE<br>T +30210 5297269<br>info@trainose.gr<br>www.trainose.gr |

| | | | |
|---|---|---|---|
| **Volos Port** | Intermodal terminal | Kentriki Provlita<br>Argonafton<br>38334 Volos<br>Greece | VPA<br>T +30 242 103 1226<br>F +30 242 103 1115<br>admin@port-volos.gr<br>www.port-volos.gr |
| **Volos** | Station with public siding | Mitropolitou Grigoriou 1<br>38334 Volos<br>Greece | TRAINOSE<br>T +30210 5297269<br>info@trainose.gr<br>www.trainose.gr |
| **Lianokladion** | Station with public siding | 35100 Stauros<br>Greece | TRAINOSE<br>T +302310 599293<br>F +302105297334<br>info@osenet.gr<br>www.trainose.gr |
| **Transcombi Express S.A.** | Intermodal terminal | 32009 Ag. Thomas<br>Greece | Transcombi<br>T +30 22620-56837<br>F +3022620-56838<br>support@transcombigroup.com<br>www.transcombigroup.com |
| **Pireus** | | | |
| **Thriassio** | Intermodal terminal | 19300 Aspropigos,<br>Athens<br>Greece | TRAINOSE<br>T +30 210 5297269<br>ics@trainose.gr<br>www.trainose.gr |
| **Pireus Port Authorithy** | Other | 18863 Pireus, Athens<br>Greece | OLP<br>T +30 210 4060970<br>F +30 210 4060959<br>kalamarap@olp.gr<br>www.olp.gr |
| **Pireus Port Authorithy- Sempo** | Intermodal terminal | 18863 Pireus, Athens<br>Greece | OLP<br>T +30(210) 4090561<br>F +30(210) 4011515<br>olp-sempo-secr@olp.gr<br>www.olp.gr |
| **Sempo Neo Ikonio** | Intermodal terminal | 18863 Perama<br>Greece | COSCO<br>T +30 210-4099100<br>F +30 210-4099101<br>info@pct.com.gr<br>www.pct.com.gr |
| **Strimonas** | Marshalling yard | | www.ose.gr |
| **Sindos** | Marshalling yard | | www.ose.gr |
| **Lianokladi** | Marshalling yard | | www.ose.gr |
| **Inoi** | Marshalling yard | | www.ose.gr |

***Source:*** www.railfreightlocations.eu

www.rfc7.eu

***RFC 7 CID Book III TT 2017-2018 – Terminal Description***

**Appendix I**

# Modal split

## a. Modal split in freight traffic in Germany

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill.tkm | % | mill.tkm | % | mill.tkm | % | mill.tkm | % | mill.tkm | % | |
| **2009** | 307 547 | **63,4** | 95 834 | **19,8** | 55 652 | **11,5** | 10 187,7 | **2,1** | 15950 | **3,3** | 485 170,7 |
| **2010** | 313 104 | **61,8** | 107 317 | **21,2** | 62 278 | **12,3** | 7 487,5 | **1,5** | 16259 | **3,2** | 506 445,5 |
| **2011** | 323 833 | **62,8** | 113 317 | **22,0** | 55 027 | **10,7** | 7 716,8 | **1,5** | 15623 | **3,0** | 515 516,8 |
| **2012** | 307 009 | **61,5** | 110 065 | **22,1** | 58 488 | **11,7** | 7 237,0 | **1,5** | 16207 | **3,2** | 499 006,0 |
| **2013** | 305 744 | **60,7** | 112 613 | **22,3** | 60 070 | **11,9** | 7 335,7 | **1,5** | 18 180 | **3,6** | 503 942,7 |
| **2014** | 310 142 | **61,2** | 112 629 | **22,2** | 59 093 | **11,7** | 7 184,1 | **1,4** | 17541 | **3,5** | 506 589,1 |

## b. Modal split in passenger traffic in Germany

| Year | Rail | | Bus | | Urban | | Individual | | Total mill. pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 81 206 | **7,80** | 62 100 | **5,97** | 16 500 | **1,59** | 881 100 | **84,65** | 1 040 906,00 |
| **2010** | 82 837 | **7,90** | 61 800 | **5,90** | 16 300 | **1,56** | 887 000 | **84,65** | 1 047 937,00 |
| **2011** | 85 400 | **8,07** | 61 400 | **5,80** | 16 600 | **1,57** | 894 400 | **84,55** | 1 057 800,00 |
| **2012** | 93 918 | **8,81** | 59 400 | **5,57** | 16 600 | **1,56** | 896 300 | **84,06** | 1 066 218,00 |
| **2013** | 89 450 | **8,36** | 60 500 | **5,66** | 16 700 | **1,56** | 903 100 | **84,42** | 1 069 750,00 |
| **2014** | 90 978 | **8,33** | 63 200 | **5,79** | 16 800 | **1,54** | 920 800 | **84,34** | 1 091 778,00 |

## c. Modal split in freight traffic in the Czech republic

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Totalmill.tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill.tkm | % | mill.tkm | % | mill.tkm | % | mill.tkm | % | mill.tkm | % | |
| **2009** | 44 955 | **74,98** | 12 791 | **21,33** | 33 | **0,06** | 22,4 | **0,04** | 2156 | **3,60** | 59 957,4 |
| **2010** | 51 832 | **76,39** | 13 770 | **20,29** | 43 | **0,06** | 18,0 | **0,03** | 2191 | **3,23** | 67 854,0 |
| **2011** | 54 830 | **77,05** | 14 316 | **20,12** | 42 | **0,06** | 16,7 | **0,02** | 1954 | **2,75** | 71 158,7 |
| **2012** | 51 228 | **75,95** | 14 267 | **21,15** | 38 | **0,06** | 11,1 | **0,02** | 1907 | **2,83** | 67 451,1 |
| **2013** | 54 893 | **77,49** | 13 965 | **19,71** | 25 | **0,04** | 19,9 | **0,03** | 1 933 | **2,73** | 70 835,9 |
| **2014** | 54 092 | **76,38** | 14 574 | **20,58** | 27 | **0,04** | 30,8 | **0,04** | 2100 | **2,97** | 70 823,8 |

## d. Modal split in passenger traffic in the Czech republic

| Year | Rail | | Bus | | Urban | | Individual | | Total mill. pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 6 472 | **6,23** | 16 100 | **15,50** | 9 000 | **8,66** | 72 300 | **69,60** | 103 872,00 |
| **2010** | 6 559 | **6,82** | 17 000 | **17,68** | 9 000 | **9,36** | 63 600 | **66,14** | 96 159,00 |
| **2011** | 6 669 | **6,90** | 15 800 | **16,34** | 8 700 | **9,00** | 65 500 | **67,76** | 96 669,00 |
| **2012** | 7 196 | **7,45** | 15 300 | **15,84** | 9 500 | **9,83** | 64 600 | **66,88** | 96 596,00 |
| **2013** | 7 512 | **7,70** | 15 700 | **16,10** | 9 600 | **9,84** | 64 700 | **66,35** | 97 512,00 |
| **2014** | 7 644 | **7,63** | 16 700 | **16,66** | 9 600 | **9,58** | 66 300 | **66,14** | 100 244,00 |

## e. Modal split in freight traffic in Austria

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 29 075 | **53,76** | 17 767 | **28,39** | 2 003 | **3,70** | 341,5 | **0,63** | 7 304 | **13,51** | 54 078,5 |
| **2010** | 28 659 | **50,92** | 19 833 | **31,78** | 2 375 | **4,22** | 357,9 | **0,64** | 7 000 | **12,44** | 56 277,9 |
| **2011** | 28 542 | **50,46** | 20 345 | **32,33** | 2 123 | **3,75** | 383,4 | **0,68** | 7 228 | **12,78** | 56 564,4 |
| **2012** | 26 089 | **49,21** | 19 499 | **32,57** | 2 191 | **4,13** | 322,1 | **0,61** | 7 146 | **13,48** | 53 017,1 |
| **2013** | 24 213 | **45,50** | 19 278 | **33,70** | 2 353 | **4,42** | 326,4 | **0,61** | 8 392 | **15,77** | 53 218,4 |
| **2014** | 24 299 | **44,69** | 20 494 | **35,44** | 2 177 | **4,00** | 370,0 | **0,68** | 8 259 | **15,19** | 54 375,0 |

## f. Modal split in passenger traffic in Austria

| Year | Rail | | Bus | | Urban | | Individual | | Total mill.pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 10 184 | **10,30** | 9 200 | **9,30** | 6 800 | **6,88** | 72 700 | **73,52** | 98 884,00 |
| **2010** | 10 263 | **10,20** | 10 000 | **9,93** | 6 900 | **6,85** | 73 500 | **73,02** | 100 663,00 |
| **2011** | 10 778 | **10,55** | 9 900 | **9,69** | 7 000 | **6,85** | 74 500 | **72,91** | 102 178,00 |
| **2012** | 11 211 | **10,95** | 9 900 | **9,67** | 7 100 | **6,93** | 74 200 | **72,45** | 102 411,00 |
| **2013** | 11 804 | **11,38** | 9 900 | **9,55** | 7 200 | **6,94** | 74 800 | **72,13** | 103 704,00 |
| **2014** | 11 981 | **11,34** | 10 100 | **9,56** | 7 000 | **6,62** | 76 600 | **72,48** | 105 681,00 |

## g. Modal split in freight traffic in the Slovak republic

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 27 705 | **67,68** | 6 931 | **16,93** | 899 | **2,20** | 0,2 | **0,00** | 5400 | **13,19** | 40 935,2 |
| **2010** | 27 575 | **65,94** | 8 054 | **19,26** | 1 189 | **2,84** | N/A | - | 5000 | **11,96** | 41 818,0 |
| **2011** | 29 179 | **67,82** | 7 912 | **18,39** | 931 | **2,16** | N/A | - | 5000 | **11,62** | 43 022,0 |
| **2012** | 29 693 | **70,12** | 7 468 | **17,64** | 986 | **2,33** | N/A | - | 4200 | **9,92** | 42 347,0 |
| **2013** | 30 147 | **67,92** | 8 335 | **18,78** | 1 006 | **2,27** | N/A | - | 4 900 | **11,04** | 44 388,0 |
| **2014** | 31 358 | **69,21** | 8 544 | **18,86** | 905 | **2,00** | N/A | - | 4500 | **9,93** | 45 307,0 |

## h. Modal split in passenger traffic in the Slovak Republic

| Year | Rail | | Bus | | Urban | | Individual | | Total mill. pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 2 264 | **6,59** | 5 400 | **15,71** | 300 | **0,87** | 26 400 | **76,82** | 34 364,00 |
| **2010** | 2 309 | **6,63** | 5 300 | **15,23** | 300 | **0,86** | 26 900 | **77,28** | 34 809,00 |
| **2011** | 2 431 | **6,92** | 5 500 | **15,66** | 300 | **0,85** | 26 900 | **76,57** | 35 131,00 |
| **2012** | 2 459 | **7,01** | 5 400 | **15,40** | 300 | **0,86** | 26 900 | **76,73** | 35 059,00 |
| **2013** | 2 485 | **7,04** | 5 300 | **15,02** | 300 | **0,85** | 27 200 | **77,09** | 35 285,00 |
| **2014** | 2 583 | **7,26** | 5 400 | **15,18** | 300 | **0,84** | 27 300 | **76,72** | 35 583,00 |

## i. Modal split in freight traffic in Hungary

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 35 373 | **75,39** | 6 699 | **14,28** | 1 831 | **3,90** | 9,8 | **0,02** | 3010 | **6,41** | 46 922,8 |
| **2010** | 33 721 | **71,79** | 7 635 | **16,26** | 2 393 | **5,09** | 5,6 | **0,01** | 3214 | **6,84** | 46 968,6 |
| **2011** | 34 529 | **73,43** | 7 526 | **16,01** | 1 840 | **3,91** | 5,9 | **0,01** | 3119 | **6,63** | 47 019,9 |
| **2012** | 33 736 | **73,85** | 7 205 | **15,77** | 1 982 | **4,34** | 0,5 | **0,00** | 2760 | **6,04** | 45 683,5 |
| **2013** | 35 818 | **71,40** | 9 722 | **19,38** | 1 924 | **3,84** | N/A | - | 2 702 | **5,39** | 50 166,0 |
| **2014** | 37 517 | **71,76** | 10 158 | **19,43** | 1 811 | **3,46** | N/A | - | 2797 | **5,35** | 52 283,0 |

## j. Modal split in passenger traffic in Hungary

| Year | Rail | | Bus | | Urban | | Individual | | Total mill. pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 8 004 | **9,86** | 16 300 | **20,07** | 2 500 | **3,08** | 54 400 | **66,99** | 81 204,00 |
| **2010** | 7 653 | **9,66** | 16 500 | **20,82** | 2 500 | **3,15** | 52 600 | **66,37** | 79 253,00 |
| **2011** | 7 763 | **9,82** | 16 500 | **20,87** | 2 500 | **3,16** | 52 300 | **66,15** | 79 063,00 |
| **2012** | 7 769 | **9,81** | 17 100 | **21,60** | 2 500 | **3,16** | 51 800 | **65,43** | 79 169,00 |
| **2013** | 7 806 | **9,86** | 17 100 | **21,59** | 2 500 | **3,16** | 51 800 | **65,40** | 79 206,00 |
| **2014** | 7 710 | **9,54** | 17 600 | **21,78** | 2 800 | **3,46** | 52 700 | **65,21** | 80 810,00 |

## k. Modal split in freight traffic in Romania

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 34 269 | **60,00** | 9 832 | **17,21** | 11 765 | **20,60** | 4,0 | **0,01** | 1243 | **2,18** | 57 113,0 |
| **2010** | 25 889 | **49,04** | 11 587 | **21,95** | 14 317 | **27,12** | 5,2 | **0,01** | 996 | **1,89** | 52 794,2 |
| **2011** | 26 349 | **50,10** | 13 924 | **26,48** | 11 409 | **21,70** | 6,1 | **0,01** | 900 | **1,71** | 52 588,1 |
| **2012** | 29 662 | **53,32** | 12 662 | **22,76** | 12 520 | **22,50** | 5,6 | **0,01** | 785 | **1,41** | 55 634,6 |
| **2013** | 34 026 | **57,02** | 12 567 | **21,06** | 12 242 | **20,52** | 5,3 | **0,01** | 829 | **1,39** | 59 669,3 |
| **2014** | 35 136 | **58,59** | 12 085 | **20,15** | 11 760 | **19,61** | 5,3 | **0,01** | 984 | **1,64** | 59 970,3 |

## l. Modal split in passenger traffic in Romania

| Year | Rail | | Bus | | Urban | | Individual | | Total mill. pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 6 128 | **6,04** | 12 800 | **12,62** | 7 000 | **6,90** | 75 500 | **74,44** | 101 428,00 |
| **2010** | 5 437 | **5,43** | 12 000 | **12,00** | 7 100 | **7,10** | 75 500 | **75,47** | 100 037,00 |
| **2011** | 5 063 | **5,12** | 11 800 | **11,92** | 7 100 | **7,17** | 75 000 | **75,79** | 98 963,00 |
| **2012** | 4 550 | **4,48** | 12 600 | **12,40** | 7 500 | **7,38** | 77 000 | **75,75** | 101 650,00 |
| **2013** | 4 382 | **4,15** | 12 900 | **12,23** | 7 800 | **7,39** | 80 400 | **76,22** | 105 482,00 |
| **2014** | 4 971 | **4,43** | 14 100 | **12,56** | 8 000 | **7,13** | 85 200 | **75,89** | 112 271,00 |

## m. Modal split in freight traffic in Bulgaria

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 17 742 | **66,48** | 3 145 | **11,51** | 5 436 | **20,37** | 1,7 | **0,01** | 437 | **1,64** | 26 689,7 |
| **2010** | 19 433 | **67,29** | 3 064 | **10,33** | 6 048 | **20,94** | 2,1 | **0,01** | 415 | **1,44** | 28 880,1 |
| **2011** | 21 214 | **72,71** | 3 291 | **10,86** | 4 310 | **14,77** | 2,3 | **0,01** | 481 | **1,65** | 29 175,3 |
| **2012** | 24 372 | **73,80** | 2 907 | **8,26** | 5 349 | **16,20** | 1,9 | **0,01** | 573 | **1,74** | 33 022,9 |
| **2013** | 27 097 | **75,91** | 3 246 | **7,26** | 5 374 | **15,05** | 1,7 | **0,00** | 633 | **1,77** | 35 696,7 |
| **2014** | 27 854 | **77,19** | 3 439 | **7,13** | 5 074 | **14,06** | 1,7 | **0,00** | 583 | **1,62** | 36 084,7 |

## n. Modal split in passenger traffic in Bulgaria

| Year | Rail | | Bus | | Urban | | Individual | | Total mill.pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 2 138 | **3,58** | 10 500 | **17,61** | 700 | **1,17** | 46 300 | **77,64** | 59 638,00 |
| **2010** | 2 090 | **3,46** | 10 600 | **17,52** | 900 | **1,49** | 46 900 | **77,53** | 60 490,00 |
| **2011** | 2 059 | **3,33** | 10 800 | **17,46** | 900 | **1,45** | 48 100 | **77,76** | 61 859,00 |
| **2012** | 1 870 | **2,96** | 10 500 | **16,65** | 1 000 | **1,59** | 49 700 | **78,80** | 63 070,00 |
| **2013** | 1 821 | **2,82** | 10 300 | **15,96** | 1 000 | **1,55** | 51 400 | **79,66** | 64 521,00 |
| **2014** | 1 698 | **2,50** | 11 500 | **16,94** | 700 | **1,03** | 54 000 | **79,53** | 67 898,00 |

### o. Modal split in freight traffic in Greece

| Year | Road | | Rail | | Water | | Air | | Pipeline | | Total mill. tkm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | mill. tkm | % | |
| **2009** | 28 585 | **97,33** | 552 | **1,88** | 0 | **0,00** | 31,4 | **0,11** | 200 | **0,68** | 29 368,4 |
| **2010** | 29 815 | **97,33** | 614 | **2,00** | 0 | **0,00** | 4,9 | **0,02** | 200 | **0,65** | 30 633,9 |
| **2011** | 20 597 | **97,37** | 352 | **1,66** | 0 | **0,00** | 4,2 | **0,02** | 200 | **0,95** | 21 153,2 |
| **2012** | 20 839 | **97,72** | 283 | **1,33** | 0 | **0,00** | 2,3 | **0,01** | 200 | **0,94** | 21 324,3 |
| **2013** | 18 970 | **97,75** | 237 | **1,22** | 0 | **0,00** | 0,6 | **0,00** | 200 | **1,03** | 19 407,6 |
| **2014** | 19 223 | **97,32** | 311 | **1,57** | 0 | **0,00** | 19,4 | **0,10** | 200 | **1,01** | 19 753,4 |

### p. Modal split in passenger traffic in Greece

| Year | Rail | | Bus | | Urban | | Individual | | Total mill.pkm |
|---|---|---|---|---|---|---|---|---|---|
| | mill. pkm | % | mill. pkm | % | mill. pkm | % | mill. pkm | % | |
| **2009** | 1 467 | **1,17** | 20 900 | **16,67** | 1 700 | **1,36** | 101 300 | **80,80** | 125 367,00 |
| **2010** | 1 383 | **1,12** | 21 100 | **17,05** | 1 700 | **1,37** | 99 600 | **80,46** | 123 783,00 |
| **2011** | 958 | **0,78** | 21 200 | **17,35** | 1 700 | **1,39** | 98 300 | **80,47** | 122 158,00 |
| **2012** | 832 | **0,69** | 21 100 | **17,51** | 1 700 | **1,41** | 96 900 | **80,39** | 120 532,00 |
| **2013** | 1 056 | **0,88** | 21 000 | **17,56** | 1 700 | **1,42** | 95 800 | **80,13** | 119 556,00 |
| **2014** | 1 072 | **0,89** | 21 000 | **17,40** | 1 700 | **1,41** | 96 900 | **80,30** | 120 672,00 |

## Source:

**Freight transport**

***Rail transport, Road transport, Inland transport***

Eurostat (http://ec.europa.eu/eurostat/data/database)

***Air transport***

The World Bank

*http://data.worldbank.org/indicator/IS.AIR.GOOD.MT.K1?end=2015&locations=DE&start=1970&view=chart*

**Passenger transport:**

***Rail transport***

Eurostat (http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do)

***Bus transport, Urban transport, Individual transport***

Statistical pocketbook 2016

(https://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2016_en)

**Appendix J**

## Rail freight transport by group of goods

### a. Standard goods classification

1. Products of agriculture, hunting, and forestry, fisth and other fishing products
2. Coal and lignite, crude petroleum and natural gas
3. Metal ores and other mining and quarrying products, peat, uranium and thorium
4. Food products, beverages and tabacco
5. Textiles and textile products, leather and leather products
6. Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media
7. Coke and refined petroleum products
8. Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel
9. Other non metallic mineral products
10. Basic metals, fabricated metal products, except machinery and equipment
11. Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks
12. Transport equipment
13. Furniture, other manufactured good n.e.c.
14. Secondary raw materials, municipal wastes and other wastes
15. Mail, parcels
16. Equipment and material utilized in the transport of goods
17. Good moved in the course of household and office removals, baggage and articles accompanying travellers, motor vehicles being moved for repair, other non market goods n.e.c.
18. Grouped goods: a mixture of types of goods which are transported together
19. Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16
20. Other goods n.e.c.

## b. Standard goods classification in Germany

| Germany (2015) | % |
|---|---|
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 21,12 |
| Basic metals, fabricated metal products, except machinery and equipment | 16,09 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 13,68 |
| Coke and refined petroleum products | 11,59 |
| Coal and lignite, crude petroleum and natural gas | 10,98 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 8,07 |
| Transport equipment | 3,85 |
| Secondary raw materials, municipal wastes and other wastes | 3,75 |
| Other non-metallic mineral products | 3,48 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 2,49 |
| Grouped goods: a mixture of types of goods which are transported together | 1,28 |
| Equipment and material utilized in the transport of goods | 1,15 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 1,11 |
| Food products, beverages and tobacco | 0,54 |
| Other goods n.e.c. | 0,47 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,31 |
| Furniture, other manufactured good n.e.c. | 0,02 |
| Mail, parcels | 0,01 |
| Textiles and textile products, leather and leather products | 0,01 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,01 |
| **Total** | **100,00** |

## c. Standard goods classification in Czech Republic

| Czech Republic (2015) | % |
|---|---|
| Coal and lignite, crude petroleum and natural gas | 30,96 |
| Grouped goods: a mixture of types of goods which are transported together | 14,20 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 12,23 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 9,25 |
| Coke and refined petroleum products | 9,15 |
| Basic metals, fabricated metal products, except machinery and equipment | 6,07 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 4,47 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 4,21 |
| Secondary raw materials, municipal wastes and other wastes | 2,99 |
| Transport equipment | 2,88 |
| Other non-metallic mineral products | 1,56 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 0,97 |
| Food products, beverages and tobacco | 0,41 |
| Other goods n.e.c. | 0,39 |
| Equipment and material utilized in the transport of goods | 0,21 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,03 |
| Textiles and textile products, leather and leather products | 0,01 |
| Furniture, other manufactured good n.e.c. | 0,00 |
| Mail, parcels | 0,00 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| **Total** | **100,00** |

## d. Standard goods classification in Austria

| Austria (2015) | % |
|---|---|
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 35,60 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 12,72 |
| Basic metals, fabricated metal products, except machinery and equipment | 8,27 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 7,42 |
| Coke and refined petroleum products | 6,63 |
| Secondary raw materials, municipal wastes and other wastes | 6,20 |
| Transport equipment | 5,91 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 5,26 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 4,49 |
| Coal and lignite, crude petroleum and natural gas | 3,46 |
| Other non-metallic mineral products | 1,69 |
| Food products, beverages and tobacco | 1,17 |
| Equipment and material utilized in the transport of goods | 0,89 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,21 |
| Mail, parcels | 0,02 |
| Grouped goods: a mixture of types of goods which are transported together | 0,02 |
| Furniture, other manufactured good n.e.c. | 0,02 |
| Textiles and textile products, leather and leather products | 0,00 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| Other goods n.e.c. | 0,00 |
| **Total** | **100,00** |

## e. Standard goods classification in Slovakia

| Slovakia (2015) | % |
|---|---|
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 33,26 |
| Other goods n.e.c. | 16,62 |
| Basic metals, fabricated metal products, except machinery and equipment | 9,18 |
| Coal and lignite, crude petroleum and natural gas | 7,85 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 7,78 |
| Coke and refined petroleum products | 6,86 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 6,86 |
| Secondary raw materials, municipal wastes and other wastes | 3,59 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 3,13 |
| Transport equipment | 1,96 |
| Other non-metallic mineral products | 1,36 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 0,64 |
| Equipment and material utilized in the transport of goods | 0,45 |
| Food products, beverages and tobacco | 0,41 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,03 |
| Furniture, other manufactured good n.e.c. | 0,01 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| Textiles and textile products, leather and leather products | 0,00 |
| Grouped goods: a mixture of types of goods which are transported together | 0,00 |
| Mail, parcels | 0,00 |
| **Total** | **100,00** |

## f. Standard goods classification in Hungary

| Hungary (2015) | % |
|---|---|
| Other goods n.e.c. | 16,53 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 15,97 |
| Coal and lignite, crude petroleum and natural gas | 14,39 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 9,97 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 9,16 |
| Coke and refined petroleum products | 8,23 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 7,83 |
| Basic metals, fabricated metal products, except machinery and equipment | 7,38 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 2,46 |
| Other non-metallic mineral products | 1,77 |
| Secondary raw materials, municipal wastes and other wastes | 1,75 |
| Transport equipment | 1,72 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 1,13 |
| Food products, beverages and tobacco | 0,92 |
| Grouped goods: a mixture of types of goods which are transported together | 0,44 |
| Equipment and material utilized in the transport of goods | 0,20 |
| Furniture, other manufactured good n.e.c. | 0,09 |
| Textiles and textile products, leather and leather products | 0,05 |
| Mail, parcels | 0,00 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| **Total** | **100,00** |

## g. Standard goods classification in Romania

| Romania (2015) | % |
|---|---|
| Coal and lignite, crude petroleum and natural gas | 35,87 |
| Coke and refined petroleum products | 30,49 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 6,55 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 4,64 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 4,44 |
| Basic metals, fabricated metal products, except machinery and equipment | 4,15 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 3,84 |
| Other non-metallic mineral products | 3,41 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 2,40 |
| Secondary raw materials, municipal wastes and other wastes | 1,19 |
| Food products, beverages and tobacco | 1,13 |
| Other goods n.e.c. | 0,77 |
| Equipment and material utilized in the transport of goods | 0,39 |
| Grouped goods: a mixture of types of goods which are transported together | 0,28 |
| Transport equipment | 0,26 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,13 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,04 |
| Textiles and textile products, leather and leather products | 0,02 |
| Furniture, other manufactured good n.e.c. | 0,01 |
| Mail, parcels | 0,00 |
| **Total** | **100,00** |

## h. Standard goods classification in Bulgaria

| Bulgaria (2015) | % |
|---|---|
| Coal and lignite, crude petroleum and natural gas | 23,13 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 21,80 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 16,36 |
| Coke and refined petroleum products | 9,29 |
| Basic metals, fabricated metal products, except machinery and equipment | 6,32 |
| Other non-metallic mineral products | 6,20 |
| Secondary raw materials, municipal wastes and other wastes | 5,52 |
| Grouped goods: a mixture of types of goods which are transported together | 2,62 |
| Food products, beverages and tobacco | 2,29 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 1,92 |
| Transport equipment | 1,41 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 1,03 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 0,94 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 0,49 |
| Equipment and material utilized in the transport of goods | 0,28 |
| Other goods n.e.c. | 0,23 |
| Textiles and textile products, leather and leather products | 0,13 |
| Furniture, other manufactured good n.e.c. | 0,03 |
| Mail, parcels | 0,00 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| **Total** | **100,00** |

## i. Standard goods classification in Greece

| Greece (2015) | % |
|---|---|
| Equipment and material utilized in the transport of goods | 41,34 |
| Basic metals, fabricated metal products, except machinery and equipment | 18,60 |
| Wood and product of wood and cork (except furniture), articles of straw and plaiting materials, pulp, paper and paper products, printed matter and recorded media | 9,05 |
| Other non-metallic mineral products | 7,34 |
| Coke and refined petroleum products | 6,56 |
| Product of agriculture, hunting and forestry, fish and other fishing products | 5,42 |
| Food products, beverages and tobacco | 4,06 |
| Coal and lignite, crude petroleum and natural gas | 2,28 |
| Unidentifiable goods: goods which for any reason cannot be identified and therefore cannot be assigned to groups 01-16 | 1,71 |
| Chemicals, chemical product, and man-made fibers, rubber and plastic products, nuclear fuel | 1,64 |
| Machinery and equipment n.e.c., office machinery and computers, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks | 1,07 |
| Furniture, other manufactured good n.e.c. | 0,93 |
| Metal ores and other mining and quarrying products, peat, uranium and thorium | 0,00 |
| Textiles and textile products, leather and leather products | 0,00 |
| Transport equipment | 0,00 |
| Secondary raw materials, municipal wastes and other wastes | 0,00 |
| Mail, parcels | 0,00 |
| Good moved in the course of household and office removals, baggage and articles accompanying travelers, motor vehicles being moved for repair, other non-market goods n.e.c. | 0,00 |
| Grouped goods: a mixture of types of goods which are transported together | 0,00 |
| Other goods n.e.c. | 0,00 |
| **Total** | **100,00** |

**Source***: Eurostat (Railway transport - goods transported, by group of goods - from 2008 onwards based on NST 2007 (1000 t, million tkm)*

**Appendix K**

## Gradient

### a. Gradient in Germany

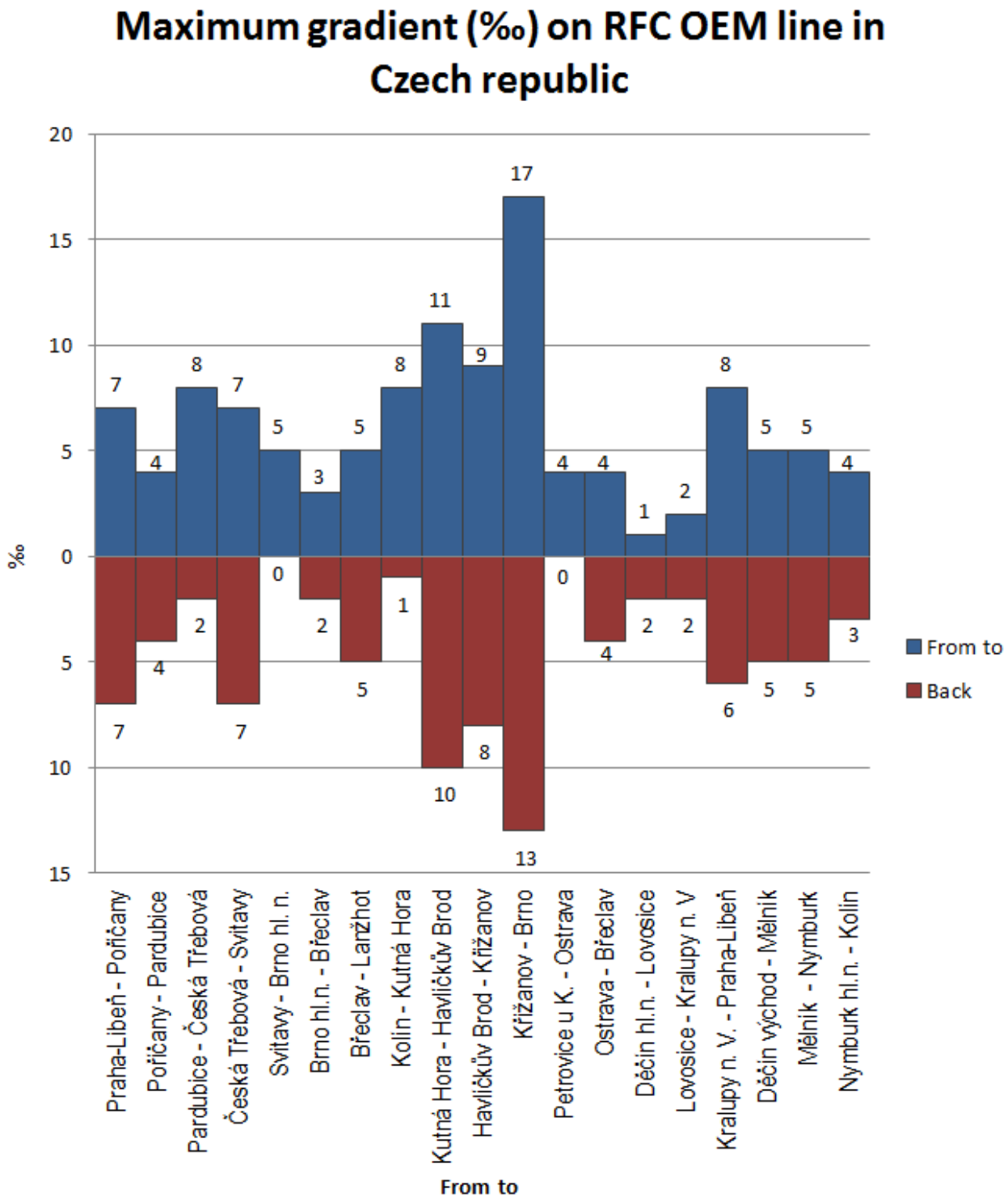
| Line section | Gradient |
|---|---|
| **Bremerhaven - Bremen** | |
| Bremerhaven Seehafen DB-Grenze - Bremerhaven-Speckenbüttel | 5 bis < 10 |
| Bremerhaven-Speckenbüttel - Bremerhaven Hbf | 0 bis < 5 |
| Bremerhaven Hbf -Bremerhaven-Wulsdorf | 5 bis < 10 |
| Bremerhaven-Wulsdorf - Lübberstedt | 0 bis < 5 |
| Lübberstedt -Oldenbüttel | 5 bis < 10 |
| Oldenbüttel -Ritterhude | 0 bis < 5 |
| Ritterhude -Bremen-Burg | 5 bis < 10 |
| Bremen-Burg - Bremen Hbf | 0 bis < 5 |
| **Wilhelmshaven - Bremen** | |
| Wilhelmshaven - Wilhelmshaven West | 0 bis < 5 |
| Wilhelmshaven West -Varel (Oldb) | 5 bis < 10 |
| Varel (Oldb) - Jaderberg | 0 bis < 5 |
| Jaderberg -Rastede | 5 bis < 10 |
| Rastede -Ofenerdiek | 0 bis < 5 |
| Ofenerdiek - Oldenburg (Oldb) Hbf | 5 bis < 10 |
| Oldenburg (Oldb) Hbf - Hoykenkamp | 0 bis < 5 |
| Hoykenkamp - Bremen Hbf | 5 bis < 10 |
| Bremen Hbf - Bremen-Mahndorf | < 20 |
| **Bremen - Magdeburg** | |
| Bremen-Mahndorf - Langwedel | 0 bis < 5 |
| Langwedel - Dörverden | 5 bis < 10 |
| Dörverden - Dedensen-Gümmer | 0 bis < 5 |
| Dedensen-Gümmer - Ahlem | < 20 |
| Ahlem - Hannover-Linden Hafen | 0 bis < 5 |
| Hannover-Linden Hafen - Misburg | 5 bis < 10 |
| Misburg - Lehrte | < 20 |
| Lehrte - Hämelerwald | 5 bis < 10 |
| Hämelerwald - Vechelde | 0 bis < 5 |
| Vechelde - Braunschweig Hbf | 5 bis < 10 |
| Braunschweig Hbf - Braunschweig Schmiedekamp | 10 bis < 15 |
| Braunschweig Schmiedekamp - Braunschweig-Buchhorst | 5 bis < 10 |
| Braunschweig-Buchhorst - Schandelah | 0 bis < 5 |
| Schandelah - Königslutter | 5 bis < 10 |
| Königslutter - Frellstedt | 0 bis < 5 |
| Frellstedt - Helmstedt | < 20 |

| Line section | Gradient |
|---|---|
| Helmstedt - Dreileben-Drackenstedt | 5 bis < 10 |
| Dreileben-Drackenstedt - Ochtmersleben | 0 bis < 5 |
| Ochtmersleben - Magdeburg-Sudenburg | 5 bis < 10 |
| Magdeburg-Sudenburg - Magdeburg-Neustadt | < 20 |
| Magdeburg-Neustadt - Magdeburg-Herrenkrug | 5 bis < 10 |
| **Magdeburg - Dresden** | |
| Magdeburg-Herrenkrug - Biederitz | 5 bis < 10 |
| Biederitz - Gommern | 0 bis < 5 |
| Gommern - Zerbst/Anhalt | 5 bis < 10 |
| Zerbst/Anhalt - Rodleben | 0 bis < 5 |
| Rodleben - Coswig (Anh) Gbf | < 20 |
| Coswig (Anh) Gbf - Lutherstadt Wittenberg-Piesteritz | 0 bis < 5 |
| Lutherstadt Wittenberg-Piesteritz - Lutherstadt Wittenberg Altstadt | 5 bis < 10 |
| Lutherstadt Wittenberg Altstadt - Fermerswalde | 0 bis < 5 |
| Fermerswalde - Falkenberg (Elster) | 5 bis < 10 |
| Falkenberg (Elster) - Neuburxdorf | 0 bis < 5 |
| Neuburxdorf - Röderau | < 20 |
| Röderau - Weißig (b Großenhain) | 0 bis < 5 |
| Weißig (b Großenhain) - Leckwitz | 5 bis < 10 |
| Leckwitz - Weinböhla Haltepunkt | < 20 |
| Weinböhla Haltepunkt - Coswig (bei Dresden) | 5 bis < 10 |
| Coswig (bei Dresden) - Radebeul Nord | < 20 |
| Radebeul Nord - Radebeul Ost | 5 bis < 10 |
| Radebeul Ost - Dresden-Neustadt | < 20 |
| Dresden-Neustadt - Dresden Mitte | 5 bis < 10 |
| Dresden Mitte - Dresden Hbf | 10 bis < 15 |
| Dresden Hbf - Dresden-Niedersedlitz Güteranlage (DHD) | 0 bis < 5 |
| **Dresden - Bad Schandau** | |
| Dresden-Niedersedlitz Güteranlage (DHD) - Bad Schandau Grenze | 0 bis < 5 |
| **Dresden - Rostock** | |
| Dresden Freiberger Straße - Dresden-Friedrichstadt | < 20 |
| Dresden-Friedrichstadt - Dresden-Cotta (Bstg) | 10 bis < 15 |
| Dresden-Cotta (Bstg) - Dresden-Kemnitz | 5 bis < 10 |
| Dresden-Kemnitz - Cossebaude | 0 bis < 5 |
| Cossebaude - Radebeul-Naundorf | 5 bis < 10 |
| Radebeul-Naundorf - Radebeul-Naundorf (Abzw) | 0 bis < 5 |
| Radebeul-Naundorf (Abzw) - Zabeltitz | 5 bis < 10 |
| Zabeltitz - Frauenhain | 0 bis < 5 |
| Frauenhain - Prösen-Wainsdorf / Prösen Ost | 5 bis < 10 |
| Prösen-Wainsdorf / Prösen Ost - Elsterwerda | 0 bis < 5 |
| Elsterwerda - Drahnsdorf | 5 bis < 10 |
| Drahnsdorf - Klasdorf Glashütte | 0 bis < 5 |
| Klasdorf Glashütte - Zossen | 5 bis < 10 |
| Zossen - Rangsdorf | 0 bis < 5 |

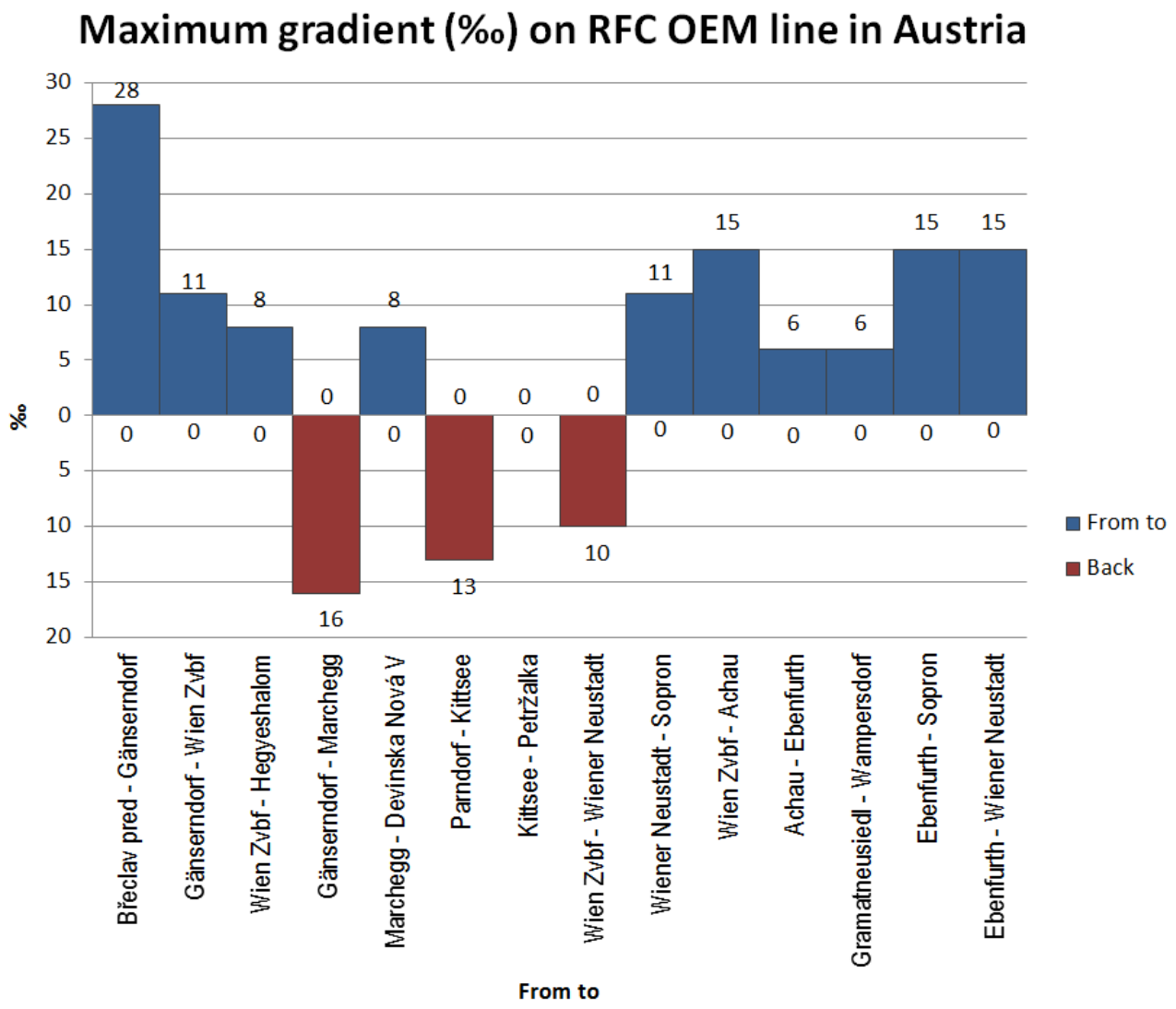
| Line section | Gradient |
|---|---|
| Rangsdorf - Dahlewitz | 5 bis < 10 |
| Dahlewitz - Glasower Damm Ost | < 20 |
| Glasower Damm Ost - Selchow West | 0 bis < 5 |
| Selchow West - Grünauer Kreuz Süd | < 20 |
| Grünauer Kreuz Süd - Berlin Eichgestell | 0 bis < 5 |
| Berlin Eichgestell - Eichgestell Nord | 10 bis < 15 |
| Eichgestell Nord - Biesdorfer Kreuz Süd | < 20 |
| Biesdorfer Kreuz Süd - Biesdorfer Kreuz Mitte | 10 bis < 15 |
| Biesdorfer Kreuz Mitte - Biesdorfer Kreuz Nord Strw 6067/6080 | 5 bis < 10 |
| Biesdorfer Kreuz Nord Strw 6067/6080 - Karower Kreuz Streckenwechsel 6067/6087 | 0 bis < 5 |
| Karower Kreuz Streckenwechsel 6067/6087 - Birkenwerder (b Berlin) | < 20 |
| Birkenwerder (b Berlin) - Borgsdorf | 0 bis < 5 |
| Borgsdorf - Sachsenhausen (Nordb) | 5 bis < 10 |
| Sachsenhausen (Nordb) - Nassenheide | 0 bis < 5 |
| Nassenheide - Dannenwalde | 5 bis < 10 |
| Dannenwalde - Fürstenberg (Havel) | 0 bis < 5 |
| Fürstenberg (Havel) - Neustrelitz Hbf | 5 bis < 10 |
| Neustrelitz Hbf - Kratzeburg | < 20 |
| Kratzeburg - Kargow | 0 bis < 5 |
| Kargow - Waren (Müritz) | 5 bis < 10 |
| Waren (Müritz) - Grabowhöfe | 10 bis < 15 |
| Grabowhöfe - Plaaz | 0 bis < 5 |
| Plaaz - Subzin-Liessow | 5 bis < 10 |
| Subzin-Liessow - Kavelstorf | 0 bis < 5 |
| Kavelstorf - Rostock Seehafen Süd | < 20 |
| **Magdeburg - Hamburg** | |
| Brücke - Magdeburg-Rothensee | < 20 |
| Magdeburg-Rothensee - Demker | 0 bis < 5 |
| Demker - Stendal (b Stendal) | 5 bis < 10 |
| Steinfeld (b Stendal) - Hohenwulsch | 0 bis < 5 |
| Hohenwulsch - Meßdorf | 5 bis < 10 |
| Meßdorf - Brunau-Packebusch | 0 bis < 5 |
| Brunau-Packebusch - Rademin | 5 bis < 10 |
| Rademin - Pretzier (Altm) | 0 bis < 5 |
| Pretzier (Altm) - Soltendieck | 5 bis < 10 |
| Soltendieck - Wieren | 0 bis < 5 |
| Wieren - Stederdorf (Kr Uelzen) | 5 bis < 10 |
| Stederdorf (Kr Uelzen) - Veerßen | 0 bis < 5 |
| Veerßen - Uelzen | 5 bis < 10 |
| Uelzen - Radbruch | 0 bis < 5 |

| Line section | Gradient |
|---|---|
| Radbruch - Ashausen | 5 bis < 10 |
| Ashausen - Stelle | 0 bis < 5 |
| Stelle - Maschen Rbf | 15 bis < 20 |
| Maschen Rbf - Hamburg-Harburg | < 20 |
| Hamburg-Harburg - Hamburg Süd DB-Grenze | 5 bis < 10 |

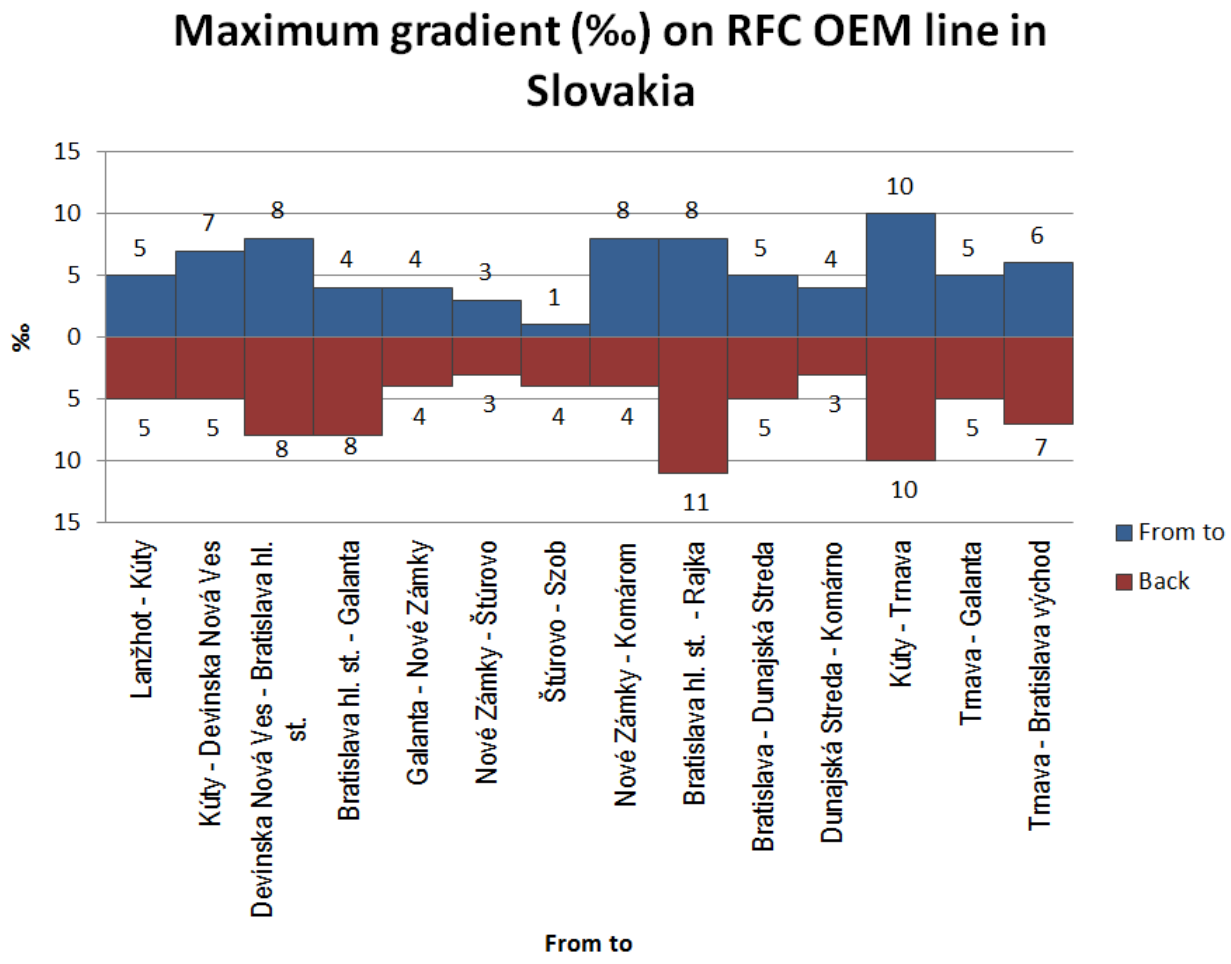
**b. Gradient in Czech Republic**



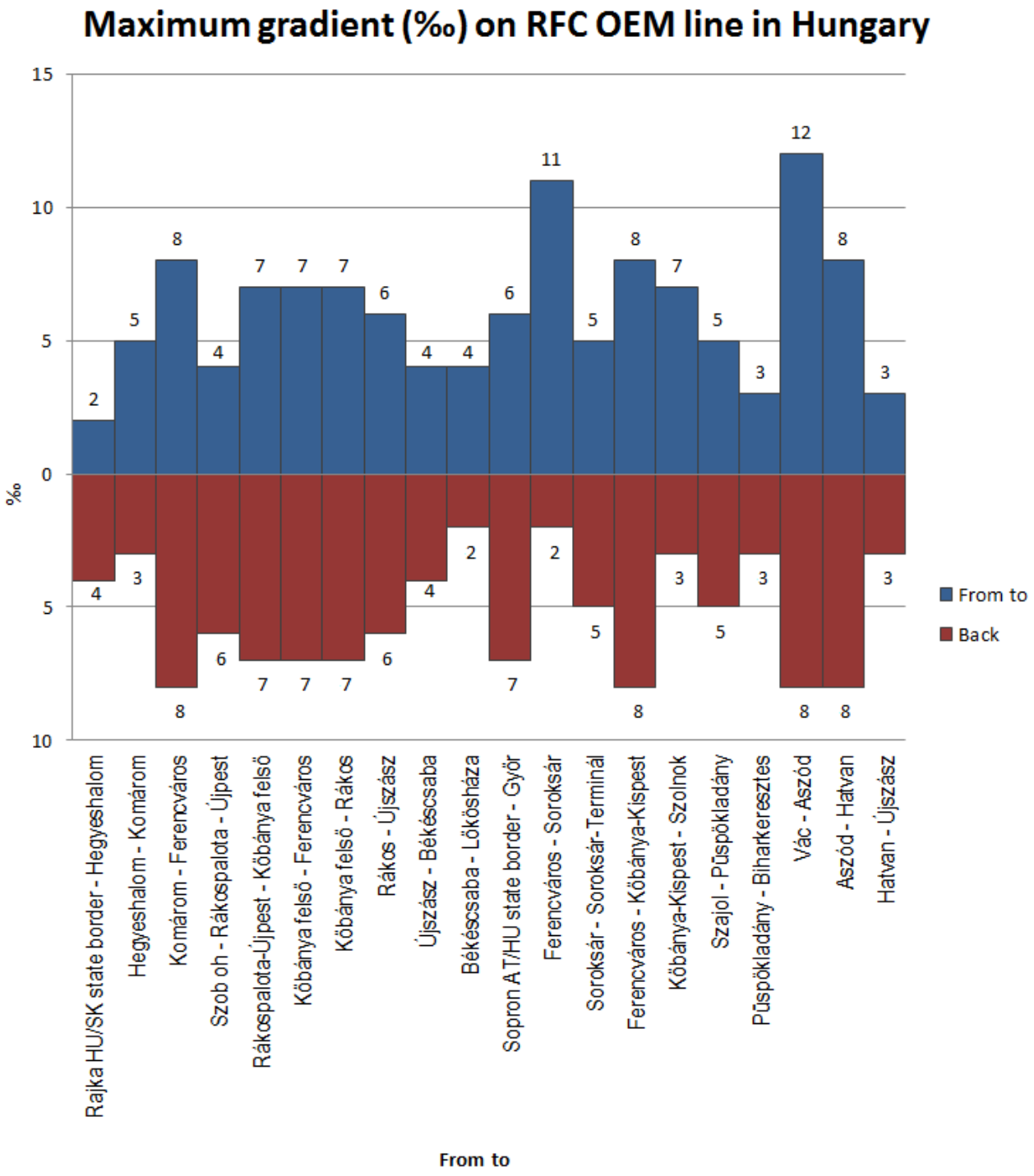
### c. Gradient in Austria



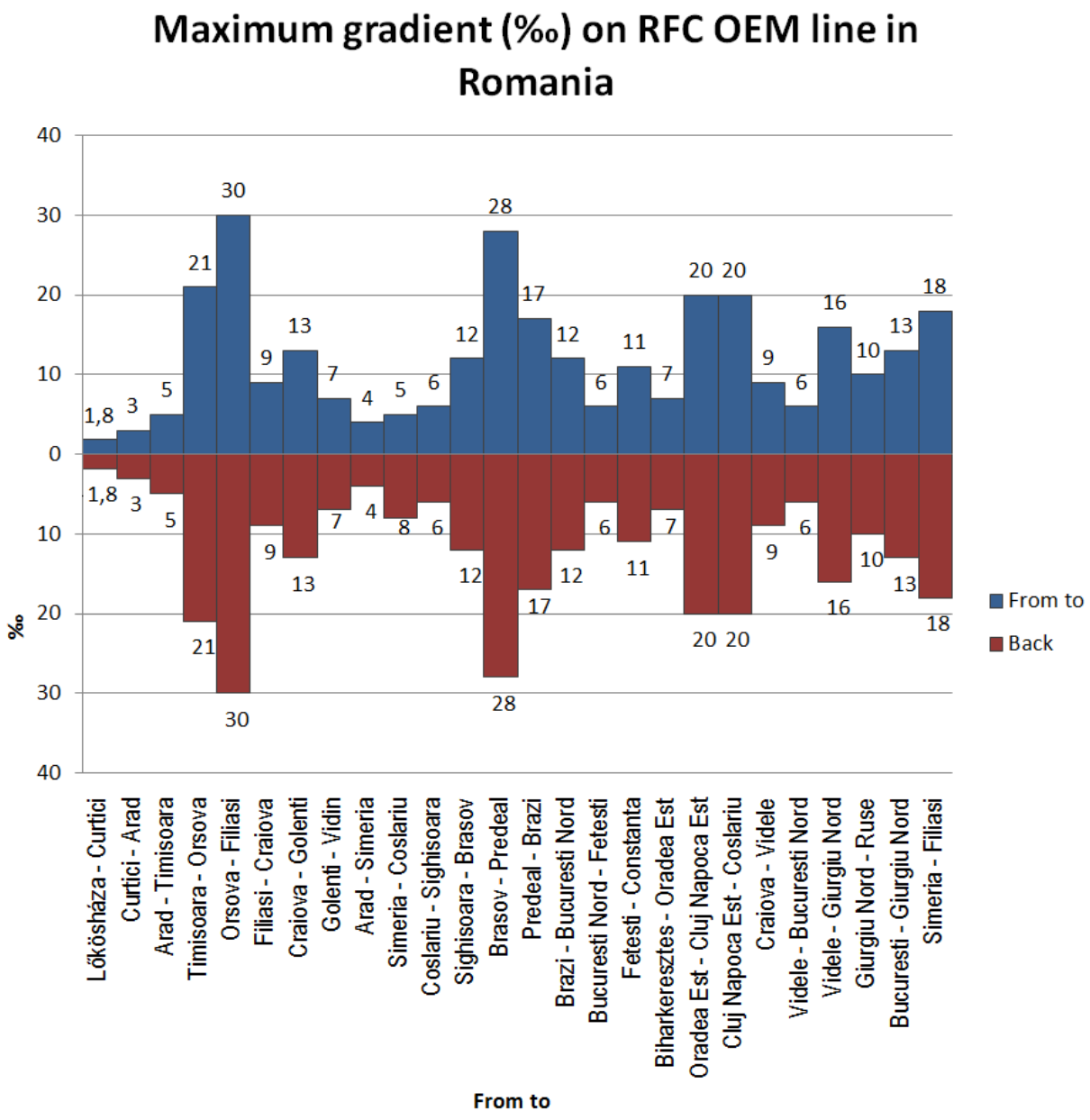
### d. Gradient in Slovakia



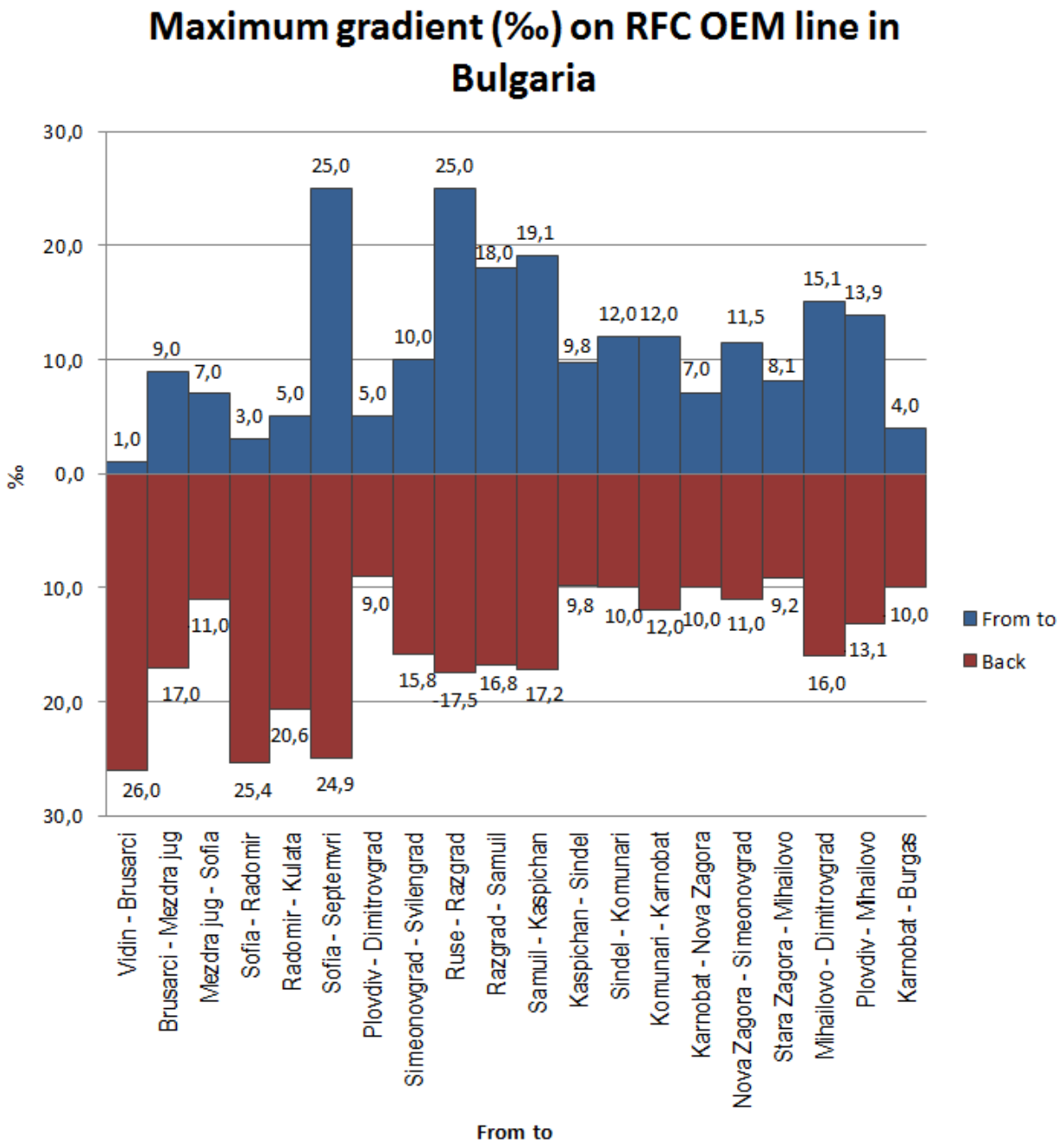
**e. Gradient in Hungary**



## f. Gradient in Romania



### g. Gradient in Bulgaria



### h. Gradient in Greece