Amber Rail Freight Corridor

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AMBER RAIL FREIGHT CORRIDOR
IMPLEMENTATION PLAN

Annex of the CID Book

PKP POLSKIE LINIE KOLEJOWE S.A.
The manager of the national railway network

ŽSR

MÁV

GYSEV Raaberbahn

VPE

Slovenske železnice
SŽ-Infrastruktura

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Glossary of terms and abbreviations

AB	Allocation Body
AG	Advisory Group
BSC	Balanced Scorecard
CEF	Connecting Europe Facility
CER	Community of European Railway and Infrastucture Company
CID	Corridor Information Document
CNC	Core Network Corridor
C-OSS	Corrridor One-Stop-Shops
EB	Executive Board
EC	European Commission
EEIG	European Economic Interest Group
EIM	European Rail Infrastructure Managers
ERTMS	European Railway Traffic Management System
ETI	Enabling Trade Index
FCA	Framework for Capacity Allocation
GCI	Global Competitiveness Index
HDI	Human Development Index
IEF	Index of Economic Freedom
IM	Infrastructure Manager
INEA	Innovation and Networks Executive Agency
IP	Implementation Plan
IRP	Internal Rules and Procedures
KPI	Key Performance Indicators
LoI	Letter of Intent
MB	Management Board
MoU	Memorandum of Understanding

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PaP	Pre-Arranged train Paths
PCS	Path Coordination System
PSA	Programme Support Action
RAG	Railway Advisory Group
RC	Reserve Capacity
RB	Regulatory Body
RFC	Rail Freight Corridor
RNE	RailNet Europe
RoC	Rules of Consultation
RU	Railway Undertaking
SERAC	Single European Railway Area Committee
SWOT	Strenghts, Weaknesses, Opportunities, Threats
TAG	Terminal Advisory Group
TCR	Temporary Capacity Restrictions
TEN-T	Trans-European Transport Network
TIS	Train Information System
TM	Traffic Management
TMS	Transport Market Study
TP&O	Train Performance & Operations
TT	Timetable
UIC	Union Internationale des Chemins de Fer (International Union of Railways)
UIRR	International Union of Combined Road-Rail Transport Companies
USS	User Satisfaction Survey

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1 Introduction

1.1 Legal Background

The EU Rail Freight Corridors (RFCs) are a key initiative and the forerunners to achieve a truly Single European Rail Area for rail freight and to respond to the urgent need for improvements of the for cross-border freight traffic. The general objective of the RFC concept is to foster co-operation across borders both at the level of Member States and rail infrastructure managers and, where relevant, capacity allocation bodies along key routes for European rail freight and to strengthen the involvement of users and terminals in the development of the European rail freight system.

The RFC concept aims at providing capacity of good quality for international freight trains through dedicated capacity products (pre-arranged train paths), coordinating capacity planning, traffic and infrastructure management and setting up Corridor - One Stop Shops as single contact points for customers. The involvement of corridor users is strengthened through the setting up of Advisory Groups for railway undertakings and terminals, through consultation procedures and regular customer satisfaction surveys.

The RFCs are based on Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight (RFC Regulation), which entered into force on 9 November 2010. It defines nine initial RFCs, of which six had to be established until November 2013 and the remaining three until November 2015[1]; the RFC Regulation also provided the possibility for the establishment of further RFCs on the initiative of Member States concerned. The first, entirely new, further RFC is the Amber rail freight corridor (RFC Amber), which was approved in December 2016 by the Single European Rail Area Committee (SERAC) and for which the legal base was published on 31 January 2017 in the Official Journal of the European Union. According to Commission Implementing Decision (EU) 2017/177, the route of RFC Amber connects Slovenia, Hungary, Slovakia and Poland. The RFC Regulation requires that the aforementioned Member States concerned set up the new RFC Amber in 2 years, thus it is currently under establishment and will become operational in January 2019.

[1] The Principal Route of the initial freight corridors was slightly amended by Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010

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1.2 Aim of the Implementation Plan

The purpose of this document is to create an inventory of the numerous tasks in connection with the establishment and the operation of RFC Amber. Taken into consideration the fact that the RFC Regulation allotted a limited time period for the infrastructure managers and allocation body to set up the rail freight corridor, it was necessary to concentrate on the essential steps that need to be taken. The members of the Management Board define in this document the conditions for making the corridor operational and for managing its operation and development by systematically listing the tasks, analysing the possible procedures, and choosing the most feasible solutions for every single field of activity.

This document summarizes the conclusions reached, and contains the commonly accepted rules applicable along the corridor. It also serves as a management tool for the Management Board and as a tool for supervising the proper operation of the corridor to the Executive Board. It is a basic document that shall be regularly updated with newly defined solutions, so it will become a point of reference that can continuously support the work of the members.

The Implementation Plan aims to present to the Executive Board for their approval (as required by article 9 of the Regulation 913) and to the European Commission the main characteristics of the RFC Amber, the measures taken so far and the planned procedures for its operation.

The Implementation Plan is also to be published on the website of RFC Amber, in order to ensure transparency, encourage networking with other corridors and to attract the interest of potential business partners, stakeholders and the interested general public.

1.3 Aim of RFC Amber Members

The RFC Amber is defined by Commission Implementing Decision (EU) 2017/177 with the following Principal Route: *Koper — Ljubljana –/Zalaszentiván — Sopron/Csorna –/(Hungarian-Serbian border) — Kelebia — Budapest –/– Komárom — Leopoldov/Rajka — Bratislava — Žilina — Katowice/Kraków — Warszawa/Łuków — Terespol — (Polish-Belarusian border).*

The name *RFC Amber* is special because it refers to the name of an important ancient trade route, which broadly followed the same alignment.

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The railway infrastructure managers and capacity allocation body are responsible for the establishment of the Management Board (MB) which shall set up and run RFC Amber according to the requirements of the RFC Regulation and the objectives set by the Members. RFC Amber is committed to:

- develop the rail freight corridor in harmony with freight market needs and customer expectations,
- to offer reliable, high-quality, competitive transport capacity in order to increase the competitiveness of customers and to promote modal shift to rail,
- to operate the corridor cost-efficiently i.a. through harmonization of technical and procedural conditions,
- to take into account the views and opinions of business partners and to attain their satisfaction,
- to be a valuable part of the European railway network for competitive freight by becoming an essential connection between the Northern Adriatic Sea and economic centres and terminals in Slovenia, Hungary, Slovakia and Poland and providing efficient links to the Euro-Asian transport axes at the EU eastern border;
- to contribute to a growing market share for the environmentally most friendly land transport mode as the backbone of a sustainable European transport system;
- to set up and develop a platform for efficient cooperation within the rail sector aiming to achieve the above goals.

1.4 Specific objectives of RFC Amber

The main tasks for the first two years following the establishment of the RFC Amber are:

1. To ensure the provision of capacity of good quality on the corridor and smooth handling of capacity requests through the Corridor- One Stop Shop)
2. to fulfil the implementation of the provisions of articles 12 to 19 of the RFC Regulation (relating to i.a. the coordination of works, C-OSS and capacity allocation, traffic management, corridor information document and quality of service)
3. to contribute to the fulfilment of the punctuality targets for international freight trains on the corridor by reducing delays for which IMs are responsible
4. to implement harmonized international IT tools and procedures
5. to introduce consultation mechanisms in order to obtain good communication with the Advisory Groups and potential corridor customers.

In order to contribute to the achievement of the above set goals the Managing Director elaborated with the cooperation of Spokesperson of the Advisory Groups an Action Plan identifying short-term and long-term actions to be tackled by the Executive Board/Ministries, Management Board/Infrastructure Managers and Allocation Body, and Railway Undertakings and Terminals/ Railway and Terminal Advisory Groups. The Management Board approved the Action Plan on 17 September 2019 in Koper. The Action Plan contains the following short- and long-term goals:

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Lead entity	Short-term	Long-term
ExBo / Ministries	Uploading of all national rules - What is uploaded? - Is it in line with 4th Railway Package?	Inclusion of freight-related investments in corridor lines into national infrastructure plans
MaBo / IMs + AB	Investigation of possibilities to raise parameter limits and / or improvement of operational rules on corridor lines with current infrastructure: - Train lengths - Axle-loads Conversion of FTE-paths into PaPs/RC Investigation of possibilities to give discount on TAC for corridor paths Confirm absence of IM-rules preventing application of ATTI-rules by RUs	Suggestion and assessment of freight-related infrastructure investments Full implementation of TTR Implementation of relevant outcome of the Issue Log (together with RAG-TAG/RUs)
RAG-TAG / RUs	Analysis and drafting of harmonised braking rules	Adaptation of rules to allow implementation of “trusted trains” concept on all borders of the corridor; implementation of relevant outcome of the Issue Log (together with MaBo/IMs) Implementation of ATTI-rules (https://uic.org/atti)

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2 Corridor description

2.1 Key Parameters of Corridor Lines

Key parameters of the Amber Rail Freight Corridor No 11, which shall be established according to its legal base the Commission Implementing Decision EU 2017/177 of 31 January 2017 on the compliance with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council, consist of data of principal, diversionary and connecting lines.

The total length of the RFC Amber No 11 is 3358,455 km. The Polish side plans to extend the Amber corridor network with newly constructed principal routes Nowy Sacz - Kraków and Radom - Warszawa in the future. The length of the new sections will be 198,487 kms. Slovenia plans to build the second railroad line Koper - Divača. The newly constructed section will be double track line, part of the RFC's principle route in length of 27,100 km. The total length of the RFC Amber will reach 3584,042 kms in the target state.

The length of the principal lines is 2853,471 kms, respectively 3051,958 kms in the future. The length of the diversionary lines is 298,984 kms and the connecting lines is 206 kms.

The division of the line categories according to the participating railways is as follows:

Country	Principal lines/future Principal lines (kms)	Diversionary lines (kms)	Connecting lines (kms)	Summary/Summary including new sections (kms)
Poland	912,971/198,487	156,784	-	1069,755/1268,242
Slovakia	563,8	63,1	92	718,9
Hungary (MÁV)	656,8	79,1	-	735,9
Hungary (GYSEV)	321,6	-	-	321,6
Slovenia	398,3		114	512,3/539,4

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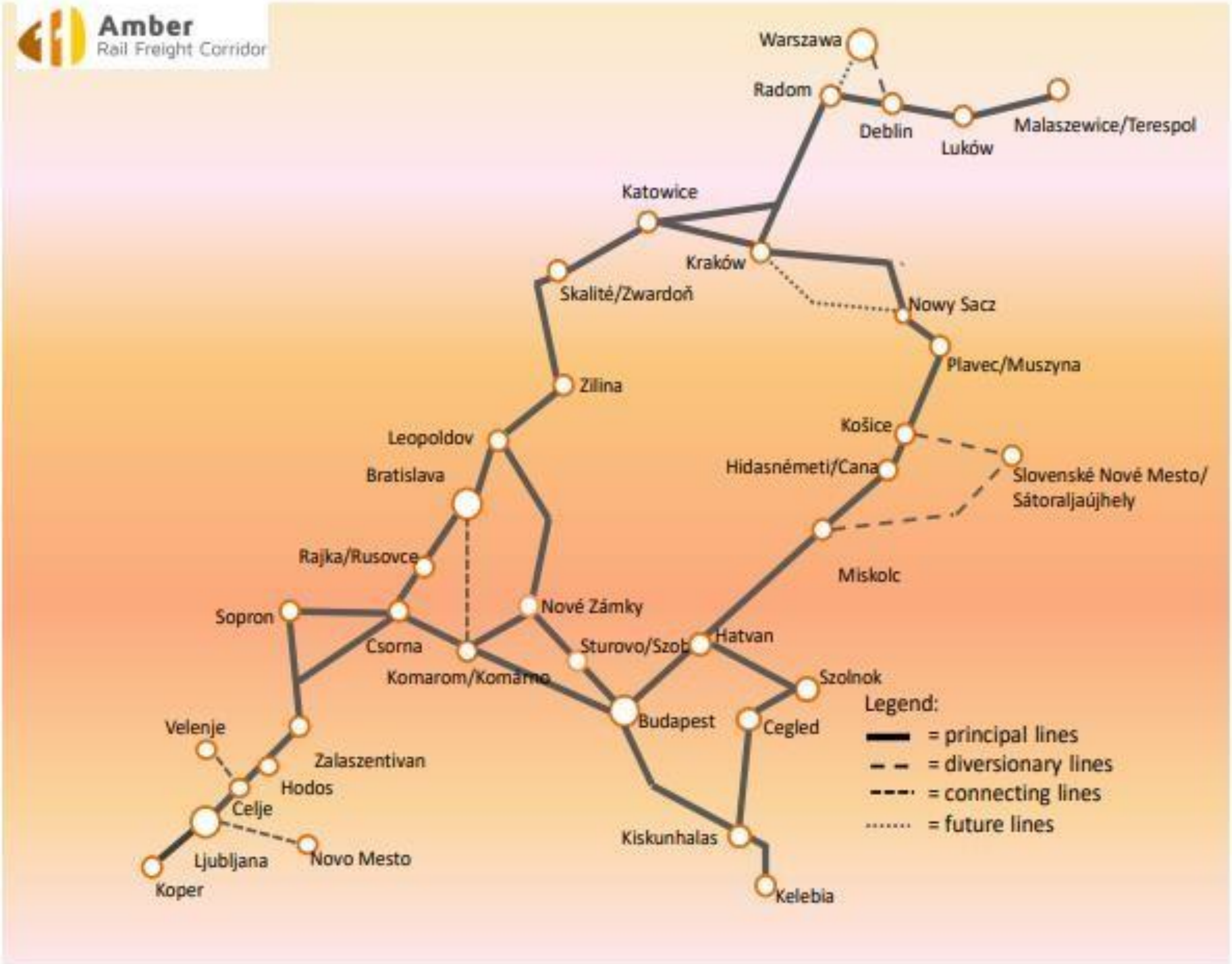
From the collected data there is an outlined a map in the figure below.



Description of individual sections of the corridor pursuant to the proposal of the Infrastructure Managers:

POLAND

Character	Line section/Terminal/Marshalling yard
Principal lines	Muszyna (G.P.) - Muszyna
	Muszyna - Nowy Sącz
	Nowy Sącz - Stróże
	Stróże - Tarnów
	Tarnów - Podłęże
	Podłęże - Podłęże R 201
	Podłęże - Podłęże R 101
	Podłęże R 101 - Podłęże R 201
	Podłęże R 201 - Dłubnia
	Dłubnia - Raciborowice
	Raciborowice - Tunel
	Tunel - Radom
	Radom - Dęblin
	Dęblin - Łuków
	Łuków - Terespol
	Podłęże R 101 - Gaj
	Gaj - Kraków Prokocim Towarowy
	Kraków Prokocim Towarowy - Bonarka
	Kraków Bonarka - Oświęcim (OwC)
	Oświęcim (OwC) - Oświęcim (OwC1)
	Oświęcim (OwC1) - Mysłowice Brzezinka
	Mysłowice Brzezinka - Sosnowiec Jęzor
	Sosnowiec Jęzor - Jaworzno Szczakowa
	Jaworzno Szczakowa - Bukowno
	Bukowno - Tunel
Future principal lines	Radom - Warka
	Warka - Warszawa al. Jerozolimskie
	Warszawa al. Jerozolimskie - Warszawa Główna Tow.
	Warszawa Główna Tow. - Warszawa Gdańska
	Warszawa Gdańska - Warszawa Praga
Diversionary lines	Zwardoń (G.P.) - Zwardoń
	Zwardoń - Wilkowice Bystra
	Wilkowice Bystra - Bielsko-Biała Lipnik
	Bielsko-Biała Lipnik - Bielsko-Biała
	Bielsko-Biała - Czechowice-Dziedzice
	Czechowice-Dziedzice - Oświęcim
	Oświęcim - Oświęcim (OwC1)
	Oświęcim - Oświęcim (OwC)

Future diversionary lines	Dęblin - Pilawa
	Pilawa - Krusze
	Krusze - Legionowo Piaski
	Legionowo Piaski - Praga
Expected line	Nowy Sącz - Tymbark
	Tymbark - Podłęże
Connecting lines	-
Terminals	-
Marshalling yards	Czechowice - Dziedzice, Dęblin, Jaworzno Szczakowa, Kraków Nowa Huta, Kraków Prokocim

SLOVAKIA

Character	Line section/Terminal/Marshalling yard
Principal lines	Hidasnémeti HU – Košice
	Košice – Kysak
	Kysak – Prešov
	Prešov – Plaveč
	Plaveč – Muszyna PL
	Szob HU - Štúrovo
	Štúrovo - Nové Zámky
	Komarom HU – Komárno
	Komárno – Nové Zámky
	Nové Zámky – Galanta
	Galanta – Leopoldov
	Leopoldov – Púchov
	Púchov – Žilina
	Žilina – Čadca
	Čadca – Skalité
	Skalité –Zwardoň PL
	Rajka HU – Bratislava Petržalka
	Bratislava Petržalka – Bratislava východ
	Bratislava východ – Bratislava Rača
	Bratislava Rača - Leopoldov
Diversionary lines	Sátoraljaújhely HU - Slovenské Nové Mesto
	Slovenské Nové Mesto - Košice
Connecting lines	Komárno – Dunajská Streda
	Dunajská Streda – Bratislava Nové Mesto
Terminals	Bratislava Palenisko, Bratislava UNS Žilina, Dunajská Streda, Košice, Žilina
Marshalling yards	Košice, Bratislava východ, Žilina Teplička

HUNGARY (MÁV)

Character	Line section/Terminal/Marshalling yard
Principal routes	(Border SLO) - Őriszentpéter - Zalaszentiván
	Győr - Ferencváros
	Komárom - Border SK
	Ferencváros - Kelebia - (Border SRB)
	Ferencváros - Kőbánya felső
	Kőbánya felső - Rákos elágazás
	Rákos elágazás - Szob - (Border SK)
	Rákos elágazás - Rákos
	Kőbánya felső - Rákos
	Rákos - Felsőzsolca
	Hatvan A elágazás - Hatvan D elágazás
	Hatvan B elágazás - Hatvan C elágazás
	Hatvan - Újszász
	Újszász - Újszászi elágazás
	Újszászi elágazás - Paládicspuszta elágazás
	Szolnok A elágazás - Szolnok-Rendező
	Szolnok B elágazás - Szolnok-Rendező
	Szolnok C elágazás - Szolnok-Rendező
	Szolnok D elágazás - Szolnok-Rendező
	Abony elágazás - Paládicspuszta elágazás
	Nyársapát elágazás - Abony elágazás
	Nyársapát elágazás - Kiskunfélegyháza
	Kiskunfélegyháza - Kiskunhalas
	Balotaszállás elágazás - Harkakötöny elágazás
	Felsőzsolca - Hidasnémeti - (Border SK)
Diversionary routes	Felsőzsolca - Sátoraljaújhely - (Border SK)
Connecting routes	-
Terminals	Soroksár-Terminál, Budapest Kikötő, Gönyű
Marshalling yards	Győr-Rendező, Komárom-Rendező, Ferencváros, Soroksári út rendező, Hatvan-Rendező,

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HUNGARY (GYSEV)

Character	Line section/Terminal/Marshalling yard
Principal lines	Rajka s.b. - Hegyeshalom
	Hegyeshalom - Porpác
	Porpác - Szombathely
	Szombathely - Vasvár
	Vasvár - Pácsony
	Pácsony - Egervár-Vasboldogasszony
	Egervár-Vasboldogasszony - Zalaszentiván
	Sopron-Rendező - Harka
	Harka - Szombathely
	Sopron-Rendező - Pinnye
	Pinnye - Fertőszentmiklós
	Fertőszentmiklós - Petőháza
	Petőháza - Győr
Diversionary lines	/
Connecting lines	/
Terminals	Sopron Container Terminal
Marshalling yards	Sopron-Rendező

SLOVENIA

Character	Line section/Terminal/Marshalling yard
	Divača - Koper
	Ljubljana - Divača
	Zidani Most - Ljubljana

Principal lines	Zidani Most - Pragersko
	Pragersko - Ormož
	Ormož - Hodoš - nat. border (HU)
Diversionary lines	/
Connecting lines	Celje - Velenje
	Ljubljana - Novo mesto
Terminals	Port of Koper, Ljubljana Moste KT, Celje tovorna, Gorenje Velenje, Revoz Novo Mesto,
Marshalling / shunting* yards	Ljubljana Zalog, Celje tovorna*, Koper tovorna*

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POLAND

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed (km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment (ETCS, GSM-R)	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
POLAND	Muszyna (G.P.) - Muszyna	Principal	Muszyna (G.P.) - Muszyna	7,536	1	3 kV DC	600	C3	30 - 60	10	14,99	-	G1	GA	-	99%	-		-
POLAND	Muszyna - Nowy Sącz	Principal	Muszyna - Nowy Sącz	50,648	1	3 kV DC	600	C3	30 - 70	10	14,99	-	G1	GA	-	40%	-		-
POLAND	Nowy Sącz - Tarnów	Principal	Nowy Sącz - Stróże	30,780	2	3 kV DC	600	C3	60 - 70	20	24,99	-	G1	GA	-	36%	-		-
POLAND	Nowy Sącz - Tarnów	Principal	Stróże - Tarnów	57,400	1	3 kV DC	620	C3	60 - 70	20	24,99	-	G1	GA	-	36%	-	Tarnów Filia	-
POLAND	Tarnów - Podłęże	Principal	Tarnów - Podłęże	58,954	2	3 kV DC	750	D3	80 - 120	5	9,99	-	G2	GB	-	26%	-	Tarnów Filia	-
POLAND	Podłęże - Podłęże R 201	Principal	Podłęże - Podłęże R 201	2,468	2	3 kV DC	600	D3	50	5	9,99	-	G1	GA	-	91%	-		-
POLAND	Podłęże - Podłęże R 101	Principal	Podłęże - Podłęże R 101	2,927	2	3 kV DC	650	D3	120	5	9,99	-	G1	GA	-	22%	-		-
POLAND	Podłęże R 101 - Podłęże R 201	Principal	Podłęże R 101 - Podłęże R 201	1,564	2	3 kV DC	600	D3	60	5	9,99	-	G1	GA	-	90%	-		-
POLAND	Podłęże R 201 - Raciborowice	Principal	Podłęże R 201 - Dłubnia	18,230	2	3 kV DC	630	D3	30 - 60	5	9,99	-			-	89%	-	Kraków Nowa Huta	-
POLAND	Podłęże R 201 - Raciborowice	Principal	Dłubnia - Raciborowice	1,090	1	3 kV DC	620	C3	30 - 60	5	9,99	-			-	92%	-		-
POLAND	Raciborowice - Tunel	Principal	Raciborowice - Tunel	42,504	2	3 kV DC	620	D3	80	10	14,99	-	G1	GA	-	3%	-		-
POLAND	Tunel - Radom	Principal	Tunel - Radom	165,583	2	3 kV DC	630	D3	80 - 100	10	14,99	-	G1	GA	-	30%	-		-

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POLAND	Radom - Dęblin	Principal	Radom - Dęblin	55,990	2	3 kV DC	640	D3	70 - 80	5	9,99	-	G1	GA	-	46%	-		-
POLAND	Dęblin - Łuków	Principal	Dęblin - Łuków	62,496	2	3 kV DC	660	D3	50 - 80	10	14,99	-			-	63%	-	Dęblin	-
POLAND	Łuków - Terespol	Principal	Łuków - Terespol	90,157	2	3 kV DC	750	D3	80 - 120	5	9,99	-	G1	GA	GSM-R	43%	-	Małaszewicze	-
POLAND	Podłęże R 101 - Kraków Prokocim Towarowy	Principal	Podłęże R 101 - Gaj	8,900	2	3 kV DC	600	D3	70 - 120	5	9,99	-			-	34%	-	Kraków Prokocim Tow.	-
POLAND	Podłęże R 101 - Kraków Prokocim Towarowy	Principal	Gaj - Kraków Prokocim Towarowy	4,000	1	3 kV DC	600	C3	30 - 60	5	9,99	-			-	54%	-	Kraków Prokocim Tow.	-
POLAND	Kraków Prokocim Towarowy - Oświęcim (OwC)	Principal	Kraków Prokocim Towarowy - Bonarka	7,400	2	3 kV DC	600	C3	60	15	19,99	-	G1	GA	-	93%	-	Kraków Prokocim Tow.	-
POLAND	Kraków Prokocim Towarowy - Oświęcim (OwC)	Principal	Kraków Bonarka - Oświęcim (OwC)	60,296	2	3 kV DC	620	C3	40 - 80	15	19,99	-	G1	GA	-	78%	-	Oświęcim	-
POLAND	Oświęcim (OwC) - Oświęcim (OwC1)	Principal	Oświęcim (OwC) - Oświęcim (OwC1)	0,499	1	3 kV DC	600	C3	30	0	4,99	-	G1	GA	-	96%	-	Oświęcim	-
POLAND	Oświęcim (OwC1) - Mysłowice Brzezinka	Principal	Oświęcim (OwC1) - Mysłowice Brzezinka	16,955	2	3 kV DC	600	C3	30 - 90	5	9,99	-	G1	GA	-	80%	-	Oświęcim	-
POLAND	Mysłowice Brzezinka - Sosnowiec Jęzor	Principal	Mysłowice Brzezinka - Sosnowiec Jęzor	7,206	1	3 kV DC	650	C3	60	5	9,99	-	G1	GA	-	99%	-		-
POLAND	Sosnowiec Jęzor - Jaworzno Szczakowa	Principal	Sosnowiec Jęzor - Jaworzno Szczakowa	7,258	2	3 kV DC	600	C3	100 - 120	5	9,99	-	G1	GA	-	57%	-	Jaworzno Szczakowa	-
POLAND	Jaworzno Szczakowa - Tunel	Principal	Jaworzno Szczakowa - Bukowno	11,700	2	3 kV DC	620	C3	50 - 90	10	14,99	-	G1	GA	-	93%	-	Jaworzno Szczakowa	-

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POLAND	Jaworzno Szczakowa - Tunel	Principal	Bukowno - Tunel	52,700	2	3 kV DC	630	D3	40 - 60	10	14,99	-	G1	GA	-	59%	-		-
POLAND	Radom - Warszawa Główna Tow.	Future principal	Radom - Warka	46,500	1	3 kV DC	700	D3	60	5	9,99	-	G1	GA	-	4%	-		-
POLAND	Radom - Warszawa Główna Tow.	Future principal	Warka - Warszawa al. Jerozolimskie	50,800	2	3 kV DC	700	D3	60 - 100	5	9,99				-	4%			
POLAND	Radom - Warszawa Główna Tow.	Future principal	Warszawa al. Jerozolimskie - Warszawa Główna Tow.	2,600	1	3 kV DC	700	C3	40	5	9,99	-	G1	GA	-	96%	-	Warszawa Gł. Tow.	-
POLAND	Warszawa Główna Tow. - Warszawa Praga	Future principal	Warszawa Główna Tow. - Warszawa Gdańska	11,500	2	3 kV DC	800	C3	40 - 60	10	14,99	-	G1	GA	-	59%	-	Warszawa Gł. Tow.	-
POLAND	Warszawa Główna Tow. - Warszawa Praga	Future principal	Warszawa Gdańska - Warszawa Praga	3,600	2	3 kV DC	700	C3	40 - 60	10	14,99				-	26%		Warszawa Gł. Tow. Warszawa Praga	
POLAND	Zwardoń (G.P.) - Zwardoń	Diversionary	Zwardoń (G.P.) - Zwardoń	0,431	1	3 kV DC	360	C3	50	0	4,99	-	G1	GA	-	11%	-		-
POLAND	Zwardoń - Bielsko-Biała	Diversionary	Zwardoń - Wilkowice Bystra	49,000	1	3 kV DC	360	C3	50 - 60	20	24,99	-			-	3%	-		-
POLAND	Zwardoń - Bielsko-Biała	Diversionary	Wilkowice Bystra - Bielsko-Biała Lipnik	6,900	2	3 kV DC	360	C3	60 - 70	20	24,99	-			-	3%	-		-
POLAND	Zwardoń - Bielsko-Biała	Diversionary	Bielsko-Biała Lipnik - Bielsko-Biała	1,500	1	3 kV DC	360	C3	40 - 80	20	24,99	-			-	3%	-		-
POLAND	Bielsko-Biała - Czechowice-Dziedzice	Diversionary	Bielsko-Biała - Czechowice-Dziedzice	11,510	2	3 kV DC	420	C3	40 - 80	10	14,99	-	G1	GA	-	7%	-	Czechowice - Dziedzice	-
POLAND	Czechowice-Dziedzice - Oświęcim	Diversionary	Czechowice-Dziedzice - Oświęcim	20,806	2	3 kV DC	680	C3	30 - 70	0	4,99	-	G1	GA	-	92%	-	Czechowice - Dziedzice, Oświęcim	-
POLAND	Oświęcim - Oświęcim (OwC1)	Diversionary	Oświęcim - Oświęcim (OwC1)	0,600	2	3 kV DC	600	C3	30	0	4,99	-	G1	GA	-	-	-	Oświęcim	-
POLAND	Oświęcim - Oświęcim (OwC)	Diversionary	Oświęcim - Oświęcim (OwC)	1,996	2	3 kV DC	600	C3	40	0	4,99	-	G1	GA	-	-	-	Oświęcim	-

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POLAND	Dęblin - Tłuszcz	future diversionary	Dęblin - Pilawa	49,200	2	3 kV DC	800	D3	80	5	9,99	-			-	25%	-	Dęblin	-
POLAND	Dęblin - Tłuszcz	future diversionary	Pilawa - Krusze	56,600	1	3 kV DC	800	D3	60 - 80	5	9,99	-			-	79%	-		-
POLAND	Tłuszcz - Warszawa Praga	future diversionary	Krusze - Legionowo Piaski	36,700	1	3 kV DC	650	C3	80	5	9,99	-			-	75%	-	Warszawa Praga	-
POLAND	Tłuszcz - Warszawa Praga	future diversionary	Legionowo Piaski - Praga	9,200	3 *(2 lines)*	3 kV DC	750	D3	100	5	9,99	-			GSM-R	9%	-		-
POLAND	Nowy Sącz - Tymbark	expected line	Nowy Sącz - Tymbark	-	expected line	expected line	expected line	expected line	expected line	expected line	expected line	-	expected line	expected line	-	-	-	-	-
POLAND	Tymbark - Podłęże	expected line	Tymbark - Podłęże	-	expected line	expected line	expected line	expected line	expected line	expected line	expected line	-	expected line	expected line	-	-	-	-	-

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Amber Rail Freight Corridor

SLOVAKIA

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed(km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment ETCS, GSM-R	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge	Actual *=in implementation phase		Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
SLOVAKIA	Čadca - Zwardoň PL	Principal line	Čadca - Skalité	13,5	1	3 kV DC	650	D4	100	14	0	70/400	P p C / 1-SM	GC/1-VM	ZUGFUNK 2000	0,00%			
SLOVAKIA	Čadca - Zwardoň PL	Principal line	Skalité - Zwardoň PL	6,7	1	3 kV DC	650	D4	70	28	0	70/400	P p C / 1-SM	GC/1-VM	ZUGFUNK 2000	0,00%			
SLOVAKIA	Žilina - Čadca	Principal line	Žilina-Krásno nad Kysucou	19,3	2	3 kV DC	700	D4	140	6	0	70/400	PpB/1-SM	GB/1-VM	ETCS 2 Baseline 2 version 2.3 od GSM-R	42,10%		Žilina Teplička ŽSR	
SLOVAKIA	Žilina - Čadca	Principal line	Krásno nad Kysucou - Čadca	10	2	3 kV DC	700	D4	100	16	0	70/400	PpB/1-SM	GB/1-VM	ETCS 2 Baseline 2 version 2.3 od GSM-R	42,10%			
SLOVAKIA	Kysak - Muszyna PL	Principal line	Muszyna PL - Plaveč	6,8	1	3 kV DC	600	D4	60	8	3	70/400	PpC/1-SM	GB/1-VM	ZUGFUNK 2000	100,00%		-	
SLOVAKIA	Kysak - Muszyna PL	Principal line	Plaveč - Prešov	54,7	1	3 kV DC	600	D4	100	14	19	70/400	PpC/1-SM	GB/1-VM	ZUGFUNK 2000	16,20%	-	-	
SLOVAKIA	Kysak - Muszyna PL	Principal line	Prešov - Kysak	16,8	1	3 kV DC	600	D4	80	15	15	70/400	PpC/1-SM	GB/1-VM	ZUGFUNK 2000	20,90%	-	-	
SLOVAKIA	Hidasné meti HU - Barca	Principal line	Hidasné meti HU - Barca	18,2	1	25 kV AC	600	D4	100	0	4	70/400	PpC/1-SM	GB/1-VM		75,00%	-	-	
SLOVAKIA	Košice - Kysak	Principal line	Košice - Kysak	15,6	2	3 kV DC	650	D4	100	7	1	70/400	PpB/0-SM	GB/1-VM		34,30%	Košice - Intrans	Košice ŽSR	
SLOVAKIA	Orlovská spojka	Principal line	Orlovská spojka	0,9	1	3 kV DC	630	D4	40	0	7	70/400	PpC/1-SM	GB/1-VM	ZUGFUNK 95	0,00%		-	
SLOVAKIA	Kysacká spojka	Principal line	Kysacká spojka	0,96	1	3 kV DC	600	D4	30	0	14	70/400	PpC/1-SM	GB/1-VM		33,30%		-	
SLOVAKIA	Barca - Košice nákl. Stanica	Principal line	Barca - Košice nákl.stanica	4,6	2	3 kV DC	700	D4	100	0	4	70/400	PpC/1-SM	GB/1-VM		73,30%		-	
SLOVAKIA	Bratislava - Žilina	Principal line	Púchov - Žilina	44,2	2	3 kV DC	650	D4	120	4	7	70/400	PpB/0-SM	GB/1-VM	ZUGFUNK 2000	38,50%	Žilina - Intrans	-	

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SLOVAKIA	Bratislava - Žilina	Principal line	Púchov - Trenčianska Teplá	26,8	2	25 kV AC	650	D4	160	2	5	70/400	PpB/1-SM	GB/1-VM	ETCS1 Baseline 2 version 2.3 od	37,70%		-	
SLOVAKIA	Bratislava - Žilina	Principal line	Trenčianska Teplá - Trenčín	7,5	2	25 kV AC	650	D4	140	0	5	70/400	PpB/1-SM	GB/1-VM	ETCS1 Baseline 2 version 2.3 od	31,00%		-	
SLOVAKIA	Bratislava - Žilina	Principal line	Trenčín - Nové Mesto nad Váhom	24,7	2	25 kV AC	650	D4	160	3	5	70/400	PpB/1-SM	GB/1-VM	ETCS1 Baseline 2 version 2.3 od	30,90%		-	
SLOVAKIA	Bratislava - Žilina	Principal line	Nové Mesto nad Váhom - Leopoldov	35,5	2	25 kV AC	650	D4	160	0	3	70/400	PpB/1-SM	GC/2-VM	ETCS1 Baseline 2 version 2.3 od	39,00%		-	
SLOVAKIA	Bratislava - Žilina	Principal line	Leopoldov - Trnava	17,5	2	25 kV AC	650	D4	160	1	5	70/400	PpB/1-SM	GC/2-VM	ETCS1 Baseline 2 version 2.3 od	29,10%		-	ŽOS Trnava privat
SLOVAKIA	Bratislava - Žilina	Principal line	Trnava - Bratislava Rača	38,9	2	25 kV AC	650	D4	160	6	7	70/400	PpB/1-SM	GC/2-VM	ETCS1 Baseline 2 version 2.3 od	28,10%		-	
SLOVAKIA	Leopoldov - Galanta	Principal line	Leopoldov - Galanta	29,7	2	25 kV AC	690	D4	100	2	2	80/400	PpB/1-SM	GC/2-VM		35,00%		-	
SLOVAKIA	Bratislava - Štúrovo	Principal line	Nové Zámky - Paláríkovo	10	2	25 kV AC	700	D4	120	1	2	70/400	PpB/1-SM	GB/1-VM	GSM-R	28,50%		-	
SLOVAKIA	Bratislava - Štúrovo	Principal line	Paláriko vo-Galanta	32,3	2	25 kV AC	700	D4	120	4	4	70/400	PpB/1-SM	GB/1-VM	GSM-R	41,10%		-	
SLOVAKIA	Komárom HU - Komárno	Principal line	Komárom HU - Komárno	8,7	1	25 kV AC	620	D4	80	4	8	70/400	PpB/1-SM	GB/1-VM		100,00%		-	
SLOVAKIA	Komárno - Nové Zámky	Principal line	Komárno - Nové Zámky	24,7	1	25 kV AC	620	D4	100	4	5	70/400	PpB/1-SM	GB/1-VM		28,60%		-	
SLOVAKIA	Komárno - Bratislava Nové Mesto	Connecting line	Komárno - Dunajská Streda	53,1	1	none	240	D4	80	3	4	70/400	PpB/0-SM	GB/0-VM		33,30%		-	

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SLOVAKIA	Komárno - Bratislava Nové Mesto	Connecting line	Dunajská Streda - Bratislava Nové Mesto	38,9	1	none	625	C4	80	5	5	70/400	PpB/0-SM	GB/0-VM		18,30%		-	
SLOVAKIA	Bratislava Rača - Bratislava východ	Principal line	Bratislava Rača - Bratislava východ	1,9	1	25 kV AC	700	D4	40	0	0	70/400	PpB/1-SM	GB/1-VM		88,20%		Bratislava východ ŽSR	
SLOVAKIA	Bratislava východ - Bratislava Predmestie	Principal line	Bratislava východ - Bratislava Predmestie	3,5	1	25 kV AC	690	D4	60	4	2	70/400	PpB/1-SM	GB/1-VM	GSM-R	100,00%		-	
SLOVAKIA	Bratislava Predmestie - Bratislava Petržalka	Principal line	Bratislava Predmestie - Bratislava Petržalka	14,2	2	25 kV AC	690	D4	80	8	8	70/400	PpB/1-SM	GB/1-VM	GSM-R	100,00%	SPaP-Maersk, UNS-Intrans	-	
SLOVAKIA	Bratislava Petržalka - Rajka HU	Principal line	Bratislava Petržalka - Rajka HU	14,7	1	25 kV AC	690	D4	80	0	3	70/400	PpB/1-SM	GB/1-VM	GSM-R	100,00%		-	
SLOVAKIA	Košice - Michaľany	Diversionary line	Košice - Michaľany	47,9	2	3 kV DC	670	D4	100	15	15	70/400	PpC/1-SM	GB/1-VM		53,52%			
SLOVAKIA	Michaľany - Slovenské Nové Mesto	Diversionary line	Michaľany - Slovenské Nové Mesto	13,8	2	3 kV DC	700	D4	120	7	11	70/400	PpC/1-SM	GB/1-VM		46,53%			
SLOVAKIA	Slovenské Nové Mesto - Satoraljaújhely HU	Diversionary line	Slovenské Nové Mesto - Satoraljaújhely HU	1,4	1	none	600	D4	40	0	2		PpC/2-SM	GB/1-VM		100,00%			

Amber Rail Freight Corridor

HUNGARY (MÁV)

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed(km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment (ETCS, GSM-R)	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Border SLO - Őriszentpéter	6,100	1	25kV AC	650	D4	120	2,5	12	C21/340	GC	1-WM	GSM-R				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Őriszentpéter - Andráshida elágazás	33,400	1	25kV AC	650	D4	120	12	6	C21/340	GC	1-WM	GSM-R				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Andráshida elágazás - Zalaszentiván elágazás	3,400	1	25kV AC	650	D4	120	6	5	C21/340	GC	1-WM	GSM-R				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Zalaszentiván elágazás - Zalaszentiván	4,700	1	25kV AC	650	D4	120	5,1	3	C21/340	GC	1-WM	GSM-R				
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Győr - Komárom	37,300	2	25kV AC	750	D3	160	2,5	2,3	C21/340	GC	1-WM	ETCS L1 2.2.2		Gönyű / Győr-Gönyű Kikötő Zrt.	Győr-Rendező / MÁV	
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Komárom - Tata	20,000	2	25kV AC	750	D3	160	0,8	5,5	C21/340	GC	1-WM	ETCS L1 2.2.2			Komárom-Rendező / MÁV	
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Tata - Budaörs	62,800	2	25kV AC	750	D3	140	7,9	8,8	C21/340	GC	1-WM	ETCS L1 2.2.2				
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Budaörs - Kelenföld	5,600	2	25kV AC	750	C3	120	5,9	1,8	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Kelenföld - Ferencváros	5,900	2	25kV AC	750	C3	80	6,8	3,8	C21/340	GC	1-WM	-			Ferencváros / MÁV	
HUNGARY (MÁV)	Komárom - Border SK	principal route	Komárom - Border SK	2,800	1	25kV AC	750	C2	60	0	4,3	C21/340	GC	1-WM	-				

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HUNGARY (MÁV)	Ferencváros - Kelebia - (Border SRB)	principal route	Ferencváros - Soroksári út	1,800	2	25kV AC	750	D3	100	9	0	C21/340	GC	1-WM	-		Budapest Kikötő / Budapesti Szabadkikötő Logisztikai Zrt.	Soroksári út rendező / MÁV	
HUNGARY (MÁV)	Ferencváros - Kelebia - (Border SRB)	principal route	Soroksári út - Soroksár	7,100	1	25kV AC	750	D3	100	5	6	C21/340	GC	1-WM	-		Soroksár-Terminál / MÁV		
HUNGARY (MÁV)	Ferencváros - Kelebia - (Border SRB)	principal route	Soroksár - Kunszentmiklós-Tass	44,600	1	25kV AC	750	C3	100	4,3	5	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Ferencváros - Kelebia - (Border SRB)	principal route	Kunszentmiklós-Tass - Border SRB	105,500	1	25kV AC	700	C3	100	2,4	3,8	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Ferencváros - Kőbánya felső	principal route	Ferencváros - Kőbánya felső	4,600	2	25kV AC	750	C3	60	0	5,6	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Kőbánya felső - Felsőzsolca	principal route	Kőbánya felső - Rákos	3,100	2	25kV AC	750	C2	60	3,4	5	C21/340	GC	-	-				
HUNGARY (MÁV)	Kőbánya felső - Felsőzsolca	principal route	Rákos - Hatvan	58,500	2	25kV AC	750	C3	120	5,6	6,8	C21/340	GC	-	-			Hatvan-Rendező / MÁV	
HUNGARY (MÁV)	Kőbánya felső - Felsőzsolca	principal route	Hatvan - Felsőzsolca	120,300	2	25kV AC	750	C3	120	5,1	5	C21/340	GC	-	-			Miskolc-Rendező / MÁV	
HUNGARY (MÁV)	Felsőzsolca - Hidasnémeti - (Border SK)	principal route	Felsőzsolca - Border SK	59,900	1	25kV AC	750	C2	100	2,2	3,1	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Kőbánya felső - Rákos elágazás	principal route	Kőbánya felső - Rákos elágazás	2,300	2	25kV AC	750	C2	60	3,5	5,9	C21/340	GC	-	-				
HUNGARY (MÁV)	Rákos elágazás - Szob - (Border SK)	principal route	Rákos elágazás - Angyalföldi elágazás	6,400	2	25kV AC	750	C2	80	6,9	5,9	C21/340	GC	-	-				
HUNGARY (MÁV)	Rákos elágazás - Szob - (Border SK)	principal route	Angyalföldi elágazás - Rákosrendező elágazás	1,000	1	25kV AC	750	C2	40	0	6,1	C21/340	GC	-	-				
HUNGARY (MÁV)	Rákos elágazás - Szob - (Border SK)	principal route	Rákosrendező elágazás - Rákospalota-Újpest	2,300	1	25kV AC	750	C2	60	2,5	2,6	C21/340	GC	-	-				

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HUNGARY (MÁV)	Rákos elágazás - Szob - (Border SK)	principal route	Rákospalota-Újpest - Vác	25,600	2	25kV AC	750	C3	120	3,9	3,9	C21/340	GC	-	-				
HUNGARY (MÁV)	Rákos elágazás - Szob - (Border SK)	principal route	Vác - Border SK	30,400	2	25kV AC	750	C3	100	4,6	4,6	C21/340	GC	-	-				
HUNGARY (MÁV)	Rákos - Rákos-elágazás	principal route	Rákos - Rákos-elágazás	1,400	2	25kV AC	750	C2	60	0	6,5	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Felsőzsolca - Mezőzombor	37,500	2	25kV AC	750	C3	120	5	2,1	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Mezőzombor - Sárospatak	31,500	1	25kV AC	700	C2	100	7,4	8	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Sárospatak - Sátoraljaújhely	9,600	1	25kV AC	700	C2	80	0	6,6	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Sátoraljaújhely - Border SK	0,500	1	-	350	C3	50	0	0	C21/340	GC	-	-				
HUNGARY (MÁV)	Hatvan A elágazás - Hatvan D elágazás	principal route	Hatvan A elágazás - Hatvan D elágazás	3,800	1	25kV AC	750	C2	40	5,5	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Hatvan B elágazás - Hatvan C elágazás	principal route	Hatvan B elágazás - Hatvan C elágazás	1,100	1	25kV AC	750	C2	40	2	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Hatvan - Újszász	principal route	Hatvan - Újszász	52,000	1	25kV AC	750	C2	100	3	2,3	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Újszász - Újszászi elágazás	principal route	Újszász - Újszászi elágazás	13,400	2	25kV AC	750	C2	120	1,4	1,5	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Újszászi elágazás - Paládicspuszta elágazás	principal route	Újszászi elágazás - Paládicspuszta elágazás	1,100	1	25kV AC	750	C2	40	0	1	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Szolnok A elágazás - Szolnok-Rendező	principal route	Szolnok A elágazás - Szolnok-Rendező	5,200	1	25kV AC	750	C2	80	0	4,9	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	
HUNGARY (MÁV)	Szolnok B elágazás - Szolnok-Rendező	principal route	Szolnok B elágazás - Szolnok-Rendező	3,600	1	25kV AC	750	C2	60	0	6,3	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	

HUNGARY (MÁV)	Szolnok C elágazás - Szolnok-Rendező	principal route	Szolnok C elágazás - Szolnok-Rendező	2,400	1	25kV AC	750	C2	50	0	5	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	
HUNGARY (MÁV)	Szolnok D elágazás - Szolnok-Rendező	principal route	Szolnok D elágazás - Szolnok-Rendező	3,900	1	25kV AC	750	C2	80	0	4,4	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	
HUNGARY (MÁV)	Abony elágazás - Paládicspuszta elágazás	principal route	Abony elágazás - Paládicspuszta elágazás	23,500	2	25kV AC	750	C3	120	1,6	0,4	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Nyársapát elágazás - Abony elágazás	principal route	Nyársapát elágazás - Abony elágazás	1,200	1	25kV AC	750	C2	40	0	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Nyársapát elágazás - Kiskunfélegyháza	principal route	Nyársapát elágazás - Városföld	42,400	1	25kV AC	750	D3	120	2,5	2,5	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Nyársapát elágazás - Kiskunfélegyháza	principal route	Városföld - Kiskunfélegyháza	13,700	2	25kV AC	750	C3	120	1,3	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Kiskunhalas - Kiskunfélegyháza	principal route	Kiskunhalas - Kiskunfélegyháza	45,700	1	25kV AC	750	C2	100	2,8	2,9	C21/340	GC	1-WM	-				

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HUNGARY (GYSEV)

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed(km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment (ETCS, GSM-R)	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Rajka s.b. - Hegyeshalom	15,800	1	25 kV AC	750	C2	100	2	4	C21/C340	G2	G2	ETCS L1	99,96%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Hegyeshalom - Porpác	94,400	1	25 kV AC	600	C2	100	4,3	3,3	C21/C340	G2	G2	n.a.	60,17%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Porpác - Szombathely	16,700	2	25 kV AC	600	C2	120	5,5	0	C21/C340	G2	G2	n.a.	9,50%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Szombathely - Vasvár	23,900	1	25 kV AC	600	C2	100	5,8	5	C21/C340	G2	G2	n.a.	5,37%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Vasvár - Pácsony	10,100	1	25 kV AC	600	C2	80	13,6	13,3	C21/C340	G2	G2	n.a.	7,64%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Pácsony - Egervár-Vasboldogasszony	8,700	1	25 kV AC	600	C2	100	0	5	C21/C340	G2	G2	n.a.	7,08%			
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Egervár-Vasboldogasszony - Zalaszentiván	7,500	1	25 kV AC	600	C2	80	0	5	C21/C340	G2	G2	n.a.	7,07%			
HUNGARY GYSEV	Sopron - Szombathely	Principal line	Sopron-Rendező - Harka	3,000	1	25 kV AC	700	C4	110	0	11	C21/C340	G2	G2	GSM-R	8,86%		Sopron-Rendező / GYSEV Cargo	
HUNGARY GYSEV	Sopron - Szombathely	Principal line	Harka - Szombathely	57,100	1	25 kV AC	700	D4	120	6,9	8	C21/C340	G2	G2	GSM-R	13,58%			

HUNGARY GYSEV	Sopron - Győr	Principal line	Sopron-Rendező - Pinnye	17,200	1	25 kV AC	600	C4	100	7,5	6	C21/C340	G2	G2	n.a.	29,94%		Sopron-Rendező / GYSEV Cargo	
HUNGARY GYSEV	Sopron - Győr	Principal line	Pinnye - Fertőszentmiklós	6,900	1	25 kV AC	600	D4	120	0	5	C21/C340	G2	G2	n.a.	29,86%			
HUNGARY GYSEV	Sopron - Győr	Principal line	Fertőszentmiklós - Petőháza	2,200	1	25 kV AC	600	C4	100	0,05	3,9	C21/C340	G2	G2	n.a.	29,45%			
HUNGARY GYSEV	Sopron - Győr	Principal line	Petőháza - Győr	58,100	1	25 kV AC	600	C4	120	6	5,8	C21/C340	G2	G2	n.a.	25,77%			

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SLOVENIA

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed(km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment (ETCS, GSM-R)	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
SLOVENIA	Koper - Hodoš	Principal line	Divača - Koper	48,000	1	3 kV DC	525	D3 - 22,5	75	20	25	P/C 90/410		G2 90/410	ETCS L1 Baseline 2.3.0.d GSM-R*	84,64%	Port of Koper - PORT Koper	Koper tovorna - SŽ-I	
SLOVENIA	Koper - Hodoš	Principal line	Ljubljana - Divača	103,700	2	3 kV DC	600	D3 - 22,5	80	12	8	P/C 82/412		G2 82/412	ETCS L1 Baseline 2.3.0.d GSM-R*	71,64%			
SLOVENIA	Koper - Hodoš	Principal line	Zidani Most - Ljubljana	63,900	2	3 kV DC	570	D3 - 22,5	80	4	1	P/C 99/429		G2 99/429	ETCS L1 Baseline 2.3.0.d GSM-R*	48,32%	Ljubljana Moste - SŽ FT	Ljubljana Zalog - SŽ-I	
SLOVENIA	Koper - Hodoš	Principal line	Zidani Most - Pragersko	73,200	2	3 kV DC	597	D3 – 22,5	80	9	9	P/C 90/410		G2 90/410	ETCS L1 Baseline 2.3.0.d GSM-R*	37,22%	Celje tovorna - SŽ FT	Celje tovorna - SŽ-I	
SLOVENIA	Koper - Hodoš	Principal line	Pragersko - Ormož	40,300	1	3 kV DC	600	D4 - 22,5	100	4	5	P/C 80/401		G2 80/041	ETCS L1 Baseline 2.3.0.d GSM-R*	48,27%			
SLOVENIA	Koper - Hodoš	Principal line	Ormož - Hodoš - n.b.	69,200	1	3 kV DC	600	D4 - 22,5	100	10	11	P/C 80/401		G2 80/041	ETCS L1 Baseline 2.3.0.d GSM-R*	54,50%			
SLOVENIA	Celje - Velenje	Connecting line	Celje - Velenje	38,000	1	Diesel	450	C3 - 20,0	65	10	1	P/C 70/390		G2 70/390	GSM-R*	10,00%			Gorenje Velenje - privat
SLOVENIA	Ljubljana -Novo mesto	Connecting line	Ljubljana - Novo mesto	76,000	1	Diesel	460	C2 - 20,0	60	24	19	P/C 50/370		G2 50/370	GSM-R*	11,03%			Revoz Novo mesto - privat

2.2 Connection with Other Corridors

The RFC Amber is a corridor linking the Adriatic Sea with the Berlin - Moscow railway main line and connecting the freight flows with one of the most important rail crossings between the EU and Asia, the border crossing Malaszewice/Terespol. It connects the Eastern network of the RFC corridors into the network of RFCs. The new corridor aims to contribute to a more efficient management of business activities in the transport logistic chain and better linkage of industrial areas along the corridor.

The tables below illustrate the overlapping sections of RFC Amber with other Rail Freight corridors. The following abbreviations are used in the tables:

- RFC 5 is named as the Baltic – Adriatic Rail Freight Corridor
- RFC 6 is named as the Mediterranean Rail Freight Corridor
- RFC 7 is named as the Orient/East – Mediterranean Rail Freight Corridor
- RFC 8 is named as the North Sea – Baltic Rail Freight Corridor
- RFC 9 is named as the Czech – Slovak Rail Freight Corridor, but in certain cases referred to as the future RFC Rhine-Danube
- RFC 10 is named as the Alpine – Western Balkan Rail Freight Corridor
- RFC 11 is named as the Amber Rail Freight Corridor

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POLAND

Overlapping section	IMs involved	RFC involved with	Section lenght
Łuków - Terespol	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	90,157
Oświęcim (OwC) - Oświęcim (OwC1)	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	0,499
Oświęcim (OwC1) - Mysłowice Brzezinka	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	16,955
Mysłowice Brzezinka - Sosnowiec Jęzor	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	7,206
Sosnowiec Jęzor - Jaworzno Szczakowa	Infrabel, ProRail, DB Netz, PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC8,	7,258
Warszawa Główna Tow. - Warszawa Gdańska	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	11,5
Warszawa Gdańska - Warszawa Praga	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	3,6
Zwardoń (G.P.) - Zwardoń	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 11	0,431
Zwardoń - Wilkowice Bystra	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 11	49
Wilkowice Bystra - Bielsko-Biała Lipnik	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	6,9
Bielsko-Biała Lipnik - Bielsko-Biała	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	1,5
Bielsko-Biała - Czechowice-Dziedzice	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	11,51
Czechowice-Dziedzice - Oświęcim	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	20,806
Oświęcim - Oświęcim (OwC1)	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	0,6
Oświęcim - Oświęcim (OwC)	PKP PLK, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	1,996
Pilawa - Krusze	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	56,6
Krusze - Legionowo Piaski	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	36,7
Legionowo Piaski - Praga	Infrabel, ProRail, DB Netz, PKP PLK, SZDC, LG, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 8,	9,2

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SLOVAKIA

Overlapping section	IMs involved	RFC involved with	Section lenght
Čadca - Skalité	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	13,5
Skalité - Zwardoň PL	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	6,7
Žilina-Krásno nad Kysucou	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 9,	19,3
Krásno nad Kysucou - Čadca	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 9,	10
Košice - Kysak	SŽDC, PKP, ŽSR, GYSEV, MÁV, SZ-I, VPE	RFC 9,	15,6
Púchov - Žilina	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 9,	44,2
Púchov - Trenčianska Teplá	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	26,8
Trenčianska Teplá - Trenčín	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	7,5
Trenčín - Nové Mesto nad Váhom	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	24,7
Nové Mesto nad Váhom - Leopoldov	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	35,5
Leopoldov - Trnava	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	17,5
Trnava - Bratislava Rača	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5,	38,9
Leopoldov - Galanta	PKP, SŽDC, ŽSR, OeBB infra, RFI, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 7,	29,7
Nové Zámky - Palárikovo	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	10
Palárikovo- Galanta	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	32,3
Komárom HU - Komárno	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	8,7
Komárno - Nové Zámky	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	24,7
Komárno - Dunajská Streda	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	53,1
Dunajská Streda - Bratislava Nové Mesto	PKP, SŽDC, ŽSR, OeBB infra, RFI, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	38,9
Bratislava Rača - Bratislava východ	PKP, SŽDC, ŽSR, OeBB infra, RFI, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 7,	1,9
Bratislava východ - Bratislava Predmestie	PKP, SŽDC, ŽSR, OeBB infra, RFI, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 7,	3,5
Bratislava Predmestie - Bratislava Petržalka	PKP, SŽDC, ŽSR, OeBB infra, RFI, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 5, RFC 7,	14,2
Bratislava Petržalka - Rajka HU	PKP, SŽDC, ŽSR, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7,	14,7

HUNGARY (MÁV)

Overlapping section	IMs involved	RFC involved with	Section lenght
(Border SLO) - Őriszentpéter - Zalaszentiván	MÁV	RFC6,	52
Győr - Ferencváros	MÁV	RFC6, RFC7,	132,6
Ferencváros - Kőbánya felső	MÁV	RFC6, RFC7,	4,6
Kőbánya felső - Rákos	MÁV	RFC6,	3,1
Rákos - Aszód	MÁV	RFC6,	42,6
Aszód - Hatvan A elágazás	MÁV	RFC6, RFC7,	11,7
Hatvan A elágazás - Mezőzombor	MÁV	RFC6,	162
Hatvan A elágazás - Hatvan D elágazás	MÁV	RFC7,	3,8
Hatvan D elágazás - Újszász	MÁV	RFC7,	49,5
Újszász - Újszászi elágazás	MÁV	RFC7,	13,4
Abony elágazás - Paládicspuszta elágazás	MÁV	RFC6, RFC7,	23,5
Ferencváros - Soroksár	MÁV	RFC7,	8,9
Kőbánya felső - Rákos elágazás	MÁV	RFC7,	2,3
Rákos elágazás - Szob - (Border SK)	MÁV	RFC7,	65,7
Komárom - Border SK	MÁV	RFC7,	2,8

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HUNGARY (GYSEV)

Overlapping section	IMs involved	RFC involved with	Section lenght
Sopron-Rendező - Pinnye*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, future RFC 9,	17,2
Pinnye - Fertőszentmiklós*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, future RFC 9,	6,9
Fertőszentmiklós - Petőháza*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, future RFC 9,	2,2
Petőháza - Győr*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, future RFC 9,	58,1

SLOVENIA

Overlapping section	IMs involved	RFC involved with	Section lenght
Divača - Koper	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC 6,	48
Ljubljana - Divača	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC 6,	103,7
Zidani Most - Ljubljana	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC 6, RFC10	63,9
Zidani Most - Pragersko	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC 6, RFC10	73,2
Pragersko-Ormož	PKP, ŽSR, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 6,	40,3
Ormož-Hodoš-nat. border (HU)	PKP, ŽSR, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 6,	69,2
Celje - Velenje	PKP, ŽSR, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC6, RFC10	38
Ljubljana-Novo mesto	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI	RFC 5, RFC6, RFC10	76

2.3 Terminals

As railway lines and terminals together specify the Corridor, terminals are also described in the Chapter 3 of the CID and in the TMS. All terminals along designated lines have been determined as part of the corridor as well, except if a terminal does not have any relevance for the traffic in the corridor. The marshalling yards, major rail-connected freight terminals, rail-connected intermodal terminals in seaports, airports and inland waterways belong to the terminals presented in the TMS.

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2.4 Bottlenecks

This chapter provides information about the infrastructural bottlenecks on the sections of RFC Amber, more precisely about the tracks' technical parameters which do not reach the requirements specified in the Regulation (EU) No 1315/2013 Article 39 (2a) of the European Parliament and of the Council of 11 December 2013. Although, the lines of RFC Amber do not necessarily belong to the core TEN-T network at every part, the IMs and AB concerned decided to take the aforementioned minimum set of infrastructure requirements as a basic goal to be reached.

We generally divide bottlenecks into the following categories:

- infrastructural bottlenecks
- operational bottlenecks
- administrative bottlenecks
- capacity bottlenecks
- other bottlenecks

In this chapter data about infrastructure bottlenecks will be provided only.

It should be noted however, that the tracks are fully functional, operable and removing the mentioned bottlenecks would only improve their technical parameters to be compatible with the parameters specified in the Regulation (EU) No. 1315/2013, Article 39 (2a). The collected information below also includes the deadlines for the projects aiming to eliminate the identified bottlenecks and the estimated financial cost and source of funding belonging to their realisation.

The elaboration of a comprehensive *"Study on bottlenecks along Rail Freight Corridor Amber (RFC Amber)"* was launched in 2019. The Bottleneck Study aims to give an in-depth understanding of the compliance of the corridor infrastructure with TEN-T minimum requirements (defined by Regulation 1315/2013 EU Art 39. (2a)), TSI line performance parameters, bottlenecks in terms of capacity and line standard, and of potential measures for infrastructure and operational improvements for efficient rail freight operations along the network of RFC Amber. The study is proposing appropriate measures for infrastructure and operational improvements with the aim to eliminate or reduce the negative effects of such bottlenecks and to allow more efficient rail freight operations along RFC Amber. The study can therefore provide support for decisions relating to future investments concerning infrastructure and operational, administrative and capacity-related measures and improved cross-border cooperation regarding the network of RFC Amber. The Bottleneck Study was completed at the end of 2020.

POLAND

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,212 PLN March2018)	Financial Sources
Poland	Muszyna (G.P.) - Muszyna	Muszyna (G.P.) - Muszyna	one track line, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	National founds
Poland	Muszyna - Nowy Sącz	Muszyna - Nowy Sącz	one track line, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	National founds
Poland	Nowy Sącz - Tarnów	Nowy Sącz - Tarnów	section with one track, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	National founds
Poland	Podłęże - Podłęże R 201	Podłęże - Podłęże R 201	low max train lenght	Project "Works on the railway line No. 95 on the section Kraków Mydlniki - Podłęże with interchanges" Project improve technical condition.	2018	14,079	National founds
Poland	Podłęże - Podłęże R 101	Podłęże - Podłęże R 101	low max train lenght	Project possibly after 2020	-	-	-
Poland	Podłęże R 101 - Podłęże R 201	Podłęże R 101 - Podłęże R 201	low max train lenght	Project: "Work on the E 30 railway line on the Kraków Główny Towarowy – Rudzice section and the addition of the agglomeration line tracks" Projects aim to improve parameters to TEN-T requirements.	2020	247, 697	CEF
Poland	Podłęże R 201 - Raciborowice	Podłęże R 201 - Raciborowice	low axle load, low max train lenght, low speed	Project "Works on the railway line No. 95 on the section Kraków Mydlniki - Podłęże with interchanges" Project improve technical condition.	2018	14,079	National founds
Poland	Raciborowice - Tunel	Raciborowice - Tunel	low max train lenght, low speed	Project possibly after 2020	-	-	-

Poland	Tunel - Radom	Tunel - Radom	low max train lenght, low speed	Projects: 1) "Works on railway line no. 8 on section Skarżysko Kamienna – Kielce –Kozłów" 2) "Modernisation railway line no. 8 Radom - Kielce"	1) 2022 2) 2018	1) 112,678 2) 10,328	1) OPIE 2)National founds
Poland	Radom - Dęblin	Radom - Dęblin	low max train lenght, low speed	Project possibly after 2020	-	-	-
Poland	Dęblin - Łuków	Dęblin - Łuków	low max train lenght, low speed	Project possibly after 2020	-	-	-
Poland	Podłęże R 101 - Kraków Prokocim Towarowy	Podłęże R 101 - Gaj	low axle load, low max train lenght, low speed	Project: "Work on the E 30 railway line on the Kraków Główny Towarowy – Rudzice section and the addition of the agglomeration line tracks" Projects aim to improve parameters to TEN-T requirements.	2020	247,697	CEF
Poland	Kraków Prokocim Towarowy - Oświęcim (OwC)	Kraków Prokocim Towarowy - Oświęcim (OwC)	low axle load, low max train lenght, low speed	Project: "Work on the railway line 94 on the Kraków Płaszów – Skawina – Oświęcim section" Project improve technical condition.	2023	84,52	Natonal founds
Poland	Oświęcim (OwC) - Oświęcim (OwC1)	Oświęcim (OwC) - Oświęcim (OwC1)	low axle load, low max train lenght, low speed	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	83,428	OPIE
Poland	Oświęcim (OwC1) - Mysłowice Brzezinka	Oświęcim (OwC1) - Mysłowice Brzezinka	low axle load, low max train lenght, low speed	Projects: 1) "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim. 2) "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	1) 2021 2) 2022	1) 131,885 2) 83,428	1) OPIE 2) OPIE

Poland	Mysłowice Brzezinka - Sosnowiec Jęzor	Mysłowice Brzezinka - Sosnowiec Jęzor	low axle load, low max train lenght, low speed	Project: "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	2022	131,885	OPIE
Poland	Sosnowiec Jęzor - Jaworzno Szczakowa	Sosnowiec Jęzor - Jaworzno Szczakowa	low axle load, low max train lenght	Project: "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	2022	83,428	OPIE
Poland	Jaworzno Szczakowa - Tunel	Jaworzno Szczakowa - Tunel	low axle load, low max train lenght, low speed	Project: "18 Work on the railway lines No. 62, 660 on the Tunel – Bukowno – Sosnowiec Płd. section." Project improve technical condition.	2021	69,824	Natonal founds
Poland	Radom - Warszawa Główna Tow.	Radom - Warszawa Główna Tow.	section with one track, low max train lenght, low speed, low axle load	Projects: 1) Modernisation railway line no. 8, section Warszawa Okęcie – Radom (LOsT: A, B,F) Phase II 2) Works on railway line no. 8, section Warka – Radom (Lots: C, D, E) Projects aim to improve parameters to TEN-T requirements	1) 2020 2) 2023	1) 224,098 2) 165,646	1) OPIE 2) OPIE
Poland	Warszawa Główna Tow. - Warszawa Praga	Warszawa Główna Tow. - Warszawa Praga	low axle load, low max train lenght	Project: Works on the Warsaw ring railway (section Warszawa Golabki/Warszawa Zachodnia–Warszawa Gdanska Project aim to improve parameters to TEN-T requirements (without maximum speed).	2019	56,268	CEF
Poland	Zwardoń (G.P.) - Zwardoń	Zwardoń (G.P.) - Zwardoń	one track line, low axle load, low max train lenght, low speed	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds
Poland	Zwardoń - Bielsko-Biała	Zwardoń - Bielsko-Biała	section with one track, low axle load, low max train lenght, low speed, high gradient	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds

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Poland	Bielsko-Biała - Czechowice-Dziedzice	Bielsko-Biała - Czechowice-Dziedzice	low axle load, low max train lenght, low speed,	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds
Poland	Czechowice-Dziedzice - Oświęcim	Czechowice-Dziedzice - Oświęcim	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Oświęcim - Oświęcim (OwC1)	Oświęcim - Oświęcim (OwC1)	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Oświęcim - Oświęcim (OwC)	Oświęcim - Oświęcim (OwC)	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Dęblin - Tłuszcz	Dęblin - Pilawa	low speed	Project: "Work on the railway line No. 7 Warszawa Wschodnia Osobowa – Dorohusk on the Warszawa – Otwock – Dęblin – Lublin section" Projects aim to improve parameters to TEN-T requirements.	2021	844,302	OPIE
Poland	Tłuszcz - Warszawa Praga	Krusze - Legionowo Piaski	low axle load, low max train lenght, low speed,	Project possibly after 2020	-	-	-

SLOVAKIA

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovakia	Bratislava Vajnory - Dunajská Streda - Komárno border	Bratislava Nové Mesto -Komárno	one track line→lack of capacity (strong passenger transport, connection to intermodal terminal)	electrification, building of 2. line track	According to the results of Feasibility study of junction Bratislava after 2030	assumption 600	OPII/ State budget
Slovakia	Košice - Plaveč border	Lipany - Plaveč border	low speed, ERTMS not full deployment	modernisation of track	-	-	-
		Prešov - Kysak	low speed, ERTMS not full deployment	modernisation of track	-	-	-
		Košice - Kysak	ERTMS not full deployment	ERTMS	after 2023	1,622	-

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HUNGARY (MÁV)

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euros	Financial Sources
Hungary	(Border SLO) - Őriszentpéter - Zalaszentiván	(Border SLO) - Őriszentpéter - Zalaszentiván	Max. train length < 740m	-	-	-	-
Hungary	(Border SLO) - Őriszentpéter - Zalaszentiván	(Border SLO) - Őriszentpéter - Zalaszentiván	ETCS is not deployed	Deployment of ETCS L2 on the Bajánsenye - Boba railway line	2018	4.6	EU and Hungarian budget
Hungary	Győr - Ferencváros	Budaörs - Kelenföld	Max. axle load < 22.5t	-	-	-	-
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	Max. speed < 100km/h Max. axle load < 22.5t	-	-	-	-
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	-	Upgrade of the Budapest South Railway Bridge	2020	114,2	EU and Hungarian budget
Hungary	Győr - Ferencváros	Győr - Kelenföld	ETCS baseline is not interoperable	-	-	-	-
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	ETCS is not deployed	Deployment of ETCS L2 on the Ferencváros - Székesfehérvár railway line	2018	15.9	EU and Hungarian budget
Hungary	Győr - Ferencváros	Győr - Ferencváros	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	19.3	EU and Hungarian budget
Hungary	Komárom - Border SK	Komárom - Border SK	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Komárom - Border SK	Komárom - Border SK	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.4	EU and Hungarian budget
Hungary	Ferencváros - Kelebia - (Border SRB)	Ferencváros - Soroksár	ETCS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	-	Hungarian budget
Hungary	Ferencváros - Kelebia - (Border SRB)	Ferencváros - Soroksár	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	23.3	EU and Hungarian budget

Hungary	Ferencváros - Kelebia - (Border SRB)	Soroksár - Kunszentmiklós-Tass	Max. axle load < 22.5t ERTMS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	-	Hungarian budget
Hungary	Ferencváros - Kelebia - (Border SRB)	Kunszentmiklós-Tass - Border SRB	Max. train length < 740m Max. axle load < 22.5t ERTMS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	-	Hungarian budget
Hungary	Ferencváros - Kőbánya felső	Ferencváros - Kőbánya felső	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Ferencváros - Kőbánya felső	Ferencváros - Kőbánya felső	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.7	EU and Hungarian budget
Hungary	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.3	EU and Hungarian budget
Hungary	Rákos elágazás - Rákospalota-Újpest	Rákos elágazás - Rákospalota-Újpest	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Rákos elágazás - Rákospalota-Újpest	Rákos elágazás - Rákospalota-Újpest	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	1.4	EU and Hungarian budget
Hungary	Rákospalota-Újpest - Border SK	Rákospalota-Újpest - Border SK	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary	Kőbánya felső - Rákos	Kőbánya felső - Rákos	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Kőbánya felső - Rákos	Kőbánya felső - Rákos	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.5	EU and Hungarian budget

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Hungary	Rákos - Felsőzsolca	Rákos - Hatvan	Max. axle load < 22.5t ETCS is not deployed	Reconstruction works of the Rákos - Hatvan railway line and the deployment of ETCS L2	2020	672.6	EU and Hungarian budget
Hungary	Rákos - Felsőzsolca	Hatvan - Felsőzsolca	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Rákos - Felsőzsolca	Rákos - Felsőzsolca	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	10.3	EU and Hungarian budget
Hungary	Felsőzsolca - Hidasnémeti - (Border SK)	Felsőzsolca - Border SK	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Felsőzsolca - Hidasnémeti - (Border SK)	Felsőzsolca - Border SK	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	3.4	EU and Hungarian budget
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Felsőzsolca - Border SK	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Felsőzsolca - Mezőzombor	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	2.2	EU and Hungarian budget
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Mezőzombor - Border SK	Max. train length < 740m GSM-R is not deployed	-	-	-	-
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Mezőzombor - Sátoraljaújhely	Track is not electrified	Removal of bottlenecks and electrification of the Mezőzombor - Sátoraljaújhely railway line	2019	93.4	EU and Hungarian budget
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Sárospatak - Sátoraljaújhely	Max. speed < 100km/h	Removal of bottlenecks and electrification of the Mezőzombor - Sátoraljaújhely railway line	2019	93.4	EU and Hungarian budget
Hungary	Felsőzsolca - Sátoraljaújhely - (Border SK)	Sátoraljaújhely - Border SK	Max. speed < 100km/h Track is not electrified	-	-	-	-

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Hungary	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.2	EU and Hungarian budget
Hungary	Hatvan B elágazás - Hatvan C elágazás	Hatvan B elágazás - Hatvan C elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Hatvan B elágazás - Hatvan C elágazás	Hatvan B elágazás - Hatvan C elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.1	EU and Hungarian budget
Hungary	Hatvan - Újszász	Hatvan - Újszász	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary	Újszász - Újszászi elágazás	Újszász - Újszászi elágazás	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Újszász - Újszászi elágazás	Újszász - Újszászi elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.8	EU and Hungarian budget
Hungary	Újszászi elágazás - Paládicspuszta elágazás	Újszászi elágazás - Paládicspuszta elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Újszászi elágazás - Paládicspuszta elágazás	Újszászi elágazás - Paládicspuszta elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary	Szolnok A elágazás - Szolnok-Rendező	Szolnok A elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Szolnok A elágazás - Szolnok-Rendező	Szolnok A elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.6	EU and Hungarian budget
Hungary	Szolnok B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Szolnok B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.5	EU and Hungarian budget

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Hungary	Szolnok C elágazás - Szolnok-Rendező	Szolnok C elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Szolnok C elágazás - Szolnok-Rendező	Szolnok C elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.4	EU and Hungarian budget
Hungary	Szolnok D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Szolnok D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.6	EU and Hungarian budget
Hungary	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	Max. axle load < 22.5t	-	-	-	-
Hungary	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	ETCS is not deployed	Deployment of ETCS L2 on the Monor - Szajol railway line	2019	20.0	EU and Hungarian budget
Hungary	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	3.4	EU and Hungarian budget
Hungary	Nyársapát elágazás - Abony elágazás	Nyársapát elágazás - Abony elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Nyársapát elágazás - Abony elágazás	Nyársapát elágazás - Abony elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary	Nyársapát elágazás - Kiskunfélegyháza	Nyársapát elágazás - Városföld	ETCS is not deployed	-	-	-	-
Hungary	Nyársapát elágazás - Kiskunfélegyháza	Nyársapát elágazás - Városföld	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	2.4	EU and Hungarian budget

Hungary	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.8	EU and Hungarian budget
Hungary	Kiskunhalas - Kiskunfélegyháza	Kiskunhalas - Kiskunfélegyháza	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary	Balotaszállás elágazás - Harkakötöny elágazás	Balotaszállás elágazás - Harkakötöny elágazás	Max. train length < 740m Max. speed < 100km/h Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-

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HUNGARY (GYSEV)

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Estimated Costs in mil. of Euro	Financial Sources
Hungary	Rajka s.b. - Hegyeshalom	Rajka s.b. - Hegyeshalom	single track; Max. axle load < 22.5t; track conditions deteriorating;	Modernisation, upgrade of railway infrastructure	-	62	-
Hungary	Hegyeshalom - Csorna	Hegyeshalom - Csorna	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	-	385	-
Hungary	Csorna - Porpác	Csorna - Porpác	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; InterCity traffic every two hours per direction; no ETCS	Modernisation, upgrade of railway infrastructure	-		-
Hungary	Porpác - Szombathely	Porpác - Szombathely	Max. axle load < 22.5t; track conditions deteriorating; high density of InterCity and commuter trains; no ETCS	Modernisation, upgrade of railway infrastructure	-	n/a	-
Hungary	Szombathely	Szombathely	outdated track and signalling infrastructure; Max. speed <100km/h; capacitiy problems for freight; no ETCS	Modernisation, upgrade of railway and signalling infrastructure	-	49	-
Hungary	Szombathely - Vasvár	Szombathely - Vasvár	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	-	174	-

Hungary	Vasvár - Pácsony	Vasvár - Pácsony	Max. speed < 100km/h; Max. axle load < 22.5t; 13‰ elevation; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	-		-
Hungary	Pácsony - Egervár-Vasboldogasszony	Pácsony - Egervár-Vasboldogasszony	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	-		-
Hungary	Egervár-Vasboldogasszony - Zalaszentiván	Egervár-Vasboldogasszony - Zalaszentiván	Max. speed < 100km/h; Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS Change of direction of trains at Zalaszentiván when going to Hodoš/Koper	Modernisation, upgrade of railway infrastructure New triangle track at Zalaszentiván	-		-
Hungary	Sopron-Rendező - Harka	Sopron-Rendező - Harka	single track line; Max. axle load <22.5t; high density of domestic and international passenger trains at least hourly; no ETCS	Modernisation, upgrade of railway infrastructure	-	-	-
Hungary	Harka - Szombathely - Szentgotthárd	Harka - Szombathely - Szentgotthárd	no major bottlenecks; ETCS L2 under construction	Deployment of ETCS control-command signalling system	03/2021	32	Cohesion Fund (IKOP)
Hungary	Sopron-Rendező - Pinnye	Sopron-Rendező - Pinnye	single track line; Max. axle load <22.5t; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	-	-	-

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Hungary	Pinnye - Fertőszentmiklós	Pinnye - Fertőszentmiklós	single track line; Max. axle load < 22.5t; at least hourly regular interval commuter trains; every two hours InterCity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	-	-	-
Hungary	Fertőszentmiklós - Petőháza	Fertőszentmiklós - Petőháza	single track line; Max. axle load <22.5t; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	-	-	-
Hungary	Petőháza - Győr	Csorna - Győr	single track line; Max. axle load < 22.5t; high density of passenger trains; at least hourly regular interval commuter trains; every hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	-	-	-

SLOVENIA

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovenia	section Zidani Most - Pragersko	section Zidani Most - Pragersko	Higher category (C3 to D4)	Modernisation, upgrade of railway infrastructure	2022	-	EU and Slovenian budget
Slovenia	Station Ljubljana (node)	Station Ljubljana (node)	Lack of capacity, longer station tracks, signaling	Modernisation, upgrade of railway infrastructure	2025	-	EU and Slovenian budget
Slovenia	section Ljubljana - Zidani Most	section Ljubljana - Zidani Most	Signaling, longer station tracks,	Modernisation, upgrade of railway infrastructure	after 2023	-	EU and Slovenian budget
Slovenia	section Divača - Koper	section Divača - Koper	An additional track on other route (shorter track) but not parallel, creation of new structure (line, tunnel, bridge, leapfrog)	Modernisation, upgrade of railway infrastructure	2025	-	EU and Slovenian budget
Slovenia	section Divača - Koper	section Divača - Koper	Lack of capacity, longer station tracks	Modernisation, upgrade of railway infrastructure	2022	-	EU and Slovenian budget
Slovenia	section Ljubljana - Divača	section Ljubljana - Divača	More energy for traction, signaling, longer station tracks	Modernisation, upgrade of railway infrastructure	2022	-	EU and Slovenian budget

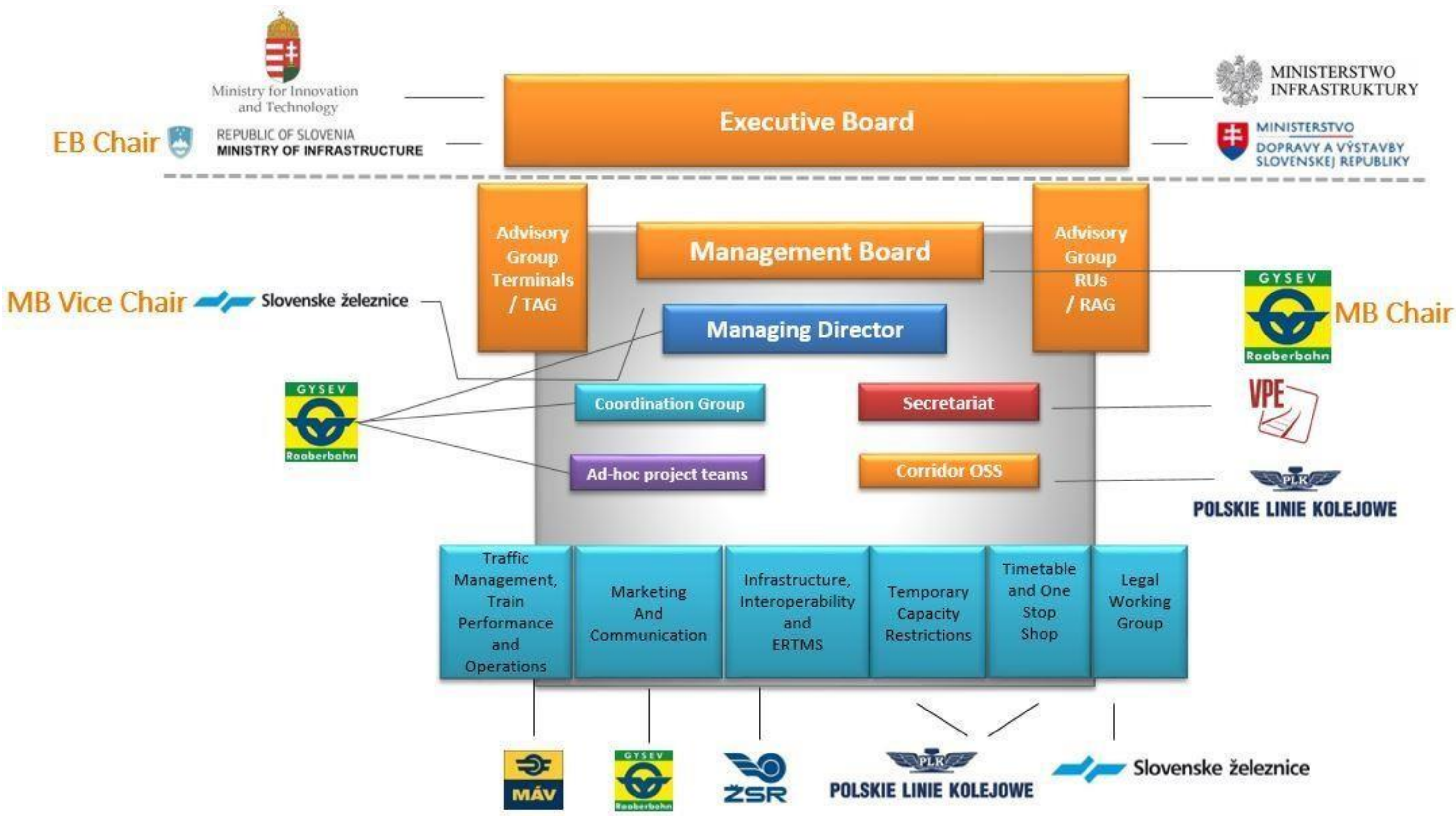
2.5 Governance of RFC Amber

2.5.1 Regulation requirements

The Regulation (EU) No 913/2010 defines the corridor governance structure on two levels. The establishment of the RFC Amber organizational structure was a crucial measure for creating the corridor:

The Executive Board, which is the highest level body assigned to the corridor.

The Management Board, which is the main operative body of the corridor. Organizational units of the RFC Amber are illustrated in the following schematic structure:



The Executive Board (EB)

The Executive Board of RFC Amber was established with the signature of the establishing Memorandum of Understanding on 5 December 2017 by the Ministers in charge of transport or of infrastructure in the involved countries. The Executive Board is currently composed of representatives from the Ministries responsible for transport or for infrastructure of Poland, the Republic of Slovakia, Hungary and the Republic of Slovenia.

This body is responsible for defining the general objectives of the freight corridor, supervising and taking the necessary measures for improving the project. They might additionally be addressed in case of issues beyond the competence of the Management Board or when a conflict of interest arises in it. Issues stemming from the Advisory Groups may also be referred by the Management Board to the Executive Board where it can decide on the substance of the problem between interested parties and inform the involved parties about its opinion. In this forum the participation of each Member State is obligatory, decesions are based on mutual consent.

Prior to its official establishment, the Executive Board held several pre-meetings.

The Management Board (MB)

For each freight corridor, the Infrastructure Managers concerned and, where relevant the Allocation Bodies as referred, shall establish a MB responsible for taking all operative measures for the implementation of the Regulation. The MB makes its decisions based on mutual consent. The participation of each IM and AB is obligatory.

Nominated representatives of the IMs and AB of RFC Amber had their first meeting regarding the establishment of the new RFC on 23 March 2016, and then still several pre-meetings, but the first proper step for the setting up of the governance of the MB of RFC Amber was the signing of a Memorandum of Understanding (MoU) among the 6 (six) stakeholders involved in RFC Amber:

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PKP PLK
PKP Polskie Linie Kolejowe S.A. (PKP Polskie Linie Kolejowe Spółka Akcyjna) – IM, Poland

ŽSR
Railways of the Slovak Republik (Železnice Slovenskej Republiky) - IM, Slovak Republic

MÁV
MÁV Hungarian State Railways Company Limited by Shares (MÁV Magyar Álllamvasutak Zrt.) - IM, Hungary

GYSEV
Győr-Sopron-Ebenfurti Vasút Zrt./ Raab–Oedenburg–Ebenfurter Eisenbahn AG - IM, Hungary & Austria

VPE
Hungarian VPE Rail Capacity Allocation Office (VPE Vasúti Pályakapacitás-elosztó Kft.) - AB, Hungary

SŽ-I
SŽ - Infrastruktura, d.o.o. – IM, Slovenia

In this MoU, which entered into force on 6 April 2017, the companies mentioned above formalized their commitment to cooperate in order to fulfill the requirements and the aim of the Regulation, to maximize the benefits of cooperation and to agree on an appropriate governance structure for the MB of RFC Amber. The first official meeting of the MB took place on 15-16 June 2017 in Ljubljana.
The MB members of RFC Amber, based on the number of activities and the volume of tasks for the timely corridor establishment, decided, that the RFC Amber will be formed without any legal entity and corridor seat. The decision of possibly forming a legal structure (e.g. EEIG) on RFC Amber will be examined within the frame of the period 2018-2020, given that it was also undertaken within the frame of the Programme Support Action project, a co-financing tool for the RFCs under the Connecting Europe Facility. RFC Amber will be a beneficiary of this fund and be eligible for co-funding from 27 September 2017 until 31 December 2020.
For the sake of corridor establishment and considering the volume and the types of tasks, the MB decided to set up also other corridor bodies (e.g. Advisory Groups, C-OSS office) as well as the Coordination Group, a Secretariat and six Working Groups to support its work.
The organizational structure of the Corridor is laid down in the Internal Rules and Procedures of RFC Amber.

The Managing Director (MD)

The Management Board has appointed a Managing Director for the RFC Amber for the fulfilment of responsibilities such as the cooperation and exchange of information with the European Commission and its bodies, RailNetEurope (RNE) and other railway sector organisations, other RFCs, i.a. within the RFC Network community, TEN-T Core Network Corridors, applicants, relevant authorities and bodies such as railway safety authorities and regulatory bodies and other stakeholders, including participation in the relevant meetings. The Managing director cooperates with the RFC Amber Executive Board, the

Chairperson and the Members of the Management Board, the leaders of the RFC Amber Working Groups and with the Spokesperson of the Railway and Terminal Advisory Groups (RAG/TAG).
The specific tasks and responsibilities of the Managing Director are to participate and represent the RFC Amber in high-level meetings such as i. a. RFC Network, RNE General Assembly, EU SERA- Committee Working Group on RFCs, Core Network Corridor (CNC) Forum and ECCO, furthermore to represent the RFC Amber towards stakeholders in meetings or events (e.g. conferences) arranged by the European Commission, the RFC Amber Railway and Terminal Advisory Groups (RAG/TAG), other RFCs and other stakeholders (such as sector organisations like CER, UIC, ERFA, UIRR).

Advisory Groups (AGs)

On 12 December 2017, the MB of RFC Amber formally approved the establishing templates for the set-up of the RFC Amber **Railway Undertaking Advisory Group (RAG)** and the **Managers and Owners of the Terminals Advisory Group (TAG).** The official establishment of these two groups was achieved on 23 May 2018 at the Terminal of Brzesko in Poland. With this activity, the MB fulfilled the requirements of article 8.7 and 8.8 of Regulation 913/2010.
Prior to the official establishment of the Advisory Groups, the Parties held National Information Days for their customers (RUs and Terminals) where they already had the chance to give opinion on the corrdior's draft route proposal, and their comments were taken into account and incorporated to the documents of RFC Amber.
The voice of customers is taken into account via the Terminal Managers and the Railway Undertakings Advisory Groups. Participation in Advisory Groups is on a voluntary basis, the joining parties have the right to leave the groups at any time and there is always room to join for interested RUs/ Terminals/ Authorised Applicants. Advisory Groups members have a dedicated area in the RFC Amber website, where all the materials under consultation are available.
The Letters of Intent establishing the Advisory Groups and the Rules of Consultation forms an annex to the Implementation Plan. The Rules of Consultation lay down the principles for organisation and communication between the Management Board and the Advisory Groups. The governance of the internal functioning of the Advisory Groups and the organisation of their further meetings are not the task of the Management Board, it shall be defined by the AGs.

One representative for each Advisory Group should be nominated to coordinate the position of the group. These people are the so-called Spokespersons. The Advisory Groups or their common representative may issue opinions and proposals to the MB regarding their decisions, which has direct consequences for the MB. The Advisory Group may also issue its own-initiative opinion. The MB shall take into account any opinion and proposal of the Advisory Group members regarding the proposed documents and its activities.

If the MB is not able to adopt the opinion or proposal of the Advisory Group member it shall be reasoned in writing. Regardless the outcome, the MB shall continue the consultation process with the Advisory

Group until the mutually acceptable solution is reached.

If the MB and the Advisory Group are not able to find a mutually acceptable solution the MB may refer the matter to the Executive Board of the RFC Amber. The Executive Board decides on the substance of the problem between interested parties and informs involved parties about its opinion. In each case the MB issues a final decision.

Railway Undertaking Advisory Group (RAG)

The RAG represents a platform for railway undertakings to facilitate the exchange of information, recommendations and mutual understanding about technical and operational issues of rail operators on the RFC Amber with the MB.
At the kick-off event of 23 May 2018, the RUs highlighted the most important priorities which shall be in the focus of the Management Board.
It was mentioned that many corridors offer PaPs which are not fitting to the market needs. It was advised to the MB to make consultation with the customers before offering any PaPs. Furthermore, the MB (and its IMs) was encouraged to lobby at their national governments for the implementation of the TEN-T minimum infrastructure requirements, such as electrification, line speed of 100 km/h, axle load of 225 kN, train length of 740 meters and ERTMS deployment till 2030.
There are always problems in Europe with each corridor concerning the harmonization of TCRs. It was also mentioned that lately announced and non-announced TCRs shall be avoided as much as possible in the future.
The RUs were involved into the preparation process of the Bottlenck Study which will deal with the identification of infrastructural, operational, capacity and administrative bottlenecks, referred to in Chapters, 6.3.2 and 6.4.

Managers and Owners of the Terminals Advisory Group (TAG)

The TAG represents a platform for managers and owners of terminals and port authorities to facilitate the exchange of information or recommendations about technical and operational issues, respectively strategic plans for improvements of RFC Amber with the MB. The TAG may issue an opinion on any proposal by the MB which has direct consequences for investment and the management of terminals.

2.5.2 Internal cooperation structure

The MB has decided to set up the Coordination Group, the Secretariat and six Working Groups to support its work.

Project Management team - support for the establishment and implementation of the RFC Amber

The RFC Amber Project Management team designated by GYSEV covers the overall management of the CEF PSA Grant Agreement (No. INEA/CEF/TRAN/M2016/PSARFC11: Establishment and development of the "Amber" rail freight corridor (RFC Amber) - action number 2016-PSA-RFC11).

In particular the Project Management activity includes the following tasks:

- elaboration and implementation of a Cooperation Agreement between the beneficiaries;
- implementation of the action 2016-PSA-RFC11 in line with the Grant Agreement;
- overall management of the Grant Agreement as well as supervision and monitoring of the project implementation;
- collection of deliverables and project documentation from the beneficiaries;
- submission of Progress Reports and Final Report and all necessary documentation to INEA.

The Project Management activity itself is undertaken by the mandated Coordinator for the conclusion and management of the Grant Agreement (action number 2016-PSA-RFC11), which is GYSEV. There are 8 cooperating Parties in the PSA, 2 Ministries, 5 IMs and 1 AB. The two Ministries are the Slovenian and the Polish Ministries of Transport. The action runs from 27/09/2017 until 31/12/2020. Basically, the set-up and run of the RFC Amber is co-funded along with the necessary activities for the implementation. Besides that, a Study examining all types of bottlenecks (for ex. infrastructural, operational, administrative) is going to be carried out.

It is important to emphasize that the meetings of the Advisory Groups are financed by the Advisory Group Members themselves. Members of the Advisory Groups will not be reimbursed by the corridor organization for their expenses. In case the Management Board convenes the AG meetings, it shall be responsible for the facility fees (such as room rental), catering provided for the venue and the promotional materials the event may need.

Coordination Group (CG)

The Coordination Group composed of representatives from the IMs and AB involved in RFC Amber, was set up in December 2017.

<u>In particular, the Coordination Group carries out the following activities</u>:

- elaborates and monitors the Action Plan (see more under point 1.4.) with the short-term and long-term actions to be tackled by the Executive Board/ Ministries, Management Board/ Infrastructure Managers and Allocation Body, RAG-TAG/ RUs
- ensures a high-level general follow-up and coordination of the activities defined by the MB,
- searches for compromises on issues that need consensual support by the MB,
- provides support for the Management Board for any issue which is not in the scope of the working groups;
- prepares the issues to be discussed and decisions to be taken for the subsequent Management Board meeting
- together with the Secretariat advises and supervises the work of the Working Groups;
- ensures an efficient communication flow between the RFC members, acting as contact point between national and corridor level;
- ensures that the Corridor Information Document (CID Book including the Implementation Plan as an Annex) is prepared according to the agreed timeline.

The Coordination Group organizes personal meetings and videoconference meetings when needed.
The Leader of the Coordination Group is the Managing Director.

Secretariat

The MB decided to set up a Secretariat for the RFC Amber. The main purpose of the establishment was the fulfillment of administrative tasks and providing support for the MB (e.g. preparation of the MB and the AGs meetings and provision for all necessary corridor organizational and supportive tasks).

Secretariat is in charge of the following tasks:

- keeping track of the names and contact details of the Members, resp. their deputies relevant to the organisational units of the corridor;
- assisting the MB in its work and supporting the organizational units of the RFC, with a view on the commonly agreed deadlines;
- cooperation and contact with Working Group leaders,
- being information point for interested external parties;
- being a first contact point for the RAG and TAG;
- compilation of the final Corridor Information Document;
- archiving the documents created in the framework of corridor activities, in particular the minutes of the meetings.

Detailed responsibilities of the Secretariat are prescribed in the Internal Rules and Procedures of RFC Amber. Representative from VPE leads the Secretariat.

Working Groups

The Working Groups were set up in October 2017 and their tasks are described in the Internal Rules and Procedures of RFC Amber. Working groups are composed of experts appointed by the Members of the RFC Amber and beside the MB they assist also the Secretariat and the Coordination Group in their work.

Each WG is led by a WG Leader who has the responsibility for:

- coordination of the work of the WG according to the rules and expectation of the MB;
- facilitation of the work of the WG by ensuring the transparency of the work;
- deliver all necessary data to the MB to take a decision;
- report on the progress of the WG to the CG, Secretariat and the MB.

Each Working Group organizes at least one personal meeting yearly as well as videoconference meeting when needed. Currently five permanent and one ad-hoc Working Groups are established:

Infrastructure, Interoperability and ERTMS WG

This Working Group is in charge of the following tasks:

- compile, review and update the Investment Plan along the corridor;
- identify the bottlenecks along the corridor;
- collect and regularly update the infrastructure parameters constituting the RFC Amber interoperability;
- analyze the outcomes of the Transport Market Study in order to improve the quality of the corridor;
- channel the data into CIP and update it regularly;
- carry out the follow-up of the activities related to the ERTMS deployment along the corridor.

A representative from ŽSR leads this Working Group.

Traffic Management / Train Performance & Operations WG (TM/TP&O WG)

This Working Group is in charge of the following tasks:

- harmonization of national approaches in order to set up a corridor model for traffic management;
- harmonization of national approaches in order to set up a corridor model for traffic performance management;
- cooperate in drafting the CID;
- define the Priority rules;
- draft the performance management report;
- propose the corridor objectives.

A representative from MÁV leads this Working Group.

Timetable and One Stop Shop WG (TT&C-OSS WG)

This Working Group is in charge of the following tasks:

- develop attractive corridor products in the form of Pre-arranged train Paths (PaPs) and Reserve Capacity (RC) as well as analysis of the results of the capacity allocation;
- regular update of the corridor offer;
- promote compatibility between the Performance Schemes along the corridor;
- propose the corridor objectives;
- cooperate in drafting the CID;
- supporting the work of the C-OSS Manager
- promote coordination of works along the corridor aiming to minimize traffic disruptions.

A representative from PKP PLK leads this Working Group.

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Temporary Capacity Restrictions WG (TCR WG)

<u>This Working Group is in charge of the following tasks</u>:

- collect, publish and aim to harmonise the TCRs along the RFC Amber;
- exchange of crucial information between IMs and AB on RFC Amber (also about TCRs on the neighbouring RFCs);
- overview of all planned TCRs (both on the principle and diversionary corridor lines as well as on main national lines);
- adaption of corridor traffic plans in cooperation with the WG TT & OSS (in accordance with agreed TCRs);
- adequate handling of new or modified TCRs (joint review with the WG TT & OSS of the availability of capacity as well as joint consent on a timeframe for developing and offering alternative timetables). A representative from PKP PLK leads this Working Group.

Marketing WG

<u>This Working Group is in charge of the following tasks</u>:

- market research to get feedback from the Customers in order to develop better solutions which would increase the corridor market share on the long term;
- elaboration of Transport Market Study and care for its regular upgrade;
- cooperation with RNE regarding the development and procedure-management of RFC yearly customer satisfaction survey;
- identify transport market opportunities to gain a better understanding of customer needs;
- promote the internal communication and manage the corridor website;
- develop promotional products and gadgets for representation purposes (RAG-TAG meetings, national information days, international events, etc).

A representative from GYSEV leads this Working Group.

Legal WG

The Legal WGis a permanent working group of all IMs and AB legal representatives that supports the MB and corridor organization with their legal knowledge and expertise. The Legal WG works with assigned MB mandate to clarify the arising legal questions and be responsible for the elaboration and supervision of all relevant documents such as agreements, contracts.
Representative from SŽ-I leads this Working Group.

The above-mentioned Working Groups are organized according to the current corridor needs and may be modified in the future. In this respect also new respectively ad hoc Working Groups may be set up in case needed.

Ad hoc Working Groups

Ad hoc WGs are usually set up for issues/projects which do either not belong to the competence precisely to any WG or required to be handled in a more complex way. Such WG was set up in 2019 for the Bottleneck Study project in order to coordinate the tasks in an effective way. In the future WGs of ad hoc nature may be set up because of the Action Plan to be able to work on the specific topics.

Corridor-One Stop Shop (C-OSS)

The MB establishes the representative model of C-OSS as single contact point for applicants on the RFC Amber. The C-OSS is a corridor body that fulfils the customer's needs for application for infrastructure capacity and the allocation of pre-arranged paths in line with the provisions of Article 13 of the RFC Regulation.

The C-OSS is in charge of the following tasks:

- establishment and operation of the C-OSS for application for infrastructure capacity;
- coordination of capacity offer between participating Infrastructure Managers and Allocation Bodies mainly through WG Timetable and OSS;
- publication of dedicated capacity (Pre-arranged train paths (PaPs), Reserve Capacity and, if applicable, possible future capacity products that may be developed);
- receiving and answering capacity requests and taking decisions on allocation of dedicated capacity;
- providing information about the corridor to actual and potential customers and functioning as single contact point;
- contribution to the Performance Monitoring Report;
- Participation in relevant RNE Working Groups related to capacity and other relevant forums or organizations of the sector i.a. C-OSS community.

The C-OSS's professional activities are performed by PKP PLK.

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2.6 EU level cooperation

The Regulation (EU) No 913/2010 has enabled the legal framework for the development and significant progress of Rail Freight Corridors as well as conditions for effective coordination between Freight Corridors, National Ministries and European Commission (EC). Such of activities are carried out on different levels.

2.6.1 Cooperation with other Rail Freight Corridors

Most of the EU documents (e.g. Regulations and Directives) require that all Rail Freight Corridors should cooperate with each other in order to harmonize their approach, procedures and organizational structure as possible.

In this respect the RFCs cooperate and coordinate together as an RFC network on different meetings and events as well as in dedicated associations (e.g. the RailNetEurope (RNE) European Association of Infrastructure Managers and Allocation Bodies (IMs/ABs).

2.6.2 Coordination at EU-level

At EU-level the RFCs are invited to attend dedicated meetings with the EC such as the Single European Railway Area Committee for RFCs WG which presents a platform for discussion on actual topics among the European Commission, the Member States and the RFCs, RNE and further sector associations such as CER, EIM, etc and it is under the coordination of the EC. On these meetings the RFCs have a possibility to comment the EC transport policy as well as the working documents and may raise questions concerning the correct interpretation and application of legal instruments towards the EC. The development of common, overall sector-wide solutions are handled, one crucial of such initiative is the development of the Handbook for International Contingency Management to avoid critical losses for the sector and economy as such.

The 10 Sector priorities which are the derivatives of the Rotterdam Declaration of 2016 are managed under the so-called Sector Statement Group, under the umbrella of CER. The aforementioned Handbook for International Contingency Management was adopted to be the 11th Sector Priority on 16 May 2018 in Sopron by the RNE General Assembly. It was also confirmed by the PRIME Plenary of the European Commission on 15 June 2018 in Amersfoort.

The fulfillment of these goals are managed and monitored together with the RFCs, RNE and further Sector Associations such as CER or UIRR. For the sake of efficient management, each priority has a so-called rapporteur who reports and cares about the assigned duties in order to achieve the targets. RFC Amber follows the work of this platform and will adapt the necessary measures in case of conclusions. For information purposes, the 11 sector priorities are asfollows:

Nr	Sector Statement Priority
1.	Following the Time Table Redesign project (TTR)
2.	New concept for capacity offer on RFCs
3.	Improving coordination on Temporary Capacity Restrictions (TCR)
4.	Enhancing the use of Path Coordination System (PCS)
5.	Improving harmonisation of processes at borders
6.	Train tracking and Expected Time of Arrival (ETA)
7.	Prioritisation, funding instruments, and monitoring of TEN-T parameters
8.	Facilitating concrete ERTMS Implementation
9.	Monitoring the quality of freight services with implemented and shared KPIs
10.	Harmonising the Corridor Implementation Document (CID)
11.	Implementing of the International Contingency Management Handbook (ICM)

The Rotterdam Declaration of June 2016 specifies that by 2018 the progress will be evaluated at political level. For this purpose, the Dutch Ministry of Infrastructure and Water Management has requested Panteia to monitor the progress of the implementation of the Rotterdam Declaration and the progress of the first 10 sector priorities. Following the Rotterdam Declaration from 2016 the members of the European rail sector reconfirm their support and continue this development with Ministerial Berlin declaration signed at 21st September 2020.

3 Market analysis Study

3.1 Introductory remarks

Rail freight is considered to be one of the environmentally friendliest modes of transport of goods, with an important role in the freight transport market. It contributes to the development of society and combines economic and social progress with respect also of the environment. Due to exogenous (e.g. entry of competition in road and air transport, technological innovations oriented to other modes of transport, change in transport requirements and logistic chain requirements, etc.) and endogenous (e.g. lack of appropriate transport policy measures, lack of flexibility, inefficiency, overemployment, low level of innovations and modernization, lack of cooperation of rail industry stakeholders, technological lag, etc factors, rail freight lost its competitiveness in the transport services resulting in a decrease in the transport performance of the rail sector. At the same time a shift of transport to other sometime less environmentally friendly modes of transport has occurred. This shift leads to higher proportion of external costs of transport. The need for higher investments into rail transport infrastructure is a must in order to reach improvement and gain higher market share to rail against road. This unfavourable state has to be addressed by individual states and on the EU level as well.

Increasing requirements on quality and availability of rail freight services led to the intention to establish the new European rail freight corridor Amber. The corridor establishment brings the connection between Adriatic seaport in the Republic of Slovenia and inland ports on the Danube and terminals in Hungary and the Slovak Republic and Poland, but it brings also the perspective of railway transport development with Serbia and the improvement of the railway transport in the Europe – Asia direction. Quality and efficiency of the new corridor need to be assessed and subsequently, based on the assessment, appropriate measures need to be taken to increase the competitiveness and growth of the overall efficiency of the corridor. The proposed strategy is developed based on acquisition, processing and subsequent evaluation of technical, technological, transport and economic indicators obtained from various sources.

3.2 Objective of the Transport Market Study

The main objective of the TMS is to provide a clear understanding of the current conditions of the multimodal freight market along the Corridor together with short and long term freight traffic forecast as a consequence of the establishment of the corridor at the beginning of 2019, and also to indicate the possible monitoring of the expected modal shift from road to rail. Based on the elaboration of the transport market study, we can evaluate the current state-of-play, perspective, prognosis and opportunities of the new corridor.

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In accordance with the findings of these analyses the Study proposes strategical steps which will lead to the development of the RFC Amber and the provision of quality services of the EU railway systems.

The establishment of the RFC Amber targets to reach the following objectives:

- Improve the interconnection of the main intermodal transport terminals in the Member States and allow for direct freight routes across east of the Alps.
- Improve the connectivity of industrial regions via rail into the main European freight streams, for example transport of products of the automotive industry.
- Facilitate the interconnection between the Adriatic Sea Port in the Republic of Slovenia and the inland ports on the Danube in Hungary and the Slovak Republic.
- Promote the railway transport development with Serbia.
- Improve the quality of railway transport connections across EU Eastern borders and on the land bridge between Europe and Asia.
- Connection to the sea ports in the Republic of Poland.
- Develop customer-oriented solutions to reach better satisfaction and quality of rail freight services which facilitates modal shift from road to rail.
- Stimulate the cooperation of stakeholders within the rail sector and logistic chain with a particular emphasis put on Infrastructure Managers and Member States concerned.

3.3 Methodology of work and methods of investigation

The statistical and analytical data required for elaborating the individual parts of TMS of RFC Amber Amber, with which it was possible to elaborate the individual parts of the study and then to propose the optimal strategy, are shown in the following table.

Table 1: Statistical and analytical indicators monitored in TMS

Scope	Indicator
Technical parameters	Maximum length of train, class of line, signalling equipment, electrification system, loading gauge, average speed of train, speed limits, profile
Transport performances	Development of transport performances on corridor lines (national transport and international transport) Development of transport performances on all lines of member state (national transport and international transport)
General indicators	Population, industry (the most important industry areas in countries of RFC Amber), transport infrastructure
Macroeconomic indicators	GDP development and prognosis in member states, GDP per capita in purchasing power parity, Human development index, Index of competitiveness of economies, Index of economic freedom

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Microeconomic indicators	Level of infrastructure charges for type trains Transit time
Modal Split	Development of modal split between individual modes of transport (freight and passenger transport on national territories)
Capacity analysis	Development of transport capacity utilization of individual lines Development of transport capacity utilization of individual corridor lines
Other indicators	Investment, technical and technological measures, proposal of extension of lines and terminals, etc.
Corridor indicators	Corridor benefits and opportunities

3.3.1 Material used in TMS elaboration

The elaboration of the TMS required the analysis and processing of various technical, capacity and economic indicators from a wide range of sources. Therefore, in elaborating the TMS of the RFC Amber, the following sources of information were used:

- EU legislation and standards of the member states of corridor,
- annual reports of infrastructure managers and allocation bodies of corridor member states,
- network statements of infrastructure managers and allocation bodies of corridor member states,
- traffic and transport performances provided by corridor infrastructure managers,
- traffic and transport performances from statistical offices of corridor member states,
- 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 TEN-T Core Network Corridors,
- other available economic, traffic and transport information necessary for the study's elaboration,
- data from questionnaires sent to infrastructure managers concerned,
- opinion received from Railway Undertakings and Terminals following a consultation procedure of the study with them (later called as “Railway Advisory Group” and “Terminal Advisory Group”)
- Manual Update of the Handbook on External Costs of Transport“ (final report for the European Commission - 2014),
- sector publications (articles, reports, press releases, etc. with relevance for RFC corridors),
- relevant railway specific literature.

3.3.2. Methods used in TMS elaboration

The individual results of TMS of the RFC Amber were 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 establishment 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, technical andstatistical data,
- method of analysis – in processing and searching required transport and technical statistical data,
- method of graphic representation – used for graphic and visual layout of acquired and processed statistical data and other results of the study,
- method of comparative analysis – comparison in analytical part,
- method of synthesis – for summarizing information and data obtained,
- method of introduction and conclusion – used in all parts of TMS, in creating logical judgements based on theoretical, legislative and empirical knowledge,
- brainstorming – consultations with railway professionals and experts,
- methods of statistical analysis – used in researching and processing required transport, technical and economical statistic data,
- prognostic method – used in development of TMS for prognoses and forecast scenarios.

3.4 Characteristics of RFC Amber

3.4.1 RFC Amber basic structure

The routing of the Amber corridor is based on the Letter of Intent concerning the establishment of the Amber Rail Freight Corridor No 11 by the Ministries competent for Rail Transport and subsequently on Commission implementing decision (EU) 2017/177 of 31 January 2017.

RFC Amber routing: Koper – Ljubljana/Zalaszentiván – Sopron/Csorna/(Hungarian-Serbian border) – Kelebia – Budapest – Komárom – Leopoldov/Rajka – Bratislava – Žilina – Katowice/Kraków – Warszawa/Łuków – Terespol – (Polish-Belorusian border) as the principal route for the „Amber“ rail freight corridor.

Member states: Slovenia, Hungary, Slovakia, Poland

Date of putting RFC OEM into operation RFC Amber:

14.01.2019

Seat of Corridor-One Stop Shop (C-OSS): Warsaw, Poland

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The graphical representation of the proposed routing according to the Letter of Intent is shown on Figure 1.

Graphical representation of RFC Amber

Figure 1: Graphical representation of RFC Amber routing

3.4.2 Analysis of capacity and bottlenecks

The steps of identifying and assessing infrastructure and capacity bottlenecks and that of the measures for improvement are introduced in the Bottleneck Study. The identification and evaluation of bottlenecks is based on the collection and consolidation of data on current infrastructure deficiencies and capacity problems (both factual and qualitative from IMs), including summarisation in tables and graphic representation.

3.5 Economic and transport analysis RFC Amberof RFC Amber

Economic analysis

Within the economic analysis, the indicators: GDP, GDP per capita in purchasing power parity, GDP share within the national economy, Human Development Index - HDI, Global Competitiveness Index - GCI, Index of Economic Freedom - IEF, Enabling Trade Index - ETI indices and the most important industries for the individual countries of the RFC Amber were analysed.

On the basis of the collected and evaluated main statistical economic data in the countries of the RFC Amber, it is possible to conclude:

- positive economic development in the RFC Amber countries: it can be assumed based on the trend of positive GDP development (Real GDP growth rate and prognosis in % for 2010 - 2020). The GDP development in the RFC Amber countries is assumed at the level of 3.1 – 4.0 %, which is more than the estimated average of GDP development in EU (2.8 – 2.9 %). Positive economic development can also be expected on the basis of the advantageous location of the RFC Amber countries within the analysed indices (IEF, GCI, HDI, ETI),
- increase in living standards of the population: it is assumed based on the RFC Amber countries ranking in the HDI. At the same time, the positive trend of GDP development, the amount of foreign investments and the increase in a share of science and research in GDP contribute to the increase of the living standard,
- increase in industrial production: influenced by the attractive position of the RFC Amber countries within the international indices (IEF, GCI, HDI, ETI). Industry structure, history, skilled labour force, geographic position and infrastructure of the RFC Amber countries also have a significant impact on industrial growth. These factors motivate foreign investors to direct their investment activities to the RFC Amber countries,
- increase in demand for services: the positive economic development in the RFC Amber countries takes a share in the consumption of services, as the purchasing power and consumer behaviour of the population are increased. This fact is confirmed in Germany and USA where an increase in demand for services due to the economic development – transition from secondary to tertiary national economy – was recorded,
- construction of industrial and logistics centres and intermodal transport terminals: results from the need to transport intermediate products, final products as well as foreign direct investment and greening transport. Increase in quality and extension of logistics services require the completion of new centres. The construction is also influenced by the attractive position of the RFC Amber

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countries within the Enabling Trade Index. The final products from the RFC Amber countries are worldwide distributed (e.g. production of cars in Hungary, Slovakia and Poland). Also, there is the need to distribute goods from Asia primarily by intermodal transport (e.g. goods distributed to the RFC Amber countries and other EU members from the Port of Koper in Slovenia),

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- increase in demand for transport services: influenced by the positive economic development and the position of the RFC Amber countries according to the analysed indices (GDP per capita in purchasing power standards and analysed indices IEF, GCI, HDI, ETI), the change in consumer behaviour, the population movement resulting from a higher purchasing power, higher production of final products, the need to transport intermediate products to the factories (in particular automotive, machine and metallurgical industries),
- requirements of a higher level of transport services, e.g. reliability, safety, shorter transport times, etc.: the economy in the RFC Amber countries forms primarily a secondary economic sphere (production and assembly of final products; electrical engineering, machine, metallurgical and automotive industries). This sphere requires reliable, flexible and safe transport services that are directly related to the production and logistics processes. Without the provision of high-quality transport services, the needs of customers (manufacturing companies, consumers, suppliers) cannot be satisfactory met, which could threaten the competitiveness of the business environment of the RFC Amber countries,
- pressure on transport ecology: the economic growth directly affects the consumer needs of the population, thereby the transport performances in goods and passenger road transport are still increased. The increase in these performances increases the production of external costs. Reduction of external costs (e.g. CO2 production) is planned by the European Commission in the next period through the legislative measures (e.g. a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars and for new light commercial vehicles as part of the Union's integrated approach to reduce CO2 emissions from light-duty vehicles and amending Regulation (EC) No 715/2007),
- more financial resources for the transport sector: GDP growth (Real GDP growth rate and prognosis in % for 2010 - 2020) in the RFC Amber countries will be reflected in the increased revenues to the state budgets. Increase in public revenues positively influences the possibilities of state investments. Due to constantly increasing demand for high-quality transport services and better public revenues, it will be possible to assign more financial means for the transport sector.

Analysis of transport and traffic indicators

The analysis of transport and traffic indicators includes the level of liberalization of rail transport services, the European Railway Performance Index, an analysis of the transport infrastructure of the RFC Amber countries, a graphical representation of other corridors passing through the surveyed countries, a modal split and an analysis of transport performances and selected transport indicators.

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Based on the analysis of transport and traffic indicators, the following conclusions can be drawn:

- realised process of liberalization of rail transport services in the RFC Amber countries: confirmed by Liberalization Index,
- potential for cooperation between several RFC corridors: results from the geographic connection of individual RFC corridors, some common line sections and strategic objectives of the corridors,
- general overall increase in rail freight transport performances in the RFC Amber countries: shown by the analysis of transport performances in the individual countries of the RFC Amber,
- general overall increase in rail passenger transport performances in the RFC Amber countries: shown by the analysis of transport performances in the countries of the RFC Amber and increasing demand of passengers influencing the quality of services to be higher, an increased offer of transport services, poor technical condition of road infrastructure and congestions,
- general increase in rail freight transport performances on the lines considered to be included in the RFC Amber in the Polish, Slovak and Slovenian Republics and Hungary: shown by the analysis of transport performances in rail freight transport on the lines to be included in the RFC Amber. Increase in performances will be affected by the RFC Amber services, its routing, increasing quality of transport services (influenced by the liberalization process) and economic development (described in chapter of TMS: Economic analysis),
- general increase in rail passenger transport performances on the lines considered to be included in the RFC Amber in the Polish, Slovak and Slovenian Republics and Hungary: shown by the analysis of transport performances in rail passenger transport on the lines to be included in the RFC Amber. Increase in performances will be affected by the increasing quality of transport services (influenced by the liberalization process) and economic development (described in chapter of TMS: Economic analysis),
- change of modal split in favour of rail freight transport took place in Hungary and in the Republic of Slovenia (road transport increased in Poland and Slovak Republic as well as in Hungary: affected by higher quality of transport services, RFC corridor services, investments in the railway system and higher demand (higher demand for rail freight services results are taken from the conclusions of chapter of TMS: Economic analysis),
- change of modal split in favour of rail passenger transport in the Slovak Republic (share of road transport increase in the Republic of Poland and Hungary): affected by higher quality of transport services, higher offer of transport services, investments in the railway system and higher demand, (higher demand for rail passenger services results also from the conclusions of chapter of TMS: Economic analysis),
- intention of all RFC Amber infrastructure managers and ministries involved to invest in the lines of the RFC Amber: results from the transport policy of individual countries, the EU’s objectives in the development and modernization of the European rail network and operational needs (increase in transport performances, cost reduction, shortening of travel time),

- rationalisation of the railway infrastructure charges for rail freight services: on the basis of the implementation of Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area, and the harmonization of transport infrastructure charging,
- overall increase of rail transport service providers: can be assumed based on the analysis of development of number of carriers in the RFC Amber countries, at the same time, it is affected by the achieved level of the liberalization process and the higher interest in business in railway transport. An increase in business interest is due to higher demand and the results of the economic analysis carried out in chapter of TMS: Economic analysis,
- transport potential for the RFC Amber services between the RFC Amber countries and the EU countries: due to the increasing level of trade between the RFC Amber countries and other EU member states,
- growth in demand for transport services within the RFC Amber countries: due to the increasing level of trade between the RFC Amber countries,
- potential for the development of intermodal transport: affected by the location of developed and equipped intermodal terminals which provide more efficient solutions and faster reloading within the RFC Amber; the higher quality of terminal services provided, the system of legislative measures of the EU and member states designed to support intermodal transport, the investments of intermodal operators, the growth of transport requirements from the Port of Koper to Central and Western Europe,
- potential for the development of single wagon load transport in international traffic: increasing number of businesses, dense railway network of the RFC Amber countries, the construction of new sidings, adequate legislative and financial measures to support the construction of public sidings. Realised process of liberalization of rail freight transport services in the RFC Amber countries: confirmed by Liberalization Index.
- potential and prospective rail freight services connecting Eastern Europe and Asia: The Republic of Slovenia is one of the important gateways for the goods incoming from Asia to Europe. The requirements for the continuation of the transport of goods from Asia continuously increase and create great opportunities for rail freight transport.

3.6 Prognosis of transport performance development

Transport performance indicators on railway infrastructure are the most important data to explain the demand for rail services. Indicators regarding infrastructure, quality of services and external costs depict whether the transport performances show an increasing or decreasing tendency. It is necessary to understand the development of transport performances in order to form the objectives and the subsequent strategy of the RFC Amber. The development of transport performances is concluded on the basis of the prognosis that includes three scenarios for the RFC Amber: realistic, optimistic and pessimistic.

Bases for forecast:

1. Model used for forecast: AAA algorithm with exponential alignment.
2. Confidence interval: 95 %.
3. Time span of forecast: 2019 – 2026 (8 years).
4. Examined indicator: transport performances in rail passenger and freight traffic.
5. Input data: provided by individual infrastructure managers, annual reports.
6. Presentation of results:
    - in tabular form for each scenario separately,
    - overall comparison of individual forecast scenarios in the form of graph
7. It is a long-term forecast.
8. Forecast was created using an appropriate forecasting software.

Forecast 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 condition of railway infrastructure required by customers (e.g. capacity, frequent possessions).
5. Change in transport legislative measures, for example charging policy.
6. Significant shift of transport performances between the modes of transport.

The forecast was elaborated based on the available information on rail transport performances and using the AAA algorithm. It calculates or predicts a future value based on existing (historical) values by using the AAA version of the Exponential Smoothing algorithm. The predicted value is a continuation of the historical values in the specified target date, which should be a continuation of the timeline. You can use this function to predict future sales, transport performances, inventory requirements, or consumer trends.

Arguments used within the forecast:

Target date Required. The data point for which you want to predict a value. Target date can be date/time or numeric – the period 2019-2026.

Values Required. Values are the historical values, for which you want to forecast the next points – transport performances of passenger and freight trains (gross tkm, train-km) on the railway infrastructure of the RFC Amber countries (2015-2017), forecast of GDP development in individual corridor member states (in €, the period 2019-2026).

Timeline Required. The independent array or range of numeric data. The dates in the timeline must have a consistent step between them and can't be zero – the period 2015-2017.

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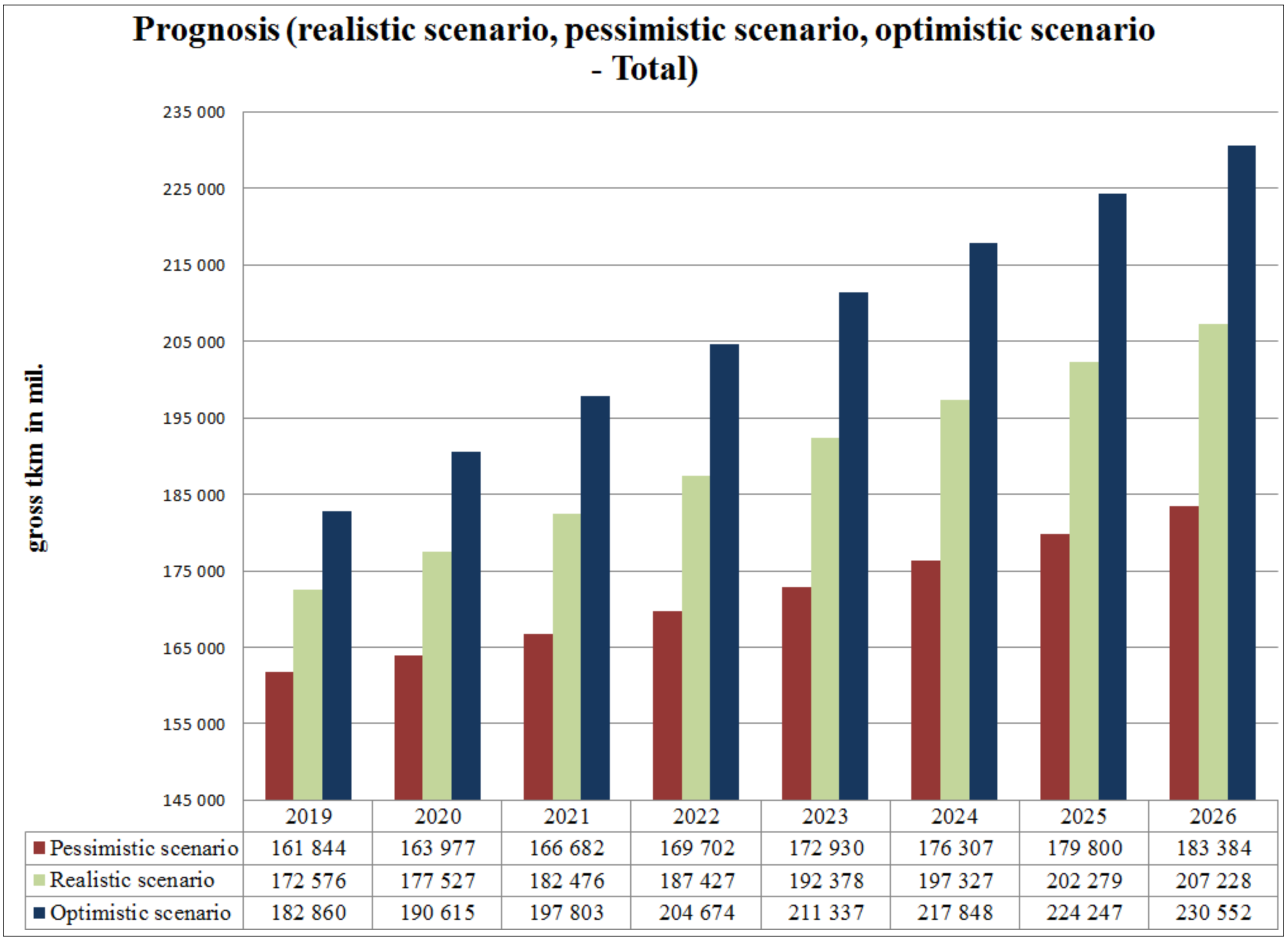
Seasonality Optional. A numeric value. The default value of 1 means program detects seasonality automatically for the forecast and uses positive, whole numbers for the length of the seasonal pattern. 0 indicates no seasonality, meaning the prediction will be linear – the used value 1 based on which the algorithm calculated seasonality.

Graph 1 for graphical comparison shows the overall prognosis of the development of rail freight transport performances in the RFC Amber countries for all scenarios. Subsequently, graph 2 for graphical comparison shows the overall development of rail freight transport performances forecasted on the lines included in the RFC Amber for all scenarios.



	2019	2020	2021	2022	2023	2024	2025	2026
Pessimistic scenario	161 844	163 977	166 682	169 702	172 930	176 307	179 800	183 384
Realistic scenario	172 576	177 527	182 476	187 427	192 378	197 327	202 279	207 228
Optimistic scenario	182 860	190 615	197 803	204 674	211 337	217 848	224 247	230 552

Graph 1: Comparison of prognosis scenarios of total transport performances

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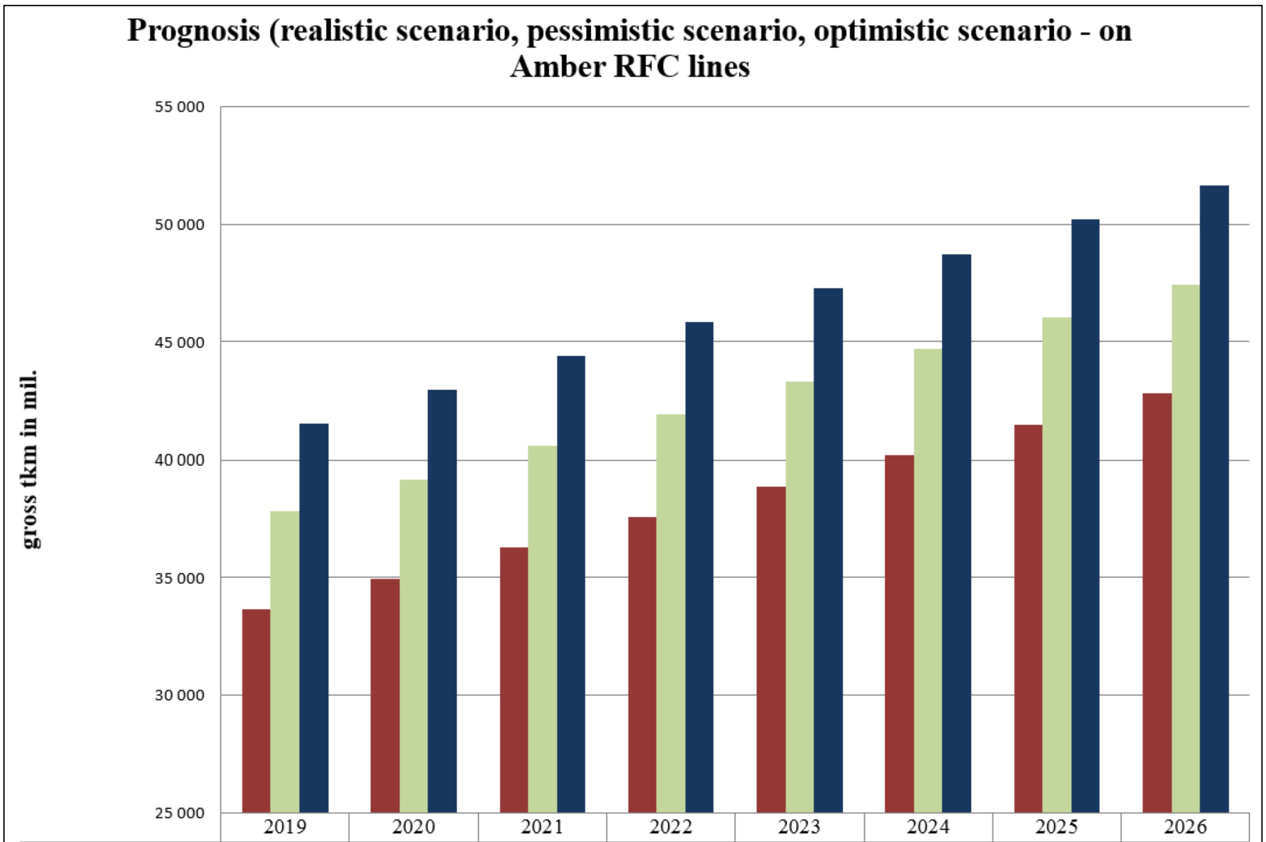

	2019	2020	2021	2022	2023	2024	2025	2026
Pessimistic scenario	33 647	34 953	36 260	37 556	38 864	40 166	41 474	42 779
Realistic scenario	37 803	39 171	40 541	41 910	43 305	44 677	46 051	47 414
Optimistic scenario	41 504	42 950	44 397	45 841	47 288	48 737	50 192	51 638

Graph 2: Comparison of prognosis scenarios of transport performances on the RFC Amber line

Based on the findings from the forecast, we can conclude:

- increase in transport performances in the rail freight transport system,
- greater increase in rail freight transport performances on the lines of the RFC Amber,
- general increase in rail passenger transport performances, (total: gross tkm, train-km),
- increase in transport performances and resulting savings in social costs generated by transport,
- increased demands on capacity and technical parameters of lines of the RFC Amber,
- requirements for modernization, reconstruction and optimization of the RFC Amber railway infrastructure and related rail, road, water and intermodal infrastructure,
- higher quality of communication and information technologies required,
- pressure on higher reliability of the rail system,
- requirement to meet the technical specifications for interoperability in rail passenger and freight transport,
- increase in international rail freight transport performances by approximately 3 – 6 % per year,
- need to harmonise the charges between rail and road freight transport,
- development of transport performances which are below the pessimistic scenario in the event of a significant impact of defined forecast risks.

3.7 Transport potential of selected countries

Worldwide growth in international trade, including trade between EU countries and selected countries, directly creates demand for transport services. Continuously increasing demand for transport services, particularly in the international transport of goods, creates a number of possibilities for the provision of rail transport services. For the RFC Amber it is very important to examine the transport potential of the selected countries, on the basis of which the measures for support of rail freight services can be identified. An examination of the transport potential is carried out for the following countries:

- China,
- Russia,
- Belarus,
- Serbia,
- Turkey,
- Ukraine

On the basis of the analysis of import/ export value from/to the EU in mill. EUR and the analysis of import/ export quantity from/to EU in thous. t, it can be concluded:

- economic growth in most of the selected countries: shown by the analysis of the economic development of individual examined countries and the growth of international trade, the expected GDP growth in China is at 6 % and Turkey at 3 %,
- increase in the number of goods transported from/to the EU 28 countries (including a share of the RFC Amber countries) from the selected countries: results from the analysis of trade between the RFC Amber countries and the selected countries. The analysis showed general growth in the import and export of goods within the selected countries, e.g. the increase in import from Turkey to the RFC Amber countries from 968 000 tons in 2010 to 1 421 000 tons in 2016.
- increase in demand for transport services from China, Ukraine and Russia: affected by the trade between the RFC Amber countries and the selected countries, economic development of selected countries and consumption of the RFC Amber countries (results from the economic analysis show increase of consumption in chapter of TMS: Economic analysis),
- growth of international trade of the RFC Amber countries with Serbia, and sufficient increase in demand for transport services from Serbia: confirmed by the growth of trade, imports of 1 839 000 tons of goods from Serbia in 2016 to the RFC Amber countries and exports of 2 336 000 tons goods from the RFC Amber countries to Serbia,
- requirement of fast, reliable and safe transport of goods from non-EU countries to the RFC Amber countries as well as from EU countries: affected by the higher value of the goods transported, required to keep the punctuality in arrival times, motivation of shift of transport performances from water to rail freight transport,

- sufficient potential for international rail transport from/to the selected countries from the EU 28 countries (including a share of the RFC Amber countries): confirmed by the gradual increase in number of goods transported within the selected countries and the EU countries,
- strategic importance of the RFC Amber for transport flows in Eastern Asia – Central Europe route: results from the geographical routing of the RFC Amber and technical condition of the railway lines,
- lowest transport potential for the RFC Amber can be expected from/to Belarus: shown by the results of import and export analysis via Belarus there is no significant importance of land (rail) connection with Russia and Asia,
- import of goods to the EU countries from the analysed countries has a generally increasing trend and such a trend can be expected also in the future, based on the GDP development in the analysed countries.

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3.8 Graphical representation of RFC Amber – Proposal of corridor routing

All analysed data, from which the results and conclusions presented in the TMS main chapters were subsequently defined, were necessary to define exactly the RFC Amber routing and to divide all proposed lines into the principal, diversionary and connecting lines of the established corridor. The following figure shows a proposal of the RFC Amber routing.

Figure 1: Proposed route alignment of RFC Amber

Based on the proposed routing of the RFC Amber, we can state the following facts:

- all principal lines are electrified – environmental benefit, lower costs of carriers,
- most of the other lines (alternative and diversionary line) are electrified – environmental benefit, lower costs of carriers,
- different electric power supply systems – it is somewhat a hindering factor because transport companies have to accommodate to multiple systems by the purchase of expensive hybrid engines,
- all lines have 1 435 mm gauge – it is not necessary to change gauge during transport,
- infrastructure included in the corridor has sufficient free capacity for increase in rail freight transport performances affected by the RFC Amber services except the line Divača and Koper. The utilization of this line is 98% because there are 82 trains/day on this single-track line,
- most included railway lines do not reach the required parameters for running long trains of 740 m, as defined in the TEN-T Regulation (1315/2013/EU Art. 39(2a)(ii)),
- some principal railway lines included do not reach the highest level of axle load – need for reconstruction/modernization,
- the Slovak Republic has all principal lines at the highest level of axle load which is 22,5 tons according to TEN-T Regulation Art. 39(2a)(ii),
- need for complete the ERTMS (European Rail Traffic Management System) on the principal corridor lines – complying with the interoperability requirements, as also laid down in the TEN-T Regulation Art. 39(2a)(iii) and defined in the European Deployment Plan (EDP) and National Implementation Plans. The currently applicable EDP is included in the Commission Implementing Regulation (EU) 2017/6 of 5 January 2017 on the European Rail Traffic Management System European deployment plan,
- routing creates the transport potential for international rail freight transport in the south – north/east direction,
- routing creates the transport potential for international rail freight transport in the direction of countries outside the EU – EU/RFC Amber countries,
- possible connection of broad-gauge line in the Republic of Poland with the principal corridor route,
- routing improves connection of intermodal transport terminals in the member states concerned and provides direct routing for intermodal consignments from the Port of Koper,
- facilitates transport connection between the Adriatic Sea port in the Republic of Slovenia and inland waterway ports on the Danube in Hungary and the Slovak Republic,
- supports the development of rail transport with the Republic of Serbia,
- potentially improves rail transport across the EU eastern border and on the land bridge between Europe and Asia.

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3.9 SWOT analysis of RFC Amber

The Amber rail freight corridor will become operational on 30.01.2019. In order to determine its direction and development, it is important to make the most objective assessment of the current inputs of the internal and external environments by which it is affected. The several methods and tools deal with the strategic planning of which SWOT analysis was selected for the purpose of selecting the strategic direction of the RFC Amber.

Using quantified evaluation of internal and external environment it was found by comparison of vectors: ***Offensive strategy,*** as model strategy for the RFC Amber. Graphical representation of matrix of model strategies with initial strategy for the Amber corridor is shown in diagram below.

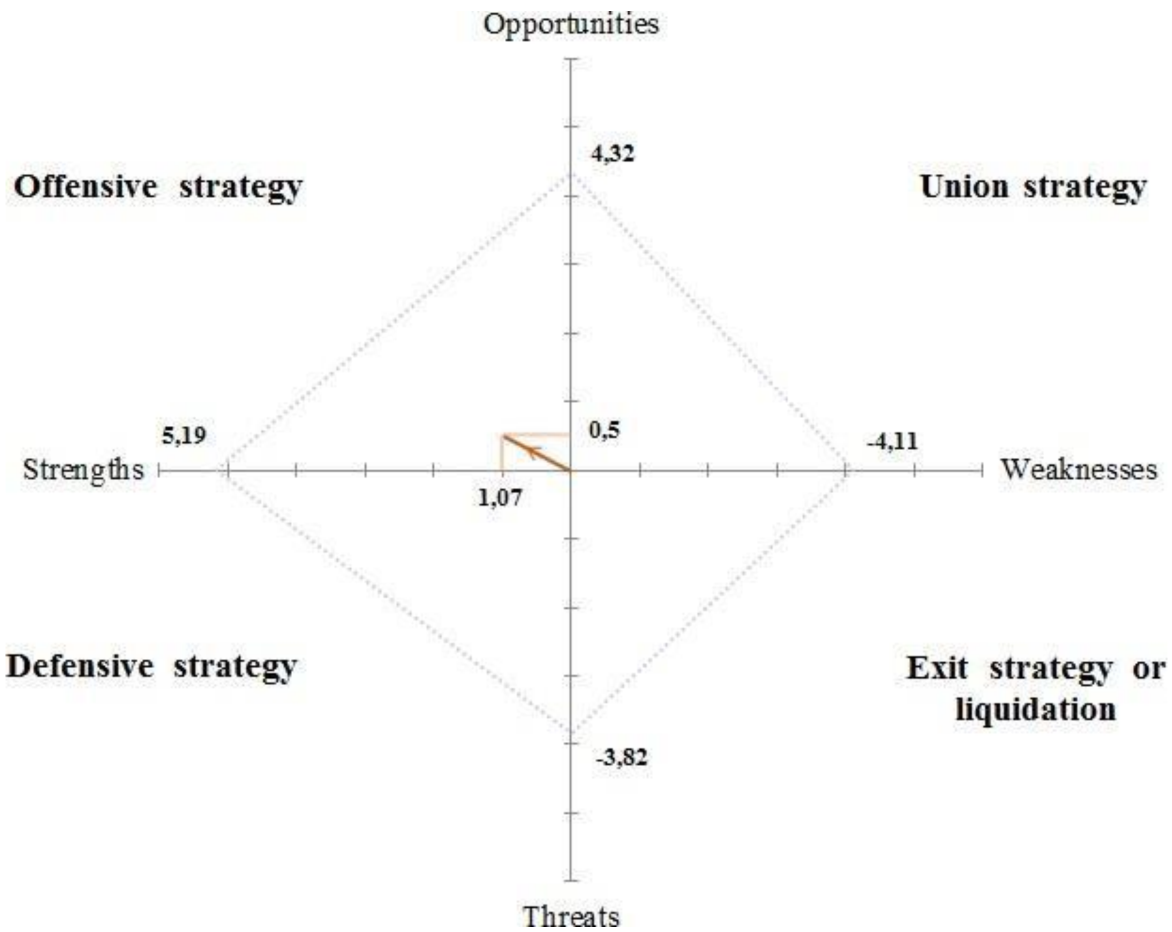

Figure 1: Matrix of model strategies for the RFC Amber

**Note: vector routing is the result of the difference between Opportunities and Threats, as well as the difference between Strengths and Weaknesses*

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Offensive strategy is considered to be the most attractive strategic alternative. It can be used by an entity whose position is ideal with the predominant strengths over the weaknesses. Such an entity is able to use its strengths to realize the opportunities offered by the external environment. However, an entity must monitor its weaknesses and avoid defined risks.

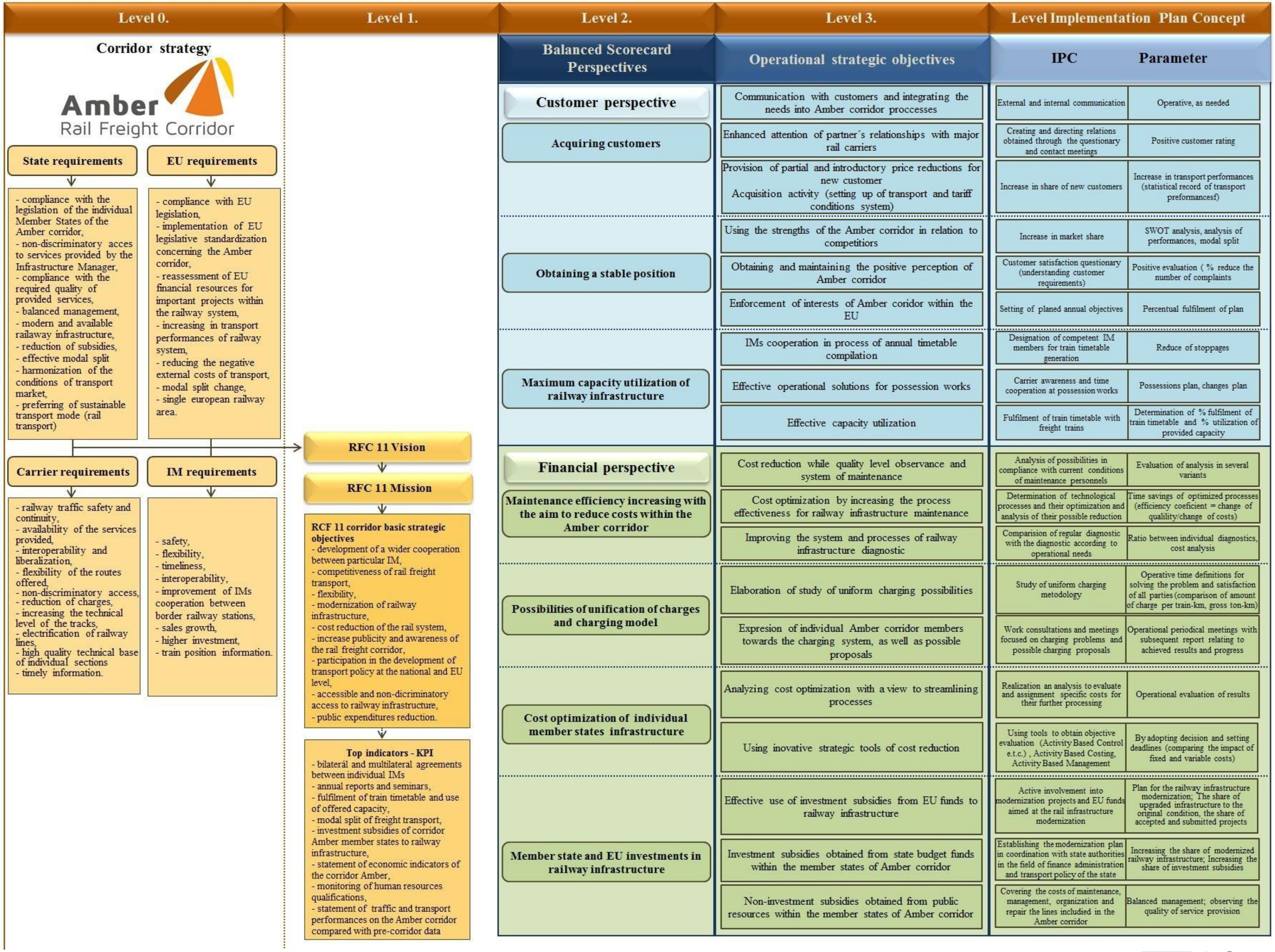
Based on the resultant strategy, it is necessary to take the following measures for the RFC Amber:

- increase the reliability of rail system services,
- developing the high-quality and available services of C-OSS,
- developing the cooperation with other RFC corridors,
- support for intermodal transport services,
- reducing the charges for local service trains,
- in operative transport management, to proceed to prioritize international freight trains,
- quality, flexible, reliable and cost-effective services of Koper seaport,
- close cooperation between infrastructure managers,
- coordination of investment projects in railway infrastructure within the RFC Amber lines,
- increased awareness of the corridor, its services and perspectives,
- exchange of information concerning operation, control and possessions,
- measures to reduce the technological times of operations for transport of goods from/to counties outside the EU,
- providing the best resources, e.g. human, IT,
- investment in interoperability,
- exclusive or dominant access to the most capable suppliers of MB RFC Amber

3.10 Strategic map of RFC Amber

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

Figure 2: Map Balanced Score Card of RFC Amber



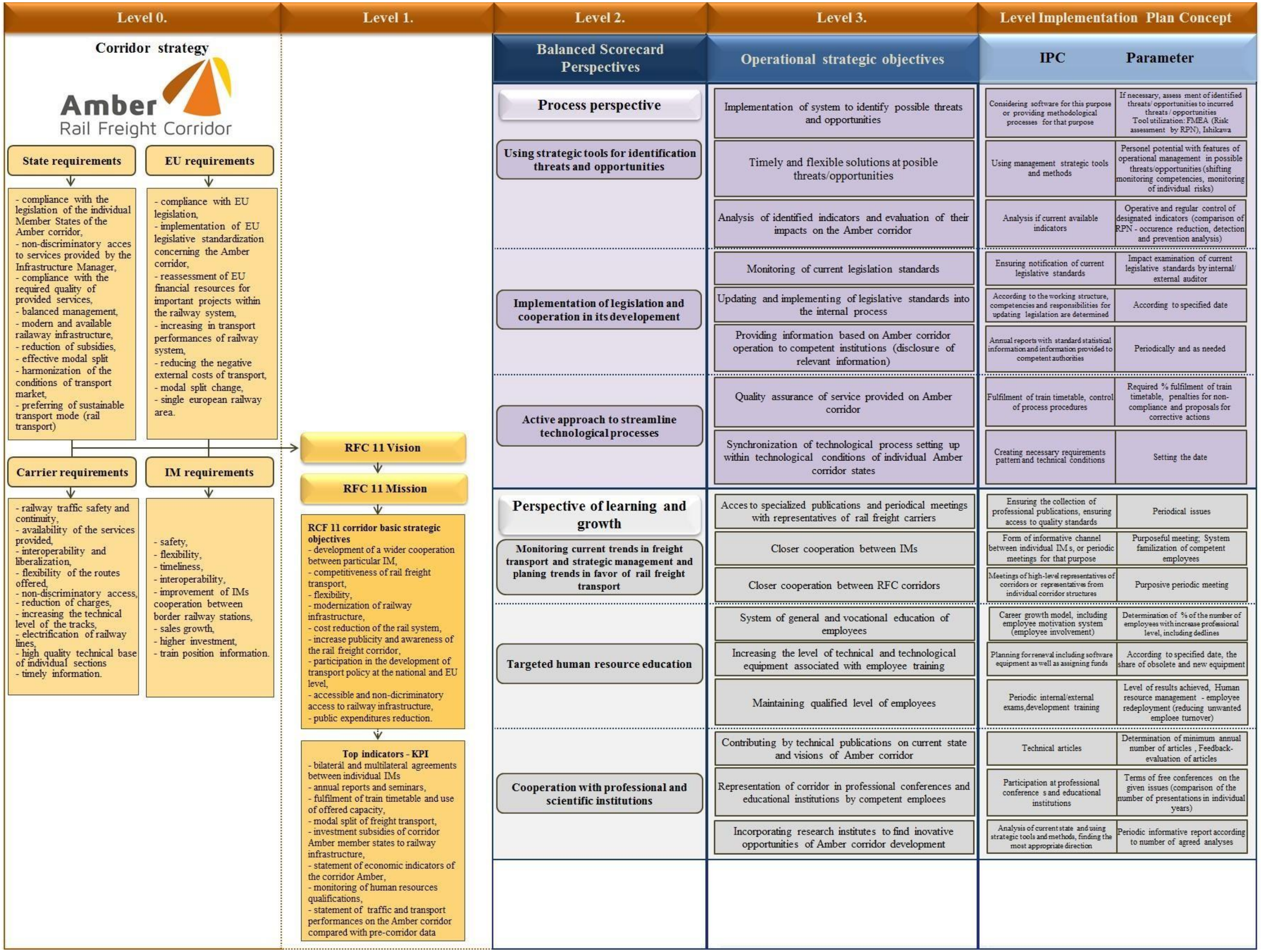


Figure 3: Map Balanced Score Card of RFC Amber

3.10 RFC Amber marketing strategy

The vision is a starting point of the strategic management process and represents a set of specific ideals and priorities of the entity. It is an image of its successful future based on the fundamental values or the philosophy with which the goals and plans of the entity are connected. The vision gives an answer to the question: how will the entity look in the future. The vision must be clearly formulated, realistic and well communicable. The basis of each vision is the result to be achieved in the customer's interest. The specific content of the vision then depends on the entity itself and the sector in which the subject operates. Three basic objectives of the vision:

- express the general direction,
- motivate people to the right direction,
- quickly and effectively coordinate the efforts of people.

Draft of the RFC Amber vision: Provision of effective, competitive, attractive, available and flexible services for corridor users on the up-to-date, interoperable and safe railway infrastructure in order to increase the overall attractiveness of rail services and thus to contribute to an increase in rail freight transport performances and subsequent fulfilment of environmental objectives of the EU and the whole human population.

A carefully thought vision can be a good base for a right mission and useful tool for strategy formulation, but also for day-to-day management decisions. The entity's mission presents not only the intention of entity existence itself, but also, towards other entities of the market, the standards of behaviour of the whole organization, and, last but not least, the values respected by entity. The mission has the following functions:

- expresses the basic strategic intention of the owners and top management of the organization,
- has an external information character towards the public and stakeholders, suppliers, customers, interest groups, etc.,
- has an internal information character as the basic standard of management and employees behaviour.

Draft of the RFC Amber mission: Continuously develop the existing and build new quality services for transport of goods, which respect to the environment and efficient use of public resources. Provide quality, available and non-discriminatory services to all corridor users, cooperate effectively with terminals and meet the expectations of the end-customers. Cooperate with EU authorities, corridor member states' authorities, intermodal operators and other RFC corridors. Create full-value mutual business relationships with major suppliers. Contribute to railwayinfrastructure development in line with customer needs and creation of competitive environment in the European and international transport system.

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Brand RFC Amber – is a promise to the customer to provide specific benefits that are related to the product. The brand is the name, title, sign, expression or their combination. Its purpose is to distinguish the product or service of one provider or group of providers from competitors. Brand is not created only by a logo, a visual style, a specific product, but also services and services associated with the main product, company and its image and brand communication.

Requirements: RFC Amber brand evaluation

- short, appropriate graphic processing - fulfilled,
- simply rememberable – fulfilled,
- easily identifiable - fulfilled,
- original, overtime - fulfilled,
- not inspiring negative associations - fulfilled,
- registered and legislatively protected – not fulfilled, need to supplement,
- applicable internationally - fulfilled.

The following table contains a draft for the use of marketing communication tools for the Amber

RFC based on its main objectives and services provided. At the same time, the marketing communication strategy is designed based on the analysis of external and internal environment of the RFC Amber.

Table 2: Draft for marketing communication application

Point	Use	Application
Advertising	yes	Leaflets, brochures, emails sent to railway undertakings, intermodal operators and forwarders
Sales support	no	-
On-line sales	yes	Through the C-OSS office, propagation of C-OSS on websites of infrastructure managers
Public relations	yes	Through email, social networks, discussion forums
Sponsorship	no	-
On-line marketing communication	yes	Through email, social networks, discussion forums, website, EC websites, websites of infrastructure managers
Guerrilla marketing	no	-
Product placement	yes	-
Content marketing	yes	Through email, social networks, discussion forums
Experiential marketing	yes	Propagation by scientific and professional articles dealing with transport of goods, transport, ecology, savings in social transport
Green marketing	yes	Environmental benefits published at website, in studies, TMS, promotional products, conferences

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3.11 Conclusions and recommendations

On the basis of the economic, transport, traffic and technical analyses carried out, the comparison of modal split and other important qualitative and quantitative transport indicators, we can conclude that the establishment of the RFC Amber is, from socio-economic point of view, justified and necessary for the development of international rail freight services.

The routing and geographical location of the RFC Amber provide a sufficient transport potential within the corridor countries, the EU countries as well as new transport opportunities from/to Serbia and other countries outside the EU examined. In the TMS the routing creates the suitable conditions for corridor extension which is conditioned, in particular, by transport requirements. The analyses of assessing the transport opportunities showed an increase in demand for transport services, particularly in international trade, with an upward trend in the following period. The research showed the competitiveness of international rail freight services on the RFC Amber lines at the time of transport and charging, compared to road freight transport.

Based on the TMS's comprehensive results, in order to further develop the RFC Amber and to fulfil its strategic objectives resulting from the corridor vision and assigned mission, the following measures are proposed:

- ensure proper cooperation of the Infrastructure Managers and the Allocation Body with the market players of the logistic chain concerned in the RFC Amber, within the given legal environment according to the best possible ways - the IMs are independent entities that run their business on multiannual contracts with their governments. They have the tools for any cooperation with neighbouring IM or other IMs on Corridor. Such measures also go in line with the foreseen infrastructure parameters – in case there is proper coordination of operational issues on cross-borders, proper knowledge of the estimated time of arrival and commitment to implement the RNE Guidelines properly and tools for efficient international rail freight then the achievement of the goals defined in the Rotterdam Declaration and the Sector Statement will be fulfilled on the medium and long term,
- ensure effective maintenance of railway infrastructure included in the RFC Amber – individual infrastructure managers,
- ensure proper and effective transport management, coordination of temporary capacity restrictions and fair capacity allocation – individual infrastructure managers and allocation body of the RFC Amber,
- adaptation of traffic management rules to the needs of rail freight transport – individual infrastructure managers of the RFC Amber,
- ensure proper priority for rail freight transport,

- increase number and quality of international rail freight capacities - C-OSS office: due to low free capacity on some line sections of the RFC Amber lines,
- increase and adapt the investment resources in modernization of the basic and connecting transport infrastructure within the corridor – Member States and the European Commission,
- start active cooperation with other RFCs – the RFC Amber, individual infrastructure managers and allocation body,
- cooperate permanently and effectively with intermodal operators, railway undertakings and carriers – the RFC Amber,
- complete the information on the Last mile infrastructure of the RFC Amber and take measures for its modernization, reconstruction and support – the RFC Amber, infrastructure managers, Member States and the EU Commission,
- elaborating a draft of interactive questionnaire available on the RFC Amber internet domain to obtain effective and quick feedback and specification for a particular customer and his/her needs – the RFC Amber and RNE,
- continuously improve the quality of marketing activity, especially marketing communication – the RFC Amber, infrastructure managers, carriers and intermodal operators,
- as appropriate, cooperation with scientific and educational institutions to address strategy and strategic management – the RFC Amber,
- regular evaluation of fulfilment of the RFC Amber main objectives.

Proposal of measures for support of the RFC Amber development and fulfilment of its strategic objectives resulting from its vision and mission in the technical field:

- elaborate an analysis and possible implementation and investment plan about the unification of the catenary system within the Member States of the RFC Amber and in Europe),
- improving the technical parameters of the principal lines to increase the level of axle load to 22,5 tons, maximum train length to 740m, line speed to 100 km/h, full deployment of ERTMS as stipulated in the TEN-T Regulation Art. 39 (2a) and AGTC requirements.
- reaching the loading profile of P/C 400: for the competitiveness of Combined Traffic the available loading gauge is of crucial importance. In order to exploit the growing market potential of transport of 4-meter-high semi-trailers the availability of the so-called P/C 400-profile is required,
- reduce the technological time of consignment dispatch from/to countries outside the EU: change of legislation, transport requirements, harmonization of transport and technical regulations,
- improve the exchange of information between infrastructure managers and railway undertakings, i.a. with the usage of RNE tools.

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At EU and international level, to support green rail freight transport, we suppose to take the following measures:

- internalisation of external costs of transport – the European Parliament and the Council, the European Commission, individual member states,
- extend the network of local and regional intermodal transport terminals and small marshalling yards that can provide high quality and competitive intermodal transport services – individual member states, the EU,
- initiative and reconsideration of the possibility of harmonizing the rail infrastructure charging model within the lines included in the RFC corridors as well as on EU-level – individual member state, the EU,
- examine the possibilities to reduce transport infrastructure charges for local service trains, siding trains, trains serving terminals with the involvement of decision makers in the Member States concerned to acquire more state – funding where reasoned – individual infrastructure managers, individual member states.

These recommendations and suggestions are based on the results of the TMS and empirical knowledge of the professional railway experts, university staff, staff of the infrastructure managers and carriers. The suggestions are intended to ensure a higher quality of railway system services and, in particular, international rail freight services. Well-developed and distributed services will contribute to a higher demand for rail freight services, effective modal split, and reduction of external costs of transport and sustainable development. This will contribute to fulfilling the vision and mission of the RFC Amber and thus meeting the EU's transport objectives.

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4 List of Measures

4.1 Coordination of planned Temporary Capacity Restrictions

Regulation (EU) No 913/2010 (hereinafter Regulation), Article 12 "Coordination of works" deal with Temporary Capacity Restrictions (TCR) on the RFC. According to Article 12, "the management board shall coordinate and ensure the publication in one place, in an appropriate manner and timeline, of their schedule for carrying out all the works on the infrastructure and its equipment that would restrict available capacity on the freight corridor". TCR are necessary to keep the infrastructure and its equipment in operational condition and to allow changes to the infrastructure necessary to satisfy market needs. Because of strong customer demand to know in advance which capacity restrictions they will be confronted with, corridor TCRs have to be coordinated, taking into account the interests of the IMs/AB and of the applicants.

Ideally, they present all planned works and possessions to be conducted on railway infrastructure such as construction works, maintenance, repair renewal, etc. These activities may result in temporarily reduced infrastructure availability and temporarily decreased capacity – including speed, weight, length or traction limitations.

The coordination of TCRs is aimed at ensuring that planned capacity restrictions will take into account in time both the needs of the IMs/AB and the applicants by minimising, as much as possible, the impact of TCRs on rail business. The IMs/AB of RFC Amber carry out the coordination process under overall surveillance of the Management Board. As a result, RFC Amber publishes the information about corridor TCRs in a coordinated manner on the corridor website using an appropriate IT tool. Coordination of planned temporary capacity restrictions of RFC Amber takes the relevant RailNetEurope (RNE) guidelines into account.

More details are provided in Chapter 4 of the CID Book – Procedures for Capacity and Traffic Management, chapter 4 Coordination and publication of planned temporary capacity restrictions.

4.2 Corridor-OSS

This chapter describes the organisation and working principles of the Corridor-One Stop Shop (C-OSS) including the documentation relating to C-OSS, requirements resulting from Regulation 913, European Framework for Capacity Allocation as well as tasks and organisation of the C-OSS in general.

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4.2.1. Documentation related to C-OSS

The following documents are related to the setup and activities of the C-OSS.

<u>EU legislation</u>

- Directive 2012/34/EU establishing a single European railway area
- Regulation (EU) No 2010/913 concerning a European network for competitive freight
- Framework for capacity allocation (FCA) on the Rail Freight Corridors – to be adopted by RFC Amber until December 2018.

<u>Other documents</u>

- RNE Guidelines for C-OSS concerning PaP and RC Management
- RNE Process Calendar
- RNE PCS Process Guidelines
- RNE Guidelines for the Coordination / Publication of Planned Temporary Capacity Restrictions
- RNE Framework for setting up a Freight Corridor Traffic Management System
- RNE Guidelines for Punctuality Monitoring

4.2.2. Requirements resulting from Regulation (EU) No 913/2010

According to Art. 13 of Regulation, the Management Board shall designate or set-up the C-OSS as a joint body to enable the applicants, in a single place and in a single operation, to request and to receive answers, regarding infrastructure capacity for freight trains crossing at least one border along the corridor. In that respect the role of the C-OSS can be summarized as follows:

- to act as a single contact point for the applicants
- to provide information concerning infrastructure capacity on RFC Amber and other information contained in the CID
- to receive requests and take decisions regarding allocation of PaPs and RC
- to forward the requests that cannot be met to competent IMs
- to keep a register of requests.

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4.2.3. Tasks and organisation

The tasks of the C-OSS of RFC Amber are to:

- act as a single point of contact for the applicants and coordinator of information
- provide basic information concerning the allocation of the infrastructure capacity on RFC Amber
- display available capacity of RFC Amber using IT tools
- handle requests for PaPs and RC for freight trains crossing at least one border on the corridor and for those IMs whom the capacity request was offered in PCS and decide on capacity allocation in accordance with the FCA. If the use of national system is obligatory, the IMs/AB must be informed about the new path requests with providing all the necessary information required in the national system.
- if requested by applicants provide assistance if possible with regard to available capacity in the running timetable, other than RC, for freight trains crossing at least one border on the corridor, contact the involved IMs/AB and facilitate the coordination of the allocation process done by the involved IMs/AB
- forward any request for PaP or RC that cannot be met to the competent IMs/AB, inform the applicant and process the decision of the competent IMs/AB, once communicated
- inform the involved IMs/AB about the allocation process
- keep a register of requests and make it freely available to all interested parties
- supply the following information contained in the CID and published on RFC Amber website:
  - network statements of national networks regarding RFC Amber, as included in Section 2
  - list, characteristics, conditions and method of access to the terminals along RFC Amber, as included in Section 3
  - functioning of the C-OSS, capacity allocation, authorised applicants and traffic management, including in the events of disturbance, as described in Section 4
  - Implementation Plan of RFC Amber, Annex of the CID Book.

A representative model of the C-OSS was adopted for RFC Amber where one IM is designated to act on behalf of all RFC Amber in the corridor with support of a coordinating IT tool. The C-OSS reports to the MB of RFC Amber and carries out its activities in a transparent, impartial and non-discriminatory manner, respecting the confidentiality of information.
More details are provided in Section 4 of the CID Book – Procedures for Capacity and Traffic Management (part C-OSS).

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4.3 Capacity Allocation Principles

The capacity of RFC Amber with regard to PaPs and RC is allocated by the C-OSS in accordance with the Framework for Capacity Allocation agreement (FCA), which is adopted by Executive Board and published on the website of RFC Amber. FCA constitutes a comprehensive set of principles related to:

- offer of PaPs and RC
- allocation of PaPs and RC, including
  - general principles related to the functioning of the C-OSS
  - principles of allocation
  - principles of fairness and independence
  - priorities to be applied by the C-OSS in case of conflicting requests
- applicants
- regulatory control

Capacity management with regard to PaPs and RC follows the standard process defined by RNE, which includes the phases and activities of preparation, publication, requesting, conflict resolution, draft offer, observation, final offer and allocation. Specific dates are set in line with the RNE calendar set up for each year.

Requests for capacity in the running timetable, other than RC, are considered as requests for tailor-made paths and are handled by the involved IMs/AB in accordance with concerning national rules. In case of appeal for assistance, the C-OSS provides support, if possible. The level of assistance by the C-OSS is determined on a case-by-case basis.

More details are provided in Chapter 4 – Procedures for Capacity and Traffic Management (part Capacity allocation).

4.4 Applicants

Applicants other than railway undertakings or the international groups of railway undertakings are enabled to request capacity on RFC Amber. Entities such as shippers, freight forwarders and combined transport operators may submit requests for PaPs and RC, as well as requests for capacity in the running timetable, other than RC.

In order to use such a train path these applicants shall appoint a railway undertaking to conclude an agreement with the IMs/AB involved and in accordance with national rules of the IMs/AB involved.

More details are provided in Section 4 of the CID Book – Procedures for Capacity and Traffic Management (part Capacity allocation).

4.5 Traffic Management

In line with Article 16 of the Regulation, the MB of the freight corridor has to set up procedures for coordinating traffic management along the freight corridor.

Traffic management is the prerogative of the national IMs and is subject to national operational rules. The goal of traffic management is to guarantee the safety of train traffic and achieve high quality performance. Daily traffic shall operate as close as possible to the planned. In case of disturbances, IMs work together with the RUs and neighbouring IMs concerned to limit the impact as much as possible and to reduce the overall recovery time of the network.

International traffic is coordinated by national IMs with neighbouring countries on a bilateral level. In this manner they ensure that the whole traffic on the network is managed in the optimal way.

In order to improve the traffic management coordination and communication among involved IMs, use of the following RNE IT tools is foreseen:

• Train Information System (TIS), that provides real time information about train running on the corridor,

• Traffic Control Centre Communication (TCCCom), that enables to call up predefined messages which will be translated to the native language on each side of the border.

In the normal daily business trains run according to their timetable, and there is no need for coordination or communication between the TCCs on the corridor.

The participating IMs of RFC Amber aim to examine the harmonisation of TIS with their national systems, i.e. to see whether the data flow is for example the same for all: data transferred towards TIS and data received from TIS for sake of tracking better punctuality.

4.6 Traffic Management in Event of Disturbance

If there is any significant deviation from the timetable or in case of disturbance regardless of the cause, communication and coordination between the related IMs is necessary. The communication and coordination are made in line with written agreements between IMs/AB and in line with local cross-border agreements. The main tool to perform those tasks will be the TCCCom, which is an internet based multilingual communication application so all the predefined messages appear at the neighbouring TCC in their national language.

The goal of traffic management, in case of disturbance, is to ensure the safety of train traffic, while aiming to quickly restore the normal situation and/or minimise the impact of the disruption. The overall aim should be to minimise the overall network recovery time.

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The Handbook on International Contingency Management has been introduced on RFC Amber. Incidents which have a duration of more than three consecutive days and more than 50% of the running trains need operational treatment, show that international measures must be implemented. An important new element of the ICM is the international re-routing overview for the Rail Freight Corridors (RFC) and re-routing scenarios for the critical routes which have been elaborated in accordance with the corridor-relevant sections and applied successfully in case of disturbances occurred so far

4.6.1 Definition of disturbance

Disturbance is an incident or accident or any other occurrence that has a significant impact on the international freight traffic of RFC Amber.

In case of disturbance the affected IM should inform the neighbouring IMs as quickly as possible and indicate the proposed measures for the elimination of the effects of disturbance if needed.

4.6.2 Communication procedure

The main principle on which the communication procedure in case of disturbance is based is that the IM concerned is responsible for starting the communication; it must deliver the information as soon as possible through standard channels both to the concerned RUs on its own network and to the concerned neighbouring IMs.

In case of disturbance the responsible IM will send a message via an agreed communication channel (which can provide reliable information - if possible on harmonized basis e.g. TCCCom) to inform the neighbouring IM's on the Corridor where the traffic will be affected. The initial message only gives information on the disturbance, its expected duration and possible traffic restrictions.

The responsible IM will keep the neighbouring IMs on the Corridor updated for the duration of the disturbance by regular messages through agreed communication channel. These messages should include reliable information on the timeframe needed to resolve the disturbance and normalization of the traffic on the corridor.

When the disturbance is solved, an updated message should be sent in order to inform the neighbouring IMs that the traffic is returned to normal.

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Steps of the communication flow:

- Every IM on RFC Amber that is affected by the disturbance should be informed using agreed communication channels
- The C-OSS shall also be informed; then it can forward the information to the RUs running trains on the Corridor
- RUs running trains on the network where the disturbance occurs, will be informed according to the national procedures

4.7 Quality Evaluation

Quality of service on the freight corridor is a comparable set of indicators to those of the other modes of transport. Service quality is evaluated as a performance. Performance is measured with different indicators. These indicators are the tools to monitor the performance of a service provider. The obligation regarding the international rail freight services is based on the provisions of Article 19 of the Regulation.

4.7.1 Performance Monitoring Report

The measurement of performance of rail freight transportation on RFC Amber lines is first of all an obligation stemming from the Regulation and on the other hand it contributes to the development of RFC services, as well. KPIs are i.a. necessary for planning and setting the objectives of the RFC, steering its business activities, increasing the added value and the quality of international rail freight, assessing the achievement of objectives, achieving the customers's expectations and preparing useful reports (also, as obligation stemming from article 19(2) of the Regulation), in order to assess the overall performance of the RFC organisation.
RNE with the cooperation of the already operational Rail Freight Corridors, elaborated the Guidelines for Key Performance Indicators of Rail Freight Corridors. It provides recommendations for using a set of KPIs commonly applicable to all RFCs. The RNE KPIs were adopted by the RFC Network too, composed of all RFCs.
The Sector Statement's 9th identified priority, as mentioned in chapter 2.5.3, is the monitoring of freight services with implemented and shared KPIs. In order to be in line with this requirement and to contribute to the achievement of the priorities on a network level, the KPIs, as proposed by the RNE Guidelines will be followed.

No	Business area	KPI (Source of data)	Timeframe	Recommend to MB (Y/N)	Entity in charge
1	Capacity mngmt*	Volume of offered capacity (PCS)	At X-11 and at X-2	Y	C-OSS
2	Capacity mngmt	Volume of requested capacity (PCS)	At X-8	Y	C-OSS
3	Capacity mngmt	Volume of requests (PCS)	At X-8	Y	C-OSS
4	Capacity mngmt	Volume of capacity (pre-booking phase) (PCS)	At X-7.5	Y	C-OSS

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5	Capacity mngmt	Number of conflicts (PCS)	At X-8	Y	C-OSS
6	Capacity mngmt	Volume of requested RC - km*days (PCS)	X+12	Y	C-OSS
7	Capacity mngmt	Volume of requested RC - dossiers (PCS)	X+12	Y (To be aligned with other RFCs)	C-OSS
8	Capacity mngmt	Average planned speed of PaPs (PCS)	X-10.5	Y (Common calculation methodology is there)	C-OSS
9	Operations**	Punctuality at origin (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
10	Operations	Punctuality at destination (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
11	Operations	Overall number of trains on the RFC (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
12	Operations	Delay reasons (TIS) The KPI is connected to Punctuality at origin and Punctuality at destination.	To be determined	Y	WG TM,TP&O
13	Market dev***	Overall number of trains per border (IMs' national tools)	In January after the timetable year concerned	Y	WG TM,TP&O
14	Market dev.	Ratio of the capacity allocated by the C-OSS and the total allocated capacity (PCS for the nominator; IMs' national tools for the denominator)	In December before the start of the timetable year	Y	WG TT/C-OSS C-OSS

*Capacity management: meaning the performance of the RFC in constructing, allocating and selling the capacity of the RFC.

**Operations: meaning the performance of the traffic running along the RFCs monitored in terms of punctuality and volume of traffic.

***Market development: the capability of the RFC in meeting the market demands will be monitored.

The KPIs will be produced, as appropriate, by C-OSS (supported by WG Timetabling & OSS) and by WG Traffic Management, Train Performance & Operations. The KPIs will be yearly delivered to WG Marketing, which will integrate them into the yearly activity and performance report, as required by article 19(2) of the regulation.

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In order to use the same quality of data and to reduce the overall efforts and workload of the RFCs and RNE, mainly the same IT tools are used for the calculation of the commonly applicable KPIs. In case the data can be provided by PCS or TIS, then the data processing tool is OBI. If the necessary data are not available in RNE IT tools, the IMs/AB collect data from their national databases. The calculation formulas of common KPIs can be found in the RNE Guidelines for Key Performance Indicators of Rail Freight Corridors (http://rne.eu/wp-content/uploads/RNE_Guidelines_KPIs_of_RFCs.pdf). The results of all KPIs shall be published in the Annual Report of RFC Amber, as required by article 19(2) of the Regulation.
The Management Board has the right to establish RFC Amber related specific indicators in case of necessity.

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4.7.2 User Satisfaction Survey

According to Article 19(3) of the Regulation "The management board shall organise a Satisfaction Survey of the users of the freight corridor and shall publish the results of it annually".

Taking into consideration that RFC Amber became operational on 14 January 2019, the first yearly user satisfaction survey (USS), as requested by article 19(3) took place in 2020 under RNE's umbrella. In order to improve the services and performance of the corridor, the results of the USS were analysed and published on the website, consequently, the customers' increased involvement into further market surveys and problem-solving have been applied.[1]

Areas to be measured by the USS:

a) Quality of information / application procedures / handling of complaints

b) Infrastructure standard

c) Train-paths, journey times

d) Terminal information

e) Train Performance Management

f) Traffic Management

g) Coordination of planned temporary capacity restrictions

h) Communication

The RNE RFC USS Common Platform is a great achievement towards "one RFC Network": it embraces the cooperation of the majority of RFCs for one aim.

The common survey platform as an initiative of RNE started in 2014 and thus has a lot of experience to conduct more and more efficient surveys, with constant developments mainly based on feedback received from the market. Its methodology is Computer Assisted Web Interview (CAWI), which is a modern research technique and very adequate for international business target groups. Online surface is an ideal arena, CAWI can diminish the language barrier, and provides automated data collection and pre-cleaning. Due to many overlaps of the RFCs' routings and that the customers of RFCs use more than one RFC for their business purposes, it is very practical not to conduct several separated RFC researches on the same target population.

The high level of standardisation (not only in the questionnaire, but also in main directions of analysis, as well as in database and output form) aims to reach a more complete comparison among the corridors' results and helps the sector as a whole to develop better solutions which are

[1] https://rfc-amber.eu/assets/downloads/other_public_documents/Summary_RFC%20Amber_RNE%20RFC%20USS_2020_v4.pdf

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not only tailored to one RFC. Based on the objective opinion of respondents the harmonised questionnaire including standard blocks covers the relevant topics.

RNE RFC USS Common Platform has already proved its functionality by reflecting real market phenomena, which validates the survey. This platform provides us a European framework for the comparison and a complex European view, which could lead us on the long term to develop the most ideal products in line with market needs. It is worth joining!

4.8 Corridor Information Document

Information on the conditions of use of RFC Amber are published in the CID book. The CID contains general information about RFC Amber (the information included in the Network Statements for national networks of the corridor's IMs/AB that relate to RFC Amber, the list and characteristics of terminals together with information concerning the methods and conditions of access, the information referring to the coordination of works, the C-OSS and the allocation of capacity, the authorised applicants and traffic management, both in normal conditions and in the event of disturbance; and the Implementation Plan).

The CID consists of the following sections:

- **Section 1: General Information**
- **Section 2: Network Statement Excerpts**
- **Section 3: Terminal Description**
- **Section 4: Procedures for Capacity and Traffic Management**
- **Annexes (Implementation Plan, Market Analysis Study etc.)**

The CID is updated if needed to reflect the essential changes that happen on the corridor and modifications in the network statements of the corridor's IMs/AB. The necessary updates take place with publication of the CID for the next timetabling year, unless an earlier amendment is required.

The CID for the current timetabling year and the CID for the next timetabling year are available on RFC Amber website, after their publication.

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5 Objectives and Performance on the Corridor

Art. 19 of the Regulation requires the Management Board to monitor the performance of the corridor and to publish results once a year.

The steps needed to meet this requirement of the Regulation are:

- Definition of the strategic vision of the corridor
- Definition of appropriate and viable key performance indicators (KPIs)
- Setting of reachable quantitative objectives.

5.1 Punctuality

Punctuality of a train will be measured on the basis of comparisons between the time planned in the timetable of a train identified by its train number and the actual running time at certain measuring points. A measuring point is a specific location on the route where the trains running data is captured. One can choose to measure the departure, arrival or run through time. The comparison should always be done with an internationally agreed timetable for the whole train run.

Punctuality will be measured by setting a threshold (30 minutes) up to which trains will be considered as punctual and building up a percentage.

Punctuality objectives: at least 60 % at origin and 60 % at destination.

The codified reasons for delay, in accordance with UIC leaflet 450-2, will be used for continuous and systematic monitoring.

5.2 Capacity

The C-OSS acts as exclusive allocator for PaPs and Reserve Capacity on the Corridor. PaPs for the annual timetable are provided by the IMs/AB to the C-OSS.

The PaPs are based on standard parameters for rail freight and previously coordinated between the IMs/AB at the borders to enable attractive running times. The path catalogue of PaPs will be published by the C-OSS in mid-January annually for the next timetable period. Reserve capacity on the corridor is available from October of each year on, to allow for ad-hoc path applications.

The offer of the C-OSS will be displayed for information on the RFC Amber website and for booking in the IT-application PCS (Path Coordination System) provided by RNE.

The objectives to offer capacity via the C-OSS is to have “one face to the customer” for international path requests along the Rail Freight Corridor and at the end harmonized path offers across at least one border. Furthermore the decision on the PaP pre-allocation will be done by the C-OSS by the end of April for the entire international PaP segment on the basis of one harmonized allocation rule. As a result the RUs will get earlier information about the PaP pre-allocation.

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Capacity related objectives

- Response time to questions of customers related to the information function of C-OSS shall be: as soon as possible
- Increasing the allocated pre-arranged paths and reserve capacity by min. **2%** annually

Interoperability objectives

- To contribute to the progressive creation of the internal market in equipment and services for the construction, renewal, upgrading and operation of the rail system within the RFC Amber
- To contribute to the interoperability of the rail system within RFC Amber

Interoperability involves

- infrastructure and energy (electrification system)
- control, command and signalling: the equipment necessary to ensure safety and to regulate movements of trains authorized to travel on the network
- operation and traffic management (including telematics applications): procedures and related equipment enabling a coherent operation of the different structural subsystems and professional qualifications required for carrying out cross-border services
- rolling stock: vehicle dynamics and superstructure, command and control system for all train equipment, current-collection devices, traction and energy conversion units, braking, coupling and running gear and suspension, doors, man/machine interfaces, passive or active safety devices and requisites for the health of passengers and on-board staff
- maintenance: procedures, associated equipment, logistics centres for maintenance work

Railway interoperability is developed through the introduction of Technical Specifications of Interoperability (TSIs) concerning the specific subsystems; TSIs are also related to safety issues, even though security and interoperability are, at present, regulated by different normative initiatives. The EU Agency for Railways (ERA) is directly involved in the interoperability process with the role of advising and assisting the process; moreover, the Agency is in charge of the development of TSIs.

As it is referred to in chapter 2.5.2 and chapter 6.4, RFC Amber works on the elaboration of a detailed bottleneck study where the infrastructural, operational, administrative and capacity bottlenecks will be analysed and corrective measures proposed by the Contractor. The main goal with such study will be to demonstrate the importance of the elimination of these bottlenecks towards the decision makers. The earlier the bottlenecks are eliminated, the sooner the competitiveness of rail vis-á-vis road raises.

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5.3 KPIs

RFC Amber's performance is monitored in terms of allocation process and train performance. Chapter 4.8.1 describes the full set of KPIs to be monitored by RFC Amber and the reasons why those KPIs were chosen. It also elaborates why the monitoring of KPIs matters for the RFCs and for what purpose this monitoring is done. The RNE guidelines „Key Performance Indicators of Rail Freight Corridors" will be entirely followed:

http://rne.eu/wp-content/uploads/RNE_Guidelines_KPIs_of_RFCs.pdf

As regards the train performance defining of KPI's will only start after at least half a year of monitoring (planned in the 2nd half of 2019 for the capacity and in the first half of 2020 for the punctuality KPIs). Only traffic that is included in the annual timetable and for which there is information in TIS is eligible and may be subject to evaluation. The high quality of data and sufficient volume of traffic are key elements that must be checked before specific sections and specific trains are chosen for measurement in the frame of Train Performance Management.

At the process of train performance management, the RUs will be involved into solving the matters at which they are concerned. Such procedure is evident as the achievement of better performance on RFC Amber can only result from the proper involvement of all the concerned parties.

6 Investment plan

The RFC Amber Investment Plan is within the competence of the Member States. Chapters 6.1. List of Projects and 6.2. Deployment Plan of this CID Book describe the activities foreseen by the Member States and the IMs for the improvement of infrastructure and deployment of ERTMS on RFC Amber.

6.1 Capacity Management Plan

6.1.1 Methodology

In general terms RFCs deal with two types of capacity. One is the capacity on corridor paths (PaPs, RC), as well as on feeder/outflow and on connecting sections to terminals. The other one is the capacity of the infrastructure along the corridor. Strong interdependency exists between these types of capacity because the more the infrastructure capacity is and the better the infrastructure parameters are, the more and higher quality paths can be dedicated for international rail freight.

The overall dedicated capacity on corridor paths is managed by the C-OSS. This is the capacity dedicated for international rail freight that the IMs/AB assign to be managed by the C-OSS. The corridor paths (PaPs and RC) are pre-defined and synchronised by the IMs/AB before handing over to the C-OSS. They already consider the available infrastructure capacity. Capacity of feeder/outflow and connecting sections to terminals is planned on demand by the IMs/AB on the basis of requests indicated to the C-OSS. Scheduling of this capacity also takes into account the existing condition of the infrastructure.

RFC Amber has overlapping sections with RFC Baltic-Adriatic, RFC Mediterranean, RFC Orient/East-Med, RFC North Sea-Baltic and RFC Czech-Slovak. In the future there are going to be overlapping sections with the future Rhine-Danube and Alpine – Western Balkan RFC which are currently under implementation. PaPs and RC on overlapping sections are planned by respective IMs/ABs as outlined above and coordinated with active assistance of the C-OSSs of the RFCs involved in order to ensure distribution of capacity in a manner satisfactory to all RFCs that share an overlapping section meanwhile satisfy the market needs too.

Whenever conflicting requests for PaPs and RC are made, priority is decided in accordance with the Framework for Capacity Allocation (FCA). In case of issues in traffic management, national rules apply. Further details are provided in this Annex in Chapter 4 List of Measures and in CID Section 4 Procedures for Capacity and Traffic Management.

The capacity of the infrastructure along the corridor is managed by the IMs with the general aim to maintain sufficient parameters, make improvements where necessary and remove bottlenecks to ensure seamless traffic flow of international freight trains. As the infrastructure parameters will gradually improve on RFC Amber, the IMs/AB will be able to offer more capacity and higher quality

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of paths for international rail freight. On overlapping sections this will reduce the pressure and competition among RFCs for the mostly wanted time slots.

For RFC Amber lines forming part of the TEN-T Core Network, the Member States should ensure that the following infrastructure requirements laid down in Article 39 (2a) of Regulation (EU) No 1315/2013 are met by the year 2030:

Full electrification of the line tracks and, as far as necessary for electric train operations, sidings;

- at least 22,5 t axle load,
- 100 km/h line speed
- possibility of running trains with a length of 740 m;
- full deployment of ERTMS;
- nominal track gauge for new railway lines: 1 435 mm except in cases where the new line is an extension on a network the track gauge of which is different and detached from the main rail lines in the Union.

Regarding the implementation of the TAF TSIs, it is estimated that until the end of 2022 all Member States in RFC Amber will comply. However, a detailed analysis can be found about that in the TAF-TSI Master Plan:

http://www.era.europa.eu/Document-Register/Documents/TAF-TSI-Master-Plan.pdf

Infrastructure works are likely to cause disruptions in traffic flows. In case of major disturbances procedures related to Temporary Capacity Restrictions will apply, as described in this Annex in Chapter 4 List of Measures and in CID Section 4 Procedures for Capacity and Traffic Management. With regard to bottlenecks, in addition to the information provided in this Annex in Chapter 2.4 Bottlenecks, RFC Amber will perform a dedicated study to address bottlenecks of administrative, operational and infrastructural nature. Particular attention will be given to cross-border areas, capacity and line standard. Potential measures will be identified for infrastructure and operational improvements for more efficient rail freight operations on the corridor. The study will help the Member States and the IMs to prioritize key infrastructural and capacity projects, which constitute bottleneck removal actions.

6.1.2 Plans for removal of bottlenecks

As it is referred to in chapter 2.5.2 and chapter 6.4, RFC Amber has received a grant from the European Commission under the Program Support Action for the action entitled Establishment and development of the "Amber" rail freight corridor with the action number 2016-PSA-RFC11, mainly aiming to support the set-up and further development of the corridor according to Regulation (EU) No 913/2010.

A comprehensive “Study on bottlenecks along RFC Amber No.11” has been elaborated too within the frame of the action. This activity is expected to give an in-depth understanding of the compliance of the corridor infrastructure with TEN-T minimum requirements, TSI line performance parameters, bottlenecks in terms of capacity and line standard, and potential measures for infrastructure and operational improvements for efficient rail freight operations along the corridor.

The main goal with such study will be to demonstrate the importance of the elimination of these bottlenecks towards the decision makers. The earlier the bottlenecks are eliminated, the sooner the competitiveness of rail vis-á-vis road raises. The study will be ready latest by end of 2020.

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6.1.2.1 Bottlenecks on Polish section

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,212 PLN March 2018)	Financial Sources
Poland	Muszyna (G.P.) - Muszyna	Muszyna (G.P.) - Muszyna	one track line, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	Natonal founds
Poland	Muszyna - Nowy Sącz	Muszyna - Nowy Sącz	one track line, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	Natonal founds
Poland	Nowy Sącz - Tarnów	Nowy Sącz - Tarnów	section with one track, low axle load, low max train lenght, low speed	Project: "Works on rail line no. 96 on section Tarnów - Muszyna". Project improve actually parameters.	2023	71,226	Natonal founds
Poland	Podłęże - Podłęże R 201	Podłęże - Podłęże R 201	low max train lenght	Project "Works on the railway line No. 95 on the section Kraków Mydlniki - Podłęże with interchanges" Project improve technical condition.	2018	14,079	Natonal founds
Poland	Podłęże - Podłęże R 101	Podłęże - Podłęże R 101	low max train lenght	Project possibly after 2020	-	-	-
Poland	Podłęże R 101 - Podłęże R 201	Podłęże R 101 - Podłęże R 201	low max train lenght	Project: "Work on the E 30 railway line on the Kraków Główny Towarowy – Rudzice section and the addition of the agglomeration line tracks" Projects aim to improve parameters to TEN-T requirements.	2020	247, 697	CEF
Poland	Podłęże R 201 - Raciborowice	Podłęże R 201 - Raciborowice	low axle load, low max train lenght, low speed	Project "Works on the railway line No. 95 on the section Kraków Mydlniki - Podłęże with interchanges" Project improve technical condition.	2018	14,079	Natonal founds
Poland	Raciborowice - Tunel	Raciborowice - Tunel	low max train lenght, low speed	Project possibly after 2020	-	-	-

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Poland	Tunel - Radom	Tunel - Radom	low max train lenght, low speed	Projects: 1) "Works on railway line no. 8 on section Skarżysko Kamienna – Kielce – Kozłów" 2) "Modernisation railway line no. 8 Radom - Kielce"	1) 2022 2) 2018	1) 112,678 2) 10,328	1) OPIE 2)National founds
Poland	Radom - Dęblin	Radom - Dęblin	low max train lenght, low speed	Project possibly after 2020	-	-	-
Poland	Dęblin - Łuków	Dęblin - Łuków	low max train lenght, low speed	Project possibly after 2020	-	-	-
Poland	Podłęże R 101 - Kraków Prokocim Towarowy	Podłęże R 101 - Gaj	low axle load, low max train lenght, low speed	Project: "Work on the E 30 railway line on the Kraków Główny Towarowy – Rudzice section and the addition of the agglomeration line tracks" Projects aim to improve parameters to TEN-T requirements.	2020	247,697	CEF
Poland	Kraków Prokocim Towarowy - Oświęcim (OwC)	Kraków Prokocim Towarowy - Oświęcim (OwC)	low axle load, low max train lenght, low speed	Project: "Work on the railway line 94 on the Kraków Płaszów – Skawina – Oświęcim section" Project improve technical condition.	2023	84,52	Natonal founds
Poland	Oświęcim (OwC) - Oświęcim (OwC1)	Oświęcim (OwC) - Oświęcim (OwC1)	low axle load, low max train lenght, low speed	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	83,428	OPIE
Poland	Oświęcim (OwC1) - Mysłowice Brzezinka	Oświęcim (OwC1) - Mysłowice Brzezinka	low axle load, low max train lenght, low speed	Projects: 1) "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim. 2) "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	1) 2021 2) 2022	1) 131,885 2) 83,428	1) OPIE 2) OPIE

Poland	Mysłowice Brzezinka - Sosnowiec Jęzor	Mysłowice Brzezinka - Sosnowiec Jęzor	low axle load, low max train lenght, low speed	Project: "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	2022	131,885	OPIE
Poland	Sosnowiec Jęzor - Jaworzno Szczakowa	Sosnowiec Jęzor - Jaworzno Szczakowa	low axle load, low max train lenght	Project: "Work on lines No. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom – Chorzów Stary – Mysłowice Brzezinka – Oświęcim and Dorota – Mysłowice Brzezinka sections" Project improve technical condition.	2022	83,428	OPIE
Poland	Jaworzno Szczakowa - Tunel	Jaworzno Szczakowa - Tunel	low axle load, low max train lenght, low speed	Project: "18 Work on the railway lines No. 62, 660 on the Tunel – Bukowno – Sosnowiec Płd. section." Project improve technical condition.	2021	69,824	Natonal founds
Poland	Radom - Warszawa Główna Tow.	Radom - Warszawa Główna Tow.	section with one track, low max train lenght, low speed, low axle load	Projects: 1) Modernisation railway line no. 8, section Warszawa Okęcie – Radom (LOsT: A, B, F) Phase II 2) Works on railway line no. 8, section Warka – Radom (Lots: C, D, E) Projects aim to improve parameters to TEN-T requirements	1) 2020 2) 2023	1) 224,098 2) 165,646	1) OPIE 2) OPIE
Poland	Warszawa Główna Tow. - Warszawa Praga	Warszawa Główna Tow. - Warszawa Praga	low axle load, low max train lenght	Project: Works on the Warsaw ring railway (section Warszawa Golabki/Warszawa Zachodnia–Warszawa Gdanska Project aim to improve parameters to TEN-T requirements (without maximum speed).	2019	56,268	CEF
Poland	Zwardoń (G.P.) - Zwardoń	Zwardoń (G.P.) - Zwardoń	one track line, low axle load, low max train lenght, low speed	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds
Poland	Zwardoń - Bielsko-Biała	Zwardoń - Bielsko-Biała	section with one track, low axle load, low max train lenght, low speed, high gradient	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds
Poland	Bielsko-Biała - Czechowice-Dziedzice	Bielsko-Biała - Czechowice-Dziedzice	low axle load, low max train lenght, low speed,	Project: Work on the railway line 139 on the Czechowice Dziedzice – Bielsko Biała - Zwardoń (national border) Project improve technical condition.	2023	47,483	Natonal founds

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Poland	Czechowice-Dziedzice - Oświęcim	Czechowice-Dziedzice - Oświęcim	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Oświęcim - Oświęcim (OwC1)	Oświęcim - Oświęcim (OwC1)	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Oświęcim - Oświęcim (OwC)	Oświęcim - Oświęcim (OwC)	low axle load, low max train lenght, low speed,	Project: "Work on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation station Oświęcim.	2021	131,885	OPIE
Poland	Dęblin - Tłuszcz	Dęblin - Pilawa	low speed	Project: "Work on the railway line No. 7 Warszawa Wschodnia Osobowa – Dorohusk on the Warszawa – Otwock – Dęblin – Lublin section" Projects aim to improve parameters to TEN-T requirements.	2021	844,302	OPIE
Poland	Tłuszcz - Warszawa Praga	Krusze - Legionowo Piaski	low axle load, low max train lenght, low speed,	Project possibly after 2020	-	-	-

- section Łuków - Terespol is an overlapping section with RFC North Sea-Baltic
- section Pilawa - Warszawa Główna Tow. is an overlapping section with RFC North Sea-Baltic
- section Sosnowiec Jęzor - Jaworzno Szczakowa is an overlapping section with RFC Baltic-Adriatic and RFC North Sea-Baltic
- section Zwardoń (G.P.) - Sosnowiec Jęzor is an overlapping section with RFC Baltic-Adriatic

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6.1.2.2 Bottlenecks on Slovakian section

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovakia	Bratislava Vajnory - Dunajská Streda - Komárno border	Bratislava Nové Mesto -Komárno	one track line→lack of capacity (strong passenger transport, connection to intermodal terminal)	electrification, building of 2. line track	According to the results of Feasibility study of junction Bratislava after 2030	assumption 600	OPII/ State budget
Slovakia	Košice - Plaveč border	Lipany - Plaveč border	low speed, ERTMS not full deployment	modernisation of track	n/a	n/a	n/a
		Prešov - Kysak	low speed, ERTMS not full deployment	modernisation of track	n/a	n/a	n/a
		Košice - Kysak	ERTMS not full deployment	ERTMS	after 2023	1,622	n/a

- section Komárno – Dunajská Streda – Bratislava Nové Mesto is an overlapping section with RFC Orient/East-Med

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6.1.2.3 Bottlenecks on MÁV section in Hungary

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euros	Financial Sources
Hungary MÁV	(Border SLO) - Őriszentpéter - Zalaszentiván	(Border SLO) - Őriszentpéter - Zalaszentiván	Max. train length < 740m	-	-	-	-
Hungary MÁV	(Border SLO) - Őriszentpéter - Zalaszentiván	(Border SLO) - Őriszentpéter - Zalaszentiván	ETCS is not deployed	Deployment of ETCS L2 on the Bajánsenye - Boba railway line	2018	4.6	EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Budaörs - Kelenföld	Max. axle load < 22.5t	-	-	-	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	Max. speed < 100km/h Max. axle load < 22.5t	-	-	-	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	-	Upgrade of the Budapest South Railway Bridge	2020	114,2	EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Győr - Kelenföld	ETCS baseline is not interoperable	-	-	-	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	ETCS is not deployed	Deployment of ETCS L2 on the Ferencváros - Székesfehérvár railway line	2018	15.9	EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Győr - Ferencváros	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	19.3	EU and Hungarian budget
Hungary MÁV	Komárom - Border SK	Komárom - Border SK	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Komárom - Border SK	Komárom - Border SK	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.4	EU and Hungarian budget
Hungary MÁV	Ferencváros - Kelebia - (Border SRB)	Ferencváros - Soroksár	ETCS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	Not known	Hungarian budget
Hungary MÁV	Ferencváros - Kelebia - (Border SRB)	Ferencváros - Soroksár	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	23.3	EU and Hungarian budget

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Hungary MÁV	Ferencváros - Kelebia - (Border SRB)	Soroksár - Kunszentmiklós-Tass	Max. axle load < 22.5t ERTMS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	Not known	Hungarian budget
Hungary MÁV	Ferencváros - Kelebia - (Border SRB)	Kunszentmiklós-Tass - Border SRB	Max. train length < 740m Max. axle load < 22.5t ERTMS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	Not known	Hungarian budget
Hungary MÁV	Ferencváros - Kőbánya felső	Ferencváros - Kőbánya felső	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Ferencváros - Kőbánya felső	Ferencváros - Kőbánya felső	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.7	EU and Hungarian budget
Hungary MÁV	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.3	EU and Hungarian budget
Hungary MÁV	Rákos elágazás - Rákospalota-Újpest	Rákos elágazás - Rákospalota-Újpest	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Rákos elágazás - Rákospalota-Újpest	Rákos elágazás - Rákospalota-Újpest	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	1.4	EU and Hungarian budget
Hungary MÁV	Rákospalota-Újpest - Border SK	Rákospalota-Újpest - Border SK	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary MÁV	Kőbánya felső - Rákos	Kőbánya felső - Rákos	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Kőbánya felső - Rákos	Kőbánya felső - Rákos	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.5	EU and Hungarian budget

Hungary MÁV	Rákos - Felsőzsolca	Rákos - Hatvan	Max. axle load < 22.5t ETCS is not deployed	Reconstruction works of the Rákos - Hatvan railway line and the deployment of ETCS L2	2020	672.6	EU and Hungarian budget
Hungary MÁV	Rákos - Felsőzsolca	Hatvan - Felsőzsolca	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Rákos - Felsőzsolca	Rákos - Felsőzsolca	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	10.3	EU and Hungarian budget
Hungary MÁV	Felsőzsolca - Hidasnémeti - (Border SK)	Felsőzsolca - Border SK	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Felsőzsolca - Hidasnémeti - (Border SK)	Felsőzsolca - Border SK	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	3.4	EU and Hungarian budget
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Felsőzsolca - Border SK	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Felsőzsolca - Mezőzombor	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	2.2	EU and Hungarian budget
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Mezőzombor - Border SK	Max. train length < 740m GSM-R is not deployed	-	-	-	-
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Mezőzombor - Sátoraljaújhely	Track is not electrified	Removal of bottlenecks and electrification of the Mezőzombor - Sátoraljaújhely railway line	2019	93.4	EU and Hungarian budget
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Sárospatak - Sátoraljaújhely	Max. speed < 100km/h	Removal of bottlenecks and electrification of the Mezőzombor - Sátoraljaújhely railway line	2019	93.4	EU and Hungarian budget
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - (Border SK)	Sátoraljaújhely - Border SK	Max. speed < 100km/h Track is not electrified	-	-	-	-

Hungary MÁV	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.2	EU and Hungarian budget
Hungary MÁV	Hatvan B elágazás - Hatvan C elágazás	Hatvan B elágazás - Hatvan C elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Hatvan B elágazás - Hatvan C elágazás	Hatvan B elágazás - Hatvan C elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.1	EU and Hungarian budget
Hungary MÁV	Hatvan - Újszász	Hatvan - Újszász	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Újszász - Újszászi elágazás	Újszász - Újszászi elágazás	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Újszász - Újszászi elágazás	Újszász - Újszászi elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.8	EU and Hungarian budget
Hungary MÁV	Újszászi elágazás - Paládicspuszta elágazás	Újszászi elágazás - Paládicspuszta elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Újszászi elágazás - Paládicspuszta elágazás	Újszászi elágazás - Paládicspuszta elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary MÁV	Szolnok A elágazás - Szolnok-Rendező	Szolnok A elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Szolnok A elágazás - Szolnok-Rendező	Szolnok A elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.6	EU and Hungarian budget
Hungary MÁV	Szolnok B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Szolnok B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.5	EU and Hungarian budget

Hungary MÁV	Szolnok C elágazás - Szolnok-Rendező	Szolnok C elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Szolnok C elágazás - Szolnok-Rendező	Szolnok C elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.4	EU and Hungarian budget
Hungary MÁV	Szolnok D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Szolnok D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.6	EU and Hungarian budget
Hungary MÁV	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	Max. axle load < 22.5t	-	-	-	-
Hungary MÁV	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	ETCS is not deployed	Deployment of ETCS L2 on the Monor - Szajol railway line	2019	20.0	EU and Hungarian budget
Hungary MÁV	Abony elágazás - Paládicspuszta elágazás	Abony elágazás - Paládicspuszta elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	3.4	EU and Hungarian budget
Hungary MÁV	Nyársapát elágazás - Abony elágazás	Nyársapát elágazás - Abony elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Nyársapát elágazás - Abony elágazás	Nyársapát elágazás - Abony elágazás	GSM-R is not deployed	Deployment of GSM-R system, 1. stage	2018	0.2	EU and Hungarian budget
Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Nyársapát elágazás - Városföld	ETCS is not deployed	-	-	-	-
Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Nyársapát elágazás - Városföld	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	2.4	EU and Hungarian budget
Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-

Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2020	0.8	EU and Hungarian budget
Hungary MÁV	Kiskunhalas - Kiskunfélegyháza	Kiskunhalas - Kiskunfélegyháza	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Balotaszállás elágazás - Harkakötöny elágazás	Balotaszállás elágazás - Harkakötöny elágazás	Max. train length < 740m Max. speed < 100km/h Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-

- section Őriszentpéter – Zalaszentiván is an overlapping section with RFC Mediterranean
- section Győr – Ferencváros is an overlapping section with RFC Mediterranean and RFC Orient/East-Med
- section Ferencváros – Rákos is an overlapping section with RFC Mediterranean and RFC Orient/East-Med
- section Rákos – Aszód is an overlapping section with RFC Mediterranean
- section Aszód – Hatvan A junction is an overlapping section with RFC Mediterranean and RFC Orient/East-Med
- section Hatvan A junction – Felsőzsolca is an overlapping section with RFC Mediterranean
- section Ferencváros - Soroksár is an overlapping section with RFC Orient/East-Med
- section Komárom - Border Sk is an overlapping section with RFC Orient/East-Med

Amber Rail Freight Corridor

6.1.2.4 Bottlenecks on GYSEV section in Hungary

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Estimated Costs in mil. of Euro	Financial Sources
Hungary / Gysev	Rajka s.b. - Hegyeshalom	Rajka s.b. - Hegyeshalom	single track; Max. axle load < 22.5t; track conditions deteriorating;	Modernisation, upgrade of railway infrastructure	n/a	62	n/a
Hungary / Gysev	Hegyeshalom - Csorna	Hegyeshalom - Csorna	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	n/a	385	n/a
Hungary / Gysev	Csorna - Porpác	Csorna - Porpác	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; InterCity traffic every two hours per direction; no ETCS	Modernisation, upgrade of railway infrastructure	n/a		n/a
Hungary / Gysev	Porpác - Szombathely	Porpác - Szombathely	Max. axle load < 22.5t; track conditions deteriorating; high density of InterCity and commuter trains; no ETCS	Modernisation, upgrade of railway infrastructure	n/a	n/a	n/a
Hungary / Gysev	Szombathely	Szombathely	outdated track and signalling infrastructure; Max. speed <100km/h; capacitiy problems for freight; no ETCS	Modernisation, upgrade of railway and signalling infrastructure	n/a	49	n/a
Hungary / Gysev	Szombathely - Vasvár	Szombathely - Vasvár	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	n/a	174	n/a
Hungary / Gysev	Vasvár - Pácsony	Vasvár - Pácsony	Max. speed < 100km/h; Max. axle load < 22.5t; 13‰ elevation; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	n/a		n/a
Hungary / Gysev	Pácsony - Egervár-Vasboldogasszony	Pácsony - Egervár-Vasboldogasszony	Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS	Modernisation, upgrade of railway infrastructure	n/a		n/a
Hungary / Gysev	Egervár-Vasboldogasszony - Zalaszentiván	Egervár-Vasboldogasszony - Zalaszentiván	Max. speed < 100km/h; Max. axle load < 22.5t; Max. train length < 740m; track conditions deteriorating; no ETCS Change of direction of trains at Zalaszentiván when going to Hodoš/Koper	Modernisation, upgrade of railway infrastructure New triangle track at Zalaszentiván	n/a		n/a

Hungary / Gysev	Sopron-Rendező - Harka	Sopron-Rendező - Harka	single track line; Max. axle load <22.5t; high density of domestic and international passenger trains at least hourly; no ETCS	Modernisation, upgrade of railway infrastructure	n/a	n/a	n/a
Hungary / Gysev	Harka - Szombathely - Szentgotthárd	Harka - Szombathely - Szentgotthárd	no major bottlenecks; ETCS L2 under construction	Deployment of ETCS control-command signalling system	31/12/2020	32	Cohesion Fund (IKOP)
Hungary / Gysev	Sopron-Rendező - Pinnye	Sopron-Rendező - Pinnye	single track line; Max. axle load <22.5t; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	n/a	n/a	n/a
Hungary / Gysev	Pinnye - Fertőszentmiklós	Pinnye - Fertőszentmiklós	single track line; Max. axle load < 22.5t; at least hourly regular interval commuter trains; every two hours InterCity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	n/a	n/a	n/a
Hungary / Gysev	Fertőszentmiklós - Petőháza	Fertőszentmiklós - Petőháza	single track line; Max. axle load <22.5t; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	n/a	n/a	n/a
Hungary / Gysev	Petőháza - Győr	Csorna - Győr	single track line; Max. axle load < 22.5t; high density of passenger trains; at least hourly regular interval commuter trains; every hours Intercity trains; no ETCS	Modernisation, upgrade of railway infrastructure, construction of 2nd track	n/a	222	n/a

- section Sopron-Rendező - Pinnye* is an overlapping section with RFC Orient/East-Med and the future extension of RFCCzech-Slovak
- section Pinnye - Fertőszentmiklós* is an overlapping section with RFC Orient/East-Med and the future extension of RFC Czech-Slovak
- section Fertőszentmiklós - Petőháza* is an overlapping section with RFC Orient/East-Med and the future extension of RFCCzech-Slovak
- section Petőháza - Győr* is overlapping section with RFC Orient/East-Med and the future extension of RFC Czech-Slovak

6.1.2.5 Bottlenecks on Slovenian section

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovenia	section Zidani Most - Pragersko	section Zidani Most - Pragersko	Higher category (C3 to D4)	Modernisation, upgrade of railway infrastructure	2022	n/a	EU and Slovenian budget
Slovenia	Station Ljubljana (node)	Station Ljubljana (node)	Lack of capacity, longer station tracks, signaling	Modernisation, upgrade of railway infrastructure	2025	n/a	EU and Slovenian budget
Slovenia	section Ljubljana - Zidani Most	section Ljubljana - Zidani Most	Signaling, longer station tracks,	Modernisation, upgrade of railway infrastructure	after 2023	n/a	EU and Slovenian budget
Slovenia	section Divača - Koper	section Divača - Koper	An additional track on other route (shorter track) but not parallel, creation of new structure (line, tunnel, bridge, leapfrog)	Modernisation, upgrade of railway infrastructure	2025	n/a	EU and Slovenian budget
Slovenia	section Divača - Koper	section Divača - Koper	Lack of capacity, longer station tracks	Modernisation, upgrade of railway infrastructure	2022	n/a	EU and Slovenian budget
Slovenia	section Ljubljana - Divača	section Ljubljana - Divača	More energy for traction, signaling, longer station tracks	Modernisation, upgrade of railway infrastructure	2022	n/a	EU and Slovenian budget

- section Zidani Most – Pragersko is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean and with the Alpine – Western Balkan Corridor in future
- station Ljubljana is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean
- section Ljubljana – Zidani most is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean and with the Alpine – Western Balkan Corridor in future
- section Divača – Koper is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean and with the Alpine – Western Balkan Corridor in future
- section Ljubljana – Divača is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean

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6.2 List of investment projects

RFC Amber identified and collected a list of projects for the modernisation, upgrade and renewal of the railway infrastructure in accordance with the provisions of Art. 11 of Regulation (EU) No 913/2010. The provided lists of the projects are of primary importance of the Member States to be taken into consideration when it comes to infrastructure planning and financing. There are also projects indicated in the list which are under realisation in order to show their importance for rail freight operations.

Financing the infrastructure developments is out of the scope of the RFCs, however, the identification of the bottlenecks and their prioritization from IMs and customers point of view, could give some guidance for decision-makers when it comes to decisions about investments to eliminate those bottlenecks. The aforementioned bottleneck study aims to provide the Member States with an adequate analysis and proposed measures on how to eliminate the bottlenecks with a purpose of supporting Member States when it comes to decisions on investments.

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POLAND

Infrastructure project												Reached parameters					
Status	**Member state**	**IM**	**Line**	**Section**		**Category**	**Project name**	**Start**		**End**		**Maximum speed [km*h^{-1}]**	**Axle load [t] / Line category**	**Axle load [t] / Line category**	**Traction power**	**ETCS Level**	**Interm. Code**
				From	**To**			**Month**	**Year**	**Month**	**Year**						
ongoing	PL	PKP PLK S.A.	Czechowice-Dziedzice - Oświęcim	Czechowice-Dziedzice	Oświęcim	Diversionary	Works on the railway line 93 on the Trzebinia – Oświęcim – Czechowice Dziedzice section	10	2017	12	2021	80 - 120	22,5 / D3	740	25 kV AC		
	PL	PKP PLK S.A.	Oświęcim - Oświęcim (OwC1)	Oświęcim	Oświęcim (OwC1)	Diversionary											
	PL	PKP PLK S.A.	Oświęcim - Oświęcim (OwC)	Oświęcim	Oświęcim (OwC)	Diversionary											
	PL	PKP PLK S.A.	Oświęcim (OwC) - Oświęcim (OwC1)	Oświęcim (OwC)	Oświęcim (OwC1)	Principal											
ongoing	PL	PKP PLK S.A.	Dęblin - Tłuszcz	Dęblin	Pilawa	future diversionary	Works on the railway line no. 7 Warszawa Wschodnia Osobowa – Dorohusk on the Warszawa – Otwock – Dęblin – Lublin section	9	2016	5	2021	160	22,5 / D3	740	25 kV AC	2	
planned	PL	PKP PLK S.A.	Dęblin - Tłuszcz	Pilawa	Krusze	future diversionary	Works on the railway lines no. 13, 513 on section Krusze / Tłuszcz – Pilawa	-	-	-	-	-	-	-	25 kV AC		
-	PL	PKP PLK S.A.	Tłuszcz - Warszawa Praga	Krusze	Legionowo Piaski	future diversionary	Project possible after 2020	-	-	-	-	-	-	-	25 kV AC		

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Infrastructure project												Reached parameters					
Status	**Member State**	**IM**	**Line**	**Section**		**Catergory**	**Project name**	**Start**		**End**		**Maximum speed [km*h^{-1}]**	**Axle load [t] / Line category**	**Axle load [t] / Line category**	**Traction power**	**ETCS Level**	**Interm. Code**
				From	**To**			**Month**	**Year**	**Month**	**Year**						
ongoing	PL	PKP PLK S.A.	Tłuszcz - Warszawa Praga	Legionowo Piaski	Praga	future diversionary	Modernisation railway line E 65/C-E 65 on section Warszawa - Gdynia in the scope of the superior layer LCS, ERTMS / ETCS / GSM-R, DSAT and power supply of the traction system - Phase II	12	2012	12	2018	no changes	no changes	no changes	25 kV AC	2	
planned	PL	PKP PLK S.A.	Nowy Sącz - Tymbark	Nowy Sącz	Tymbark	expected line	Construction of a new railway line Podłęże – Szczyrzyc – Tymbark/Mszana Dolna and modernisation of the existing railway line no. 104 Chabówka – Nowy Sącz – Stage II	3	2020	12	2023	t.b.a.	t.b.a.	t.b.a.	25 kV AC		

Infrastucture Project												Reached parameters					
Status	Member State	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Axle load [t] / Line category	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
planned	PL	PKP PLK S.A.	Tymbark - Podłęże	Tymbark	Podłęże	expected line	Construction of a new railway line Podłęże – Szczyrzyc – Tymbark/Mszana Dolna and modernisation of the existing railway line no. 104 Chabówka – Nowy Sącz – Stage III	-	-	-	-	-	-	-	25 kV AC		
ongoing	PL	PKP PLK S.A.	Tarnów - Podłęże	Tarnów	Podłęże	Principal	Construction of ERTMS/ETCS on TEN-T core network	1	2018	4	2021	-	-	-	25 kV AC	2	
	PL	PKP PLK S.A.	Łuków - Terespol	Łuków	Terespol	Principal		1	2018	2	2023	-	-	-	25 kV AC	2	
planned	PL	PKP PLK S.A.	All lines and sections				Construction of GSM-R network infrastructure		2018	12	2020	no impact	no impact	no impact	25 kV AC		

SLOVAKIA

Infrastructure project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h-1]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
planed	Slovakia	ŽSR	Trnovec nad Váhom - Tvrdošovce	Trnovec nad Váhom	Tvrdošovce	principal	Reconstruction, modernisation of the track	8	2018	8	2018	120	22,5/D4	700	25 kV AC		
planed	Slovakia	ŽSR	Bratislava - Rajka	Bratislava Nové Mesto	Bratislava UNS	principal	Track and platform renewal, structure improvement	7	2018	7	2018	80	22,5/D4	690	25 kV AC		
planed	Slovakia	ŽSR	Nové Zámky - Komárno	Bajč	Bajč	principal	Track and platform renewal, structure improvement	7	2018	7	2018	100	22,5/D4	620	25 kV AC		
ongoing	Slovakia	ŽSR	Nové Zámky - Galanta	Nové Zámky	Palárikovo	principal	Reconstruction, modernisation of the track	1	2014	12	2020	120	22,5/D4	700	25 kV AC		
ongoing	Slovakia	ŽSR	Kysak - Plaveč	Prešov	Plaveč	principal	Reconstruction on the remote control of traffic	10	2014	12	2019	60	22,5/D4	600	3kV DC		
ongoing	Slovakia	ŽSR	Bratislava - Rajka	Bratislava UNS	Bratislava Petržalka	principal	Reconstruction of bridge	1	2016	12	2020	80	22,5/D4	690	25 kV AC		

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Infrastucture project												Reached parameters					
Status	**Member state**	**IM**	**Line**	**Section**		**Category**	**Project name**	**Start**		**End**		**Maximum speed [km*h^{-1}]**	**Axle load [t] / Line category**	**Maximum Train Lenght [m]**	**Traction power**	**ETCS Level**	**Interm. Code**
				From	**To**			**Month**	**Year**	**Month**	**Year**						
ongoing	Slovakia	ŽSR	Košice - Kysak	Košice	Košice	principal	Reconstruction of switches	1	2016	12	2020		22,5/D4		3kV DC		
ongoing	Slovakia	ŽSR	Košice - Kysak	Košice	Kostoľany nad Hornádom	principal	Reconstruction of track No 2	1	2016	12	2020	100	22,5/D4	650	3kV DC		
ongoing	Slovakia	ŽSR	Čaňa - Košice	Barca	Barca	principal	Reconstruction of switches	1	2017	12	2019	100	22,5/D4		3kV DC		
ongoing	Slovakia	ŽSR	Bratislava - Rajka	Bratislava východ	Bratislava východ	principal	Reconstruction of rail brakes	1	2017	12	2020		22,5/D4		25kV AC		
ongoing	Slovakia	ŽSR	Košice - Kysak	Košice	Košice	principal	Reconstruction of switches	9	2017	12	2020		22,5/D4		3kV DC		
ongoing	Slovakia	ŽSR	Košice - Kysak	Kysak	Kysak	principal	Reconstruction of switches	9	2017	12	2020		22,5/D4		3kV DC		
ongoing	Slovakia	ŽSR	Bratislava - Rajka	Bratislava Nové Mesto	Bratislava Predmestie	principal	Reconstruction of safety instalations	2	2017	12	2019		22,5/D4		25kV AC		

Amber Rail Freight Corridor

HUNGARY (MÁV)

Infrastructure project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h⁻¹]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
planned	Hungary	MÁV	Budapest - Hidasnémeti	Budapest (Rákos)	Hatvan	principal	Upgrading of Budapest (Rákos) - Hatvan railway line		2018		2020	120/160	22,5	750	25 kV AC	ETCS L2	
planned	Hungary	MÁV	Budapest - Kelebia	Soroksár	Kelebia border	principal	Modernization of Budapest - Belgrad railway line		2020		2024	160	22,5	750	25 kV AC	ETCS L2	
planned	Hungary	MÁV	Budapest - Kelebia	Ferencváros	Soroksár	principal	Modernization of Ferencváros - Soroksár railway line		2020		2024	100/120	22,5	750	25 kV AC	ETCS L2	
ongoing	Hungary	MÁV	Budapest - Hegyeshalom	Ferencváros	Győr	principal	Deployment of GSM-R 1st stage		2016		2018	140	22,5	750	25 kV AC	ETCS L1	
ongoing	Hungary	MÁV	Budapest - Hegyeshalom	Komárom	Komárom border	principal	Deployment of GSM-R 1st stage		2016		2018	80	22,5	750	25 kV AC		

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HUNGARY (GYSEV)

Infrastructure project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h-1]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
done	Hungary	Gysev	Rajka - Hegyeshalom	Rajka	Hegyeshalom	principal	Building up the European Train Control System between the stations	5	2014	11	2015	100	C2	750	25 kV AC	ETCS L1	C21/340
done	Hungary	Gysev	Hegyeshalom - Szombathely	Mosonszolnok	Porpác	principal	The electrification of the railway line Hegyeshalom (kiz)-Csorna-Porpác and the development of the control of the station interlocking	4	2014	11	2015	100	C2	600	25 kV AC	n/a	C21/340
				Porpác	Szombathely							120	C2	600	25 kV AC	n/a	C21/340

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Infrastucture project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed $[km*h^{-1}]$	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
done	Hungary	Gysev	Szombathely - Zalaszentivan	Szombathely	Vasvár	principal	Building up the catenary, modernisation of the substation in Szombathely, installing optical cables	11	2015	11	2016	100	C2	600	25 kV AC	n/a	C21/3 40
				Vasvár	Pácsony							80					
				Pácsony	Egervár-Vasboldogasszony							100					
				Egervár-Vasboldogasszony	Zalaszentivan							80					
done	Hungary	Gysev	Sopron - Szentgotthárd	Sopron-Rendezö	Harka	principal	Modernisation of track, catenary and signalling	7	2009	1	2011	110	C4	700	25 kV AC	GSM-R (ETCS L2 (2020))	C21/3 40
				Harka	Szombathely							120	D4				
planned	Hungary	Gysev	Rajka s.b. - Hegyeashalom	Rajka	Hegyeshalom	principal	Upgrade of railway infrastructure	n/a	n/a	n/a	n/a	100	C2	750	25 kV AC	n/a	C21/3 40
planned	Hungary	Gysev	Hegyeshalom - Szombathely	Hegyeshalom	Csorna	principal	Upgrade of railway infrastructure	n/a	n/a	n/a	n/a	100	C2	600	25 kV AC	n/a	C21/3 40
				Csorna	Porpác												
planned	Hungary	Gysev	Szombathely station	Szombathely	Szombathely	principal	Upgrade of railway and signalling infrastructure	n/a	n/a	n/a	n/a	100	C2	600	25 kV AC	n/a	C21/3 40

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Infrastructure project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
planned	Hungary	Gysev	Szombathely - Zalaszentivan	Szombathely	Vasvár	principal	Upgrade of railway infrastructure	n/a	n/a	n/a	n/a	100	C2	600	25 kV AC	n/a	C21/340
				Vasvár	Pácsony							80					
				Pácsony	Egervár-Vasboldogasszony							100					
				Egervár-Vasboldogasszony	Zalaszentivan							80					
planned	Hungary	Gysev	Sopron - Györ	Sopron Rendezö	Pinnye	principal	Upgrade of railway infrastructure, construction of the second track	n/a	n/a	n/a	n/a	100	C4	600	25 kV AC	n/a	C21/340
				Pinnye	Fertöszentmiklós							120	D4				
				Fertöszentmiklós	Petöháza							100	C4				
				Petöháza	Györ							120	C4				

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SLOVENIA

Infrastructure project												Reached parameters					
Status	Member state	IM	Line	Section		Category	Project name	Start		End		Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
ongoing	Slovenia	SŽ-I	Ljubljana -	Zidani Most	Pragersko	principal	Modernisation, upgrade of railway infrastructure Higher category (C3 to D4)		2016		2022	120 km/h	22.5 t / D4	597 m	3kV DC	ETCS_L1	
planned	Slovenia	SŽ-I	Ljubljana	Ljubljana	Ljubljana	principal	Modernisation, upgrade of railway station Ljubljana Lack of capacity, longer station tracks, signaling		2021		2025	40 km/h	22,5 t / D3	600 m	3kV DC	ETCS_L1	
planned	Slovenia	SŽ-I	Ljubljana	Zidani Most	Ljubljana	principal	Modernisation, upgrade of railway infrastructure, Signaling, longer station tracks,		2023		2027	120 km/h	22,5 t / D3	570 m	3kV DC	ETCS_L1	
planned	Slovenia	SŽ-I	Koper - Ljubljana	Divača	Koper	principal	Modernisation, upgrade of railway infrastructure Lack of capacity, longer station tracks		2018		2022	80 km/h	22,5 t / D3	525 m	3kV DC	ETCS_L1	
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Divača	Koper	principal	Construction of the second track Divača - Koper, An additional track on other route (shorter track) but not parallel, creation of new structure (line, tunnel, bridge, leapfrog)		2018		2025	120 km/h	22.5 t / D4	740 m	3kV DC	ETCS_L1	

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Infrastructure project												Reached parameters					
Status	**Member state**	**IM**	**Line**	**Station**		**Category**	**Project name**	**Start**		**End**		**Maximum speed [km*h-1]**	**Axle load [t] / Line category**	**Maximum Train Lenght [m]**	**Traction power**	**ETCS Level**	**Interm. Code**
				From	**To**			**Month**	**Year**	**Month**	**Yeat**						
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Ljubljana	Divača	principal	Modernisation, upgrade of railway infrastructure, More energy for traction, signaling, longer station tracks		2018		2020	100 km/h	22,5 t / D3	600 m	3kV DC	ETCS_L1	
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Bivje	Koper	principal	Construction of the pull-out track, Lack of capacity, longer station tracks		2016		2019	80 km/h	22,5 t / D3	525 m	3kV DC	ETCS_L1	
ongoing	Slovenia	SŽ-I	Pragersko	Pragersko	Pragersko	principal	Modernisation, upgrade of railway station Pragersko, Lack of capacity, longer station tracks, signaling		2017		2020	50 km/h	22.5 t / D4	597 m	3kV DC	ETCS_L1	
ongoing	Slovenia	SŽ-I	Ljubljana - Maribor	Poljčane	Slovenska Bistrica	principal	Modernisation, upgrade of railway infrastructure, Signaling, longer station tracks,		2016		2018	120 km/h	22.5 t / D4	597 m	3kV DC	ETCS_L1	

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6.3 Deployment Plan

The collected technical parameters indicate the current state of the RFC Amber. The tables in Chapter 6.1 describe the intentions of RFC Amber Member States to achieve the required indicators.

Investments should be directed towards removing obstacles, achieving higher speed allowances, improving environmental protection, increasing capacity, etc. In order to achieve the compatibility of technical parameters, interoperability systems within the frame of Directive (EU) 2016/797, some further measures should be put in place. The following Technical Specifications for Interoperability (TSI) are relevant for improving the interoperability of rail subsystems or part of subsystems:

a/ Fixed installations TSIs

INF TSI - infrastructure

ENE TSI – energy

b/ Common TSIs

CCS TSI - control command and signalling

SRT TSI – Safety in railway tunnels

PRM TSI – Persons with reduced mobility

c/ Functional TSIs

OPE TSI – Operation and Traffic Management

TAF TSI - Telematics applications for freight service TAP TSI – Telematics applications for passenger service

d/ Rolling Stock TSIs

WAG TSI – Wagons

NOI TSI - Noise

LOC & PAS TSI - Locomotives and Passenger Rolling Stock

The development and elaboration of TSIs is the competence of the European Railway Agency (ERA), based on the mandate of the European Commission.

By analysing the projects that are being and will be realized on the corridor we can state the following:

Poland: The corridor's lines are electrified with direct current. Some sections have lower loading capacity and speed allowance than the directive prescribes. All five sections are equipped with the ETCS level no. 2. Most sections are currently under modernization, only some projects are planned to start at a later phase.

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Slovakia: The corridor‘s lines are electrified. Most parts are powered by direct current and certain sections with an alternating current of 25 kV / 50 Hz. Some parts have lower speed allowance than the directive prescribes. The axle load category C4 and the diesel traction are only relevant on the connecting line. Sections and stations are currently being upgraded.

Hungary (MÁV): The corridor’s lines are electrified with an alternating current AC 25 kV / 50 Hz. Some sections have a lower loading capacity and speed allowance than the directive prescribes. Three sections are equipped with the ETCS level no. 1. At present, the GSM-R system is implemented in two parts and three corridor sections are planned to go under modernization.

Hungary (GYSEV): The corridor’s lines are electrified with an alternating current of 25 kV / 50 Hz. Some sections have lower loading capacity and speed allowance than the directive prescribes. The modernization of the railway infrastructure is only at a planning phase.

Slovenia: The principal route of the corridor is electrified with direct current. Some parts have lower speed allowance than the directive prescribes. The axle load category C4 and the diesel traction are only on the connecting line.

Regarding the implementation of the TAF TSIs, it is estimated that until the end of 2022 all Member States in RFC Amber will comply. However, a detailed analysis can be found about that in the TAF-TSI Master Plan:
http://www.era.europa.eu/Document-Register/Documents/TAF-TSI-Master-Plan.pdf

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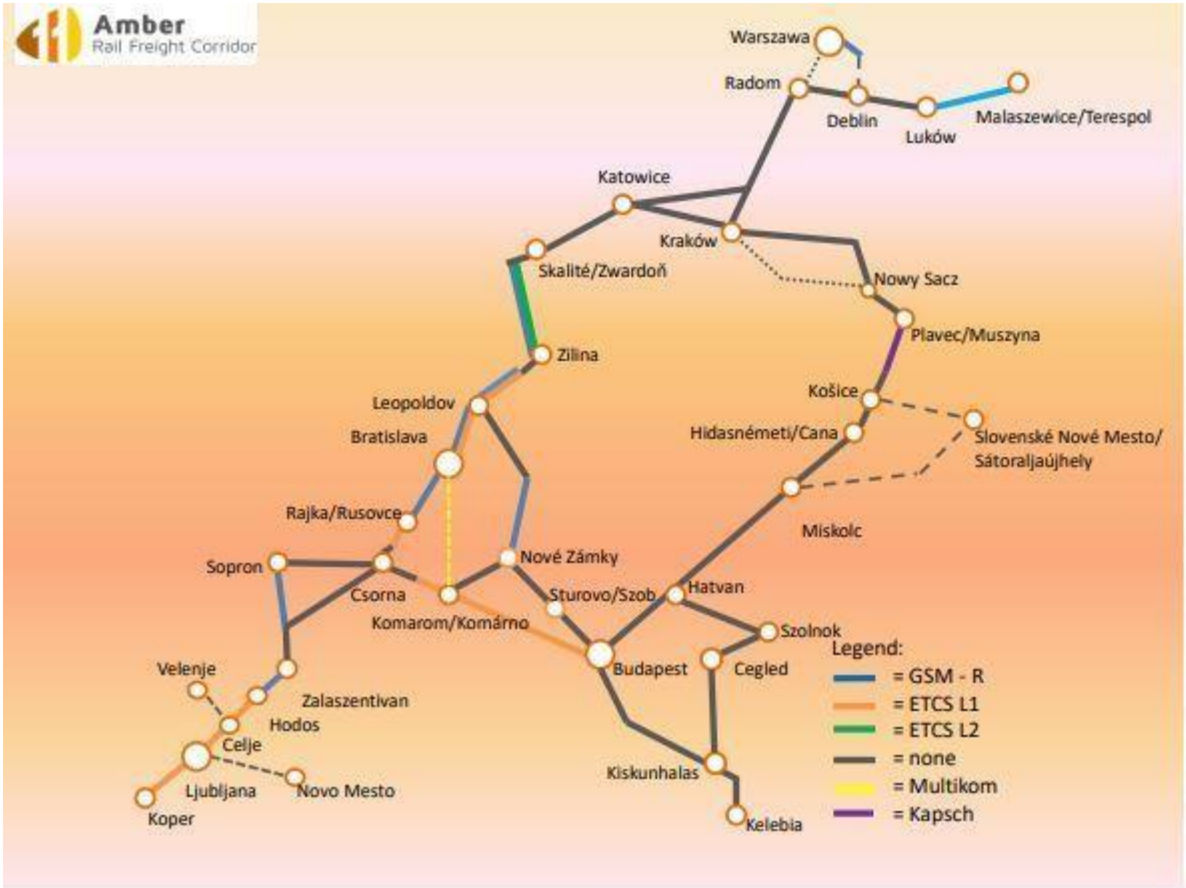
The current state of the control command and signalling system is shown on the map below:



6.4 Reference to Union Contribution

The RFC Amber was a beneficiary of the Connecting Europe Facility (CEF) - Programme Support Action (PSA) on the basis of the Multi-annual Work Programme 2014-2020, entitled "Establishment and development of the Amber rail freight corridor", action number 2016-PSA-RFC11. The PSA was extended until 30 September 2021.

Previous corridor related projects are published on the INEA TEN-T website: https://ec.europa.eu/inea/en/ten-t/ten-t-projects.

The Action is a Programme Support Action in the meaning of Article 2(7) and 7(2)(j) of the CEF Regulation (EU) n°1316/2013 establishing the Connecting Europe Facility and contributes to the preparation of the following pre-identified project on the core network: Rail Freight Corridors (RFCs) established and developed in line with Regulation (EU) No 913/2010 forming the rail freight backbone of the TEN-T Core Network Corridors.

The Project Management activity itself is undertaken by the mandated Coordinator for the conclusion and management of the Grant Agreement (action number 2016-PSA-RFC11), which is GYSEV. There are 8 cooperating Parties in the PSA, 2 Ministries, 5 IMs and 1 AB. The two Ministries are the Slovenian and the Polish Ministries of Transport. The action runs from 27/09/2017 until 31/12/2020. Basically, the set-up and run of the RFC Amber is co-funded along with the necessary activities for the implementation. Besides that, a Study examining all types of bottlenecks (for ex. infrastructural, operational, administrative, capacity) is going to be carried out.

The Grant Agreement entered into force on 23/05/2018 (the date when it is signed by both parties - GYSEV and INEA).

The Action concerns studies, managerial structures and activities for the establishment and the development of the Amber Rail Freight Corridor (RFC11) in line with the provisions of Regulation (EU) No 913/2010 of 22 September 2010 (RFC Regulation), along the route Koper - Ljubljana – /Zalaszentiván - Sopron/Csorna –/(Hungarian-Serbian border) - Kelebia - Budapest –/– Komárom - Leopoldov/Rajka - Bratislava - Žilina - Katowice/Kraków - Warszawa/Łuków - Terespol - (Polish-Belarusian border) as per Commission Implementing Decision (EU) 2017/177 of 31 January 2017. The general objective of the Action is to establish and have the Rail Freight Corridor operational by 31 January 2019, i.e. at the latest two years after the adoption of the above Commission Implementing Decision, as defined by Article 5(6) of the RFC Regulation, providing optimal rail freight transport services, increasing rail transport competitiveness and bringing socio-economic and environmental benefits to the concerned countries.

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7 Annexes

7.1 Memorandum of Understanding of establishing of ExBo for RFC Amber

7.2 Memorandum of Understanding of establishing of MaBo for RFC Amber

7.3 Framework for Capacity Allocation

7.4 Letter of Intent concerning the establishment of Advisory Groups for RFC Amber

7.5 Advisory Group Rules of Consultation for RFC Amber

7.6 Transport Market Study for RFC Amber

7.7 The description of the KPIs for RFC Amber

7.8 Process descriptions for Corridor-OSS (C-OSS contract annex 2) for RFC Amber

MEMORANDUM OF UNDERSTANDING

between the Ministries responsible for Transport of

**Poland,
the Slovak Republic,
Hungary,
and the Republic of Slovenia**

**on the establishment of the Executive Board of the
Amber Rail Freight Corridor**

Considering the following general objectives:

The implementation of a European rail freight network is one of the objectives of the European transport policy. In this policy framework, the goal is to encourage the gradual development of trans-European corridors for competitive rail freight transport, thus enabling higher usage of the railway system with positive effects on modal shift. The gradual establishment of corridors giving a higher level of quality to rail freight transport has to be achieved notably through improvements in capacity, including the upgrading and the rehabilitation of infrastructure, in coordination of the capacity offer and coordination of works, or through the development of traffic management systems and better access to the terminals of the corridor. The improved level of quality offered by rail infrastructure services should make it possible to further develop rail freight services or create new ones.

Commission Implementing Decision (EU) No 2017/177 (hereinafter referred to as 'the Decision') on the compliance with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council (hereinafter referred to as 'the Regulation') of the joint proposal to establish the 'Amber' rail freight corridor was adopted on 31st January 2017.

The Regulation lays down rules for the establishment and organisation of European rail freight corridors with a view to the development of a European rail network for competitive freight. It sets out rules for the selection, organisation, management and indicative investment planning of freight corridors. The Regulation applies to the management and the use of railway infrastructure included in rail freight corridors.

The Decision provides the legal basis for setting up the Amber Rail Freight Corridor (RFC 11) as a further rail freight corridor in accordance with Article 5 of the Regulation. In line with the provisions of the Regulation, it has to be operational within two years after the Decision (31st January 2019).

In order to implement the provisions of the Regulation, the Member States concerned set up an Executive Board, composed of their representatives of the Ministries responsible for Transport.

The Ministries responsible for transport of Poland, the Slovak Republic, Hungary and the Republic of Slovenia:

- recognise the contribution of rail freight to Europe's socio-economic development and to the environment;
- stress the high potential of rail freight corridors to utilise in a more efficient and effective way the rail infrastructure of the TEN-T Core Network and beyond;
- stress the high potential of the rail freight corridors in terms of multimodality and their benefits for the global transport, including in particular for relations with Asia;
- share the ambition to continue to work together to develop a network of rail freight corridors through managing and developing the corridors as well as managing their interconnections, but also by improving interoperability, removing bottlenecks, harmonising operational rules and capacity management;
- wish to increase the involvement of the business community in developing the rail freight corridors;
- consider that the present Memorandum of Understanding is without prejudice to the competence of the Member States regarding planning and funding of the rail infrastructure on their territory;
- encourage the regulatory bodies and national safety authorities to improve their cooperation along the rail freight corridor;
- promote the modal shift from road to rail by facilitating the interconnectivity of the rail freight transport across the borders and providing alternative routes to ensure smooth traffic flow even under unexpected circumstances;

With regards to the above and in order to comply with the provisions laid down in Article 8(1) of the Regulation, the Ministries hereby establish the Executive Board of the Amber Rail Freight Corridor which is responsible for defining the general objectives of the rail freight corridor, supervising and taking the measures as expressly provided for in Article 8(1) of the Regulation.

The functioning of the ExBo shall be governed by the internal rules of procedure to be adopted by the ExBo.

Done at Brussels on 5th December 2017 in four original copies in English.

Memorandum of Understanding - Executive Board
of the Amber Rail Freight Corridor

For the Ministry of Infrastructure and Construction of Poland

Andrzej Adamczyk

Minister of Infrastructure and Construction

For the Ministry of Transport and Construction of the Slovak Republic

Mr. Árpád Érsek

Minister of Transport and Construction

For the Ministry of National Development of Hungary

Mr. Róbert Homolya dr.

Minister of State for Transport Policy

For the Ministry of Infrastructure of the Republic of Slovenia

Peter Gašperšič

Minister of Infrastructure

0150 - 35/2017

ŽELEZNICE SLOVENSKEJ REPUBLIKY BRATISLAVA
GENERÁLNE RIADITEĽSTVO
ODBOR PRÁVNYCH VZŤAHOV
813 51 BRATISLAVA, KLEMENSOVA 8

Memorandum of Understanding

between

Railway Infrastructure Managers of Slovenia, Hungary, Slovakia and Poland and Allocation Body of Hungary

to establish the Management Board of the Amber Rail Freight Corridor

"Koper – Ljubljana –/ Zalaszentiván – Sopron/Csorna – / (Hungarian-Serbian border) – Kelebia – Budapest - / - Komárom – Leopoldov/Rajka – Bratislava – Žilina – Katowice/Kraków – Warszawa/Łuków – Terespol – (Polish-Belarusian border)"

Memorandum of Understanding

between

Railway Infrastructure Managers of Slovenia, Hungary, Slovakia and Poland and

Allocation Body of Hungary

to establish the Management Board

of the Amber Rail Freight Corridor

"Koper – Ljubljana –/ Zalaszentiván – Sopron/Csorna – / (Hungarian-Serbian border) – Kelebia – Budapest - / - Komárom – Leopoldov/Rajka – Bratislava – Žilina – Katowice/Kraków – Warszawa/Łuków – Terespol – (Polish-Belarusian border)"

The below parties to this Memorandum of Understanding:

Name of organization: ***SŽ – Infrastruktura, d. o. o.***
Seated at: ***Kolodvorska ulica 11, SI – 1000 Ljubljana***
Court of registration: ***District court in Ljubljana***
Registration no. of the organization: ***60171770000***
Represented by: ***Mr Matjaž Kranjc, Director***
from Slovenia

Name of organization: ***MÁV Hungarian State Railways Private Company Limited by Shares***
Seated at: ***H-1087 Budapest, 54-60 Könyves Kálmán krt.***
Court of registration: ***Company Registry Court of Budapest – Capital Regional Court***
Registration no. of the organization: ***Cg. 01-10-042272***
Represented by: ***Ms Ilona Dávid, President-Director General***
from Hungary

Name of organization: ***Győr-Sopron-Ebenfurti Railways Private Company Limited by Shares***
Seated at: ***H-9400 Sopron, 19 Mátyás Király St.***
Court of registration: ***Court of Győr-Moson-Sopron County as the Court of Registration***
Registration no. of the organization: ***Cg. 08-10-001787***
Represented by: ***Mr Szilárd Kövesdi, Director General***
from Hungary

Name of organization: ***VPE – Hungarian Rail Capacity Allocation Office***

Seated at: ***H-1054 Budapest, 48 Bajcsy Zsilinsky St.***

Court of registration: ***Company Registry Court of Budapest – Capital Regional Court***

Registration no. of the organization: ***Cg. 01-09-725271***

Represented by: ***Ms Réka Németh, Managing Director***

from Hungary

Name of organization: ***Železnice Slovenskej republiky, Bratislava v skrátenej forme "ŽSR"***

Seated at: ***Klemensova 8, 813 61 Bratislava***

Court of registration: ***Okresný súd Bratislava I, oddiel Po, vložka číslo 312/B***

Registration no. of the organization: ***31 364 501***

Represented by: ***Mr Martin Erdössy, Director General***

from Slovakia

Name of organization: ***PKP Polskie Linie Kolejowe Spółka Akcyjna***

Seated at: ***ul. Targowa 74, 03-374 Warszawa***

Court of registration: ***Court for the capital city of Warsaw, XII Commercial Division of the National Court Register, NIP PL 113-23-16-427, share capital PLN 16.696.577.000,00 paid in total***

Registration no. of the organization: ***0000037568***

Represented by: (names, positions)

Mr Ireneusz Merchel, President of the Management Board

and

Mr Włodzimierz Żmuda, Member of the Management Board

from Poland

having regard to

- the Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight (hereinafter: Regulation (EU) No 913/2010);
- Commission Implementing Decision (EU) 2017/177 of 31 January 2017 on the compliance with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council of the joint proposal to establish the 'Amber' rail freight corridor;
- the Letter of Support to the establishment of the Amber Rail Freight Corridor No. 11 that was signed by the abovementioned Parties;
- the aim of increase the railway transport´s share on the freight transport market;

- the aim of attraction new transport business for rail among current and new customers using the routes of the corridor through specific new procedures;

hereby establish the Management Board of Amber Rail Freight Corridor according to Article 8 of Regulation (EU) No 913/2010.

I. Appointment of Management Board

The Railway Infrastructure Managers and Allocation Body appoint the following Management Board members, and their substitutes, where applicable, of Amber Rail Freight Corridor:

Name of organization: ***SŽ – Infrastruktura, d. o. o.***
Name of Management Board member: ***Mr Franc Klobučar***
Address: ***Kolodvorska ulica 11, SI – 1000 Ljubljana***
Telephone no.: +386-1-29-14-126
E-mail address: franc.klobučar@slo-zeleznice.si
from Slovenia

Name of organization: ***MÁV Hungarian State Railways Private Company Limited by Shares***
Name of Management Board member: ***Mr Lőrinc Czakó***
Address: ***H-1087 Budapest, 54-60 Könyves Kálmán krt.***
Telephone no.: +36-1-511-3880
E-mail address: czako.lorinc@mav.hu
from Hungary

Name of organization: ***Győr-Sopron-Ebenfurti Railways Private Company Limited by Shares***
Name of Management Board member: ***Ms Andrea Mosóczi***
Address: ***H-9400 Sopron, 19 Mátyás Király St.***
Telephone no.: +36-1-224-5824
E-mail address: amosoczi@gysev.hu
from Hungary

Name of organization: ***VPE – Hungarian Rail Capacity Allocation Office***
Name of Management Board member: ***Ms Réka Németh***
Address: ***H-1054 Budapest, 48 Bajcsy Zsilinsky St.***
Telephone no.: +36-1-301-9928
E-mail address: nemethr@vpe.hu
from Hungary

Name of organization: ***Železnice Slovenskej republiky, Bratislava v skrátenej forme "ŽSR"***
Name of Management Board member: ***Ing. Miroslav Matúšek***
Address: ***Klemensova 8, 813 61 Bratislava***
Telephone no.: ***+ 421 2 2029 7360***
E-mail address: ***matusek.miroslav@zsr.sk***
from Slovakia

Name of organization: ***PKP Polskie Linie Kolejowe Spółka Akcyjna***
Name of Management Board member: ***Mr Maarten Gutt***
Address: ***ul. Targowa 74, 03-374 Warszawa***
Telephone no.: +48 22 47 333 78
E-mail address: maarten.gutt@plk-sa.pl
Name of substitute member: ***Mr Krzysztof Jamrozik***
Address: ***ul. Targowa 74, 03-374 Warszawa***
Telephone no.: +48 22 47 324 77
E-mail address: krzysztof.jamrozik@plk-sa.pl
from Poland

The future changes of Management Board members and their substitutes shall be made in compliance with Amber Rail Freight Corridor Internal Rules and Procedures and, until they are adopted, by written decisions of the parties which will be annexed to this Memorandum of Understanding.

II. The Management Board shall be responsible for:

- fulfilment of all Management Board tasks defined in Regulation (EU) No. 913/2010
- determination of the legal form of the Amber Rail Freight Corridor
- fulfilment of other tasks defined by decisions of the Management Board and Internal Rules and Procedures of the corridor, including adoption of the latter
- ensuring organizational, technical and operational conditions to make Amber Rail Freight Corridor operational on time
- management of whole Amber Rail Freight Corridor structure
- seeking good co-operation with the Executive Board of the Amber Rail Freight Corridor, with the Advisory Groups and customers of the corridor and with the Management Boards of other RFCs
- implementation of new specific procedures with the aim to attract new transport business for railways,

III. Final provisions

Present Memorandum of Understanding enters into force on the date when it is signed by every Signatory, and shall be effective for an undetermined period.

Present Memorandum of Understanding may be modified at any time by written agreement of the Infrastructure Managers and Allocation Body.

The Regulation (EU) No. 913/2010 is decisive for the interpretation of this MoU.

On behalf of SŽ – Infrastruktura, d. o. o.

Ljubljana, 06. 03. 2017

Date

SŽ - Infrastruktura, d.o.o.

Signature

On behalf of MÁV Hungarian State Railways Private Company Limited by Shares

Budapest, 14. 03. 2017

Date

MÁV Magyar Államvasutak Zrt. 1868 MÁV 48 1087 Budapest, Könyves Kálmán körút 54-60.

Signature

On behalf of Győr-Sopron-Ebenfurti Railways Private Company Limited by Shares

Sopron, 13. 03. 2017.

Date

Signature

On behalf of VPE – Hungarian Rail Capacity Allocation Office

Budapest, 09. 03. 2017.

Date

VPE Vasúti Pályakapacitás-elosztó Kft. 1054 Budapest, Bajcsy-Zs. út 48. Adószám: 13239990-2-41 Cg.01-09-725271

Signature

On behalf of Železnice Slovenskej republiky, Bratislava v skrátenej forme "ŽSR"

Bratislava, 1. 3. 2017

Date

Signature

On behalf of PKP Polskie Linie Kolejowe Spółka Akcyjna

Warszawa, 06/04/2017

Date

Signature

2017. 04. 05.

Date

Signature

Decision of the Executive Board of Amber Rail Freight Corridor

adopting the Framework for capacity allocation

on the Rail Freight Corridor

(updated harmonised framework capacity allocation, elaborated by the Network of Executive Boards, version 31.10.2018, adopted on 19th November 2018)

Having regard to

- Regulation (EU) No 913/2010 of the European Parliament and of the Council and in particular Article 14 thereof;
- Directive 2012/34/EU of the European Parliament and of the Council and in particular Chapter IV (Section 3) thereof;

Whereas:

- Directive 2012/34/EU provides the general conditions and objectives of infrastructure capacity allocation;
- Article 14 of Regulation (EU) No 913/2010 provides the particular conditions applicable in the context of rail freight corridors;
- Article 14(1) of Regulation (EU) No 913/2010 requires the Executive Board to define the framework for the allocation of infrastructure capacity on the rail freight corridor;
- Articles 14(2) to (10) of Regulation (EU) No 913/2010 establish the procedures to be followed by the Management Board, Infrastructure Managers and Allocation Bodies, with reference to the general rules contained in Directive 2012/34/EU;
- The Executive Board invites the Management Board to cooperate with the other Management Boards in order to harmonise as far as possible the time limit mentioned in Article 14(5) of Regulation (EU) No 913/2010;
- The Executive Board invites the Management Board to cooperate with the relevant stakeholders in order to harmonise the conditions for capacity allocated but ultimately not used, taking into account Article 14(7) of Regulation (EU) No 913/2010.

Acting in accordance with its internal rules of procedure,

THE EXECUTIVE BOARD HAS ADOPTED THIS DECISION:

Chapter I

PURPOSE, SCOPE AND CHARACTER OF THE FRAMEWORK

Article 1

1. This framework for the allocation of infrastructure capacity on the rail freight corridor ("Corridor Framework") concerns the allocation of pre-arranged paths as defined according to Article 14(3) of Regulation (EU) No 913/2010 ("the Regulation"), and of reserve capacity as defined according to Article 14(5) of the Regulation, displayed by the Corridor One-Stop-Shop ("C-OSS") for freight trains crossing at least one border on a rail freight corridor. It describes the key activities of the C-OSS and Management Board in this respect, and also identifies the responsibilities of the Regulatory Bodies in accordance with Article 20 of the Regulation.
2. The scope of application of the Corridor Framework is the railway network defined in the rail freight corridor implementation plan where principal, diversionary and connecting lines are designated.
3. The Executive Board may decide to allow specific rules within this Corridor Framework for networks which are applying the provisions permitted in accordance with Article 2(6) of Directive 2012/34/EU.
4. In addition, specific rules and terms on capacity allocation may be applicable on parts of the rail freight corridor for the timetable periods 2020 to 2024. These rules and terms are described and defined in Annex 4.

Article 2

The document to be published by the Management Board in accordance with Article 18 of the Regulation – hereinafter referred to as the Corridor Information Document ("CID") – shall reflect the processes in this Corridor Framework.

Chapter II

PRINCIPLES FOR THE OFFER OF PRE-ARRANGED PATHS AND RESERVE CAPACITY

Article 3

1. The offer displayed by the C-OSS contains pre-arranged paths and reserve capacity. The pre-arranged paths and reserve capacity are jointly defined and organised by the IMs/ABs in accordance with Article 14 of the Regulation. In addition, they shall take into account as appropriate:

   – recommendations from the C-OSS based on its experience;

   – customer feedback concerning previous years (e.g. received from the Railway Undertaking Advisory Group);

   – customer expectations and forecast (e.g. received from the Railway Undertaking Advisory Group);

   - results from the annual users satisfaction survey of the rail freight corridor;

   – findings of any investigation conducted by the Regulatory Body in the previous year;

2. The infrastructure managers and allocation bodies (IMs/ABs shall ensure that the pre-arranged path catalogue and reserve capacity are appropriately published. Before publication of the pre-arranged path catalogue and reserve capacity, the Management Board shall inform the Executive Board about the offer and its preparation.

3. Upon request of the Regulatory Bodies and in accordance with Articles 20(3) and 20(6) of the Regulation, IMs/ABs shall provide all relevant information allowing Regulatory Bodies to assess the non-discriminatory designation and offer of pre-arranged paths and reserve capacity and the rules applying to them.

Article 4

1. The pre-arranged paths shall be handed over to the C-OSS for exclusive management at the latest by X-11[1], and reserve capacity at the latest by X-2. The Management Board is required to decide whether, and if so to what extent, unused pre-arranged paths are to be returned by the C-OSS to the relevant IMs/ABs at X-7.5 or kept by the C-OSS after X-7.5 in order to accept late requests, taking into account the need for sufficient reserve capacity. The Management Board shall publish in the CID the principles on which it will base its decision.

Article 5

1. The pre-arranged paths managed by the C-OSS for allocation in the annual timetable and the reserve capacity are dedicated solely to the rail freight corridor. Therefore, it is essential that the displayed dedicated capacity is protected between its publication in the pre-arranged path catalogue and the allocation decision by the C-OSS at X-7.5 against unilateral modification by the IMs/ABs.

2. Following the allocation decision by the C-OSS at X-7.5, an IM/AB and an applicant may agree to minor modifications of the allocated capacity that do not impact the results of the allocation decision. In that case, the modified capacity shall have the same level of protection as that applied to the original capacity.

Article 6

1. Certain pre-arranged paths may be designated by the Management Board for the application of the network pre-arranged path priority rule “Network PaP rule” (defined in Annex 1) aimed at better matching traffic demand and best use of available capacity, especially for capacity requests involving more than one rail freight corridor. The Network PaP rule may apply to pre-arranged path sections linked together within one single or across several rail freight corridors. These sections are designated to promote the optimal use of infrastructure capacity available on rail freight corridors. A pre-arranged path on which the Network PaP rule applies is called “Network PaP”.

2. The designation of Network PaPs, in terms of origin and destination and quantity should take into account the following as appropriate:

   – scarcity of capacity;
   – the number and characteristics of conflicting requests as observed in previous years;
   – number of requests involving more than one rail freight corridor as observed in previous years;

[1] X indicates the date of the timetable change; figures refer to months. Therefore X-11 is 11 months before the timetable change etc.

– number of requests not satisfied, etc. as observed in previous years.

3. Explanations for the designation of Network PaPs, the rail freight corridor sections to be covered by Network PaPs and an indicative share of Network PaPs as a proportion of all pre-arranged paths offered on the rail freight corridor shall be published in the CID.

4. Where Network PaPs relate to more than one rail freight corridor, the Management Board shall cooperate with the Management Board(s) of the other relevant rail freight corridor(s) to engage the IMs/ABs in the designation process. If one rail freight corridor identifies a need for Network PaPs on several rail freight corridors, the other rail freight corridor(s) involved should if possible meet the request. These Network PaPs can only be designated if the Management Boards of all relevant rail freight corridors agree.

Chapter III

PRINCIPLES OF ALLOCATION OF PRE-ARRANGED PATHS AND RESERVE CAPACITY

Article 7

1. The decision on the allocation of pre-arranged paths and reserve capacity on the rail freight corridor shall be taken by the C-OSS, in accordance with Article 13 of the Regulation.

The activities under the timetabling processes concerning pre-arranged paths and reserve capacity are set out in Annex 2.

III-A GENERAL PRINCIPLES RELATED TO THE FUNCTIONING OF THE C-OSS

Article 8

1. The CID to be published by the Management Board shall describe at least the competences, the form of organisation, the responsibilities vis-à-vis applicants and the mode of functioning of the C-OSS and its conditions of use.

2. The corridor capacity shall be published and allocated via an international path request coordination system, which is as far as possible harmonised with the other rail freight corridors.

III-B PRINCIPLES OF ALLOCATION

Article 9

1. The C-OSS is responsible for the allocation of pre-arranged paths and reserve capacity on its own rail freight corridor.

2. An applicant requesting pre-arranged paths or reserve capacity covering more than one rail freight corridor may select one C-OSS to act as a single point of contact to co-ordinate its request, but that C-OSS remains responsible for the allocation of capacity on its own rail freight corridor only.

3. Where the same pre-arranged paths are jointly offered by more than one rail freight corridor, the Management Board shall coordinate with the other Management Board(s) concerned to designate the C-OSS responsible for allocating those paths and publish this in the CID.

Article 10

1. After receipt of all path requests for pre-arranged paths at X-8 (standard deadline for submitting path requests for the annual timetable) the C-OSS shall decide on the - allocation of pre-arranged paths by X-7.5 and indicate the allocation in the path register accordingly.
2. Requests for pre-arranged paths that cannot be met pursuant to Article 13(3) of the Regulation and that are forwarded to the competent IMs / ABs in accordance with Article 13(4) are to be considered by IMs/ABs as having been submitted before the X-8 deadline. The IMs/ABs shall take their decision and inform the C-OSS within the timescales set out in Annex VII of Directive 2012/34/EU and described in Annex 2 of this Corridor Framework. The C-OSS shall complete the processing of the request and inform the applicant of the decision as soon as possible after receiving the decision from the competent IMs/ABs.
3. The Management Board is invited to decide the deadline for submitting requests for reserve capacity to the C-OSS in a harmonised way at 30 days before the running date.
4. Without prejudice to Article 48(1) of Directive 2012/34/EU, the C-OSS shall endeavour to provide a first response to requests for reserve capacity within five calendar days of receiving the path request.

III-C PRINCIPLES OF FAIRNESS AND INDEPENDENCE

Article 11

1. The C-OSS shall respect the commercial confidentiality of information provided to it.
2. In the context of the rail freight corridor, and consequently from the point of view of international cooperation, C-OSS staff shall, within their mandate, work independently of their IMs/ABs in taking allocation decisions for pre-arranged paths and reserve capacity on a rail freight corridor. However, the C-OSS staff should work with the IMs/ABs for the purpose of coordinating the allocation of pre-arranged paths and reserve capacity with the allocation of feeder/outflow national paths.

III-D PRIORITIES TO BE APPLIED BY THE C-OSS IN CASE OF CONFLICTING REQUESTS

Article 12

1. In the event of conflicting requests, the C-OSS may seek resolution through consultation as a first step, if the following criteria are met:
   - The conflict is only on a single rail freight corridor;
   - Suitable alternative pre-arranged paths are available.
2. Where consultation is undertaken, the C-OSS shall address the applicants and propose a solution. If the applicants agree to the proposed solution, the consultation process ends.
3. If for any reason the consultation process does not lead to an agreement between all parties by X-7.5 the priority rules described in Annex 1 apply.

Article 13

1. Where consultation under Article 12 is not undertaken, the C-OSS shall apply the priority rules and the process described in Annex 1 immediately.
2. The priority rules concern only pre-arranged paths and are applied only between X-8 and X-7.5 in the event of conflicting applications.
3. Once the allocation decision is made for requests received by X-8, the C-OSS shall propose suitable alternative pre-arranged paths, if available, to the applicant(s) with the lower priority ratings or, in the absence of suitable alternative pre-arranged paths, shall without any delay forward the requests to the competent IMs/ABs in accordance with Article 13(4) of the Regulation. These path requests are to be considered by IMs/ABs as having been submitted before the X-8 deadline.
4. Experience of the conflict resolution process should be assessed by the Management Board and taken into consideration for the pre-arranged path planning process in following timetable periods, in order to reduce the number of conflicts in following years.

Article 14

With regard to requests placed after X-8, the principle "first come, first served" shall apply.

Chapter IV

APPLICANTS

Article 15

1. An applicant may apply directly to the C-OSS for the allocation of pre-arranged paths or reserve capacity.
2. Applicants shall accept the rail freight corridor's general terms and conditions as laid down in the CID in order to place requests for pre-arranged path and reserve capacity. A copy of these general terms and conditions shall be provided free of charge upon request. The applicant shall confirm that:
   - it accepts the conditions relating to the procedures of allocation as described in the CID,
   - it is able to place path requests via the system referred to in Article 8,
   - it is able to provide all data required for the path requests.

   The conditions shall be non-discriminatory and transparent.
3. The allocation of pre-arranged paths and reserve capacity by the C-OSS to an applicant is without prejudice to the national administrative provisions for the use of capacity.
4. Once the pre-arranged path/reserve capacity is allocated by the C-OSS, the applicant shall appoint the railway undertaking(s) which will use the train path/reserve capacity on its behalf and shall inform the C-OSS and the IMs / ABs accordingly. If this appointment is not provided by the applicant by 30 days before the running day at the latest, regardless of whether it is a prearranged path or reserve capacity, the allocated path shall be considered as cancelled.
5. The CID shall describe the rights and obligations of applicants vis-à-vis the C-OSS, in particular where no undertaking has yet been appointed.

Chapter V

REGULATORY CONTROL

Article 16

1. The application of this Corridor Framework on the annual allocation of capacity shall be subject to the control of the Regulatory Bodies.
2. Article 20 of the Regulation requires the relevant Regulatory Body in each rail freight corridor to collaborate with other relevant Regulatory Bodies. The Executive Board invites the Regulatory Bodies involved on the corridor to set out the way in which they intend to cooperate on regulatory control of the C-OSS, by developing and publishing a cooperation agreement defining how complaints regarding the allocation process of the C- OSS are to be filed and how decisions following a complaint are to be taken. The Executive Board also invites the Regulatory Bodies to set out the procedures they envisage for co-operation across rail freight corridors.
3. Where a cooperation agreement has been developed and published, the CID should provide a link to it.

Chapter VI

FINAL PROVISIONS

Article 17

The Management Board shall inform the Executive Board on an annual basis, using the indicators identified in Annex 3, of the quantitative and qualitative development of pre-arranged paths and reserve capacity, in accordance with Article 9(1)c and 19(2) of the Regulation. On this basis, the Executive Board shall evaluate the functioning of the Corridor Framework annually and exchange the findings with the other rail freight corridors applying this Corridor Framework. The Regulatory Bodies may inform the Executive Board of their own observations on the monitoring of the relevant freight corridor.

Article 18

1. The Executive Board has taken this Decision on the basis of mutual consent of the representatives of the authorities of all its participating States, in accordance with the provisions of Article 14(1) of the Regulation. This Decision is legally binding on its addressees and shall be published.
2. This Corridor Framework replaces any previous Corridor Framework. It shall come into force on 14 December 2019 for the timetable period 2020.
3. Changes to this Corridor Framework can be made but only after consultation with the Management Board and with all rail freight corridors’ Executive Boards and Regulatory Bodies.

Article 19

1. The priority rule and the process described in Annex 1, which are based on frequency and distance criteria, shall be evaluated by the rail freight corridor at the latest in the second half of 2021. This evaluation shall be based on a general assessment undertaken by the rail freight corridor taking into account its experience in terms of allocation. The evaluation

shall also take into account the experiences from the specific rules and terms as referred to in Article 1(4).

2. In accordance with the results of the evaluation of the priority rule, as described above, any potential modification would take effect for the timetable period 2023 and onwards.

Article 20

A reference to this Corridor Framework will be included in the CID and in the network statements of the IMs/ABs.

Article 21

This Decision is addressed to the IMs/ABs and the Management Board of the rail freight corridor.

Approved by the Executive Board of Amber Rail Freight Corridor with mutual consent, decision entering into force 14th December 2018

ANNEXES

1. Description of the priority rule at X-8 in the event of conflicting requests for pre-arranged paths

2. Activities within the timetabling processes concerning pre-arranged paths and reserve capacity

3. Evaluation of the allocation process.

4. Specific rules and terms on capacity allocation applicable on parts of the rail freight corridor according to Art. 1(4)

ANNEX 1

Description of the priority rule at X-8 in the event of conflicting requests for pre- arranged paths.

For the purpose of this Annex, a request comprises a train run from origin to destination, including sections on one or more rail freight corridors as well as feeder and/or outflow paths, on all of its running days. In certain cases, which are due to technical limitations of the IT system used, a request may have to be submitted in the form of more than one dossier. These cases must be described in the CID.

If no "Network PaP" is involved in the conflicting requests

The priority is calculated according to this formula:

$$K = (L^{\mathbf{PAP}} + L^{\mathbf{F/O}}) \times Y^{\mathbf{RD}}$$

$L^{\mathbf{PAP}}$ = Total requested length of all PaP sections on all involved RFCs included in one request.

$L^{\mathbf{F/O}}$ = Total requested length of the feeder/outflow path(s) included in one request; for the sake of practicality, is assumed to be the distance as the crow flies.

$Y^{\mathbf{RD}}$ = Number of requested running days for the timetable period. A running day will only be taken into account for the priority calculation if it refers to a date with a published PaP offer for the given section.

K = The rate for priority

All lengths are counted in kilometres.

The method of applying this formula is:

in a first step the priority value (K) is calculated using only the total requested length of pre-arranged path ($L^{\mathbf{PAP}}$) multiplied by the Number of requested running days ($Y^{\mathbf{RD}}$);

- if the requests cannot be separated in this way, the priority value (K) is calculated using the total length of the complete paths ($L^{\mathbf{PAP}} + L^{\mathbf{F/O}}$) multiplied by the number of requested running days ($Y^{\mathbf{RD}}$) in order to separate the requests;
- if the requests cannot be separated in this way, a random selection is used to separate the requests. This random selection shall be defined in the CID.

If a "Network PaP" is involved in at least one of the conflicting requests:

- If the conflict is not on a "Network PaP", the priority rule described above applies
- If the conflict is on a "Network PaP", the priority is calculated according to the following formula:

$$K = (L^{\mathbf{NetPAP}} + L^{\mathbf{Other\ PAP}} + L^{\mathbf{F/O}}) \times Y^{\mathbf{RD}}$$

K = Priority value

$L^{\mathbf{NetPAP}}$ = Total requested length (in kilometres) of the PaP defined as “Network PaP” on either RFC included in one request.

$L^{\mathbf{Other\ PAP}}$ = Total requested length (in kilometres) of the PaP (not defined as “Network PaP”) on either RFC included in one request.

$L^{\mathbf{F/O}}$ = Total requested length of the feeder/outflow path(s) included in one request; for the sake of practicality, is assumed to be the distance as the crow flies.

$Y^{\mathbf{RD}}$ = Number of requested running days for the timetable period. A running day will only be taken into account for the priority calculation if it refers to a date with a published PaP offer for the given section.

The method of applying this formula is:

- in a first step the priority value (K) is calculated using only the total requested length of the “Network PaP” (L^{NetPAP}) multiplied by the Number of requested running days (Y^{RD})
- if the requests cannot be separated in this way, the priority value (K) is calculated using the total length of all requested “Network PaP” sections and other PaP sections ($L^{NetPAP} + L^{Other\ PAP}$) multiplied by the Number of requested running days (Y^{RD}) in order to separate the requests
- if the requests cannot be separated in this way, the priority value (K) is calculated using the total length of the complete paths ($L^{NetPAP} + L^{Other\ PAP} + L^{F/O}$) multiplied by the Number of requested running days (Y^{RD}) in order to separate the requests

If the requests cannot be separated in this way, a random selection is used to separate the requests. This random selection shall be defined in the CID.

ANNEX 2

Activities under the timetabling processes concerning pre-arranged paths and reserve capacity.

Date/period	Activity
X-19 – X-16	Preparation phase
X-16 – X-12	Construction phase
X-12 – X-11	Approval and publication
X-11	Publication of pre-arranged paths provided by the IMs/ABs and identification among them of the designated Network PaPs
X-11 – X-8	Application for the Annual Timetable
X-8	Deadline for submitting path requests
X-8 – X-7.5	Pre-booking phase
X-7.5	Forwarding requests with “flexible approaches” (e.g. Feeder/Outflow) “special treatments” and requests where the applicant has neither received the requested pre-arranged path nor accepted – if applicable – an appropriate alternative pre-arranged path to IMs/ABs
X-7.5	Possible return of some remaining (unused) pre-arranged paths to the competent IMs/ABs – based on the decision of the rail freight corridor Management Board – for use during the elaboration of the annual timetable by the IMs/ABs
X-7.5 – X-5.5	Path construction phase for the “flexible approaches”
X-5.5	Finalisation of path construction for requested “flexible approaches” by the IMs/ABs and delivering of the results to C-OSS for information and development of the draft timetable
X-5	Publication of the draft timetable for pre-arranged paths – including sections provided by the IMs/ABs for requested “flexible approaches” by the C-OSS - and for tailor-made alternatives in case the applicant has neither received the requested pre-arranged path nor accepted – if applicable – an appropriate alternative pre-arranged path
X-5 – X-4	Observations from applicants
X-4 – X-3.5	Post-processing and final allocation
X-7,5 – X-2	Late path request application phase
X-4 – X-1	Late path request allocation phase
X-4 – X-2	Planning (production) reserve capacity for ad-hoc traffic
X-2	Publication reserve capacity for ad-hoc traffic
X-2 – X+12	Application and allocation phase for ad hoc path requests
X+12 – X+15	Evaluation phase

ANNEX 3

Evaluation of the allocation process

The process of capacity allocation on the rail freight corridor shall be evaluated throughout the allocation process, with a focus on continuous improvement of the working of the C-OSS. The evaluation shall take place after the major deadlines:

X-11: Publication of PaPs

X-8: Deadline for submitting path requests in the annual timetabling process

X-7.5: Deadline for treatment of PaP requests for the annual timetable by the C-OSS

X-2: Publication of reserve capacity for ad-hoc traffic

The evaluation shall be undertaken by the Management Board. Furthermore, the Management Board shall compile an annual evaluation report which includes recommendations for improvements of the capacity allocation process. The Annual report shall be addressed to the Executive Board.

The results of the monitoring shall be published by the Management Board, and to be included in the reporting as referred to in Article 19 of the Regulation.

The following basic indicators shall at least be evaluated using the methodology outlined below:

Indicator	Calculation formula	Timing
Volume of offered capacity	Km*days offered	At X-11 and X-2
Volume of requested capacity	Km*days requested	At X-8
Volume of requests	Number of requests	At X-8
Volume of capacity (pre-booking phase)	Km*days -(pre-booking phase)	At X-7.5
Number of conflicts	Number of requests submitted to the C-OSS which are in conflict with at least one other request	At X-8

ANNEX 4

Specific rules and terms on capacity allocation applicable on parts of the rail freight corridor according to Art. 1(4)

This Annex will apply on the following parts of the rail freight corridor:

- Rotterdam-Antwerp, on the RFC "North Sea-Mediterranean"
- Mannheim-Miranda de Ebro, on the RFC "Atlantic"
- Munich-Verona, on the RFC "Scandinavian-Mediterranean"

For additional routes, the Management Board shall make a proposal to the Executive Board for approval.

The decision shall be published by the Management Board in accordance with Article 18 of the Regulation.

The timeline of Annex 2 shall be adapted as follows for the reserve capacity provided in accordance to Article 1(4):

- [X-4 – X-2: Planning (production) reserve capacity for ad-hoc traffic] shall be replaced by [Until X-11: Planning (production) reserve capacity]
- [X-2: Publication reserve capacity for ad-hoc traffic" shall be replaced by [X-11: Publication of reserve capacity]
- [X-2 – X+12: Application and allocation phase for ad hoc path requests] shall be replaced by [M-4 – M-1: Application for reserve capacity and start of allocation phase]

In its request, the applicant has to indicate the timetable period of the request. If one or several operation days (following the first day of operation) are part of subsequent timetable periods, the applicant may announce this in its request. The request may not exceed a period of 36 months.

The C-OSS must consider the request in all timetable periods concerned:

- For the first timetable period, the C-OSS has to allocate a path, if available;
- For subsequent timetable periods, the concerned IMs may conclude a framework agreement in compliance with Article 42 of Directive 2012/34/EU and Commission Implementing Regulation (EU) 2016/545 where possible.

GLOSSARY OF ABBREVIATIONS

- **AB:** Allocation Body
- **IM:** Infrastructure Manager
- **C-OSS:** Corridor One Stop Shop
- **PaP:** Pre-arranged path
- **X:** Starting date of a timetable
- **F/O:** Feeder / Outflow
- **RD:** Running days
- **RFC:** Rail Freight Corridor
- **Network PaP:** Pre-arranged path on which the “Network PaP rule” applies.
- **CID:** Corridor Information Document
- **TCRs:** Planned Temporary Capacity Restrictions
- **M-x**: x Months prior to first day of operation

Letter of Intent

of the Management Board to establish the Advisory Group of Railway Undertakings

of Rail Freight Corridor Amber No.11

“Koper – Ljubljana – Zalaszentiván – Sopron/Csorna – / (Hungarian-Serbian border) – Kelebia – Budapest - / - Komárom – Leopoldov / Rajka– Bratislava – Žilina – Katowice / Kraków – Warszawa / Łuków – Terespol – (Polish-Belarusian border)”

in accordance with Regulation (EU) 913/2010

Warsaw 12 December 2017

According to article 8 paragraph 8 of Regulation (EU) 913/2010, the Management Board of the above-mentioned Rail Freight Corridor Amber No.11 shall set up an Advisory Group of Railway Undertakings, which

- may issue an opinion on any proposal by the Management Board which has consequences for these undertakings;
- may issue own-initiative opinions.

The Management Board shall take any of these opinions into account.

Participation in the Advisory Group is on a voluntary basis. Railway Undertakings may become members or resign their memberships of the Advisory Group at will.

The purpose of this Letter of Intent is to identify a framework for cooperation and partnership between the Management Board and Railway Undertakings and their representative organizations in the context of the above-mentioned Advisory Group and with the aim to ensure that the development of the corridor and the services provided along the corridor meet the demands of Railway Undertakings as much as possible.

In case of intention to become a member of the Advisory Group of Railway Undertakings of Rail Freight Corridor Amber No.11 the below presented *"Confirmation of Intent"* shall duly be filled.

Done at_________,_________2018 ...…………………………..

Chairperson of RFC Amber No.11

Confirmation of Intent

to become a member of the Advisory Group of Railway Undertakings of Rail Freight Corridor Amber No.11

The undersigned hereby confirm that the organizations they represent intend to cooperate with the Management Board of Rail Freight Corridor Amber No.11 in the framework of the Advisory Group of Railway Undertakings, in accordance with Regulation (EU) 913/2010 and the Rules of Consultation annexed to this Letter of Intent. The Rules of Consultation are laid down in a separate document due to the fact that they intend to provide guidance based on common principles for the regulation of exchange between the Management Board and the Advisory Groups. The undersigned organizations reserve the right to resign their memberships at will.

In case new members aim to join the Advisory Group the current confirmation shall duly be updated.

The opinions of the Group (including majority and minority opinions, if applicable) shall be communicated to the Management Board by one Member of the Railway Advisory Group (RAG Spokesperson).

Done at______________,____________________2018

Contact Person	Name of company (Member)	Address of company	Signature

Letter of Intent

of the Management Board to establish the Advisory Group of Terminal Managers and Terminal Owners of Rail Freight Corridor Amber No.11

“Koper – Ljubljana – Zalaszentiván – Sopron/Csorna – / (Hungarian-Serbian border) – Kelebia – Budapest - / - Komárom – Leopoldov / Rajka– Bratislava – Žilina – Katowice / Kraków – Warszawa / Łuków – Terespol – (Polish-Belarusian border)”

in accordance with Regulation (EU) 913/2010

Warsaw, 12 December 2017

According to article 8 paragraph 7 of Regulation (EU) 913/2010, the Management Board of the above-mentioned Rail Freight Corridor Amber No.11 shall set up an Advisory Group made up of managers and owners of the Terminals of the freight corridor, which

- may issue an opinion on any proposal by the Management Board which has consequences for investment and the management of terminals;
- may issue own-initiative opinions.

The Management Board shall take any of these opinions into account.

Participation in the Advisory Group is on a voluntary basis. Managers of Terminals and Owners of the Terminals of the rail freight corridor may become members or resign their memberships of the Advisory Group at will.

The purpose of this Letter of Intent is to identify a framework for cooperation and partnership between the Management Board and the managers and owners of Terminals and their representative organizations in the context of the above-mentioned Advisory Group and with the aim to ensure that the development of the corridor and the services provided along the corridor meet the demands of managers and owners of Terminals as much as possible.

In case of intention to become a member of the Advisory Group of Managers of Terminals and Owners of the Terminals of Rail Freight Corridor Amber No.11 the below presented *"Confirmation of Intent"* shall duly be filled.

Done at________,________2018 …………………………..

Chairperson of RFC Amber No.11

Confirmation of Intent

to become a member of the Advisory Group of Managers of Terminals and Owners of the Terminals of Rail Freight Corridor Amber No.11

The undersigned hereby confirm that the organizations they represent intend to cooperate with the Management Board of Rail Freight Corridor Amber No.11 in the framework of the Advisory Group of Terminal Managers and Owners, in accordance with Regulation (EU) 913/2010 and the Rules of Consultation annexed to this Letter of Intent. The Rules of Consultation are laid down in a separate document due to the fact that they intend to provide guidance based on common principles for the regulation of exchange between the Management Board and the Advisory Groups.

The undersigned organizations reserve the right to resign their memberships at will.

In case new members aim to join the Advisory Group the current confirmation shall duly be updated.

The opinions of the Group (including majority and minority opinions, if applicable) shall be communicated to the Management Board by one Member of the Terminal Advisory Group (TAG Spokesperson).

Done at______________,______________2018

Contact person	Name of company (Member)	Address of Company	Signature

Rules of Consultation between the Management Board and the Advisory Groups of RFC Amber No.11

in line with Regulation (EU) No. 913/2010

I. Basic provisions

1. The Management Board (hereinafter referred to as 'MB') sets up one Advisory Group (hereinafter referred to as 'AG') made up of managers and owners of the terminals of Amber Rail Freight Corridor (hereinafter referred to as 'Amber RFC').

2. The MB sets up one further AG made up of railway undertakings (hereinafter referred to as 'RUs') interested in the use of Amber RFC.

3. Participation in the AGs is on a voluntary basis.

4. The AGs may issue an opinion on any proposal by the MB which has direct consequences for AG Members. The AGs may also issue own-initiative opinions. The MB shall take any of the opinions of the AGs into account.

5. The MB is responsible for organization and financing of at least one regular AG meeting per year per AG and of consultation between MB and AGs. The MB and the AG may jointly decide about additional meetings if necessary.

6. Meetings of the AGs are financed by the AG Members themselves. Members of the AGs will not be reimbursed by the corridor organization for their expenses.

7. The MB defines only the rules applicable between the MB and the AGs, but the MB does not define the process of communication and the procedure for opinion-making inside the AGs.

II. Formulation and representation of the opinions of the AGs

8. Each AG elects its own representative (hereinafter referred to as 'Spokesperson') for a defined time period, and informs the Secretariat of the Amber RFC (hereinafter referred to as 'Secretariat') and the responsible MB Member in charge of management of AGs of Amber RFC about the name and contact details of the AG Spokespersons. The Spokespersons of the AGs collect the opinions of AG Member companies, and communicate the opinion of the AGs to the MB.

9. A sole opinion of an AG shall be communicated to the MB, and not individual opinions of AG Members.

10. The possibility for joining and leaving both AGs shall always be open. The Secretariat and the responsible MB Member in charge of management of AGs shall be informed by the Spokesperson of names and contact details of newly joined and/or leaving AG Members.

III. Procedure of consultation between MB and AGs

11. The MB prefers to communicate with the AGs via the Spokespersons of the AGs. This shall, however, not exclude the possibility of direct communication of any AG member with the MB if needed.

12. For the AGs the contact point on the side of the MB is the Secretariat whose contact details are to be found below as well as on the website of the corridor. Therefore, the AG and further external Parties should address the Secretariat in written form in case of sending the opinion of the AG, asking for clarifications, etc. Every written initiative has to be answered by the MB in written form via the Secretariat. In case of change in the contact details of the Secretariat it is the responsibility of the MB to communicate that towards the AGs in written form.

13. The Secretariat shall always be put in copy of any communication with the responsible MB Member in charge of management of AGs.

Contact details of the Secretariat:

<u>Amber RFC Secretariat</u>

Adress:	VPE Rail Capacity Allocation Office Ltd. H-1054 Budapest, Bajcsy-Zsilinszky út 48. Hungary
Phone:	+ 36 30 184 7884
E-mail:	amberrfc-secretariat@vpe.hu

14. The Secretariat circulates the documents for consultation by sending them to each AG Member by e-mail but receives the opinions of the AGs only from the Spokespersons of the AGs.

15. The language of communication between the MB and the AGs shall be English.

16. Forms of communication between Advisory Group members and the Management Board are:

- E-mail communication (Amber RFC website with dedicated area),
- National conferences,
- Amber RFC RAG/TAG international conferences with AG members organized by MB.

17. Regular meetings of the AGs are held at least once per year. The MB and the AG may jointly decide about additional meetings, if necessary. Regular meetings are organized by the Secretariat in cooperation with the hosting IM. .

18. AG Members and their experts, MB Members and their experts, Executive Board Members and their experts and representatives of the European Commission may take part in the AG meetings depending on the items on the agenda.

The AGs may decide to invite further persons to an AG meeting depending on the items on the agenda.

IV. Utilization of opinions of the AGs

19. The MB takes any opinion of the AGs into account.

20. If the MB cannot meet the requests or expectations expressed by an AG opinion, the MB gives an explanation to the AG, and continues consultation with the aim to reach agreement.

21. In the event of disagreement between the MB and an AG, the latter may refer the matter to the EB. The EB shall act as an intermediary and provide its opinion in due time. The final decision however shall be taken by the MB.

TRANSPORT MARKET STUDY

2018

Amber Rail Freight Corridor

PL - SK - HU - SI

Client

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Contents

GLOSSARY/ABBREVIATIONS

Glossary/ abbreviations	Definition
AB	Allocation Body
AGTC	European Agreement on Important International Combined Transport Lines and Related Installations
AT	Republic of Austria
BCh	Беларуская чыгунка (Belarusian Railway – national railway company)
BSC	Balanced scorecard (BSC) is a visual tool used to measure the effectiveness of an activity against the strategic plans of a company. Balanced scorecards are often used during strategic planning to make sure the company's efforts are aligned with overall strategy and vision.
BY	Belarus
CFR	Compania Naţională de Căi Ferate (Manager of infrastructure in Romania)
CNC	The Core Network Corridors
C-OSS	Corridor One Stop Shop 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 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 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
GCI	The Global Competitiveness Index
GDP	Gross Domestic Product
GYSEV	GYSEV Raaberbahn (Austrian – Hungarian railway company)
HDI	Human Development Index
HR	Croatia
HU	Hungary
HŽ	Hrvatske Željeznice (Croatian Railways)
IEF	Index of Economy Freedom
IM	Infrastructure Manager
INF TSI	Infrastructure - Technical specification for interoperability relating to the infrastructure subsystem of the rail system in the European Union Commission reugulation (EU) No 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the 'infrastructure' subsystem of the rail system in the European Union.
IT	Italy
ITT	Intermodal transport terminal rail-road, rail-water
LG	Lietuvos geležinkeliai (Railway Infrastructure Directorate of SC "Lithuanian Railways")
LT	Lithuania
MÁV Zrt.	Magyar Államvasutak (Hungarian State railways)
N/A	Not Available
ÖBB INFRA	Österreichische Bundesbahnen (The Austrian Federal Railways)
PaPs	Pre- Arranged Paths
PCS	The Path Coordination System (PCS) is an international path request coordination system for path applicants, e.g. Railway Undertakings (RUs), Infrastructure Managers (IMs) and Allocation Bodies (ABs). The internet-based application optimises international path coordination by ensuring that path requests and path offers are harmonised by all involved parties.

PLK	Polskie Linie Kolejowe (Infrastructure manager in Poland)
RC	Reserve Capacity
RFI	Rete Ferroviaria Italiana (Italian railways manager of infrastructure)
RNE	Rail Net Europe
RO	Romania
RS	Serbia
RU	Railway Undertaking
RUS	Russian Federation
RŽD	Российские железные дороги (Russian Railways)
SI	Slovenia
SK	Slovak Republic
SŽ-I	Slovenske Železnice - Infrastruktura (Infrastructure manager in Slovenia)
SŽDC	Správa železniční dopravní cesty (Manager of infrastructure in Czech Republic)
TAF TSI	Telematics application for freight service – Technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union Commission regulation (EU) No 1305/2014 of 11 December 2014 on the technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union
TAP TSI	Telematics application for passenger service – Technical specification for interoperability relating to the subsystem ´telematics applications for passenger services´ of the trans-European rail system Commission Regulation (EU) No 527/2016 amending Commission Regulation (EU) No 454/2011
TEN-T	The Trans-European Transport Network (TEN-T) is a European Commission policy directed towards the implementation and development of a Europe-wide network of roads, railway lines, inland waterways, maritime shipping routes, ports, airports and rail-road terminals.

TEU	TEU - Twenty- foot Equivalent Unit (a measure used for capacity in container transportation)
TMS	Transport market study
UA	Ukraine
UŽ	Укрзалізниця (Ukrainian Railways)
VPE	Vasúti Pályakapacitás-elosztó Kft. (Rail Capacity Allocation Body)
ŽS	Železnice Srbije (Serbian Railways)
ŽSR	Železnice Slovenskej republiky (Infrastructure manager in Slovakia)

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INTRODUCTION

The current economic development in EU countries has an impact on continuous increase in demand for transport services. The continuous increase in demand for transport services results from a higher consumption of EU population and a higher production of manufacturing enterprises. The demand is directly influenced also by the need to transport the final products and the intermediate products from Asia to Europe and vice versa. Several European companies cooperate with the companies in Asia and their trading income, level of innovations and social benefits depend on their cooperation. This demand then creates an offer that results in a market for transport services. There are many offers from several modes of transport in this market where each mode of transport has its advantages and disadvantages for the transport process, the customer, the society and the environment.

Rail freight is considered to be the most environmentally friendly mode of transport of goods, with an important role in the freight transport market. It contributes to the development of human society and combines economic and social progress while respecting the environment. Due to exogenous (e.g. entry of competition in road and air transport, technological innovations oriented to other modes of transport, change in transport requirements) and endogenous (e.g. inefficiency, overemployment, low level of innovations and modernization, technological lag) factors, rail freight lost the competitiveness in the transport services market resulting in decrease in the transport performances of rail sector. At the same time a shift of transport performances to other more environmentally demanding modes of transport has occurred. This shift leads to a higher production of the negative external costs of transport and need for higher state subsidies to the transport infrastructure from public funds. This unfavourable state has to be addressed by individual states and EU.

EU, to promote the competitiveness of rail freight transport, in particular in the field of infrastructure quality, safety, time and administrative effectiveness, international cooperation, has established the European Rail Freight Corridors. The establishment of the European Rail Freight Corridors should bring, in particular, better, more complete, more reliable and less expensive services to railway undertakings. Such services of the single European railway infrastructure consequently contribute to the better services of the railway undertakings providing freight services. Increased commercial activity, reliable, fast, safe and cost competitive service lead to a shift of transport performances from more environmentally demanding modes of transport to rail freight transport. In addition to its environmental advantage, rail freight transport can provide more reliable, safer, less expensive and faster transport service in case of harmonizing the transport and technological processes in comparison with other modes of transport. The shift of transport performances to rail leads to overall decrease in social costs (infrastructure owner costs, carrier costs and negative external costs of transport) generated by transport.

Increasing requirements on quality and availability of rail freight service led to intention to establish the new European rail freight corridor Amber. The corridor establishment brings the connection between Adriatic seaports in the Republic of Slovenia and inland ports on the Danube and terminals in Hungary and the Slovak Republic and Poland, but it brings also the perspective of railway transport development with Serbia and the improvement of the railway transport in Europe – Asia direction. The perspective, quality and efficiency of the new corridor need to be assessed and subsequently, based on the assessment, to take measures to increase competitiveness and growth of the overall efficiency of the corridor. The proposed strategy is developed based on acquisition, processing and subsequent evaluation of technical, technological, transport and economic indicators obtained from various sources.

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

1 OBJECTIVE OF TRANSPORT MARKET STUDY

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, decreasing of non-investment state subsidies to the railway infrastructure, promoting investment state subsidies in the railway infrastructure, ensuring good economic conditions for railway undertakings and meeting the needs of customers. These corridors 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 contribute to better quality, more available, more comprehensive and cost-effective services provided to railway undertakings. Cost effective services motivate railway undertakings to higher acquisition activity, thus more suitable modal split will be ensured for the whole society.

The chapter is aimed at the interpretation of basic objectives and effects of establishing the eleventh European rail freight corridor. At the same time, the chapter defines the main objective of TMS and the resulting partial objectives.

1.1 Aspects of establishing the Amber RFC

The main objectives of establishing the rail freight corridors, defined by the European Commission (hereinafter referred to as EC) are:

1. Strengthening competitiveness of rail freight transport compared with other modes of transport.
2. Effective modal split with an emphasis on environmentally friendly rail freight transport.
3. Coordination of investment in more qualitative railway infrastructure with possibility of financial support from EU funds.
4. Harmonisation and synergy between national rail systems.
5. Strengthening cooperation in allocation of railway infrastructure capacity to international freight trains between single infrastructure managers.
6. Conformity with existing objectives of other specific RFC corridors.

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

1. General growth of transit rail freight performances.
2. General growth of international rail freight performances (import, export).

3. General growth of intermodal transport performances.
4. Improve the interconnection of the main intermodal transport terminals in the Member States and allow for direct freight routes across the eastern part of the Alps.
5. Facilitate the interconnection between the Adriatic Sea Port in the Republic of Slovenia and the inland ports on the Danube in Hungary and the Slovak Republic.
6. Promote the railway transport development with Serbia.
7. Improve, potentially, the railway transport across EU Eastern border and on the land bridge between Europe and Asia.
8. Connection to the sea ports in the Republic of Poland.
9. Better services of infrastructure managers provided to railway undertakings.
10. Better services provided by railway undertakings to customers.
11. Shift of transport performances from environmentally demanding modes to rail freight – change in modal split in favour of rail freight.
12. Increase in reliability and decrease in transport time.
13. Decrease in railway undertaking costs.

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

1. Making an offer of capacity on the whole route within the corridor in one place.
2. Overview concerning the railway infrastructure capacity included in the corridor, including the capacity provided with priority (the management board shall promote coordination of priority rules relating to capacity allocation on the freight corridor).
3. Better services in terms of transit time, regularity, reliability and information.
4. Strengthening customer approach.
5. Information on investment projects in railway infrastructure between railway administrations.
6. Reduction of operating restrictions.
7. Harmonization of infrastructure technical and transport parameters.
8. Harmonization of track possessions between individual railway infrastructure managers.
9. Possibility of improving the infrastructure included in the corridor, including connecting lines to terminals.
10. Eliminate bottlenecks.

11. Chance to strengthen priority rules in operative traffic control for freight trains carrying out transport performances on the corridor.
12. Possibility to express the opinion of railway undertakings on the quality of infrastructure manager services and the Amber RFC.

The defined objectives and benefits of the Amber 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. The fulfilment of corridor's objectives requires the cooperation of all stakeholders – transport policy (state, government), ministries concerned, infrastructure managers, intermodal operators, carriers and external suppliers of the railway sector.

1.2 Structure of TMS objectives

The main objective of TMS: is to provide a clear understanding of the current conditions of the multimodal freight market along the Corridor together with short and long term freight traffic forecast consequent to the implementation of the corridor at the beginning of year 2019, and also to propose a measurement of the expected modal shift from road to rail. Based on the elaboration of the transport market study, evaluate the current state, perspective, prognosis and opportunities of the new corridor. In accordance with the findings of these analyses, propose a strategy which will lead to the development of the Amber RFC and provision quality services of the EU railway systems.

The TMS main objective justification: To fulfil the main objectives of establishing the new European rail freight corridor Amber, mentioned in subchapter 1.1, it is necessary to examine and evaluate the current state of the transport and technical situation within the countries participating in the Amber RFC. The establishment of each rail freight corridor requires, based on an analysis of current state, the development of strategic direction in order to fulfil the basic objectives.

In order to achieve the TMS main objective of the Amber RFC, the following structure was set:

1. Introduction to issues.
2. Objectives of the transport market study.
3. Methodology of the study.
4. Corridor characteristics – legislative structure, corridor structure, graphical representation of the corridor in individual countries, technical parameters of corridor lines, capacity analysis,

comprehensive basic comparison of RFC infrastructures, description of EU TEN-T corridor concerned, summary of obtained data.

5. Analysis of economic indicators – GDP analysis and prognosis, purchasing power parity, human development index, index of competitiveness of economies, index of economic freedom, analysis of significant industrial areas, summary of obtained data.
6. Analysis of transport indicators – analysis of investment and non-investment subsidies, analysis of selected economic indicators of transport infrastructure, analysis of intended investment in transport infrastructure, analysis of transport performances (train km, gross tkm, number of trains) on corridor lines and on the whole network, modal split, summary of obtained data.
7. Prognosis of transport performances: pessimistic, realistic and optimistic scenarios, results of prognosis.
8. Comparative analysis of rail and road freight transport within the corridor.
9. Analysis of strategic opportunities of the corridor – possibilities of cooperation with other corridors, transport opportunities from countries outside the EU.
10. Last mile: overview of sidings, intermodal terminals, ports, loading and unloading facilities.
11. Socio-economic benefits of the corridor.
12. SWOT analysis – draft of strategy based on SWOT.
13. Draft of marketing strategy – external environment analysis, internal environment analysis, draft of marketing strategy.
14. Strategic map of the corridor.
15. Conclusion and recommendations.

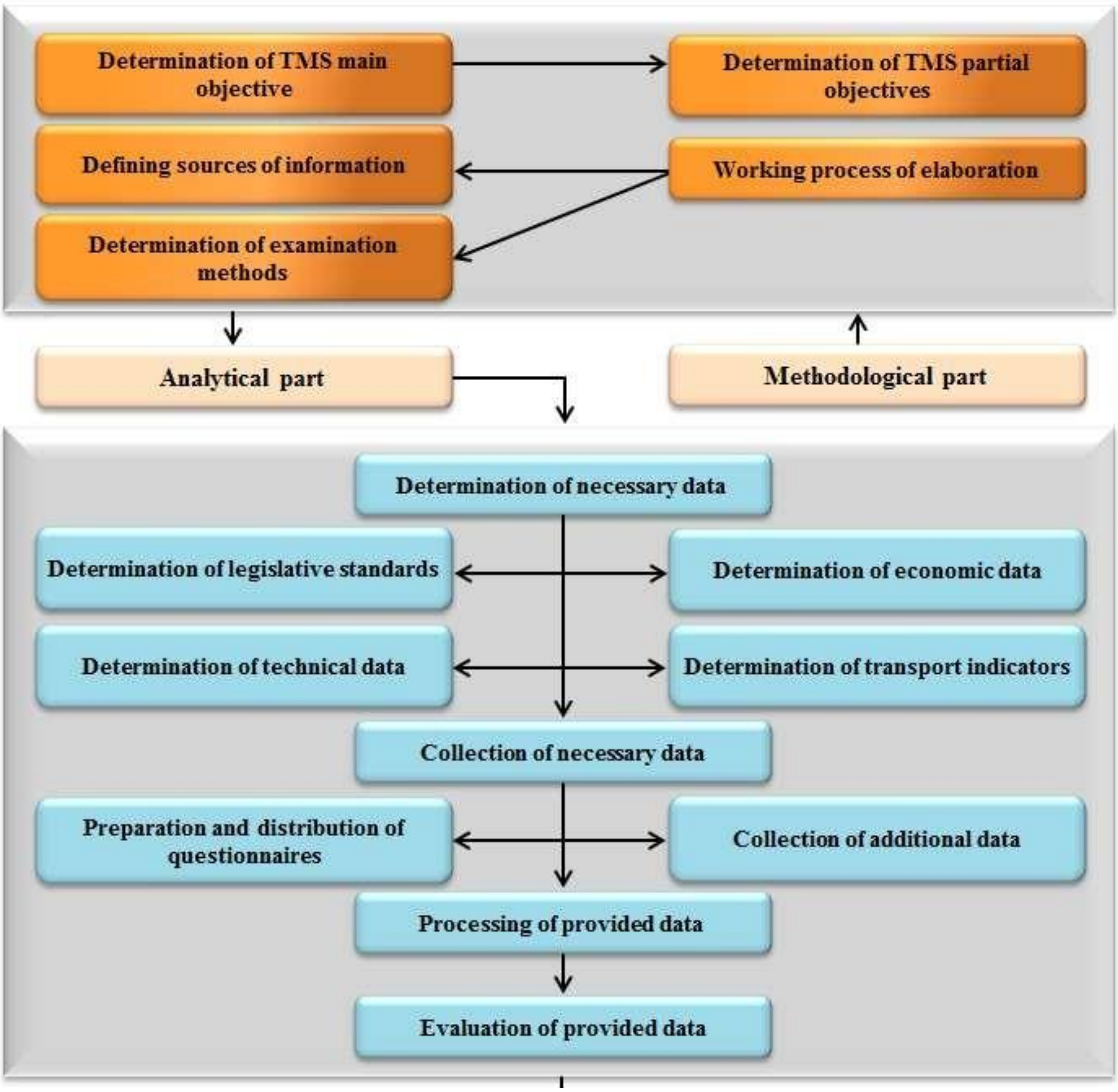
The processing of all these partial objectives is necessary to fulfil the main objective of the TMS of the new rail freight corridor Amber.

2 METODOLOGY OF WORK AND METHODS OF INVESTIGATION

The chapter in the first part graphically represents the selected working process of elaborating the TMS of the Amber RFC. Subsequently, the chapter provides sources of information necessary for elaborating the primary and secondary objectives. Based on the working process, the used methods necessary for elaborating the particular partial objectives of TMS are listed in the chapter.

2.1 Working process of TMS elaboration

For the elaboration of TMS, based on determining the main objective and resulting partial objectives, the methodological working process, shown in Fig. 1, was chosen.



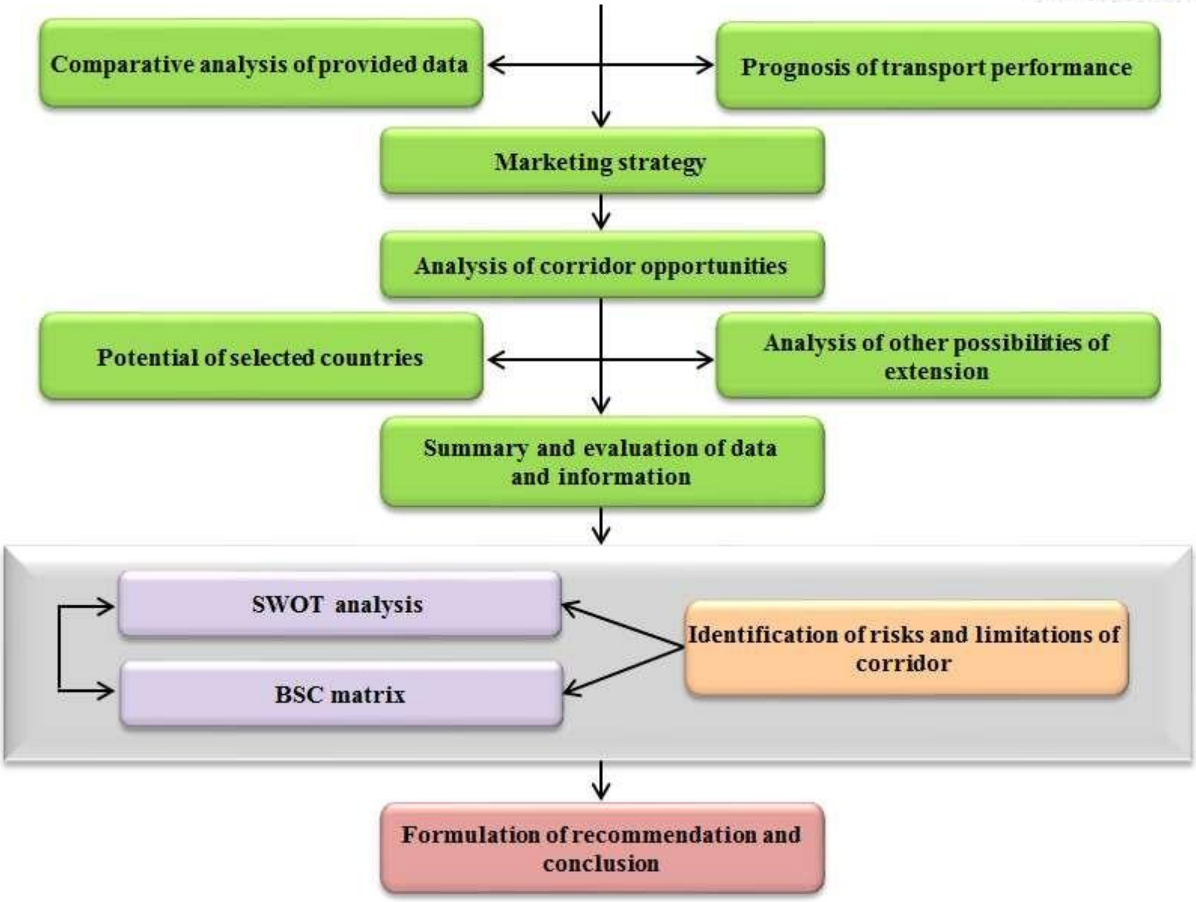


Figure 1: *Graphical representation of methodical working process of TMS (Source: ŽSR, VVÚŽ)*

2.2 Baselines for the TMS elaboration

The elaboration of all TMS tasks, listed in subchapter 1.2, requires the analysis and processing of various technical, capacity and economic indicators. This requires a wide range of statistical and analytical information stemming from several sources:

- EU legislation, modifications and standards of the member states of corridor,
- annual reports of infrastructure managers and allocation bodies of corridor member states,
- network statements of infrastructure managers and allocation bodies of corridor member states,
- traffic and transport performances provided by corridor infrastructure managers,
- traffic and transport performances from statistical offices of corridor member states,
- 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 TEN-T Core Network Corridors,
- other available economic, traffic and transport information necessary for study elaboration,
- data from questionnaires sent to infrastructure managers,
- Manual Update of the Handbook on External Costs of Transport“ (final report for the European Commission - 2014),
- sector publications (articles, reports, press releases, etc. with relevance for RFC corridors),
- scientific literature.

The statistical and analytical data require for elaborating the individual parts of TMS of the Amber RFC, with which it was possible to elaborate the individual parts of the study and then to propose the optimal strategy, are shown in Table 1.

Table 1: Statistical and analytical indicators monitored in TMS

Scope	Indicator
Technical parameters	Maximum length of train, class of line, signalling equipment, electrification system, loading gauge, average speed of train, speed limits, profile
Transport performances	Development of transport performances on corridor lines (national transport and international transport) Development of transport performances on all lines of member state (national transport and international transport)
General indicators	Population, industry (the most important industry areas in countries of Amber RFC), transport infrastructure
Macroeconomic indicators	GDP development and prognosis in member states, GDP per capita in purchasing power parity, Human development index, Index of competitiveness of economies, Index of economic freedom
Microeconomic indicators	Level of infrastructure charges for type trains Transit time
Modal Split	Development of modal split between individual modes of transport (freight and passenger transport on national territories)
Capacity analysis	Development of transport capacity utilization of individual lines Development of transport capacity utilization of individual corridor lines
Other indicators	Investment, technical and technological measures, proposal of extension of lines and terminals, etc.
Corridor indicators	Corridor benefits and opportunities

2.3 Methods used in TMS elaboration

The individual partial objectives of TMS of the Amber RFC were 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 establishment 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 graphic representation – used for graphic and visual layout of acquired and processed statistical data and other results of the study,
- 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 – 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.

3 CHARACTERISTICS OF AMBER RAIL FREIGHT CORRIDOR

The third part of TMS is aimed at the precise technical characteristics of the Amber RFC. The first part defines the legislative aspects of the establishment of the corridor in question. Consequently, the corridor routing in the individual railway infrastructures of the member states is graphically represented. An important part of the chapter is a description of technical parameters of the lines included in the corridor.

3.1 Legislative aspects of Amber RFC establishment

The Amber rail freight corridor No 11 is being established based on Commission Implementing Decision (EU) no. 2017/177 of 31 January 2017, that was issued of the basis of “Letter of Intent” as request of 4 Ministries competent for Rail Transport of Hungary, Republic of Poland, Slovak Republic and Republic of Slovenia.

The establishment of Amber rail freight corridor is on the compliance with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight. This Regulation lays down rules for the establishment and organisation of international rail freight corridors with a view to the development of a European rail network for competitive freight.

The implementation of international RFCs forming a European rail network for competitive freight is conducted in a manner consistent with the trans-European Transport Network (TEN-T) according to 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 and repealing Decision No 661/2010/EU.

In order to speed up TEN-T investments and strengthening public and private sector financing, while increasing legal certainty and respecting the principle of technological neutrality, REGULATION (EU) No 1316/2013 of the European Parliament and of the council decision of 11 December 2013 establishing the instrument of Connecting Europe and amending Regulation (EU) No (EC) No 913/2010 and repealing Regulations (EC) 680/2007 and (EC) no. 67/2010.

All the above mentioned legal acts are in line with Directive 2012/34/ EU of the European Parliament and of the Council of 21 November 2012 on the establishment of a single European railway area.

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:

- development of interoperability through the technical specification of interoperability relating to the infrastructure subsystem of the rail system in European Union (INF TSI),
- development of interoperability through the technical specification of interoperability relating to Traffic Operation and Management (TOM TSI) and TSI relating to Telematics Applications for Freight Services (TAF TSI), and Telematics Applications for Passenger Services (TAP TSI).

3.2 Amber RFC governance structure

For proper functioning of the European rail freight corridors, control and management mechanisms in the form of bodies have been introduced for each corridor. At the same time, the coordination of established bodies contributes to meeting the basic objectives of RFC corridors and responds to the challenges of effective daily operation and the provision of the best possible services to customers.

RFC bodies:

Executive Board – made up of representatives of the authorities of the Member States concerned.

Management Board – made up of the representatives of the infrastructure managers and Allocation Body

Railway Advisory Group (RAG) – made up of railway undertakings interested in the use of the freight corridor.

Terminal Advisory Group (TAG) – made up of managers and owners of the terminals of the freight corridor including, sea and inland waterway ports.

Corridor One Stop Shop (C-OSS) – will be established by the corridor launching according to Commission Implementing Regulation No 2017/177 of 31 January 2017.

Amber RFC Working Groups:

- Traffic management, Train Performance and Operations,
- Marketing,
- Timetable and One Stop Shop,
- Temporary Capacity restrictions,
- Infrastructure, Interoperability and ERTMS,

- Legal Task Force.

Organizational support, coordination of activities and review of documents elaborated by Working Groups are provided by the Coordination Group. Administrative part is ensured by the RFC Secretariat.

Figure 2: *Organizational structure of Amber RFC*

(Source: marketing Amber)

Excerpt of the 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 Management Board,
- periodically analyses 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.

Excerpt of the tasks of Management Board:

- fulfilment of all Management Board tasks defined in Regulation (EU) No 913/2010,
- determination of the legal form of the Amber RFC,
- fulfilment of other tasks defined by decisions of the Management Board and Internal rules and procedures of the corridor,
- ensuring organisational, technical and operational conditions to make the Amber RFC operational on time,
- management of whole Amber RFC organizational structure,
- seeking good co-operation with the Executive Board of the Amber RFC, with the Advisory Groups and customers of the corridor and with the management boards of other RFCs.

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 Regulatory Body.

Main tasks of Corridor One Stop Shop (C-OSS): the C-OSS is the only body where applicants may request and receive infrastructure capacity for international freight trains on Amber RFC. The handling of the requests takes place in a single place and a single operation. The C-OSS is responsible for performing the handling of capacity requests for international freight trains and for the publication and allocation decision with regard to requests for PaPs and RC (Reserve Capacity) on behalf of the IMs / ABs concerned.

RFC Amber routing: Koper – Ljubljana/Zalaszentiván – Sopron/Csorna/(Hungarian-Serbian border) – Kelebia – Budapest – Komárom – Leopoldov/Rajka – Bratislava – Žilina – Katowice/Kraków – Warszawa/Łuków – Terespol – (Polish-Belorusian border) as the principal route for the Amber rail freight corridor.

Member states: Poland, Slovakia, Hungary, Slovenia

Deadline for making Amber RFC operational: by 30.01.2019

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

3.3 RFC graphical representation of proposed routing

The routing of the Amber RFC is based on the document Letter of intent concerning the establishment of the Amber Rail Freight Corridor No 11 by the Ministries competent for Rail Transport and subsequently on Commission implementing decision (EU) 2017/177 of 31 January 2017. The graphical representation of the proposed routing according to given documents is shown in the following Figure.

Figure 3: *Graphical representation of Amber RFC routing*
(Source: ŽSR, VVÚŽ)

For more detailed representation, the graphical representation of the proposed routing within the railway infrastructure of individual participated countries is shown in Fig. 4 - Fig. 7.

Figure 4: *Graphical representation of Amber RFC routes on PKP PLK network*

(Source: ŽSR, VVÚŽ)

Figure 5: *Graphical representation of Amber RFC routes on ŽSR network*

(Source: ŽSR, VVÚŽ)

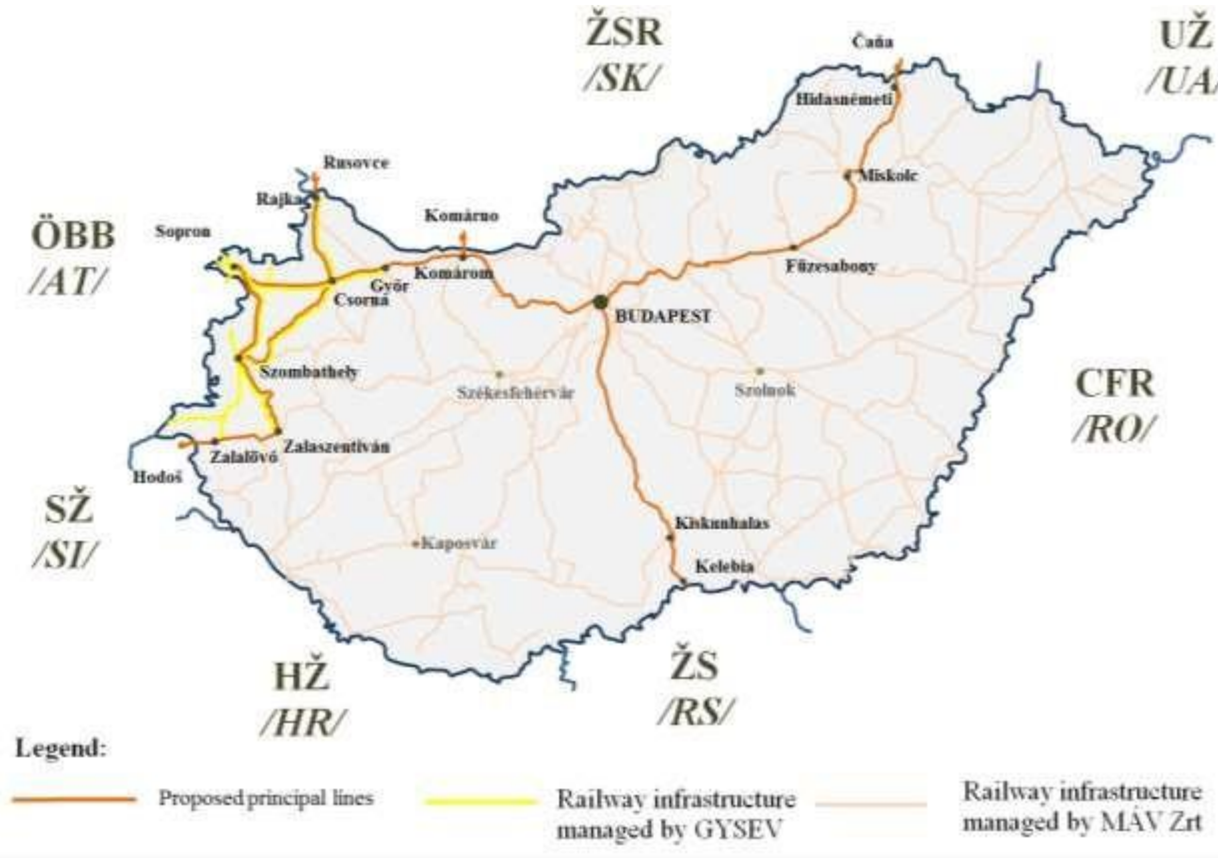


Figure 6: *Graphical representation of Amber RFC routes on MÁV and GYSEV network (Source: ŽSR, VVÚŽ)*

Figure 7: *Graphical representation of Amber RFC routes on SŽ-I network (Source: ŽSR, VVÚŽ)*

4 ECONOMIC ANALYSIS

The chapter is focused on the characterization and the subsequent analysis of selected economic indicators that influence the demand for transport services. An important part is the graphical analysis of important industrial areas located in the territories of countries under consideration.

4.1 Basic general characteristics of the countries of the Amber RFC

The aim of the subchapter is to provide basic general data on all countries participating in the Amber RFC.

Republic of Poland

Capital: Warsaw

Area: 312 679 km² (69th place in the world) of which water 8 220 km² (3,07 %)

Population: 38 116 000, census in 2017

Official language: Polish

Administrative division: 16 regions, 373 counties

Currency: Polish zloty =100 groshes (PLN)

Neighbouring countries: the Slovak Republic, the Republic of Lithuania, the Russian Federation, the Czech Republic, the Federal Republic of Germany, the Republic of Belarus, Ukraine.

Geographical location: Central Europe

Figure 8 is a graphical representation of the geographical location of the Republic of Poland with marked borders and significant cities. The geographical location of the country is particularly advantageous from the transport point of view in the direction from the Baltic Sea and the eastern part of Europe. The area of country, industry and tourism directly create increased demands for quality, safe, reliable and available transport services.

Figure 8: *Geographical representation of the Republic of Poland*
(Source: ŽSR, VVÚŽ)

Slovak Republic

Capital: Bratislava

Area: 49 036 km² (127th place in the world) of which water 931 km² (1.9 %)

Population: 5 435 343, estimate 2016

Official language: Slovak

Administrative division: 8 self-governing regions, 79 districts

Currency: Euro = 100 cents (EUR)

Neighbouring countries: the Czech Republic, the Republic of Poland, the Republic of Austria, Hungary, Ukraine.

Geographical location: Central Europe

Figure 9 is a graphical representation of the geographical location of the Slovak Republic with marked borders and significant cities. By its location, the country creates the appropriate conditions for rail transit traffic, mainly in the direction east (Asia) – west (Western Europe). The geographical location and available transport infrastructure in the country directly contribute to the direction of foreign investment that creates demand for transport services.

Figure 9: *Geographical representation of the Slovak Republic*

(Source: ŽSR, VVÚŽ)

Hungary

Capital: Budapest

Area: 93 030 km² (108th place in the world) of which water 1 685 km² (~ 2 %)

Population: 9 830 485, estimate 2016

Official language: Hungarian

Administrative division: 7 regions, 19 counties and Budapest

Currency: Hungarian Forint = 100 fillér (HUF)

Neighbouring countries: the Republic of Austria, the Slovak Republic, Romania, the Republic of Serbia, the Republic of Croatia, the Republic of Slovenia, Ukraine.

Geographical location: Central Europe

Figure 10 is a graphical representation of the geographical location of Hungary with marked borders and some of significant cities. By its location, the country creates the appropriate conditions for rail transit traffic, mainly in the direction south – west and north of Europe. The transport infrastructure of Hungary has the potential to realize a significant part of transportations from countries outside the EU and the Republic of Turkey to the countries of Western Europe.

Figure 10: *Geographical representation of Hungary*

(Source: ŽSR, VVÚŽ)

Republic of Slovenia

Capital: Ljubljana

Area: 20 273 km² (154th place in the world) of which water 122 km² (0,7 %)

Population: 2 065 895, estimate 2016

Official language: Slovenian

Administrative division: 212 municipalities (občine)

Currency: Euro = 100 cents (EUR)

Neighbouring countries: the Republic of Austria, Hungary, the Republic of Croatia, the Republic of Italy

Geographical location: Central Europe

Figure 11 is a graphical representation of the geographical location of the Republic of Slovenia with marked borders and significant cities. The Republic of Slovenia is one of the important gateways for the goods incoming from Asia to Europe. The requirements for the continuation of the transport of goods from Asia continuously increase and create great opportunities for rail freight transport.

Figure 11: *Geographical representation of the Republic of Slovenia*

(Source: ŽSR, VVÚŽ)

4.2 Economic indicators

Within the economic indicators, the indicators: GDP, GDP per capita in purchasing power parity and HDI, GCI, IEF indices for the individual countries of Amber RFC, are analysed in the following sections. At the same time, the analysed indicators are briefly characterized.

GDP – Gross domestic product

Gross Domestic Product (GDP) is defined as the value of all final products and services produced by all units of the national accounting of the monitored territory over the given period. Within the above GDP indicator, the following table shows GDP growth rate in % for the individual states included in the Amber RFC, including the forecast for 2018 - 2020.

Table 2: Real GDP growth rate and prognosis in %

Description	Real GDP growth rate (%)								Prognosis of GDP (%)		
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Poland	3,6	5,0	1,6	1,4	3,3	3,8	2,9	4,2	*3,8*	*3,4*	*3,6*
Slovakia	5,0	2,8	1,7	1,5	2,8	3,9	3,3	3,3	*3,8*	*4,0*	*4,0*
Hungary	0,7	1,7	-1,6	2,1	4,2	3,4	2,2	3,7	*3,6*	*3,1*	*3,1*
Slovenia	1,2	0,6	-2,7	-1,1	3,0	2,3	3,1	4,7	*4,0*	*3,3*	*3,2*

Source: Eurostat

From the above-mentioned analysis of GDP growth rate, we can confirm the slowdown in economic growth in 2012 and 2013 in all analysed countries. GDP growth revival has been recorded since 2014. The GDP growth rate forecasts a positive growth trend above 3 % in 2018 as well as in 2019 and 2020 for all monitored countries.

GDP per capita in purchasing power parity

Table 3 shows the trend of index of GDP per capita in purchasing power parity in relation to the average of EU 28 that is equal to 100 for the period 2010 – 2016. If the index of a country is higher than 100, the level of GDP per capita in the country under consideration is higher than EU average and vice versa. The basic data are expressed in purchasing power parity, i.e. common currency that eliminates differences in price levels between countries allowing meaningful volume comparisons of GDP between countries.

Table 3: GDP per capita in purchasing power standards

Description	GDP per capita in Purchasing Power Standards (PPS)						
Year	2010	2011	2012	2013	2014	2015	2016
EU28	100	100	100	100	100	100	100
Poland	62	65	67	67	67	68	68
Slovakia	74	75	76	77	77	77	77
Hungary	65	66	66	67	68	68	67
Slovenia	83	83	82	82	82	82	83

Source: Eurostat

The highest index of GDP per capita in PPS among member states of the Amber RFC reached Slovenia at the level 83 in 2016. The Republic of Poland recorded a steady trend in 2012 – 2014 and then increased degree in the period 2015 – 2016. In Hungary, there was a slight decline in 2016 at the level 67 compared to the previous year. GDP per capita in PPS on the territory of the Slovak Republic is stable since 2013. A steady trend of GDP per capita in purchasing power parity confirms price stability in the analysed countries.

IEF – Index of Economy Freedom

This index belongs to indicators aimed at measuring the economic freedom in relation to the overall performance of the economy. More than 50 world institutions are involved in the creation of the index, which analyse the indicators in the areas of impact of state interventions in the economy, the protection of property rights, the interventions in conditions of entry into business. Based on the long-term monitoring of this index, it is confirmed that countries with a higher level of economic freedom achieve higher performance of the economy, higher GDP growth rates and higher GDP per capita compared to countries with low level of economic freedom. The scale of values of index of economic freedom creates the Heritage Foundation, which covers 180 countries in the world with scores from 0 to 100, with 100 being the highest value of the economic freedom index.

GCI – The Global Competitiveness Index

According to the Global Competitiveness Index, it is possible to express how the quality of business environment contributes to increasing the performance of economy and it is assessed according to four basic areas. These areas include economic growth, government efficiency, business environment efficiency, infrastructure efficiency. The World Economic Forum Global Competitiveness Index assesses 137 countries in the world with scores ranging from 1 to 7, with 7 being the highest value of the global competitiveness index.

HDI – Human Development Index

The index is currently used most often to compare the level of human development. It is considered to be the most comprehensive indicator of quality of life. The Human Development Index assesses health and life expectancy, education and living standards. The index is also used by the United Nations Development Programme (UNPD). It is assessed within 188 countries ranging from 0 to 1, with the value of human development index being higher.

Table 4 analyses the above-described IEF, GCI, HDI indicators separately for each country of the Amber RFC.

Table 4: Overview of analysed indexes in countries of Amber RFC

Index (Year)	IEF (2017)		GCI (2017 – 2018)		HDI (2015)	
Country	**score**	**Rank/180**	**score**	**Rank/137**	**score**	**Rank/188**
Poland	68,3	45	4,59	39	0,855	36
Slovakia	65,7	57	4,33	59	0,845	40
Hungary	65,8	56	4,33	60	0,836	43
Slovenia	59,2	97	4,48	48	0,890	25

Source: The Heritage Foundation, World Economic Forum, United Nations Development Programme

From the mentioned values of Economic Freedom Index and Global Competitiveness Index, the Republic of Poland achieved the best rating among the analysed countries. Poland ranked in 45th place in comparison with the Economic Freedom Index values and in 39th place in comparison of values of the Global Competitiveness Index. The best ranking within the Human Development Index among countries was achieved by Slovenia which ranked in 25th place in 2015. Overall, based on the date in Table 4, it is possible to confirm sufficiently appropriate macro environment in all analysed countries for investment, business and innovations which contribute to the economic development and subsequent demand for transport services. The results also confirm the competitiveness of the economies of the analysed countries towards the other evaluated countries of the world.

ETI – Enabling Trade Index

The index is created by the World Economic Forum in cooperation with the World Bank and various national institutions which ensure the completion of necessary data. The index is made up of four sub-indexes:

- Market access,
- Border administration,
- Transport and communications infrastructure,
- Business Environment.

Each of these sub-indexes is divided into pillars ranging from 1 to 7, composed of basic indicators (55 in total) as well as indicators that are specific for given range. There are 136 countries in ranking, where the countries with the ranking closest to 7 are ranked the best. The rank of the best ranked countries goes upwards from 1 to the worst ranked countries up to 136.

Table 5: Overview of ETI index and individual sub-indexes for Amber RFC countries

Country	Rank/136 (2016)	Score	Subindex scores			
			Market Access	Border Administration	Transport and communications Infrastructure	Business Environment
Poland	**31**	**5,0**	5,0	5,7	4,6	4,5
Slovakia	**34**	**4,9**	4,9	5,6	4,6	4,6
Hungary	**38**	**4,9**	4,9	5,7	4,5	4,5
Slovenia	**32**	**5,0**	5,0	5,8	4,6	4,5

Source: World Economic Forum, World Bank, National statistics office

Based on the ETI index, we can confirm the above-average ranking of countries in terms of enabling business activities, while at the same time the above-average value of sub-index in the area of transport and communications infrastructure has been demonstrated. Appropriate measures of EU, individual member states in the field of transport infrastructure and transport infrastructure managers will again be reflected in ranking of analysed countries, whereby the overall value of ETI index will be increased.

Table 6 analyses the share of GDP within primary, secondary and tertiary spheres of the national economy for the period 2010 – 2016 for the countries of the Amber RFC.

Table 6: Analysis of GDP share

Country	Item/ Year	2010	2012	2014	2015	2016
Poland	Agriculture, value added (% of GDP)	2,9	3,0	2,9	2,5	2,7
	Industry, value added (% of GDP)	33,2	33,6	33,2	34,1	33,7
	Services, etc., value added (% of GDP)	63,9	63,4	63,9	63,4	63,6
Slovakia	Agriculture, value added (% of GDP)	2,8	3,5	4,4	3,8	3,7
	Industry, value added (% of GDP)	35,2	35,4	34,6	34,5	34,8
	Services, etc., value added (% of GDP)	62,0	61,1	61,0	61,7	61,5
Hungary	Agriculture, value added (% of GDP)	3,5	4,6	4,7	4,4	4,4
	Industry, value added (% of GDP)	29,9	30,0	30,6	31,7	30,5
	Services, etc., value added (% of GDP)	66,6	65,4	64,7	63,9	65,1
Slovenia	Agriculture, value added (% of GDP)	2,0	2,0	2,3	2,3	2,2
	Industry, value added (% of GDP)	30,6	31,7	32,8	32,6	32,3
	Services, etc., value added (% of GDP)	67,4	66,3	64,9	65,1	65,5

Source: The World Bank, Data

On the basis of the data analysed in Table 6, we can confirm the high share of the tertiary sphere of the national economy in the total GDP of the surveyed countries. The data document the high development of countries and the potential for sustainable development, as the tertiary sphere of the national economy is less harmful to the environment.

4.3 Industry

The transport services market is different in the individual countries. Differences are mainly influenced by the geographical location of the country, by the deployment of industrial and logistics centers as well as the main sectors of the economy.

The most important industries in the Republic of Poland:

Extractive industries – rich sources of mineral resources, black coal, brown coal, oil and natural gas, lead, zinc, copper, rock salt.

Metallurgical industry – rolled material and sheets for cars, processing of copper, zinc, lead.

Mechanical engineering and automotive industry – means of transport, cars, especially for export, railway sets and sea vessels.

Chemical industry, pharmaceutical industry and food industry.

Figure 12 illustrates the most important industrial areas in the Republic of Poland.

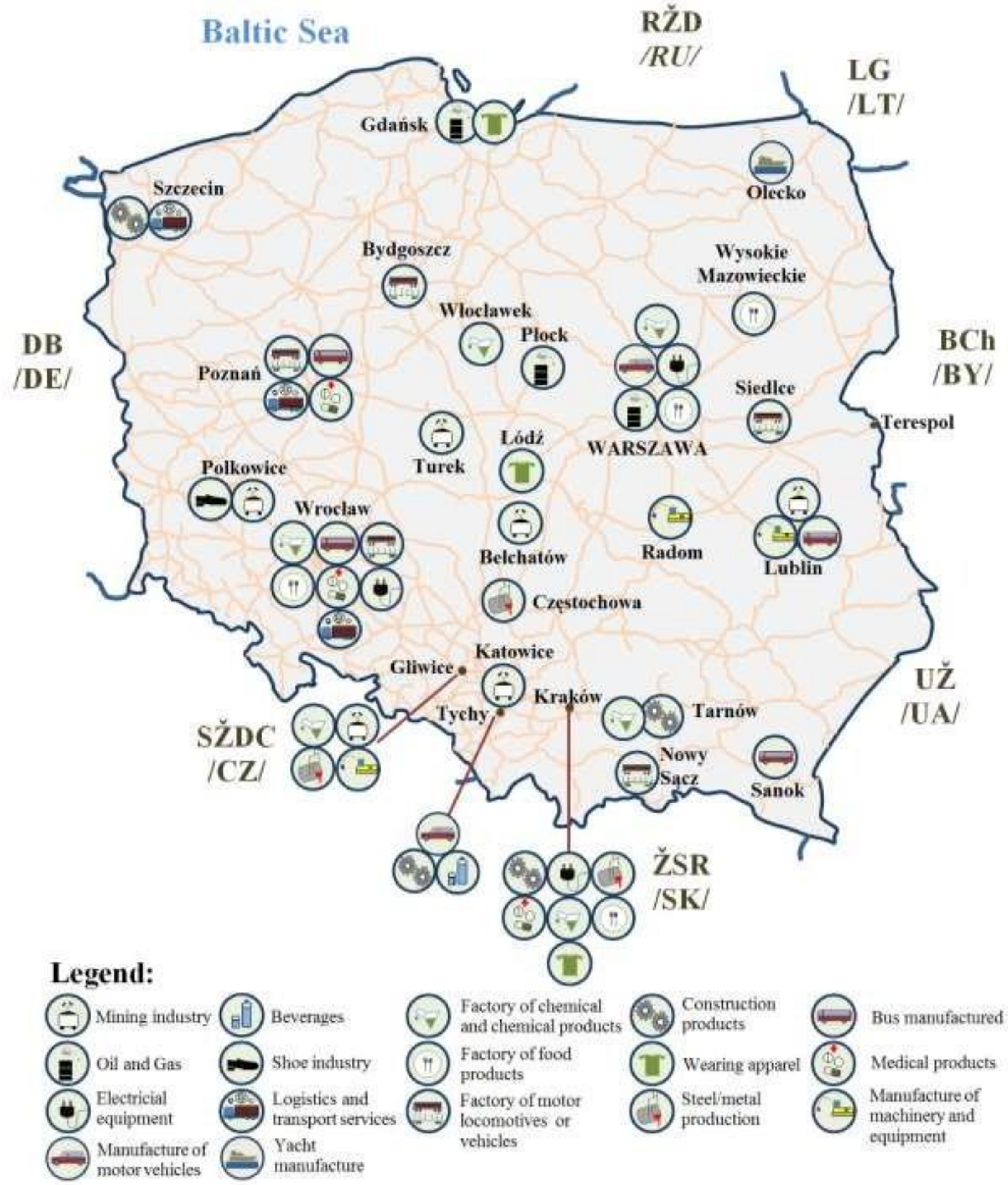


Figure 12: *The most important industrial areas in the Republic of Poland (Source: General information on industry in Poland)*

The most important industries in the Slovak Republic:

Metallurgical industry – rolled material and sheets for automobiles, pipe and tube production.

Mechanical engineering – manufacturing of bearings, automobile components.

Automotive industry – four car factories.

Electrotechnical industry – manufacturing of screens, televisions, home appliances.

Tourism – especially the area of the High and Low Tatras, Bratislava, national parks.

Chemical industry and food industry.

Figure 13 illustrates the most important industrial areas in the Slovak Republic.

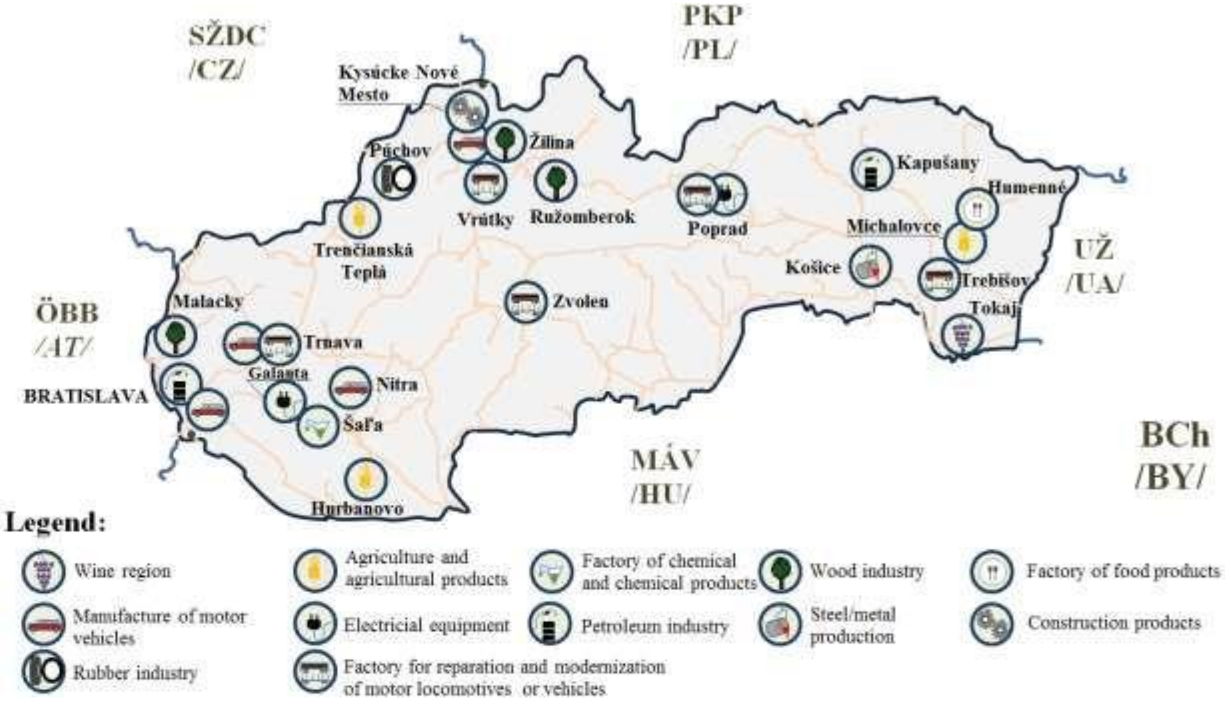


Figure 13: *The most important industrial areas in the Slovak Republic*

(Source: General information on industry in Slovakia)

The most important industries in Hungary:

Mechanical engineering – mainly production of means of transport.

Chemical industry – mainly petroleum processing.

Textile production – especially furriery and work clothes.

Tourism – especially the area around Balaton, Budapest.

Food and agriculture – major exporter of meat, poultry, cereals and wines.

Figure 14 illustrates the most important industrial areas in Hungary.

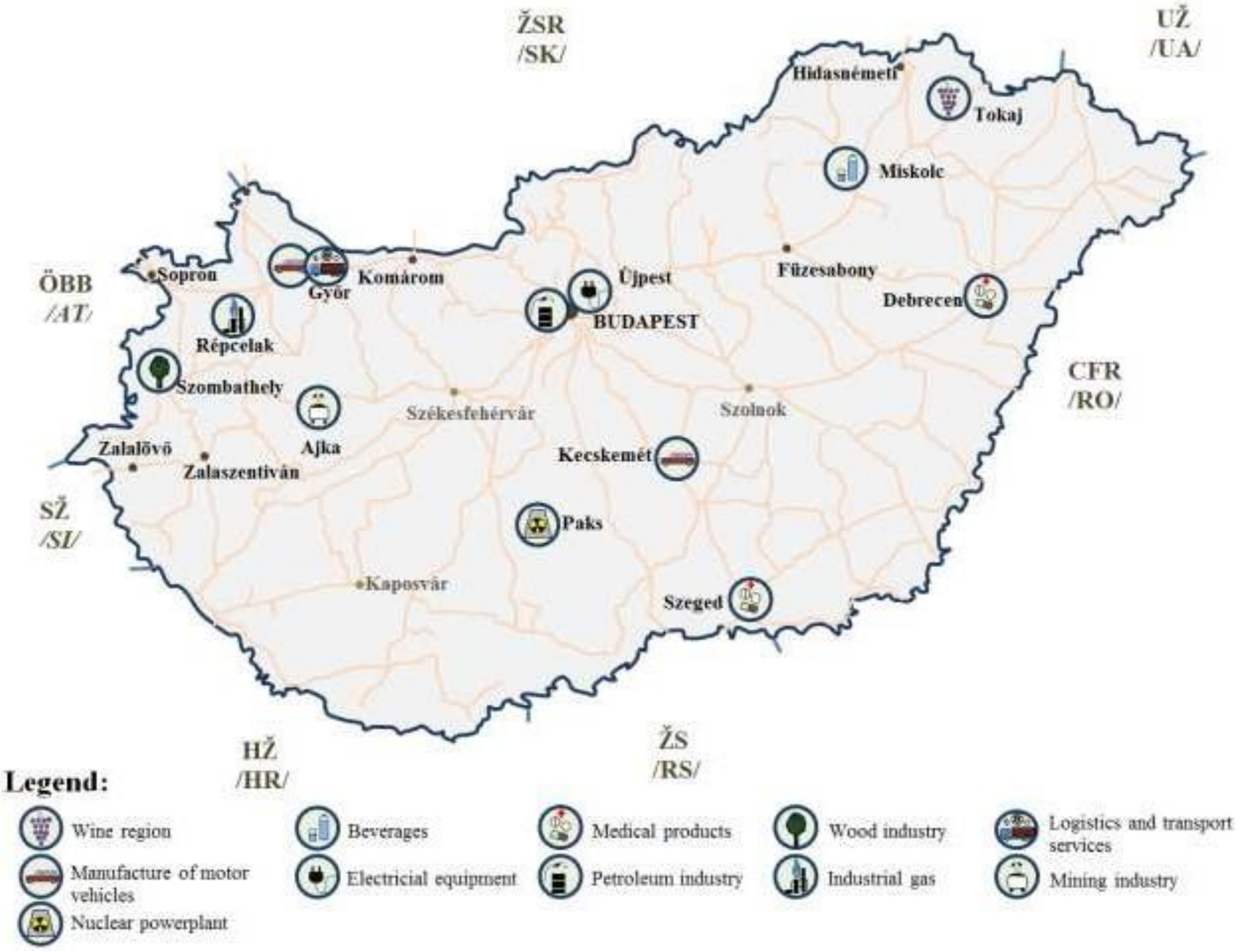


Figure 14: *The most important industrial areas in Hungary*

(Source: General information on industry in Hungary)

The most important industries in the Republic of Slovenia:

Mining industry – ferrous ores and metals, and other mining(lead and zin ores) and quarrying products.

Metallurgical industry – non-ferrous metals.

Mechanical engineering – means of transport, tools, home appliances.

Textile and pharmaceutical industries.

Furniture industry – important export goods of the country.

Tourism – especially in seaside areas.

Figure 15 illustrates the most important industrial areas in the Republic of Slovenia.

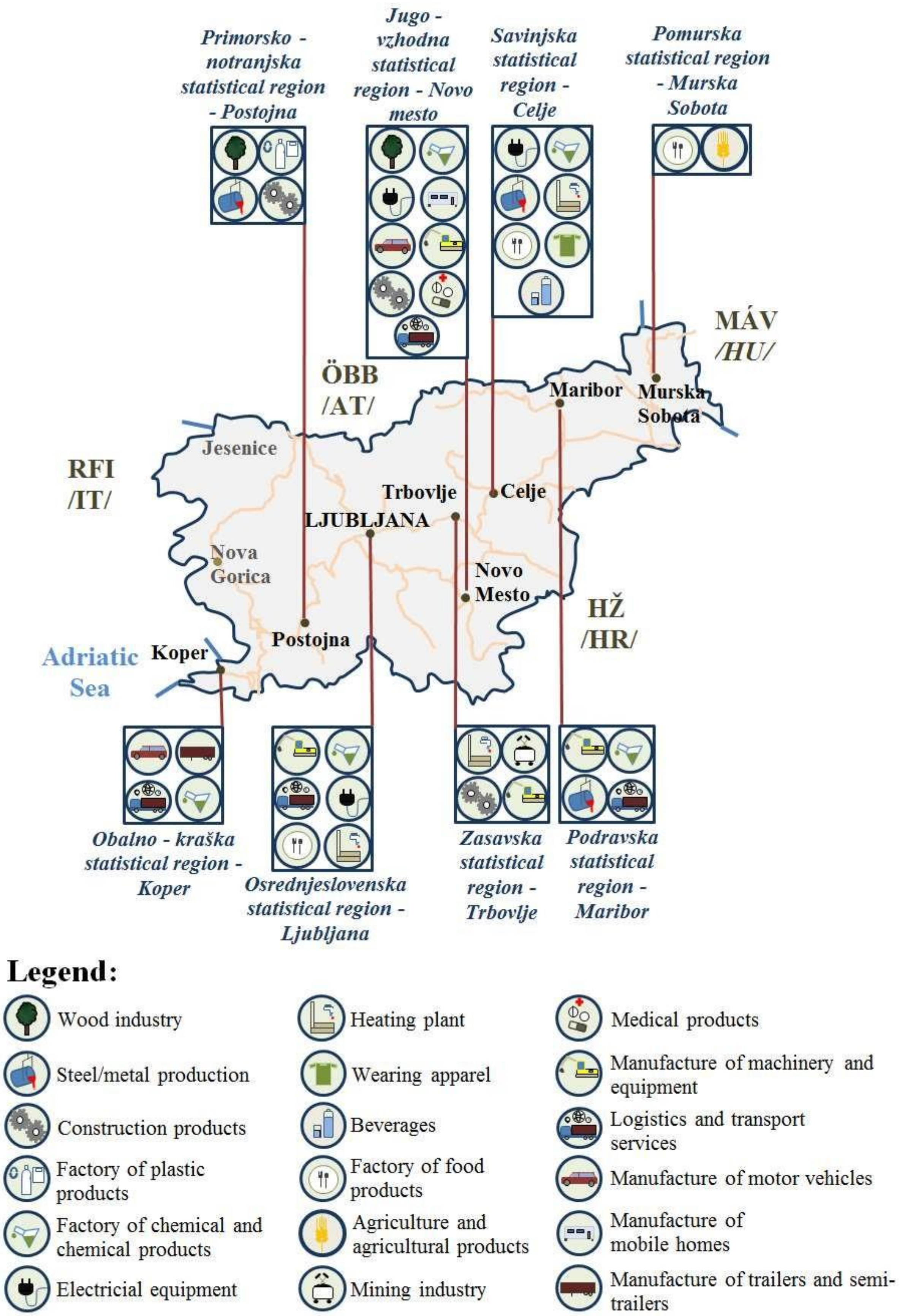


Figure 15: *The most important industrial areas in the Republic of Slovenia*

(Source: SURS – Statistical office of Republic of Slovenia)

4.4 Results and summary of the findings of Chapter 4

On the basis of the collected and evaluated main statistical economic data in the Amber RFC countries, it is possible to conclude:

- positive economic development in the Amber RFC countries: it can be assumed based on the trend of positive GDP development in Table 2. The GDP development in the Amber RFC countries is assumed at the level of 3.1 – 4.0 %, which is more than the estimated average of GDP development in EU (2.8 – 2.9 %). Positive economic development can also be expected on the basis of the advantageous location of the Amber RFC countries within the analysed indices (Tables 4 and 5),
- increase in living standards of the population: it is assumed based on the Amber RFC countries ranking in the Human Development Index. At the same time, the positive trend of GDP development (expected based on the analysis in Table 2), the amount of foreign investments and the increase in a share of science and research in GDP contribute to increase in living standard,
- increase in industrial production: influenced by the attractive position of the Amber RFC countries within the international indices analysed in Tables 4 and 5. Industry structure, history, skilled labour force, geographic position and infrastructure of the Amber corridor countries also have a significant impact on industrial growth. These factors motivate foreign investors to direct their investment activities to the Amber RFC countries,
- increase in demand for services: the positive economic development in the Amber RFC countries (shown in Tables 2 and 3) takes a share in the consumption of services, as the purchasing power and consumer behaviour of the population are increased. This fact is confirmed in Germany and USA where an increase in demand for services due to the economic development – transition from secondary to tertiary national economy – was recorded,
- construction of industrial and logistics centres and intermodal transport terminals: results from the need to transport intermediate products, final products as well as foreign direct investment and greening transport. Increase in quality and extension of logistics services require the completion of new centres. The construction is also influenced by the attractive position of the Amber RFC countries within the Enabling Trade Index. The final products from the Amber RFC countries are worldwide distributed (e.g. production of cars in Hungary, Slovakia and Poland). Also, there is the need to distribute goods from Asia primarily by intermodal transport (e.g. goods distributed to the Amber RFC countries and other EU members from the Port of Koper in Slovenia),

- increase in demand for transport services: influenced by the positive economic development and the position of the Amber RFC countries according to the analysed indices (analysis in Tables 3, 4 and 5 – above-average position of the Amber RFC countries), the change in consumer behaviour, the population movement resulting from a higher purchasing power, higher production of final products, the need to transport intermediate products to the factories (in particular automotive, machine and metallurgical industries),
- requirements of a higher level of transport services, e.g. reliability, safety, shorter transport times, etc.: the economy in the Amber RFC countries forms primarily a secondary economic sphere (production and assembly of final products; electrical engineering, machine, metallurgical and automotive industries; Figures 12-15). This sphere requires reliable, flexible and safe transport services that are directly related to the production and logistics processes. Without the provision of high-quality transport services, the needs of customers (manufacturing companies, consumers, suppliers) cannot be satisfactory met, which could threaten the competitiveness of the business environment of the Amber RFC countries,
- pressure on transport ecology: the economic growth directly affects the consumer needs of the population, thereby the transport performances in goods and passenger road transport are still increased. The increase in these performances increases the production of negative external costs. Reduction of negative external costs (e.g. CO2 production) is planned by the European Commission in the next period through the legislative measures (e.g. a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars and for new light commercial vehicles as part of the Union’s integrated approach to reduce CO2 emissions from light-duty vehicles and amending Regulation (EC) No 715/2007),
- more financial resources for the transport sector: GDP growth (data in Table 2) in the Amber RFC countries will be reflected in the revenues to the state budgets in a positive way. Increase in public revenues positively influences the possibilities of state investments. Due to constantly increasing demand for high-quality transport services and better public revenues, it will be possible to assign more financial means for the transport sector.

The economic analysis carried out for the Amber RFC countries has shown sufficient potential for rail freight services. The economic growth puts increased demands on logistics and transport processes. The population mobility, purchasing power and environmental awareness, which significantly affect the demand for ecological rail transport services, are constantly increasing.

5 ANALYSIS OF TRANSPORT AND TRAFFIC INDICATORS

The first part of the chapter analyses the achieved level in the process of liberalization of the rail transport services market and the European Railway Performance Index. Consequently, an analysis of the transport infrastructure of the countries of the Amber RFC is carried out and graphical representation of other corridors passing through the surveyed countries can be found in Figures 19 - 22. The analysis of transport performances and selected transport indicators, which are the basis for the development of the Amber RFC strategy, are an important part of the chapter. The presented data create a comprehensive realistic view of the state of the railway system in individual countries.

5.1 Liberalization of rail transport services market

The market opening rate of rail transport services in EU countries was expressed by means of the liberalization index issued by IBM Germany in 2011. The index provides qualified data on the legislative and practical possibilities for the entry of new railway undertakings into the rail transport services market. The index also points to barriers and shortcomings to the entry of new railway undertakings into the rail transport services market in individual EU countries. The index was also calculated for Switzerland and Norway. The liberalization index is calculated fairly, therefore it provides a detailed view of the liberalization process in the analysed countries. The liberalization index examines, in particular, the view of new entering railway undertakings by answering questions:

- What are the legal bases for external railway undertakings in the target country?
- What are the opportunities and barriers to entry to the rail market?
- What is the dynamic and strong competition on the rail transport services market?

The liberalization index is based on data from two types of indicators:

1. LEX indicator – shares 20 % in the overall result of the index. It examines the organization of the rail sector, in particular the vertical separation of the infrastructure manager and the railway undertakings. An important criterion is a degree of market access control and power of market institutions. The most important part of LEX consists of the assessment and the resulting strength of the regulatory authorities of the analysed countries. Thematic areas examined in LEX:

- access to the railway market on the basis of Directive No 91/440, as amended by Directive 2001/12,
- national legislation,
- organizational classification of railway undertakings operating in the market under consideration,

- regulatory body.

2. ACCESS indicator – shares 80 % in the overall result of the index. It is focused on the analysis of conditional and complete barriers to access of new railway undertakings to the railway market. ACCESS thematic areas:

- conditions for obtaining the license and the safety certificate,
- access mode,
- access to the railway network,
- information barriers,
- system of charging for rail infrastructure and service facilities,
- access to service facilities.

The ACCESS indicator also evaluates the extent to which liberalization of the rail transport services market shares in the modal split and the development of the number of railway undertakings. In particular, the shift in transport performances in favour of rail transport is being monitored. The indicator separately assesses the segments of freight, suburban and long distance rail passenger transport. All analysed and examined areas of the liberalization index are scored and then counted, taking into account the ratios of individual countries:

- over 800 points advanced state,
- from 600 to 799 opening up the market as planned,
- from 300 to 599 points delayed state.

Figure 16 shows the liberalization index for passenger and freight rail transport in EU countries, Switzerland and Norway, issued by IBM Germany in 2011.

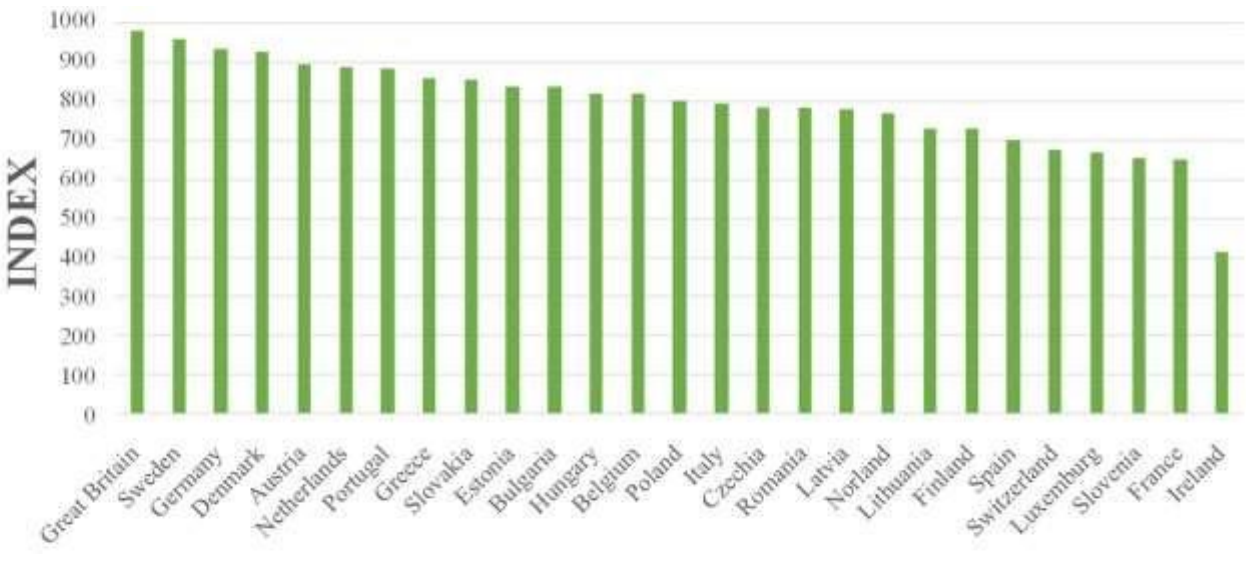


Figure 16: *Liberalization index for passenger and freight rail transport, 2011*

(Source: IBM Germany, 2011)

IBM Germany Liberalization Index, 2011 is currently the most up-to-date and the most objective tool to demonstrate the achieved level of liberalization process of rail transport services market in the evaluated countries. Figure 16 demonstrates the divergence in the level of rail transport market liberalization in EU countries due to the different implementation of EU legislative measures in the national legislation of the member states. The rail markets of the Polish, Slovak and Hungarian Republics have reached an advanced state in the market opening process. In evaluation, the Republic of Slovenia has reached the state – opening the market as planned. On the basis of the facts, we can confirm the appropriate conditions for doing business in the rail transport sector and providing transport services of the railway system in the Amber RFC countries. Based on the knowledge and experience, we can confirm the increasing level of the liberalization process in EU countries as well as in the Amber RFC countries.

5.2 The European Railway Performance Index

Data on the Railway Performance Index were obtained from the website: https://www.bcg.com/publications/2017/transportation-travel-tourism-2017-european-railway-performance-index.aspx. Elaboration and evaluation of the study „The European Railway Performance Index" were carried out by the Boston Consulting Group.

BCG's 2017 European Railway Performance Index (RPI) report provides insights for stakeholders seeking to answer this question. The RPI enables the most comprehensive benchmarking of European railway operations by considering the three critical components of railway performance: intensity of use, quality of service, and safety. The 2017 RPI report follows from the first two editions, published in 2012 and 2015. Over the five-year period covered by the three RPI studies, countries have generally remained within the same performance tiers.

Safety and quality of service (especially punctuality) are the most important factors underlying changes in a system's performance. Countries experiencing a decrease in overall performance typically have seen a decrease in their safety rating, while those with improving performance have usually experienced an increase in their quality of service rating.

The RPI measures the performance of railway systems in three dimensions for both passenger and freight traffic:

- Intensity of Use: To what extent is rail transport used by passengers and freight companies?
- Quality of Service: Are the trains punctual and fast, and is rail travel -affordable?
- Safety: Does the railway system adhere to the highest safety standards?

The analysis was confined to these dimensions to create an indicator that is comprehensive yet easy to understand. Each dimension comprises at least two subdimensions, and all were given equal weight. The data were rescaled to represent a score of 0 to 10 for each subdimension. To create the index, the -ratings for each dimension and subdimension based on their weighting were combined.

The index's simplicity results in three methodological biases:

- Passenger performance is overweighted relative to freight performance because reliable information about the quality of service for freight operators - especially in terms of price and punctuality is unavailable. Consequently, the RPI for a particular country may not necessarily reflect high quality in the country's freight services.
- Large countries are favoured relative to smaller countries because the quality-of-service dimension takes into account the share of high-speed-rail travelers. That is significant because high-speed travel is more common in countries with railway networks that cover long distances.
- Countries in which consumers have low purchasing power are favoured - relative to those in which purchasing power is higher, because average fares were not adjusted on the basis of purchasing power parity (PPP). Never-theless, a PPP adjustment would have only a small impact on countries' - rankings, since it would mainly reinforce differences between tiers.

The following figure shows each country's performance, overall and for each of the three dimensions, as weighted in accordance with the methodology. The exhibit also shows each country's RPI ranking in 2012 and 2015, for comparison.

Figure 17: *RPI ranking in 2017*
(Source: the Boston Consulting Group)

Tier One - the railways in tier one perform well in at least two dimensions, although the results were not uniform.

Tier Two - countries in tier two have high-performing railway systems overall. The similarity among their RPI ratings, however, obscures a wide range of results among the three dimensions. The highest-ranked systems have high safety scores, but low scores for quality and intensity of use.

Tier Three - the railway systems in almost all the tier three countries have poor safety ratings. One exception is Ireland: its safety rating is among the highest in the index. Slovenia, Hungary, and Slovakia are rated very good for intensity of use, while Lithuania, Latvia, and Poland are close behind with ratings of good. Portugal, Romania, and Bulgaria in addition to Ireland have poor ratings for intensity of use.

Changes in safety and quality have the greatest impact. Safety and quality of service (especially punctuality) appear to be the most important factors underlying changes in a system's performance. There were only small variations in intensity of use from year to year, and these have little impact on overall performance. A decrease in safety is typically the factor responsible for an overall decrease in performance. Countries with improving performance usually experience an increase in their quality of service rating.

The growth of the railway system effectiveness was also recorded in the countries which spend higher investments (investment and non-investment subsidies) in the railway system. Overall, as in 2012 and 2015, this year's study shows a correlation between public cost and a given railway system's performance level as measured by the RPI (Figure 18). In addition, it reveals differences in the value that countries receive in return for their public cost. Denmark, Finland, France, Germany, the Netherlands, Sweden, and Switzerland capture relatively high value for their money. These countries outperform relative to the average ratio of performance to cost for all countries. In contrast, Luxembourg, Belgium, Latvia, Slovakia, Portugal, Romania, and Bulgaria get relatively low value for their money.

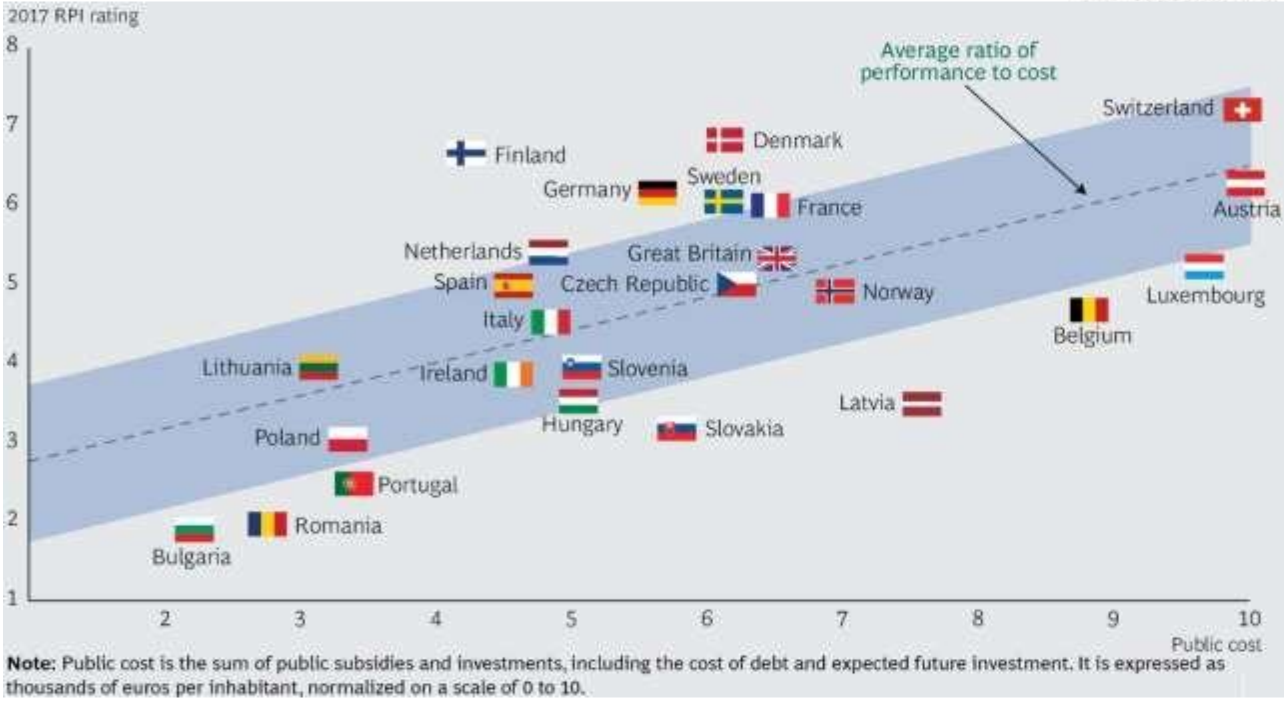


Figure 18: *Correlation between public cost and a given railway system's performance level (Source: the Boston Consulting Group)*

The analysis not only confirmed the correlation between public cost and performance, but also found that it applies over time. Countries that recently increased their public cost have been rewarded with the highest performance improvements (this is especially true for Finland). During the same period, stagnating levels of public cost in France and Great Britain, and decreasing levels in Italy and Sweden, have coincided with the incipient trend of declining performance.

Based on the results of RPI, it is necessary to ensure:

- at least to keep the level of financial resources allocated to the railway system in the countries with increasing performance,
- adapt the legislation and the transport policy of countries with a lower RPI in favour of the railway system (e.g. reduction of charges, support of intermodal transport, internalization of part of negative external costs of transport),
- increase investment and non-investment subsidies in the railway system in the countries with decrease in performance level (e.g. modernization of lines, electrification, eliminating bottlenecks),
- take measures to increase the safety and reliability of rail transport (e.g. modernization of signalling equipment, support of new IT technologies, increase of penalties for railway safety intruders, take interoperability measures),
- ensure a more efficient maintenance and management of rail transport in the countries with decrease in performance level (use innovations in the field of railway infrastructure

diagnostics, efficient management of internal processes, use of new equipment for railway infrastructure management).

5.3 Analysis of transport infrastructure of the Amber RFC countries

The sustainable economic development of the country depends, inter alia, on the quality, density and development of transport infrastructure as a tool necessary for the movement of goods and people. Each country manages and invests in the development and construction of its transport infrastructure. A high-quality and accessible transport infrastructure contributes to the overall development of the national economy. Tables 7-9 show an analysis of the development of rail and road infrastructure of the Amber RFC countries.

Table 7: Length of operated railway lines in km

Country	1995	2000	2005	2010	2012	2013	2014	2015
Poland	23 986	22 560	19 507	19 702	19 617	18 959	18 942	18 510
Slovakia	3 665	3 662	3 658	3 622	3 631	3 631	3 627	3 626
Hungary	7 714	8 005	7 950	7 893	7 877	7 898	7 892	7 894
Slovenia	1 201	1 201	1 228	1 228	1 209	1209	1 209	1 209

Source: Annual reports of the relevant ministries

Table 8: Total length of motorways in km

Country	1995	2000	2005	2010	2012	2013	2014	2015
Poland	246	358	552	857	1 365	1 482	1 556	1 559
Slovakia	198	296	328	416	419	420	420	463
Hungary	335	448	859	1 477	1 515	1 767	1 782	1 884
Slovenia	293	427	569	771	769	770	770	773

Source: Annual reports of the relevant ministries

Table 9: Length of other roads in km

Country	1995	2000	2005	2010	2012	2013	2014	2015
Poland	372 233	372 725	381 463	406 122	412 035	413 530	415 470	419 636
Slovakia	17 670	17 442	43 417	42 910	42 948	42 943	42 938	42 951
Hungary	29 738	29 533	N/A	198 090	200 426	203 309	204 057	202 998
Slovenia	N/A	37 976	37 916	38 303	38 216	38 104	38 114	38 124

Source: Annual reports of the relevant ministries

Based on the statistical data in Tables 7-9, we can confirm the decline in the length of railway infrastructure in the monitored period in Poland and Slovakia. On the contrary, the increase in the length of the transport infrastructure is recorded on motorways. The most significant increase is recorded in the Republic of Poland. The trend of motorway construction is mainly influenced by performances in individual motoring and road goods transport.

Tables 10 and 11 provide an analysis of the development of expenditures on railway and road infrastructure maintenance in the Amber RFC countries.

Table 10: Expenditures on railway infrastructure maintenance (mill. EUR – current prices)

Country	1995	2000	2005	2010	2012	2013	2014	2015
Poland	584,8	59,4	82,3	212,8	307,3	387,1	614,2	578,6
Slovakia	60,0	70,9	90,6	120,4	80,6	60,9	70,5	110,5
Hungary	137,8	78,6	233,9	439,5	434,9	418,3	490,1	473,1
Slovenia	N/A	7,0	7,0	68,0	87,0	71,0	101,0	110,0

Source: Annual reports of the relevant ministries

Table 11: Expenditures on road infrastructure maintenance (mill. EUR – current prices)

Country	1995	2000	2005	2010	2012	2013	2014	2015
Poland	286,4	448,6	1 263,5	2 636,5	428,0	438,1	383,1	415,4
Slovakia	24,6	66,6	100,3	174,7	192,6	203,6	181,2	201,0
Hungary	96,8	106,8	283,4	328,5	295,9	370,3	272,8	282,1
Slovenia	53,0	79,0	99,0	137,0	120,0	123,0	113,0	126,0

Source: Annual reports of the relevant ministries

The demonstrated overall long-term trend in the growth of expenditures on the analysed transport infrastructure maintenance in the monitored period is mainly influenced by an increase in transport performances, aging of transport infrastructure and, in some cases, by neglected diagnostics which has a preventive role in transport infrastructure maintenance. Maintenance costs of transport infrastructure will continue to increase as a trend of increase in transport performances of rail and road transport is expected. The increasing trend of transport performances is influenced by the long-term economic development of the Amber RFC countries as shown in Chapter 4. The expenditures on maintenance will also be affected by the technical and technological parameters of the new and upgraded transport infrastructure that meets the conditions of a quality and safe transport infrastructure.

Figures 19-22 graphically represent the passing railway corridors for the Amber RFC countries.

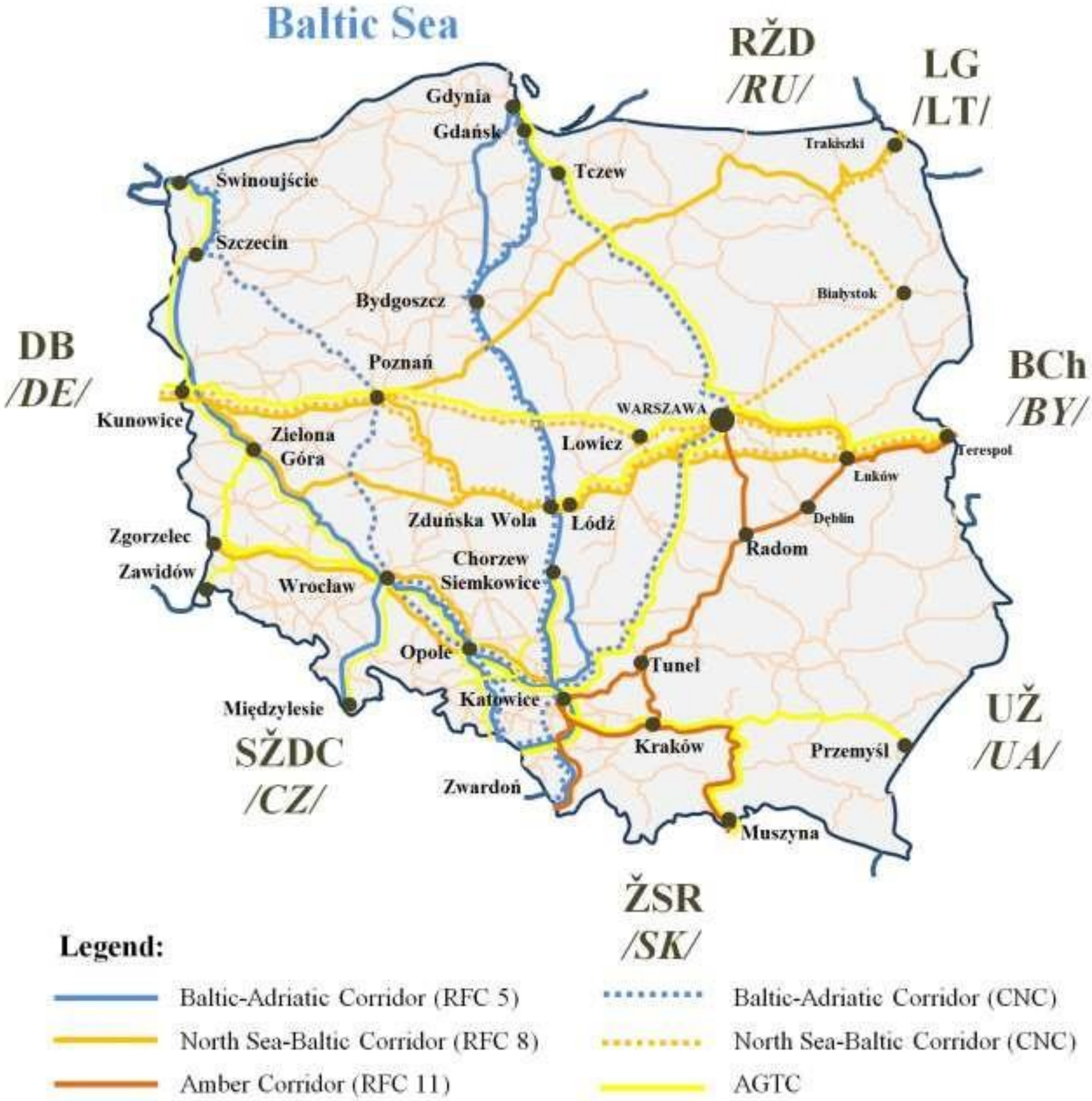


Figure 19: *Railway corridors of the Republic of Poland*

(Source: ŽSR, VVÚŽ)

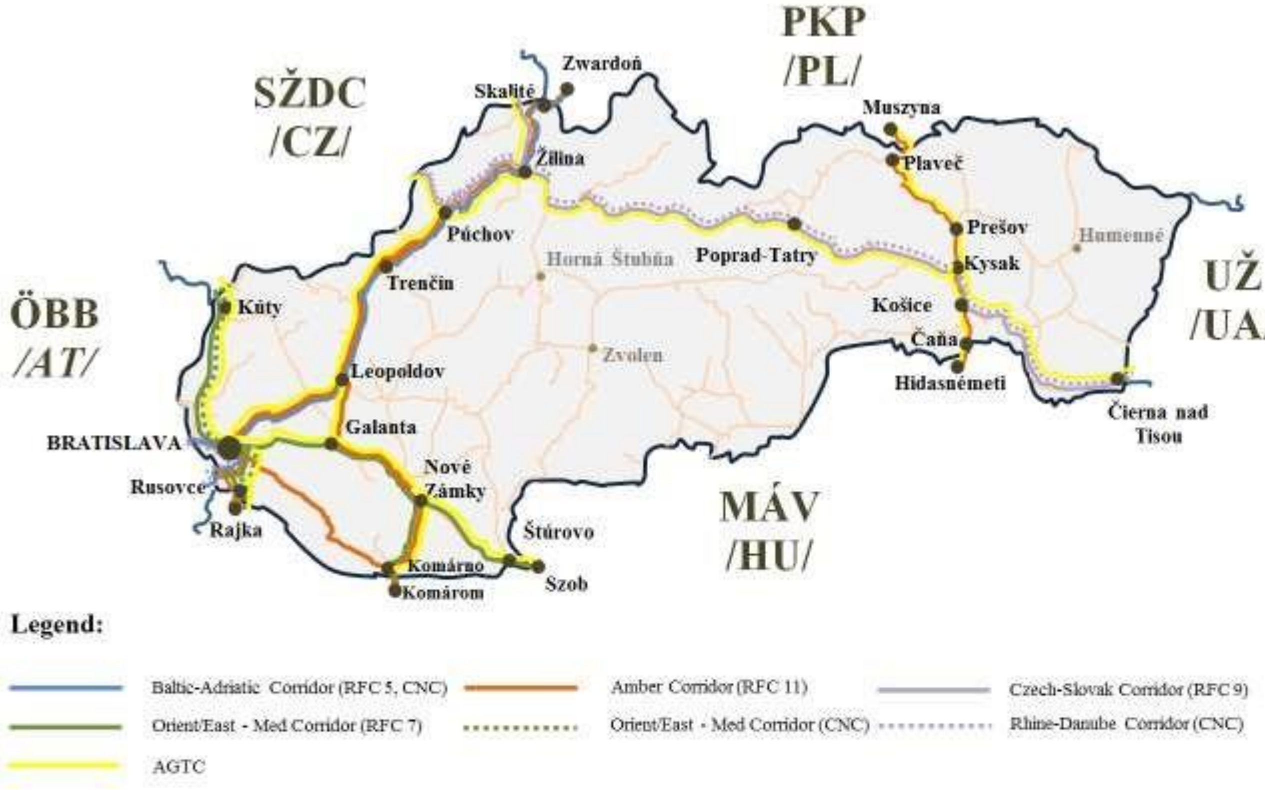


Figure 20: *Railway corridors of the Slovak Republic*

(Source: ŽSR, VVÚŽ)

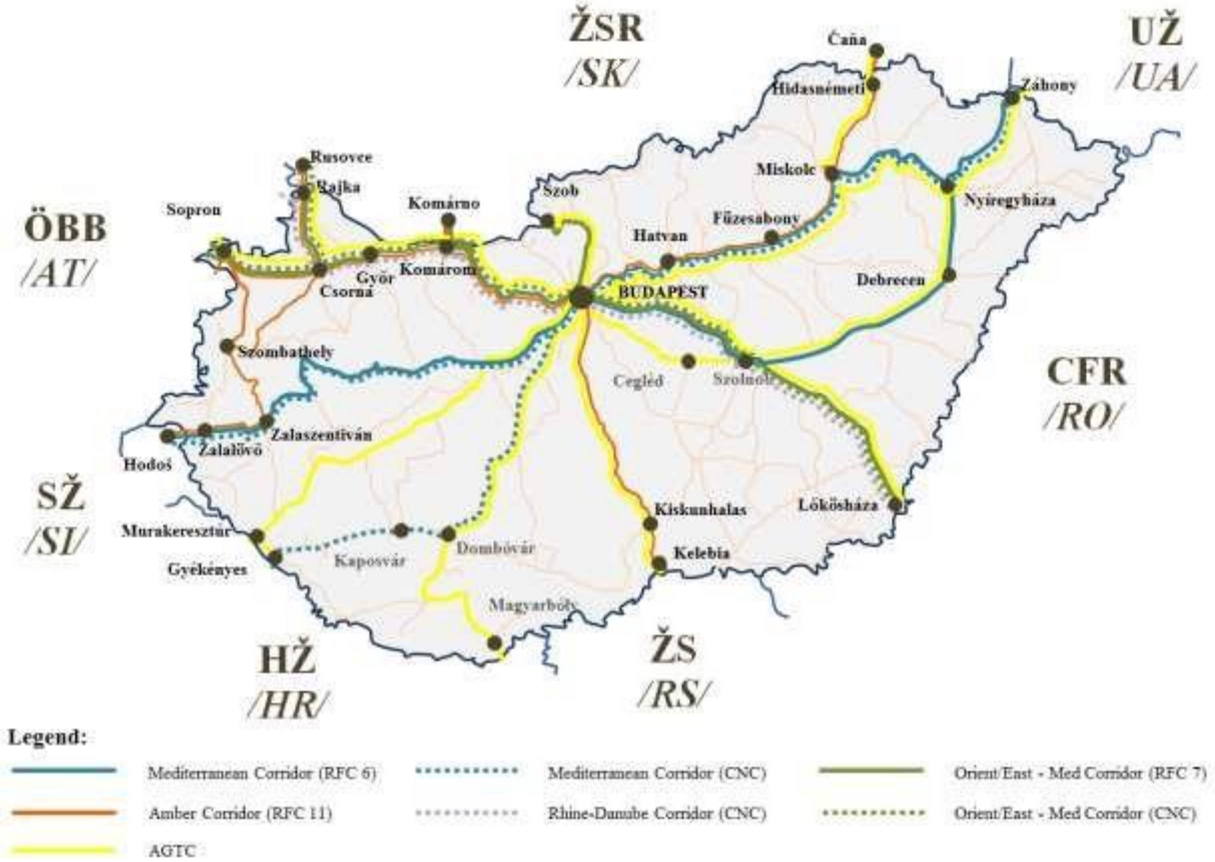


Figure 21: *Railway corridors of Hungary*

(Source: ŽSR, VVÚŽ)

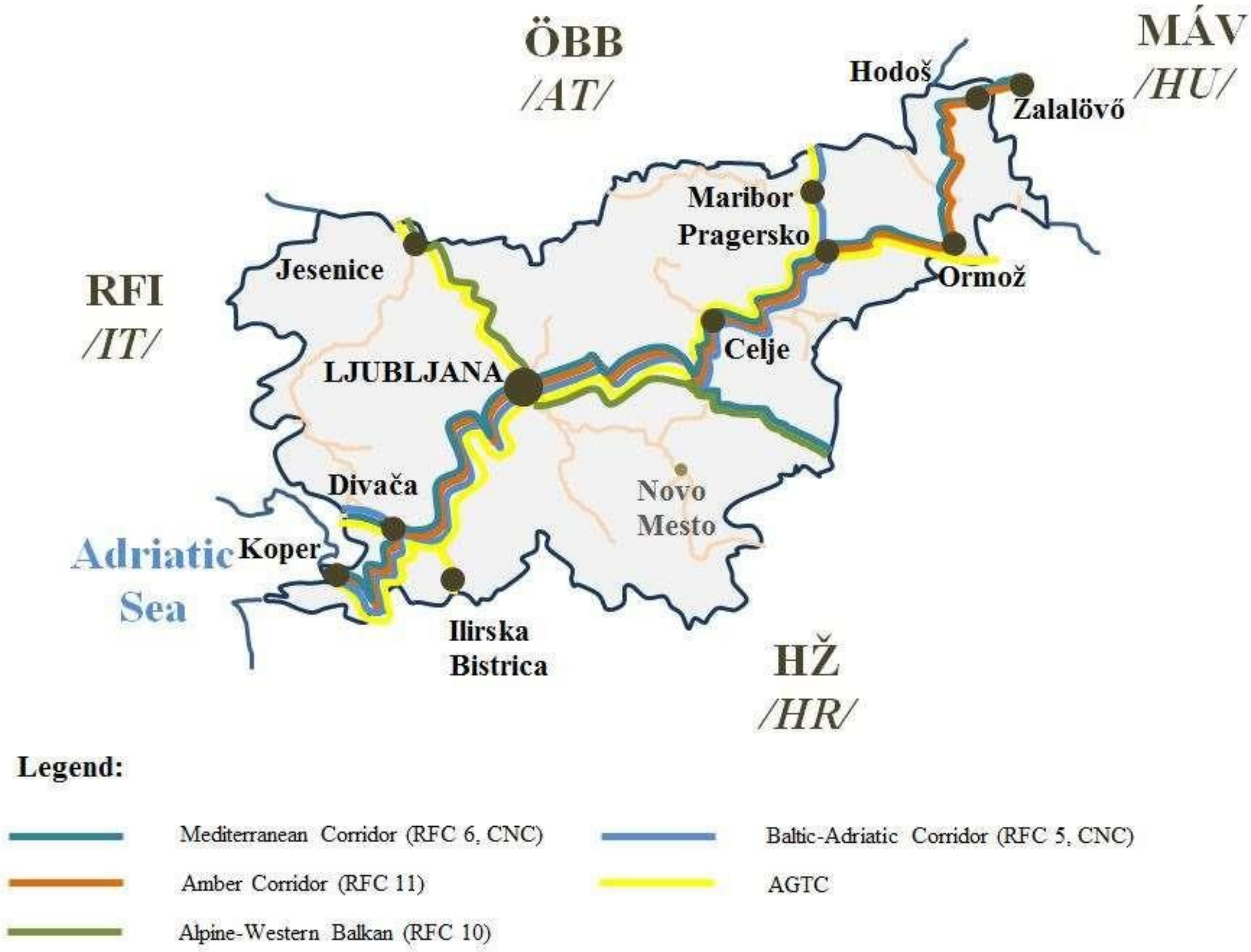


Figure 22: *Railway corridors of the Republic of Slovenia*

(Source: ŽSR, VVÚŽ)

Table 12 provides an analysis of the most important airports, container terminals, sea and inland waterways ports located in the Amber RFC countries.

Table 12: Analysis of air and water transport infrastructure

Country	Airport	Sea port	Container terminal - Port	Inland waterways port
Poland	Warsaw Kraków Gdańsk Katowice Wrocław Poznań Rzeszów Szczecin Bydgoszcz Łódź Lublin Zielona Góra Radom Olsztyn	Szczecin Świnoujście Kolobrzeg Darlowo Wladyslawowo Elblag	Gdańsk Gdynia	Kraków Warsaw Włocławek Bydgoszcz Gliwice Opole Wrocław Głogów Nowa Sól Szczecin Poznań Konin
Slovakia	Bratislava Košice Žilina Sliač Poprad Piešťany	-	-	Bratislava Komárno Štúrovo
Hungary	Budapest Debrecen Győr Pécs-Pogány Fertőszentmiklós Nyíregyháza Siófok Szeged Sármellék	-	-	Győr Komárom Budapest Százhalombatta Dunaújváros Paks Fadd-Dombori Baja Mohács
Slovenia	Ljubljana Maribor Portorož	Piran Izola	Koper	-

Source: maps of TEN-T

5.4 Rail transport analysis

The subchapter is aimed at the analysis of the most important rail data that are necessary to determine the Amber RFC routing and draft of its strategic direction. The data also serve as a basis for drafting the measures to promote rail freight transport. The subchapter also contains a modal split analysis.

5.4.1 Poland

All data contained in the subchapter was provided by PLK. An important indicator from the point of view of infrastructure managers is the development of transport performances in rail passenger and freight transport. The transport performances demonstrate the utilization of railway infrastructure over time. On the basis of the above mentioned, Table 13 analyses the development of total transport performances in the Republic of Poland in the period 2013 – 2016. At the same time, Table 14 contains an analysis of the development of number of railway undertakings providing railway infrastructure services in the Republic of Poland.

Table 13: Analysis of transport performances on PLK lines

Mode of transport	Carrier	Transport performance/Year	2013	2014	2015	2016
Passenger transport	National carrier*	train-km in thous.	43 140	39 481	46 940	58 292
		gross tkm in mill.	21 445	16 161	18 459	21 576
	Private carrier	train-km in thous.	92 925	92 106	93 388	96 843
		gross tkm in mill.	16 740	15 497	15 359	16 335
	Total	**train-km in thous.**	**136 065**	**131 587**	**140 328**	**155 135**
		gross tkm in mill.	**38 185**	**31 658**	**33 818**	**37 911**
Freight transport	National carrier*	train-km in thous.	45 814	44 491	42 653	39 461
		gross tkm in mill.	64 445	63 573	62 730	56 748
	Private carrier	train-km in thous.	25 711	26 883	28 589	30 862
		gross tkm in mill.	34 427	35 565	38 302	42 620
	Total	**train-km in thous.**	**71 525**	**71 374**	**71 242**	**70 323**
		gross tkm in mill.	**98 872**	**99 138**	**101 032**	**99 368**

**As 'national' we assumed the incumbent railway undertaking from PKP Group*

Table 14: Structure of rail carriers with valid access agreement

Number of carriers with valid access agreement/Year		2013	2014	2015	2016
Passenger carrier	national	1	1	1	1
	private	13	14	14	15
Freight carrier	national	1	1	1	1
	private	61	67	68	69
Total	national	2	2	2	2
	private	74	81	82	84

The analysis of transport performances in the Republic of Poland has shown their gradual increase in rail passenger transport (Total: train-km) and freight transport (Total: gross tkm, 2013 compared to 2016). The increase in passenger transport performances is more important than in rail freight. In rail freight transport there is a significant decrease in performances of the national carrier (train-km, gross tkm). At the same time, there is a gradual increase in the number of private carriers which has been positively shown in increase in the transport performances. The noticed increase in transport performances is mainly influenced by international transit rail transport.

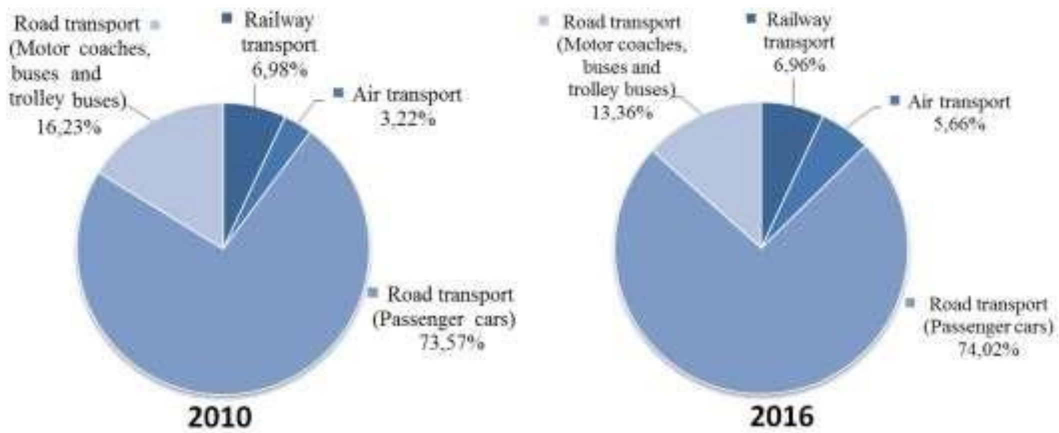
The analysis of rail transport in the Republic of Poland requires, for the needs of its benefits for the Amber RFC, the processing of additional data. By reason of presenting and maintaining the transparency and integrity of rail transport data in the Republic of Poland, the analysis of other data is carried out in Appendix A in the .xls format. The individual sheets in the Appendix contain the following data:

- technical parameters of the potential lines for the Amber RFC,
- analysis of transport base in the whole country,
- analysis of planned investments in transport infrastructure,
- analysis of charges,
- analysis of transport performances in rail passenger and freight transport on the potential lines of the Amber RFC,
- analysis of average running times on the potential lines of the Amber RFC.

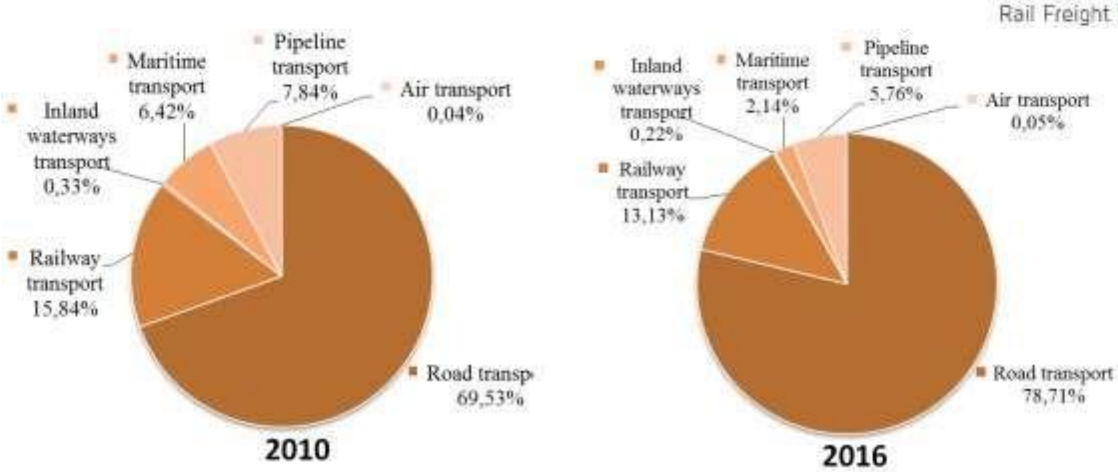
Appendix B contains the supplementary data concerning analysis of investment subsidies in the Republic of Poland.

Based on these analyses, it will be possible to decide on the inclusion of the individual lines in the Amber RFC. The results of analyses will be used to formulate the conclusions resulting from the Chapter 5. Consequently, the draft of strategy will be based on the summary results.

The graphs 1 and 2 show a graphical comparison of the modal split in the Republic of Poland in passenger transport in 2010 compared to 2016 and in freight transport in 2010 compared to 2016. The comparison is made in the band of 6 years giving a sufficient time span of the market response to the changes of modal split following the adoption of measures to support rail transport within the EU.



Graph 1: Comparison of modal split in passenger transport in Poland
(Source: Statistics Poland /www.stat.gov.pl/, Transport – activity results in 2016)



Graph 2: Comparison of modal split in freight transport in Poland
(Source: Statistics Poland /www.stat.gov.pl/, Transport – activity results in 2016)

Based on the comparison of modal split in the Republic of Poland, we can confirm the decrease in share of the transport performances in rail transport system in favour of road goods transport and individual motoring due to large investments in road infrastructure.

5.4.2 Slovakia

All data contained in the subchapter were provided by ŽSR. An important indicator from the point of view of infrastructure managers is the development of transport performances in rail passenger and freight transport. The transport performances demonstrate the utilization of railway infrastructure over time. Based on the above mentioned, the analysis of total transport performances in the Slovak Republic in the period 2013-2016 is carried out in Table 15. At the same time, Table 16 contains an analysis of the development of number of railway undertakings providing railway infrastructure services in the Slovak Republic.

Table 15: Analysis of transport performances on ŽSR lines

Mode of transport	Carrier	Transport performance/Year	2013	2014	2015	2016
Passenger transport	National carrier	train-km in thous.	30 356	30 724	31 801	31 438
		gross tkm in mill.	8 371	8 556	9 373	9 264
	Private carrier	train-km in thous.	1 215	1 351	2 789	3 170
		gross tkm in mill.	136	190	803	1 089
	Total	**train-km in thous.**	**31 570**	**32 075**	**34 590**	**34 608**
		gross tkm in mill.	**8 508**	**8 746**	**10 176**	**10 352**
Freight transport	National carrier	train-km in thous.	11 557	11 240	11 436	11 367
		gross tkm in mill.	15 256	15 186	15 210	15 149
	Private carrier	train-km in thous.	2 518	2 979	3 237	3 739
		gross tkm in mill.	2 376	2 795	3 243	3 766
	Total	**train-km in thous.**	**14 075**	**14 219**	**14 673**	**15 106**
		gross tkm in mill.	**17 632**	**17 981**	**18 453**	**18 915**

Table 16: Structure of rail carriers with valid access agreement

Number of carriers with valid access agreement/Year		2013	2014	2015	2016
Passenger carrier	national	1	1	1	1
	private	1	4	5	5
Freight carrier	national	1	1	1	1
	private	42	43	43	41
Passenger and freight carrier	national	1	1	1	1
	private	0	0	2	3

The analysis of transport performances in the Slovak Republic showed a successive increase in rail passenger transport (Total: train-km, gross tkm) and freight transport (Total: train-km, gross tkm). In rail freight transport, there is a slight decrease in performances of the national carrier (train- km, gross tkm: 2013 compared to 2016). The recorded increase in transport performances in rail freight transport is influenced by, in particular, international transit rail transport and the situation in the metallurgical industry and mechanical engineering in SR. Within the development of the number of carriers, there was recorded a slight decrease in 2016 compared to 2015 and 2014.

The analysis of rail transport in the Slovak Republic requires, for the needs of its benefits for the Amber RFC, the processing of additional data. By reason of presenting and maintaining the transparency and integrity of rail transport data in the Slovak Republic, the analysis of other data is carried out in Appendix A in the .xls format. The individual sheets in the Appendix contain the following data:

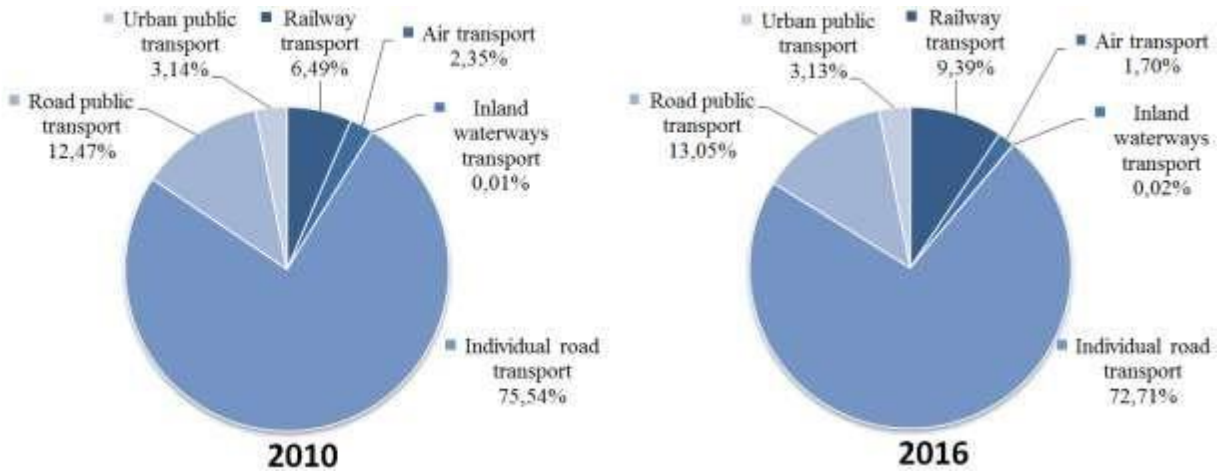
- technical parameters of the potential lines for the Amber RFC,
- analysis of transport performances in rail passenger and freight transport on the potential lines of the Amber RFC,
- analysis of average running times on the potential lines of the Amber RFC.

Supplementary data of rail transport analysis in the Slovak Republic are listed in Appendix C which contains the following data:

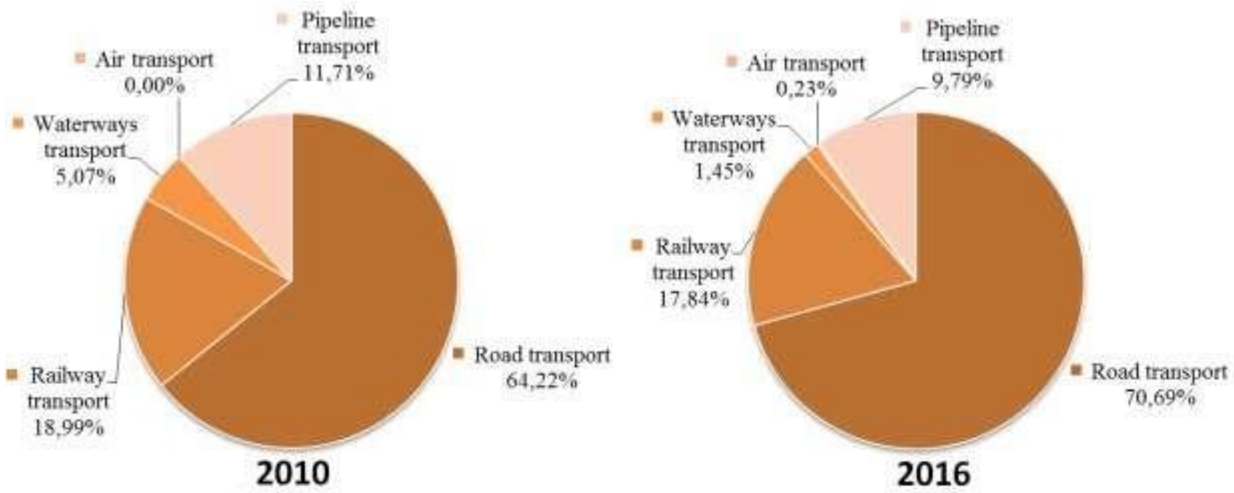
- analysis of line capacity utilization,
- analysis of average revenues,
- investments in railway infrastructure,
- average charges for railway infrastructure – rail freight transport.

Based on these analyses, it will be possible to decide on the inclusion of individual lines in the Amber RFC. The results of the analyses will be used to formulate the conclusions resulting from the Chapter 5. Consequently, the draft of strategy will be based on the summary results.

The graphs 3 and 4 show a graphical comparison of the modal split in the Slovak Republic in passenger transport in 2010 compared to 2016 and in freight transport in 2010 compared to 2016. The comparison is made in the band of 6 years giving a sufficient time span of the market response to the changes of modal split following the adoption of measures to support rail transport within the EU.



Graph 3: Comparison of modal split in passenger transport in Slovakia
(Source: Statistical office of the SR /www.statistics.sk/,EC - Statistical pocketbook 2017)



Graph 4: Comparison of modal split in freight transport in Slovakia
(Source: Statistical office of the SR /www.statistics.sk/)

Based on the modal split comparison in the Slovak Republic, we can confirm the decrease in the share of transport performances in rail freight transport in favour of road goods transport. In passenger transport system, an increase in the share of transport performances in favour of rail passenger transport was recorded, particularly to the disadvantage of individual motoring.

5.4.3 Hungary

All data contained in the subchapter were provided by GYSEV Zrt, MÁV Zrt. and VPE. Tables 17 and 18 analyse the development of total transport performances in Hungary in the period 2013 – 2016. At the same time, Table 19 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in Hungary.

Table 17: Analysis of transport performances on GYSEV lines

Mode of transport	Carrier	Transport performance/Year	2013	2014	2015	2016
Passenger transport	National carrier	train-km in thous.	5 017,7	4 935,0	4 974,6	5 163,4
		gross tkm in mill.	979,3	928,1	889,1	886,6
	Private carrier	train-km in thous.	0,9	0,9	0,8	0,3
		gross tkm in mill.	0,4	0,2	0,5	0,2
	Total	**train-km in thous.**	5 018,6	4 935,9	4 975,4	5 163,8
		gross tkm in mill.	979,7	928,4	889,6	886,8
Freight transport	National carrier	train-km in thous.	0,0	0,0	0,0	0,0
		gross tkm in mill.	0,0	0,0	0,0	0,0
	Private carrier	train-km in thous.	1 028,7	981,7	919,2	913,9
		gross tkm in mill.	1 066,9	999,1	916,4	904,1
	Total	**train-km in thous.**	1 028,7	981,7	919,2	913,9
		gross tkm in mill.	1 066,9	999,1	916,4	904,1

On GYSEV infrastructure a gradual increase in rail freight transport performances (train-km, gross tkm) can be realised especially on the lines of the North-South axis of GYSEV's infrastructure of the RFC since the full electrification of lines Csorna – Szombathely – Zalaszentiván took place and freight trains of Metrans from Dunajska Streda Terminal come via GYSEV infrastructure. Increasing tendency can be shown on the field of rail passenger transport (Total: gross tkm).

Table 18: Analysis of transport performances on MÁV Zrt. lines

Mode of transport	Carrier	Transport performance/Year	2013	2014	2015	2016
Passenger transport	National carrier	train-km in thous.	73 846	76 478	76 775	77 020
		gross tkm in mill.	18 056	17 847	17 262	17 124
	Private carrier	train-km in thous.	9	22	17	15
		gross tkm in mill.	4	9	7	7
	Total	**train-km in thous.**	73 855	76 500	76 792	77 035
		gross tkm in mill.	18 060	17 856	17 269	17 131
Freight transport	National carrier	train-km in thous.	0	0	0	0
		gross tkm in mill.	0	0	0	0
	Private carrier	train-km in thous.	17 414	17 024	17 142	16 842
		gross tkm in mill.	19 723	20 817	20 904	20 785
	Total	**train-km in thous.**	17 414	17 024	17 142	16 842
		gross tkm in mill.	19 723	20 817	20 904	20 785

The analysis of transport performances carried out on MÁV Zrt. infrastructure showed an overall trend of the increase in transport performances in rail passenger transport (Total: train-km). An overall increase in transport performances is recorded in rail freight transport (Total: gross tkm, 2013 compared to 2016).

Table 19: Structure of rail carriers with valid access agreement

Number of carriers with valid access agreement/Year		2013	2014	2015	2016	2017
Passenger carrier	national	2	2	2	2	2
	private	1	1	2	2	2
Freight carrier	national	0	0	0	0	0
	private	34	34	39	41	43
Passenger and freight carrier	national	2	2	2	2	2
	private	35	35	41	43	45

The analysis of the development of the number of active providers of transport services in Hungary showed a gradual increase. An increase in the number of transport service providers is a sign of sufficient transport opportunities in rail transport in Hungary, particularly in transit traffic. Such an increase will positively affect the quality of railway services and the subsequent increase in transport performances.

The analysis of rail transport in Hungary requires, for the needs of its benefits for the Amber RFC, the processing of additional data. Due to presenting and maintaining the transparency and integrity of rail transport data in Hungary, the analysis of other data is carried out in Appendix A in the .xls format. The individual sheets in Appendix for the Hungarian railway infrastructure contain the following data:

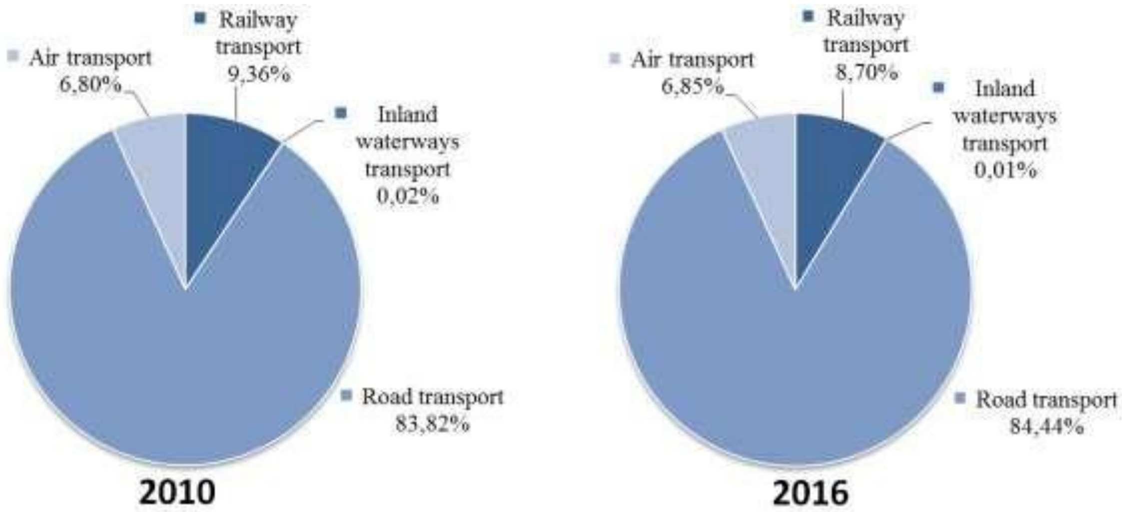
- technical parameters of the potential lines for the Amber RFC,
- analysis of transport performances in rail passenger and freight transport on the potential lines of the Amber RFC,
- analysis of planned investments in transport infrastructure,
- analysis of charges,
- analysis of average running times between border stations.

Supplementary data of rail transport analysis in Hungary are listed in Appendix D which contains the following data:

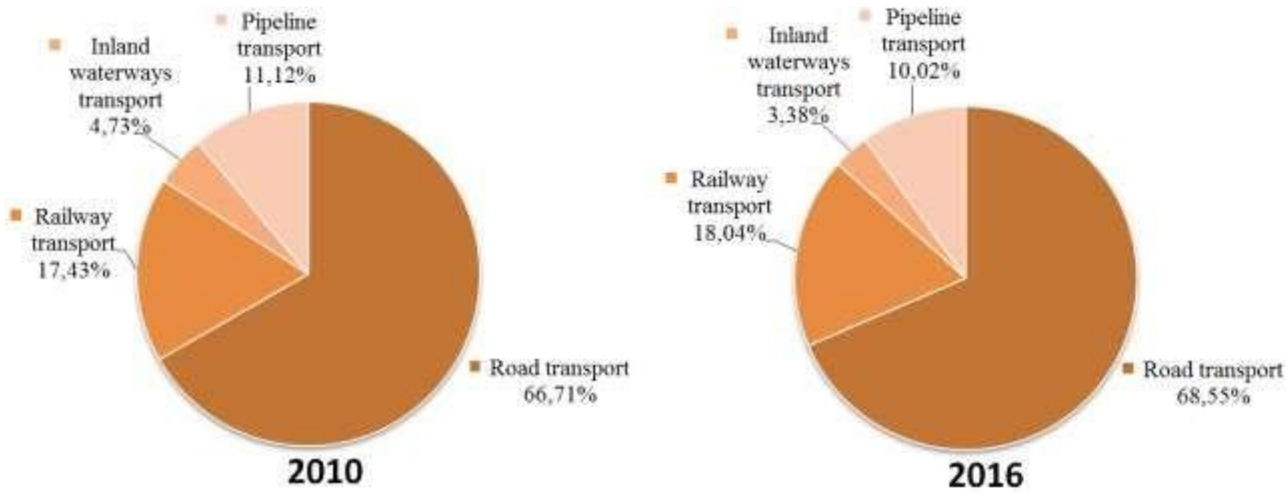
- analysis of investment subsidies focused on railway infrastructure,
- analysis of non-investment subsidies,
- analysis of selected economic indicators of transport infrastructure – GYSEV,
- analysis of selected economic indicators of transport infrastructure – MÁV Zrt.

Based on these analyses, it will be possible to decide on the inclusion of the individual lines in the Amber RFC. The results of analyses will be used to formulate the conclusions resulting from Chapter 5. Consequently, the strategy draft will be based on the summary results.

Graphs 5 and 6 show a graphical comparison of modal split in Hungary in 2016 compared to 2010 in passenger transport and in 2016 compared to 2010 in freight transport. The comparison is made in the band of 6 years giving a sufficient time span of the market response to the changes of modal split following the adoption of measures to support rail transport within the EU.



Graph 5: Comparison of modal split in passenger transport in Hungary (Source: Hungarian Central Statistical Office /www.ksh.hu/)



Graph 6: Comparison of modal split in freight transport in Hungary (Source: Hungarian Central Statistical Office /www.ksh.hu/, Eurostat, EC – Statistical pocketbook 2017)

Based on the modal split comparison in Hungary, we can confirm a decrease in share of transport performances in rail passenger transport in favour of road transport. In the freight transport system, an increase in share of transport performances in favour of rail freight transport was recorded, especially on the RFC Amber's infrastructure, mainly thanks to the continuous modernisation measures of the infrastructure managers concerned. An increase was also recorded in road goods transport.

5.4.4 Slovenia

All data contained in the subchapter were provided by SŽ-I. Table 20 gives an analysis of the development of total transport performances in the Republic of Slovenia in the period 2013 – 2017. At the same time, Table 21 contains an analysis of the development of the number of railway undertakings providing railway infrastructure services in the Republic of Slovenia.

Table 20: Analysis of transport performances on SŽ-I lines

Mode of transport	Carrier	Transport performance/Year	2013	2014	2015	2016	2017
Passenger transport	National carrier	train-km in thous.	10 586	10 130	10 402	9 562	10 290
		gross tkm in mill.	1 491	1 389	1 288	1 364	1 424
	Private carrier	train-km in thous.	0,0	0,0	0,0	0,0	0,0
		gross tkm in mill.	0,0	0,0	0,0	0,0	0,0
	Total	**train-km in thous.**	**10 586**	**10 130**	**10 402**	**9 562**	**10 290**
		gross tkm in mill.	**1 491**	**1 389**	**1 288**	**1 364**	**1 424,0**
Freight transport	National carrier	train-km in thous.	8 351	8 874	9 696	8 766	9 494,0
		gross tkm in mill.	7 096	7 653	8 422	8 423	9 074,0
	Private carrier	train-km in thous.	638,4	630,5	569,7	735,3	1 433,6
		gross tkm in mill.	547,7	571,6	543,2	674,2	1 303,1
	Total	**train-km in thous.**	**8 989,4**	**9 504,5**	**10 265,7**	**9 501,3**	**10 927,6**
		gross tkm in mill.	**7 643,7**	**8 224,6**	**8 965,2**	**9 097,2**	**10 377,1**

Table 21: Structure of rail carriers with valid access agreement

Number of carriers with valid access agreement/Year		2013	2014	2015	2016	2017
Passenger carrier	national	1	1	1	1	1
	private	0	0	0	0	0
Freight carrier	national	1	1	1	1	1
	private	2	2	3	3	3
Passenger and freight carrier	national	0	0	0	0	0
	private	0	0	0	0	0

The analysis of the development of transport performances on SŽ-I lines showed an increase in rail freight transport performances (Total: train-km, 2013 compared to 2017) in the overall course. A significant increase in rail freight transport performances is recorded at the gross tkm indicator. In rail passenger transport there is an increase in the gross tkm indicator (Total: 2015 – 2017) as the offered capacity of passenger trains increases. On the other hand, there is a decrease in transport performances in the train-km indicator (Total: 2013 compared to 2017). The analysis of the number of railway undertakings providing rail services showed the lowest number of providers from among the countries of the Amber RFC.

The analysis of rail transport in the Republic of Slovenia requires, for the needs of its benefits for the Amber RFC, the processing of additional data. Due to presenting and maintaining the transparency and integrity of rail transport data in the Republic of Slovenia, the analysis of other data is carried out in Appendix A in the .xls format. The individual sheets in Appendix A for the Slovenian railway infrastructure contain the following data:

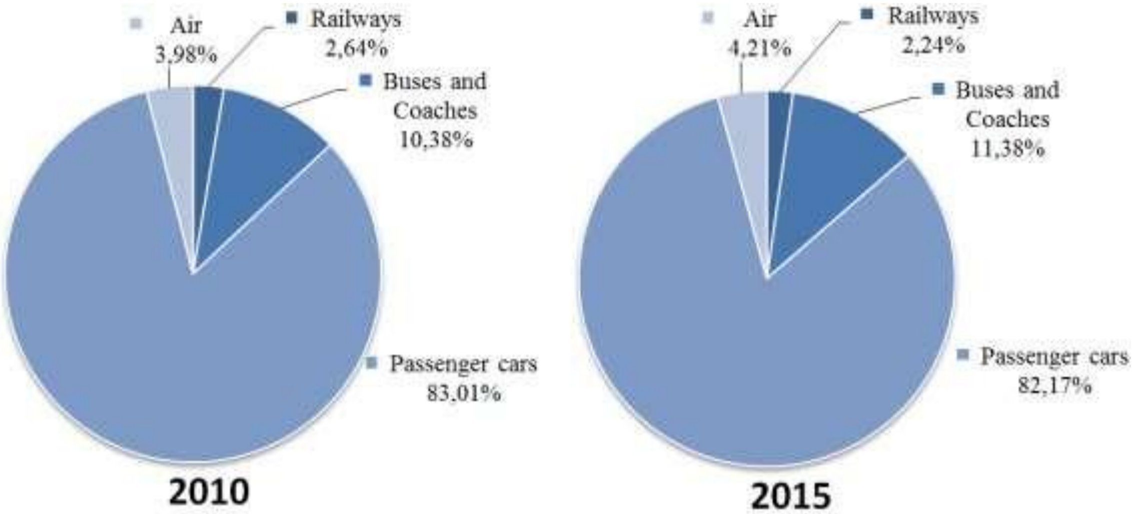
- technical parameters of the potential lines for belonging to the Amber RFC,
- analysis of transport performances in rail passenger and freight transport on the potential lines belonging of the Amber RFC,
- analysis of planned investments in transport infrastructure,
- analysis of charges,
- analysis of average running times between border stations.

Supplementary data of rail transport analysis in the Republic of Slovenia are listed in Appendix E which contains the following data:

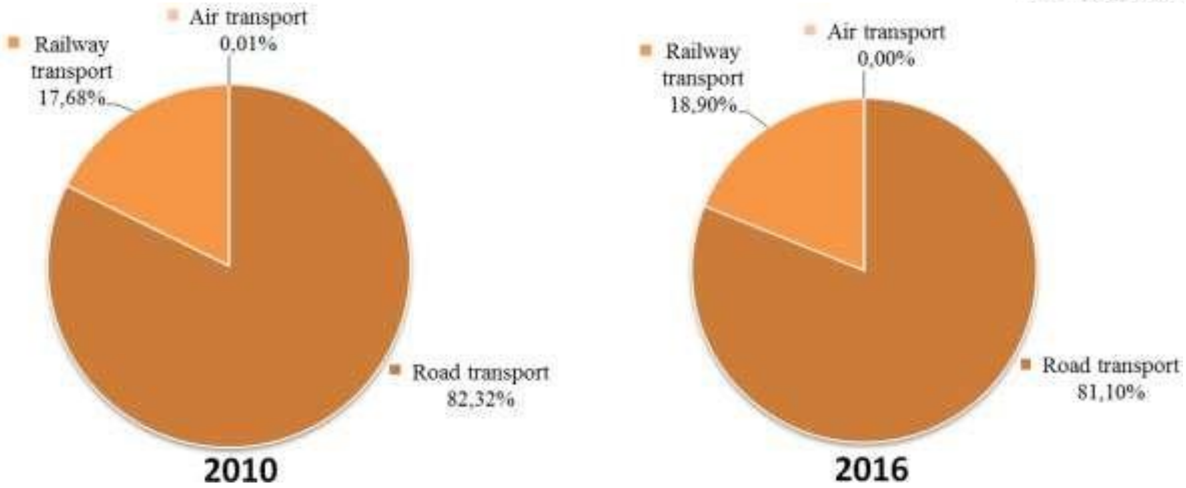
- statistical average of capacity utilization,
- analysis of investment subsidies focused on railway infrastructure,
- infrastructure access charges.

The results of analyses will be used to formulate the conclusions resulting from Chapter 5. Consequently, the strategy draft will be based on the summary results.

Graphs 7 and 8 show a graphical comparison of modal split in the Republic of Slovenia in 2015 compared to 2010 in passenger transport and in 2016 compared to 2010 in freight transport. The comparison is made in the band of 6 years giving a sufficient time span of the market response to the changes of modal split following the adoption of measures to support rail transport within the EU.



Graph 7: Comparison of modal split in passenger transport in Slovenia (Source: Republika Slovenija –Statistični Urad /www.stat.si/, Eurostat, EC – Statistical pocketbook 2017)



Graph 8: Comparison of modal split in freight transport in Slovenia
(Source: Republika Slovenija –Statistični Urad /www.stat.si/, Eurostat)

Based on the modal split comparison in the Republic of Slovenia there is a decrease in share of transport performances in rail passenger transport. At the same time, there is a slight decrease in performances in individual motoring. In the freight transport system, an increase in share of transport performances in favour of rail freight transport to the disadvantage of road goods transport was recorded.

5.5 Analysis of transport indicators of the Amber RFC countries

The potential of rail freight transport is influenced by goods flows, particularly at international level. The goods flows between neighbouring countries create demand for transport services and rail freight transport is more time-efficient, cost-efficient and socially-efficient than other modes of transport. At medium and long distances, the efficiency is currently demonstrated also in single wagon load transport. Therefore, it is necessary to examine the transport potential between the individual countries of the Amber RFC and then between the neighbouring countries of the established corridor. The results of the analysis are necessary for the formulation of strategic objectives and tasks of the Amber RFC as well as for the identification of the transport potential of international rail transport between EU countries. The analysis of transport potential from countries outside the EU for the Amber RFC is addressed in Chapter 8.

Table 22 analyses the import and export of goods from/to the Republic of Poland, expressed in euro, between the Amber RFC countries and the EU countries. Subsequently, the analysis of the import and export of goods from/to the Republic of Poland, expressed in tonnes, between the Amber RFC countries and the EU countries, is carried out in Table 23.

Table 22: Import and Export value from/to Poland in mill. €

Country/ Year	2010	2012	2014	2015	2016
Import value from Poland in mill. €					
Total EU 28 countries	**89 694**	**104 896**	**120 193**	**135 797**	**143 344**
Slovakia	2 672	3 410	3 804	4 217	4 432
Hungary	3 472	3 424	4 079	4 528	4 632
Slovenia	418	477	547	623	696
Total Amber RFC countries	**6 562**	**7 310**	**8 429**	**9 369**	**9 761**
Export value to Poland in mill. €					
Total EU 28 countries	**99 810**	**113 135**	**127 018**	**138 017**	**142 928**
Slovakia	3 650	5 238	5 515	5 797	5 400
Hungary	2 646	3 069	3 262	3 476	3 907
Slovenia	806	810	977	1 115	1 124
Total Amber RFC countries	**7 102**	**9 117**	**9 754**	**10 387**	**10 431**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

Table 23: Import and export quantity from/to Poland in 1000 t

Country/ Year	2010	2012	2014	2015	2016
Import quantity from Poland in 1000 t					
Total EU 28 countries	**63 018**	**66 935**	**78 083**	**82 889**	**85 918**
Slovakia	2 763	2 519	3 362	3 520	3 910
Hungary	1 348	1 419	1 678	2 098	2 289
Slovenia	185	187	213	235	268
Total Amber RFC countries	**4 296**	**4 125**	**5 253**	**5 853**	**6 466**
Export quantity to Poland in 1000 t					
Total EU 28 countries	**63 809**	**67 053**	**70 232**	**70 844**	**72 922**
Slovakia	3 803	4 296	4 596	4 438	4 621
Hungary	1 520	1 787	1 861	1 749	2 065
Slovenia	279	300	327	308	332
Total Amber RFC countries	**5 603**	**6 383**	**6 784**	**6 495**	**7 018**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

The analysis of the transport flows in Tables 22 and 23 showed the increase in transport indicators in all monitored indicators and countries. On the basis of the trend of economic growth, the same trend can be assumed in the years 2018 – 2021. By this, the sufficient transport potential for rail freight transport within the European transport market has been shown within the Republic of Poland.

As the transport performance indicator in tonnes is more significant for the needs of evaluation of rail freight potential, Figure 23 illustrates the goods flows between the neighbouring countries of the Republic of Poland for 2016, including the percentage share.

Figure 23: *Graphical representation of import and export of goods in tonnes – Republic of Poland*

Table 24 analyses the import and export of goods from/to the Slovak Republic, expressed in euro, between the Amber RFC countries and the EU countries. Subsequently, the analysis of import and export of goods from/to the Slovak Republic, expressed in tonnes, between the Amber RFC countries and the EU countries is carried out in Table 25.

Table 24: Import and export value from/ to Slovakia in mill. €

Country/ Year	2010	2012	2014	2015	2016
Import value from Slovakia in mill. €					
Total EU 28 countries	**38 606**	**47 988**	**49 770**	**53 003**	**55 798**
Poland	3 446	4 400	4 469	4 611	4 857
Hungary	2 749	4 166	4 258	4 346	4 516
Slovenia	313	347	324	351	411
Total Amber RFC countries	**6 509**	**8 914**	**9 051**	**9 308**	**9 784**
Export value to Slovakia in mill. €					
Total EU 28 countries	**37 019**	**45 703**	**48 166**	**53 321**	**53 633**
Poland	3 258	3 745	4 202	4 611	4 509
Hungary	3 842	4 792	4 196	4 551	4 624
Slovenia	726	834	1 106	1 349	1 024
Total Amber RFC countries	**7 826**	**9 370**	**9 504**	**10 510**	**10 157**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

Table 25: Import and export quantity from/ to Slovakia in 1000 t

Country/ Year	2010	2012	2014	2015	2016
Import quantity from Slovakia in 1000 t					
Total EU 28 countries	**28 075**	**28 690**	**30 131**	**31 354**	**32 540**
Poland	3 886	4 558	4 208	3 776	4 156
Hungary	2 934	3 348	4 131	4 668	5 080
Slovenia	230	257	220	248	273
Total Amber RFC countries	**7 050**	**8 164**	**8 559**	**8 692**	**9 510**
Export quantity to Slovakia in 1000 t					
Total EU 28 countries	**22 386**	**23 706**	**24 589**	**27 543**	**27 435**
Poland	3 430	3 136	3 687	4 018	4 125
Hungary	3 293	3 706	3 072	3 381	3 464
Slovenia	431	489	467	631	594
Total Amber RFC countries	**7 155**	**7 331**	**7 226**	**8 030**	**8 184**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

The analysis of transport flows in Tables 24 and 25 showed, in overall comparison, increase in transport indicators with a slight fluctuating decrease. However, the increase is recorded at the indicator of transported tonnes within the Amber RFC countries. On the basis of the trend of economic growth, the upward trend in the years 2018 – 2021 can be assumed for both indicators examined. By this, the sufficient transport potential for the rail freight transport within the European transport market has been shown within the Slovak Republic and thus sufficient transport potential for the use of the Amber RFC services.

Since the transport performance indicator in tonnes is more significant for the needs of the evaluation of rail freight potential, Figure 24 shows the goods flows between the neighbouring countries of the Slovak Republic for 2016, including the percentage share.

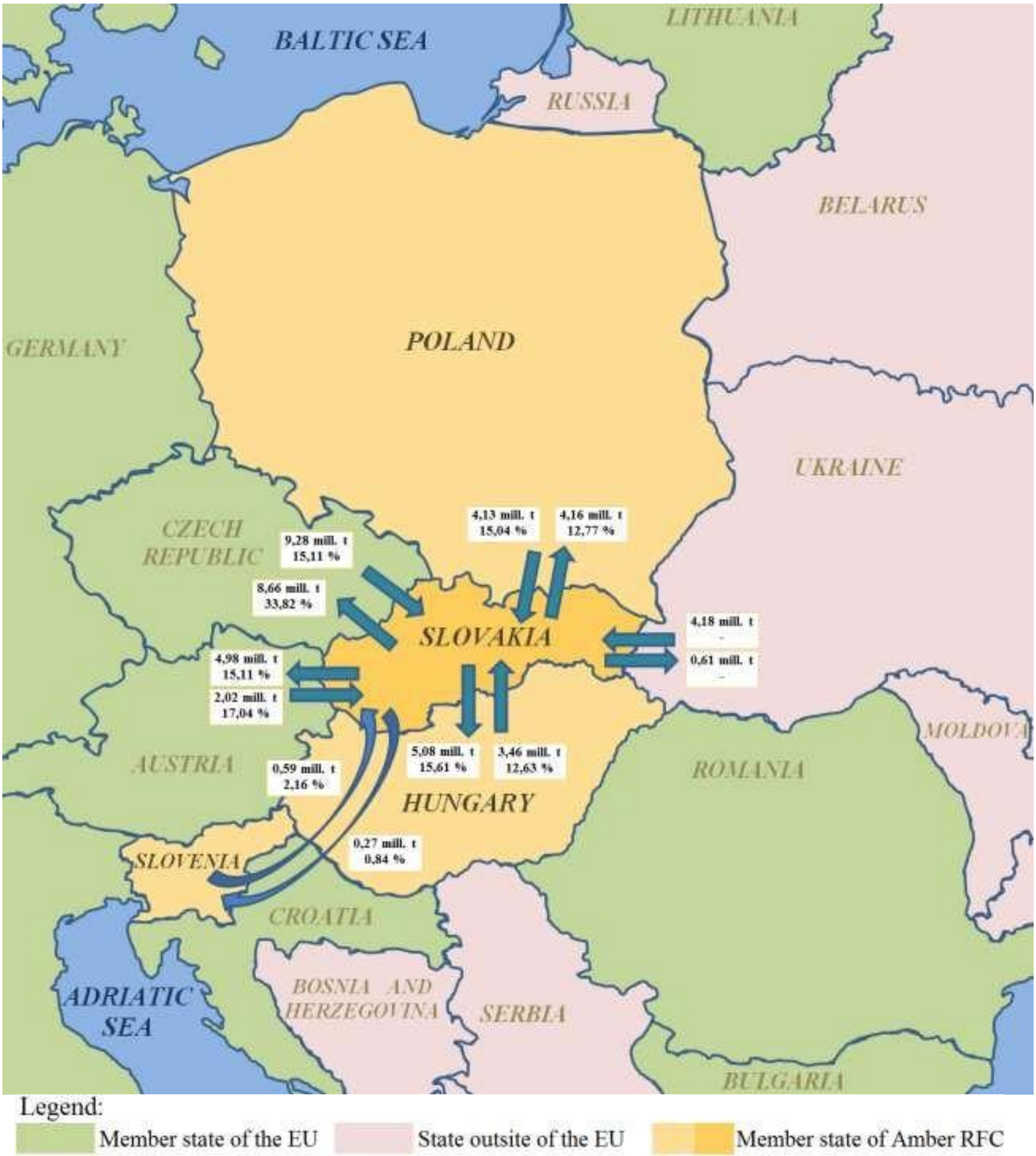


Figure 24: *Graphical representation of import and export of goods in tonnes – Slovak Republic*

In order to assess the Amber RFC transport potential, the analysis of import and export of goods from/to Hungary, expressed in euro, between the Amber RFC countries and the EU countries is carried out in Table 26. Subsequently, the analysis of import and export of goods from/to the

Hungary, expressed in tonnes, between the Amber RFC countries and the EU countries is carried out in Table 27.

Table 26: Import and export value from/ to Hungary in mill. €

Country/ Year	**2010**	**2012**	**2014**	**2015**	**2016**
Import value from Hungary in mill. €					
Total EU 28 countries	**51 901**	**57 255**	**61 557**	**67 424**	**69 991**
Poland	2 379	2 766	2 871	2 943	3 349
Slovakia	3 433	3 969	3 766	4 185	4 195
Slovenia	805	1 000	1 031	1 014	1 012
Total Amber RFC countries	**6 617**	**7 735**	**7 668**	**8 142**	**8 556**
Export value to Hungary in mill. €					
Total EU 28 countries	**44 005**	**50 604**	**58 338**	**63 368**	**64 935**
Poland	3 406	3 488	4 359	4 774	4 810
Slovakia	3 364	4 524	4 074	3 881	4 001
Slovenia	914	929	1 186	1 255	1 312
Total Amber RFC countries	**7 684**	**8 941**	**9 619**	**9 910**	**10 123**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

Table 27: Import and export quantity from/ to Hungary in 1000 t

Country/ Year	**2010**	**2012**	**2014**	**2015**	**2016**
Import quantity from Hungary in 1000 t					
Total EU 28 countries	**27 624**	**29 863**	**30 220**	**31 419**	**32 243**
Poland	1 425	1 632	1 674	1 622	1 905
Slovakia	2 781	2 953	2 647	2 998	3 189
Slovenia	1 020	1 256	1 013	1 060	1 106
Total Amber RFC countries	**5 226**	**5 841**	**5 333**	**5 681**	**6 199**
Export quantity to Hungary in 1000 t					
Total EU 28 countries	**22 198**	**22 763**	**26 181**	**26 410**	**27 446**
Poland	1 583	1 582	1 910	2 235	2 509
Slovakia	3 153	4 118	4 832	4 814	5 148
Slovenia	865	679	812	922	1 083
Total Amber RFC countries	**5 601**	**6 379**	**7 555**	**7 971**	**8 740**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

The analysis of transport flows in Tables 26 and 27 confirmed, in overall comparison, increase in the transport indicators only slightly fluctuating. On the basis of the economic growth trend, the upward trend in the years 2018 – 2021 can be assumed for both indicators examined. The total increase in transport flows in tonnes is recorded between the EU countries and Hungary, with more significant increase in goods transport recorded between Hungary and the Amber RFC countries. Moreover, the increase in value of transported goods is shown. On the basis of the facts, the sufficient transport potential for rail freight transport within the European transport market is shown in case of Hungary and, therefore, the sufficient transport potential for the use of the Amber RFC services, too.

Since the transport performance indicator in tonnes is more significant for the needs of rail freight transport, Figure 25 shows the goods flows between the neighbouring countries of Hungary for 2016, including the percentage share.

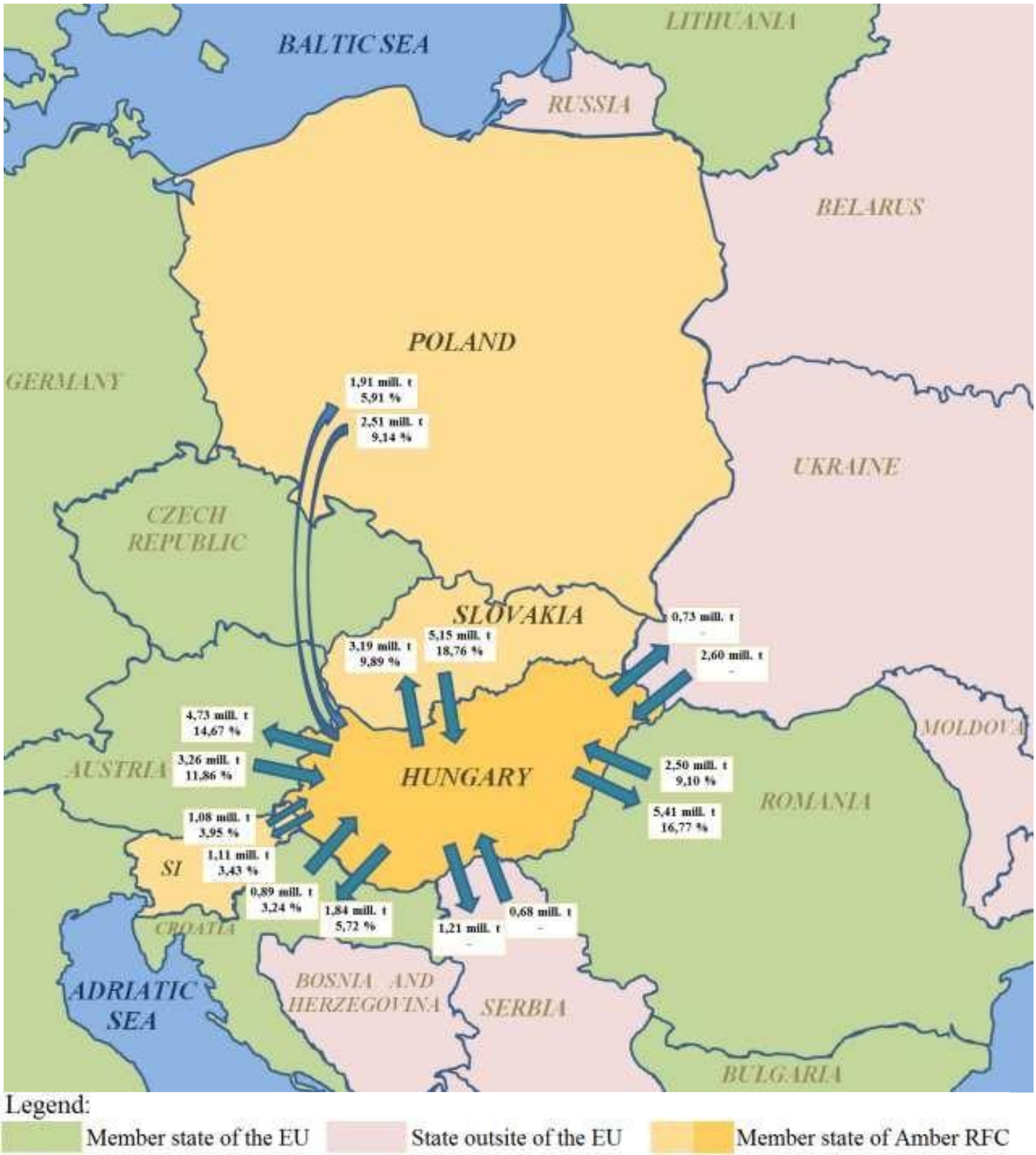


Figure 25: *Graphical representation of import and export of goods in tonnes – Hungary*

To determine the transport potential, Table 28 analyses the import and export of goods from/to the Republic of Slovenia, expressed in euro, between the Amber RFC countries and the EU countries. Subsequently, the analysis of import and export of goods from/to the Republic of

Slovenia, expressed in tonnes, between the Amber RFC countries and the EU countries is carried out in Table 29.

Table 28: Import and export value from/ to Slovenia in mill. €

Country/ Year	2010	2012	2014	2015	2016
Import value from Slovenia in mill. €					
Total EU 28 countries	**14 176**	**16 390**	**19 064**	**20 055**	**20 777**
Poland	646	665	788	864	839
Slovakia	544	685	1 205	1 304	1 031
Hungary	654	794	1 040	1 124	1 225
Total Amber RFC countries	**1 844**	**2 144**	**3 032**	**3 292**	**3 095**
Export value to Slovenia in mill. €					
Total EU 28 countries	**15 796**	**17 211**	**18 067**	**18 999**	**19 823**
Poland	425	471	572	628	683
Slovakia	359	468	481	479	469
Hungary	755	921	931	898	966
Total Amber RFC countries	**1 538**	**1 860**	**1 984**	**2 005**	**2 118**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

Table 29: Import and export quantity from/ to Slovenia in 1000 t

Country/ Year	2010	2012	2014	2015	2016
Import quantity from Slovenia in 1000 t					
Total EU 28 countries	**10 490**	**11 566**	**12 807**	**13 542**	**14 242**
Poland	249	288	321	278	280
Slovakia	250	394	500	487	457
Hungary	499	560	683	819	960
Total Amber RFC countries	**998**	**1 241**	**1 505**	**1 584**	**1 697**
Export quantity to Slovenia in 1000 t					
Total EU 28 countries	**12 766**	**13 557**	**14 539**	**15 236**	**16 175**
Poland	213	207	280	271	285
Slovakia	248	270	281	247	323
Hungary	995	1 115	1 013	1 022	1 002
Total Amber RFC countries	**1 456**	**1 592**	**1 573**	**1 539**	**1 610**

Source: European Commission - Trade – EU Trade Helpdesk – Statistics

Based on the findings from Tables 28 and 29, we can confirm the upward trend in transport performances between the Amber RFC countries and the Republic of Slovenia. Moreover, the increase in transport performances between the EU countries and the Republic of Slovenia is confirmed for both transport indicators in overall course. Based on the expected economic growth trend, the upward trend in the years 2018 – 2021 can be assumed for both indicators. The analysis showed increase in the value of goods transported. The analysis carried out confirms the sufficient transport potential for rail freight transport within the European transport market and, therefore, sufficient transport potential for the use of the Amber RFC services in the Republic of Slovenia, too. Within transport capacities, there is sufficient potential for transport between the Republic of Slovenia and the other countries of the Amber RFC, particularly in intermodal transport and single wagon load transport.

As the transport performance indicator in tonnes is more significant for the needs of evaluation of rail freight potential, Figure 26 illustrates the goods flows between the neighbouring countries of the Republic of Slovenia for 2016, including the percentage share.

Figure 26: *Graphical representation of import and export of goods in tonnes – Republic of Slovenia*

The following figure shows all registered transport flows between the Amber RFC countries and all EU countries in tonnes for the year 2016.

Figure 27: *Graphical representation of import and export of goods in tonnes - summary*

5.6 Analysis of intermodal transport terminals

The basic objectives of the transport policy of the Amber RFC countries include reducing greenhouse gas emissions and finding ways to reduce the environmental burden of transport. One way to meet these objectives is the intermodal transport. The intermodal transport is efficient, safe, reliable and cost-competitive. The provision of intermodal transport services requires, inter alia, adequate location of intermodal transport terminals and sufficient transport infrastructure (appropriate connection of terminals to road and rail infrastructure) and advanced technical equipment (wagons, unit loads and loading units).

Analysis in subchapter 5.6. was carried out on the basis of the information listed and received from the KombiConsult 2018 comprehensive source at www.intermodal-terminals.eu. This source does not contain information about all terminals from the list provided by the individual Infrastructure Managers.

Poland

The following figure shows the location of intermodal transport terminals on the territory of the Republic of Poland. The terminals marked in green colour are located on the basic network of the Amber RFC.

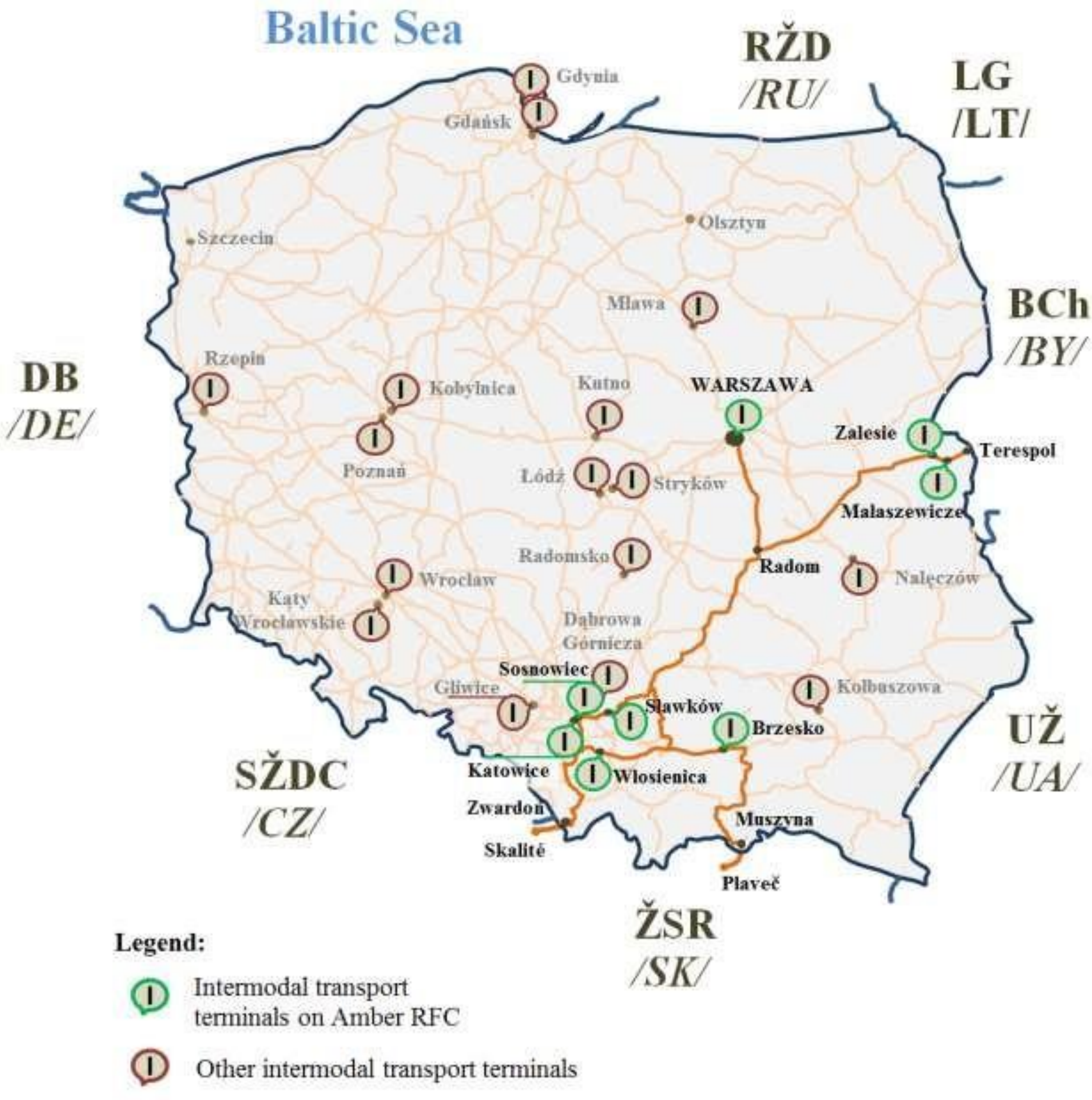


Figure 28: *Terminals located on the territory of the Republic of Poland*

(Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu)

Operators of intermodal transport terminals within the basic network of the Amber RFC:

- Małaszewicze Kontenerowa: PKP Cargo Centrum Logistyczne Małaszewicze sp. Z o. o.,

- EUROPORT Małaszewicze Duże: EUROSPORT Sp. z o.o.,
- Terminal przeładunkowy Wólka (Zalesie): PKP - Cargo Connect Sp. z o.o.,
- Transgaz S.A., Zalesie: Transgaz S.A. Terminal Gazów,
- Containerterminal Warszawa: Cargosped Sp. Z o.o.,
- Warszawa Główna Towarowa- Container Terminal: Spedcont,
- Terminal Kontenerowy Warszawa: PKP Cargo Connect Sp. z o.o.,
- Loconi Intermodal Terminal Kontenerowy Warszawa: Loconi Intermodal S.A.,
- Polzug Terminal Kontenerowy Pruszków: POLZUG Intermodal Polska Sp. z o.o.,
- Euroterminal Sławków: Euroterminal Sławków Ltd,
- Brzeski terminal kontenerowy: Karpiel sp. Z o. o.,
- Terminal kontenerowy Włosienica: Baltic Rail AS,
- Terminal Sosnowiec Południowy: Spedcont.

Tables 30 gives basic information on intermodal transport terminals located on the basic network of the Amber RFC.

Table 30: Basic information on intermodal transport terminals in the Republic of Poland

Intermodal transport terminals on Amber RFC	**Connectivity***			**Area (m^2)**	**Storage Capacity**
	Road	**Rail**	**Water**		
Małaszewicze Terminal Kontenerowy				40 000	1 632 TEU
EUROPORT Małaszewicze Duże				86 000	1 300 TEU
Terminal przeładunkowy Wólka (Zalesie)				57 000	N/A
Transgaz S.A., Zalesie				N/A	1 000 m^3
Containerterminal Warszawa				24 000	1 200 TEU
Warszawa Główna Toworowa- Container Terminal				18 600	1 000 TEU
Terminal Kontenerowy Warszawa				30 000	N/A
Loconi Intermodal Terminal Kontenerowy Warszawa				68 000	2 000 TEU
Polzug Terminal Kontenerowy Pruszków				44 600	1 500 TEU
Euroterminal Sławków				93 000	3 500 TEU
Brzeski terminal kontenerowy				100 000	5 000 TEU
Terminal kontenerowy Włosienica				100 000	780 TEU
Terminal Sosnowiec Południowy				N/A	N/A

Note:* ***YES/NO*

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu, www.utk.gov.pl

Continuation of Table 30:

Intermodal transport terminals on Amber RFC	Number of tracks / Usable length of tracks (m)		Gantry cranes (number)	Reach stacker (number)
	1 520 mm	1 435 mm		
Małaszewicze Terminal Kontenerowy	2/1 766	2/1 746	3	2
EUROPORT Małaszewicze Duże	-/1 300	-/1 300	N/A	N/A
Terminal przeładunkowy Wólka (Zalesie)	-/2 254	-/3 104	N/A	N/A
Transgaz S.A., Zalesie	-	N/A	N/A	N/A
Containerterminal Warszawa	-	1/320	0	3
Warszawa Główna Towarowa - Container Terminal	-	2/715	2	0
Terminal Kontenerowy Warszawa	-	-/3 680	N/A	N/A
Loconi Intermodal Terminal Kontenerowy Warszawa	-	2/1 040	0	3
Polzug Terminal Kontenerowy Pruszków		-/650	0	8
Euroterminal Sławków	-/17 521	-/24 256	1	4
Brzeski terminal kontenerowy	-	6/3 200	0	1
Terminal kontenerowy Włosienica	-	1/400	0	1
Terminal Sosnowiec Południowy	-	N/A	N/A	N/A

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu, www.utk.gov.pl

Slovakia

The following figure shows the location of intermodal transport terminals on the territory of the Slovak Republic. The terminals marked in green colour are located on the basic network of the Amber RFC.

Figure 29: *Terminal located on the territory of the Slovak Republic*

(Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu)

Operators of intermodal transport terminals within the basic network of the Amber RFC:

- Terminal Košice – Haniska pri Košiciach: Metrans Danubia, a. s.,
- Terminal Žilina: Rail Cargo Operator,
- Terminal Žilina-Teplička,
- Bratislava ÚNS: Rail Cargo Operator,
- Bratislava Pálenisko: SPaP, a. s.,
- Rail Hub Terminal Dunajská Streda: Metrans (Danubia) a. s.

Table 31 gives the basic information on intermodal transport terminals located on the basic network of the Amber RFC.

Table 31: Basic information on intermodal transport terminals in the Slovak Republic

Intermodal transport terminals on Amber RFC	Connectivity*			Area (m^2)	Storage Capacity (TEU)
	Road	Rail	Water		
Terminal Košice	YES	YES	NO	25 000	3 000
Terminal Žilina	YES	YES	NO	16 000	N/A
Bratislava ÚNS	YES	YES	NO	34 500	N/A
Bratislava Pálenisko	YES	YES	YES	24 000	1 400
Rail Hub Terminal Dunajská Streda	YES	YES	NO	280 000	25 000

Note:* ***YES/NO*

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Continuation of Table 31:

Intermodal transport terminals on Amber RFC	Number of tracks	Usable length of tracks (m)	Gantry cranes (number)	Reach stacker (number)
Terminal Košice	2	300	2	2
Terminal Žilina	4	1 520	0	3
Bratislava ÚNS	3	912	1	1
Bratislava Pálenisko	2	450	3	3
Rail Hub Terminal Dunajská Streda	9	5 450	4	6

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Hungary

The following figure shows the location of intermodal transport terminals on the territory of Hungary. The terminals marked in green colour are located on the basic network of the Amber RFC.

Figure 30: *Terminals located on the territory of Hungary*
(Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu)

Operators of intermodal transport terminals within the basic network of the Amber RFC:

- Sopron Container Terminal: GYSEV Cargo Zrt.,
- Kombiterminál Törökbálint: Törökbálint Container Terminal Kft.,
- Budapest BILK: Budapest BILK Co. Ltd.,
- Mahart Container Center, Budapest: MAHART Container Center Ltd.

Table 32 gives the basic information on intermodal transport terminals located on the basic network of the Amber RFC.

Table 32: Basic information on intermodal transport terminals in Hungary

Intermodal transport terminals on Amber RFC	Connectivity*			Area (m^2)	Storage Capacity (TEU)
	Road	Rail	Water		
Sopron container terminal	YES	YES	NO	40 500	1 500
Kombiterminál Törökbálint	YES	YES	NO	35 000	6 000
Budapest BILK	YES	YES	NO	223 000	220 000
Mahart Container Center, Budapest	YES	YES	YES	105 000	5 800

Note:* ***YES/NO*
Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Continuation of Table 32:

Intermodal transport terminals on Amber RFC	Number of tracks (m)	Usable length of tracks (m)	Gantry cranes (number)	Reach stacker (number)
Sopron container terminal	6	1 960	2	2
Kombiterminál Törökbálint	3	600	N/A	3
Budapest BILK	11	6 800	2	8
Mahart Container Center, Budapest	5	2 120	N/A	9

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Slovenia

The following figure shows the location of intermodal transport terminals on the territory of Slovenia. The terminals marked in green colour are located on the basic network of the Amber RFC.

Figure 31: *Terminals located on the territory of Slovenia*

(Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu)

Operators of intermodal transport terminals within the basic network of the Amber RFC:

- Koper Luka KT: Luka Koper D.D – Port of Koper PLC,
- Ljubljana Moste: Slovenske železnice - Tovorni promet, d.o.o.,
- Celje: Slovenske železnice - Tovorni promet, d.o.o.

Table 33 gives the basic information on intermodal transport terminals located on the basic network of the Amber RFC.

Table 33: Basic information on intermodal transport terminals in Slovenia

Intermodal transport terminals on Amber RFC	Connectivity*			Area (m^2)	Storage Capacity (TEU)
	Road	Rail	Water		
Koper Luka KT	YES	YES	YES	270 000	19 130
Ljubljana Moste	YES	YES	NO	99 250	1 270
Celje	YES	YES	NO	6 500	80

Note:* ***YES/NO*

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Continuation of Table 33:

Intermodal transport terminals on Amber RFC	Number of tracks (m)/	Usable length of tracks (m)	Gantry cranes (number)	Reach stacker (number)
Koper Luka KT	9	4 640	3	8
Ljubljana Moste	4	2 000	1	2
Celje	20	5 000	0	1

Source: Internet domains of individual terminals, KombiConsult 2018, www.intermodal-terminals.eu

Analysis of intermodal transport terminals within the Amber RFC countries showed:

- appropriate location of terminals within the Amber RFC rail network,
- significant part of intermodal transport terminals located in the Amber RFC countries is connected with the Amber RFC infrastructure,
- potential of increase in the transport performances of intermodal transport trains on the Amber RFC lines,
- sufficient technical base of intermodal transport terminals,
- sufficient capacity to handle TEU,
- perspective of cooperation between the Amber RFC and intermodal transport terminals.

5.7 Results and summary of the findings of Chapter 5

Based on the data presented in the individual subchapters of the fifth part of TMS, we can state determine:

- realised process of liberalization of rail transport services market in the Amber RFC countries: confirmed by Liberalization Index (Figure 16),
- potential for cooperation between RFCs network: results from the geographic connection of individual RFC corridors, some common line sections and strategic objectives of the corridors,
- general overall increase in rail freight transport performances in the Amber RFC countries: shown by the analysis of transport performances in the individual countries of the Amber RFC,
- general overall increase in rail passenger transport performances in the Amber RFC countries: shown by the analysis of transport performances in the individual countries of the Amber RFC and increasing demand of passengers influenced by a higher quality of services, a higher offer of transport services, poor technical condition of road infrastructure and congestions,
- general increase in rail freight transport performances on the lines considered to be included in the Amber RFC in the Polish, Slovak and Slovenian Republics: shown by the analysis of transport performances in rail freight transport on the lines to be included in the Amber RFC. Increase in performances will be affected by the Amber RFC services, its strategic routing, increasing quality of transport services (influenced by the liberalization process) and economic development (described in Chapter 4),
- general increase in rail passenger transport performances on the lines considered to be included in the Amber RFC in the Polish, Slovak and Slovenian Republics: shown by the analysis of transport performances in rail passenger transport on the lines to be included in the Amber RFC. Increase in performances will be affected by the increasing quality of transport services (influenced by the liberalization process) and economic development (described in Chapter 4),
- change of modal split in favour of rail freight transport in Hungary and the Republic of Slovenia (road transport increased in Republic of Poland, Slovak republic and Hungary): affected by higher quality of transport services, RFC corridor services, investments in the railway system and higher demand (higher demand for rail freight services results also from the conclusions of Chapter 4),
- change of modal split in favour of rail passenger transport in the Slovak Republic (road transport increase in the Republic of Poland and Hungary): affected by higher quality of

transport services, higher offer of transport services, investments in the railway system and higher demand (higher demand for rail passenger services results also from the conclusions of Chapter 4),

- intention of all Amber RFC infrastructure managers and ministries involved to invest in the lines considered for the Amber RFC: results from the transport policy of individual countries, the EU's objectives in the development and modernization of the European rail network and operational needs (increase in transport performances, cost reduction, shortening of travel time),
- general reduction of the railway infrastructure charges for rail freight services: on the basis of the implementation of Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area, and the harmonization of transport infrastructure charging,
- overall increase of providers of rail transport services: can be assumed based on the analysis of development of number of carriers in the Amber RFC countries, at the same time, it is affected by the achieved level of the liberalization process (Figure 16) and the higher interest in business in railway transport. An increase in business interest is due to higher demand and the results of the economic analysis carried out in Chapter 4,
- transport potential for the Amber RFC services between the Amber RFC countries and the EU countries: due to the increasing trade between the Amber RFC countries and the other EU member states, graphically shown in Figure 27,
- growth in demand for transport services within the Amber RFC countries: due to the increasing trade between the Amber RFC countries, graphically shown in Figures 23-26,
- potential for the development of intermodal transport: affected by the location of intermodal transport terminals within the Amber RFC, the higher quality of services provided, the system measures of the EU and member states designed to support intermodal transport, the investments of intermodal operators, the growth of transport requirements from the Port of Koper to Central and Western Europe,
- potential for the development of single wagon load transport in international traffic: increasing number of business entities, dense railway network of the Amber RFC countries, the construction of new sidings, measures to support sidings by the countries.

On the basis of the facts listed, the strategic tools and measures to support rail freight services, to support the growth in demand for rail services and the Amber RFC services will be proposed in the final chapter of the TMS.

6 PROGNOSIS OF TRANSPORT PERFORMANCE DEVELOPMENT

Several aspects affecting infrastructure, quality of services and external costs result from transport performances. Therefore, it is necessary to know the development of transport performances in order to form the objectives and the subsequent strategy of the Amber RFC. The development of transport performances is assumed on the basis of the prognosis that includes three scenarios for the Amber RFC: realistic, optimistic and pessimistic.

Forecasting deals with prediction of the future development of organization, society, economy, transport, environment, etc. The aim is to get an idea of the future state which is based on rational ways of prediction. The forecasts obtained are of great importance for strategic management, risk management and planning.

Forecasting has connection with:

- planning,
- targeting,
- organizing,
- decision-making.

Forecast creation process:

1. Problem formulation.
2. Formulation and definition of necessary information and data.
3. Data collection.
4. Data reduction and condensation.
5. Forecast model creation.
6. Forecast generation using the selected algorithm and using GDP.
7. Forecast evaluation.

Bases for forecast:

1. Model used for forecast: AAA algorithm with exponential alignment.
2. Confidence interval: 95 %.
3. Time span of forecast: 2019 – 2026 (8 years).
4. Examined indicator: transport performances in rail passenger and freight traffic.
5. Input data: provided by individual infrastructure managers, annual reports.
6. Presentation of results:
   - in tabular form for each scenario separately,
   - overall comparison of individual forecast scenarios in the form of graph.
7. It is a long-term forecast in terms of time.

8. Forecast was created using an appropriate forecasting software.

Forecast 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. Change in transport infrastructure charging – increase in rail charges and decrease in charges for other modes of transport.
6. Significant shift of transport performances to other modes of transport.

The forecast was elaborated based on the available information on rail transport performances and using the AAA algorithm. It calculates or predicts a future value based on existing (historical) values by using the AAA version of the Exponential Smoothing algorithm. The predicted value is a continuation of the historical values in the specified target date, which should be a continuation of the timeline. This prognosis method does not take into account e.g. major changes in the infrastructure (e.g. new construction of lines, changes of infrastructure parameters, such as longer trains, etc.) nor major changes in the competition between modes. You can use this function to predict future sales, transport performances, inventory requirements, or consumer trends.

Arguments used within the forecast:

Target date Required. The data point for which you want to predict a value. Target date can be date/time or numeric – the period 2019-2026.

Values Required. Values are the historical values, for which you want to forecast the next points – transport performances of passenger and freight trains (gross tkm, train-km) on the railway infrastructure of the Amber RFC countries (2015-2017), forecast of GDP development in individual corridor member states (in %, the period 2019-2026, forecast of the European Commission and the European Central Bank).

Timeline Required. The independent array or range of numeric data. The dates in the timeline must have a consistent step between them and can't be zero – the period 2015-2017.

Seasonality Optional. A numeric value. The default value of 1 means program detects seasonality automatically for the forecast and uses positive, whole numbers for the length of the seasonal pattern. 0 indicates no seasonality, meaning the prediction will be linear – the used value 1 based on which the algorithm calculated seasonality.

Table description:

Table 34 – realistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the Amber RFC.

Table 35 – optimistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the Amber RFC.

Table 36 – pessimistic scenario, prognosis of the development of total transport performances of rail system in individual countries and on lines included in the Amber RFC.

The difference between the individual prognosis scenarios is due to setting the input parameters of deviation and sensitivity for individual scenarios. For processing the prognosis, the mean degree of deviation was selected at the level of 5 points – most frequently used for traffic forecasting. Subsequently, the software and algorithm used calculated the outputs for individual prognosis scenarios, listed in Tables 34, 35 and 36.

Table 34: Prognosis – Realistic scenario

IM	Mode of transport	Scope	Transport performance/ Year	2019	2020	2021	2022	2023	2024	2025	2026
PLK	Passenger transport	total	train-km in thous.	170 740	177 667	184 594	191 521	198 448	205 375	212 302	219 229
			gross tkm in mill.	41 606	43 050	44 494	45 939	47 383	48 828	50 272	51 716
		on RFC	train-km in thous.	14 572	14 854	15 136	15 418	15 699	15 981	16 263	16 545
			gross tkm in mill.	3 978	4 093	4 208	4 323	4 438	4 552	4 667	4 782
	Freight transport	total	train-km in thous.	83 443	85 572	87 701	89 830	91 959	94 088	96 217	98 345
			gross tkm in mill.	119 977	123 705	127 433	131 160	134 888	138 616	142 344	146 071
		on RFC	train-km in thous.	9 495	9 906	10 318	10 729	11 141	11 553	11 964	12 376
			gross tkm in mill.	14 013	14 699	15 384	16 070	16 756	17 442	18 128	18 813
ŽSR	Passenger transport	total	train-km in thous.	37 205	38 377	39 549	40 721	41 892	43 064	43 064	45 408
			gross tkm in mill.	11 590	12 297	13 004	13 710	14 417	15 124	15 831	15 830
		on RFC	train-km in thous.	11 654	12 050	12 446	12 842	13 238	13 633	14 029	14 425
			gross tkm in mill.	4 429	4 682	4 934	5 187	5 439	5 691	5 944	6 196
	Freight transport	total	train-km in thous.	15 908	16 277	16 646	17 015	17 384	17 753	18 122	18 491
			gross tkm in mill.	19 922	20 369	20 815	21 262	21 709	22 155	22 602	23 049
		on RFC	train-km in thous.	5 480	5 785	6 090	6 395	6 701	7 006	7 311	7 616
			gross tkm in mill.	6 488	6 844	7 201	7 557	7 914	8 270	8 627	8 983
MAV Zrt. + GYSEV	Passenger transport	total	train-km in thous.	85 850	86 883	87 915	88 948	89 981	91 014	92 047	93 080
			gross tkm in mill.	18 111	18 264	18 571	18 826	19 212	19 736	19 998	20 157
		on RFC	train-km in thous.	22 216	22 684	23 098	23 415	23 821	24 189	24 608	24 891
			gross tkm in mill.	5 212	5 424	5 616	5 931	6 187	6 442	6 887	7 184
	Freight transport	total	train-km in thous.	18 086	18 234	18 621	19 148	19 823	20 184	20 531	21 038
			gross tkm in mill.	22 707	23 158	23 800	24 485	25 012	25 354	25 700	26 053
		on RFC	train-km in thous.	7 752	7 952	8 255	8 878	9 101	9 601	10 015	10 858
			gross tkm in mill.	9 235	10 158	10 800	11 425	11 980	12 357	12 977	13 324
SŽ-I	Passenger transport	total	train-km in thous.	9 695	9 393	9 121	8 962	8 797	8 536	8 342	8 123
			gross tkm in mill.	1 324	1 278	1 232	1 203	1 197	1 176	1 141	1 109
		on RFC	train-km in thous.	6 895	6 939	6 982	7 026	7 070	7 114	7 158	7 202
			gross tkm in mill.	746	713	701	697	683	675	669	654
	Freight transport	total	train-km in thous.	10 279	10 486	10 693	10 900	11 108	11 315	11 522	11 730
			gross tkm in mill.	9 970	10 485	10 999	11 514	12 029	12 543	13 058	13 572
		on RFC	train-km in thous.	8 093	8 404	8 716	9 027	9 339	9 650	9 962	10 273
			gross tkm in mill.	8 067	8 444	8 822	9 199	9 577	9 955	10 332	10 710
Total	Passenger transport	total	**train-km in thous.**	**303 490**	**312 320**	**321 179**	**330 152**	**339 118**	**347 989**	**355 755**	**365 840**
			gross tkm in mill.	**72 631**	**74 889**	**77 301**	**79 678**	**82 209**	**84 864**	**87 242**	**88 812**
		on RFC	**train-km in thous.**	**55 337**	**56 527**	**57 662**	**58 701**	**59 828**	**60 917**	**62 058**	**63 063**
			gross tkm in mill.	**14 365**	**14 912**	**15 459**	**16 138**	**16 747**	**17 360**	**18 167**	**18 816**
	Freight transport	total	**train-km in thous.**	**127 716**	**130 569**	**133 661**	**136 893**	**140 274**	**143 340**	**146 392**	**149 604**
			gross tkm in mill.	**172 576**	**177 717**	**183 047**	**188 421**	**193 638**	**198 668**	**203 704**	**208 745**
		on RFC	**train-km in thous.**	**30 820**	**32 047**	**33 379**	**35 029**	**36 282**	**37 810**	**39 252**	**41 123**
			gross tkm in mill.	**37 803**	**40 145**	**42 207**	**44 251**	**46 227**	**48 024**	**50 064**	**51 830**

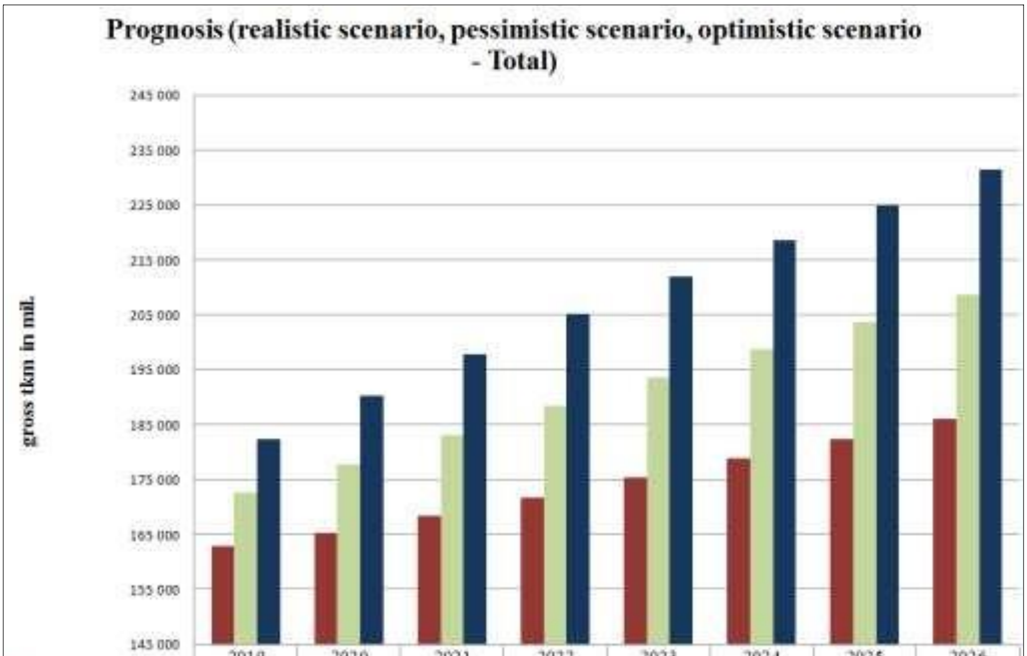
Table 35: Prognosis – Optimistic scenario

IM	Mode of transport	Scope	Transport performance/Year	2019	2020	2021	2022	2023	2024	2025	2026
PLK	Passenger transport	total	train-km in thous.	181 941	190 196	198 327	206 365	214 329	222 234	230 088	237 900
			gross tkm in mill.	48 355	51 491	54 344	57 023	59 580	62 046	64 441	66 779
		on RFC	train-km in thous.	15 919	16 538	17 101	17 629	18 133	18 619	19 090	19 550
			gross tkm in mill.	4 656	5 006	5 307	5 581	5 838	6 082	6 315	6 542
	Freight transport	total	train-km in thous.	88 977	93 021	96 668	100 096	103 379	106 558	109 657	112 693
			gross tkm in mill.	127 925	134 402	140 310	145 903	151 288	156 523	161 645	166 674
		on RFC	train-km in thous.	10 358	10 769	11 181	11 593	12 004	12 416	12 828	13 239
			gross tkm in mill.	15 327	16 013	16 699	17 384	18 070	18 756	19 442	20 128
ŽSR	Passenger transport	total	train-km in thous.	39 005	40 200	41 394	42 589	43 784	44 979	46 173	47 368
			gross tkm in mill.	12 410	13 131	13 851	14 572	15 292	16 013	16 734	17 454
		on RFC	train-km in thous.	12 427	12 831	13 234	13 638	14 042	14 445	14 849	15 252
			gross tkm in mill.	4 791	5 048	5 305	5 563	5 820	6 077	6 335	6 592
	Freight transport	total	train-km in thous.	16 450	16 834	17 217	17 600	17 983	18 366	18 748	19 131
			gross tkm in mill.	20 400	20 858	21 317	21 775	22 233	22 691	23 149	23 607
		on RFC	train-km in thous.	5 754	6 070	6 386	6 703	7 019	7 334	7 650	7 966
			gross tkm in mill.	6 767	7 135	7 503	7 871	8 239	8 607	8 975	9 343
MAV Zrt. + GYSEV	Passenger transport	total	train-km in thous.	90 143	91 227	92 311	93 395	94 480	95 565	96 649	97 734
			gross tkm in mill.	18 745	18 903	19 221	19 485	19 884	20 427	20 698	20 862
		on RFC	train-km in thous.	23 327	23 818	24 253	24 586	25 012	25 398	25 838	26 136
			gross tkm in mill.	5 394	5 614	5 813	6 139	6 404	6 667	7 128	7 435
	Freight transport	total	train-km in thous.	18 990	19 146	19 552	20 105	20 814	21 193	21 558	22 090
			gross tkm in mill.	23 502	23 969	24 633	25 342	25 887	26 241	26 600	26 965
		on RFC	train-km in thous.	8 140	8 350	8 668	9 322	9 556	10 081	10 516	11 401
			gross tkm in mill.	9 697	10 666	11 340	11 996	12 579	12 975	13 626	13 990
SŽ - I	Passenger transport	total	train-km in thous.	10 241	10 187	10 063	9 899	9 821	9 934	10 164	10 289
			gross tkm in mill.	1 477	1 434	1 406	1 384	1 372	1 389	1 426	1 483
		on RFC	train-km in thous.	7 324	7 378	7 432	7 486	7 539	7 592	7 645	7 698
			gross tkm in mill.	846	804	796	783	792	813	839	852
	Freight transport	total	train-km in thous.	11 437	11 678	11 919	12 159	12 398	12 637	12 875	13 113
			gross tkm in mill.	10 510	11 037	11 565	12 092	12 620	13 147	13 675	14 202
		on RFC	train-km in thous.	8 635	8 952	9 270	9 587	9 905	10 223	10 540	10 858
			gross tkm in mill.	8 486	8 871	9 256	9 641	10 026	10 411	10 796	11 180
Total	Passenger transport	total	**train-km in thous.**	**321 330**	**331 810**	**342 094**	**352 248**	**362 414**	**372 711**	**383 074**	**393 291**
			gross tkm in mill.	**80 987**	**84 960**	**88 822**	**92 464**	**96 128**	**99 875**	**103 299**	**106 578**
		on RFC	**train-km in thous.**	**58 997**	**60 566**	**62 020**	**63 339**	**64 726**	**66 054**	**67 423**	**68 636**
			gross tkm in mill.	**15 688**	**16 472**	**17 221**	**18 066**	**18 853**	**19 639**	**20 618**	**21 421**
	Freight transport	total	**train-km in thous.**	**135 855**	**140 679**	**145 356**	**149 960**	**154 574**	**158 754**	**162 838**	**167 027**
			gross tkm in mill.	**182 336**	**190 266**	**197 825**	**205 112**	**212 028**	**218 603**	**225 068**	**231 448**
		on RFC	**train-km in thous.**	**32 886**	**34 141**	**35 505**	**37 205**	**38 484**	**40 054**	**41 533**	**43 464**
			gross tkm in mill.	**40 277**	**42 685**	**44 798**	**46 893**	**48 914**	**50 749**	**52 839**	**54 641**

Table 36: Prognosis – Pessimistic scenario

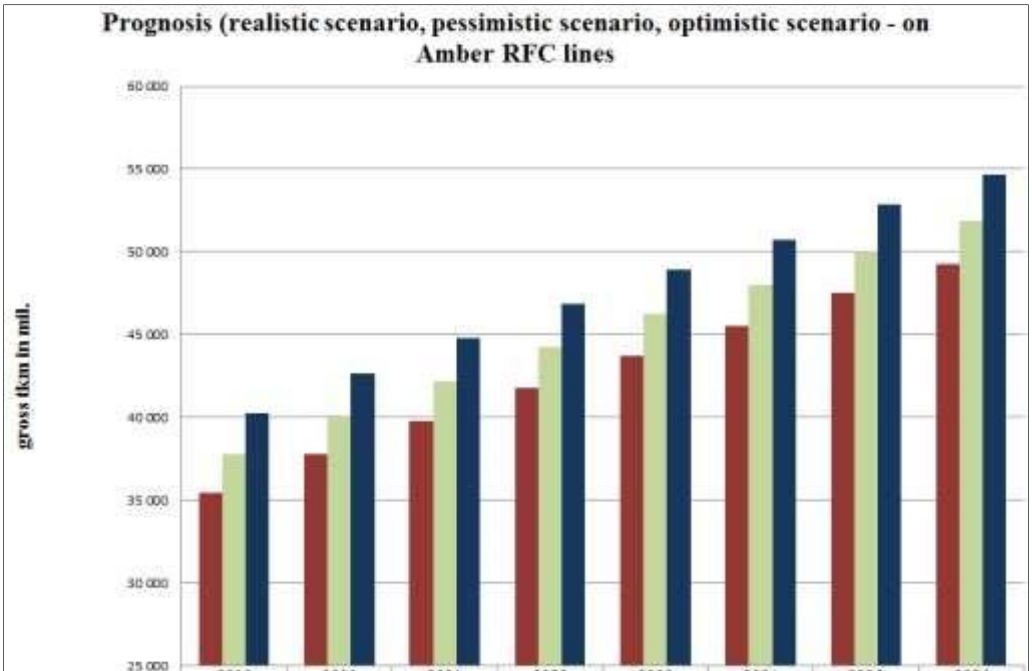
IM	Mode of transport	Scope	Transport performance/Year	2019	2020	2021	2022	2023	2024	2025	2026
PLK	Passenger transport	total	train-km in thous.	159 538	165 138	170 861	176 677	182 567	188 517	194 517	200 559
			gross tkm in mill.	34 856	34 609	34 644	34 855	35 187	35 609	36 103	36 654
		on RFC	train-km in thous.	13 225	13 170	13 170	13 206	13 266	13 344	13 436	13 539
			gross tkm in mill.	3 299	3 179	3 108	3 064	3 037	3 023	3 019	3 023
	Freight transport	total	train-km in thous.	77 909	78 122	78 733	79 564	80 539	81 617	82 776	83 998
			gross tkm in mill.	112 030	113 007	114 555	116 418	118 489	120 708	123 043	125 468
		on RFC	train-km in thous.	8 631	9 043	9 455	9 866	10 278	10 690	11 101	11 513
			gross tkm in mill.	12 699	13 385	14 070	14 756	15 442	16 128	16 813	17 499
ŽSR	Passenger transport	total	train-km in thous.	35 095	36 232	37 370	38 508	39 646	40 783	41 921	43 059
			gross tkm in mill.	10 686	11 372	12 058	12 744	13 431	14 117	14 803	15 489
		on RFC	train-km in thous.	10 794	11 178	11 562	11 947	12 331	12 715	13 100	13 484
			gross tkm in mill.	4 038	4 283	4 528	4 773	5 018	5 263	5 508	5 754
	Freight transport	total	train-km in thous.	15 223	15 574	15 926	16 278	16 630	16 981	17 333	17 686
			gross tkm in mill.	19 254	19 685	20 117	20 548	20 979	21 410	21 841	22 273
		on RFC	train-km in thous.	5 161	5 452	5 743	6 035	6 326	6 618	6 910	7 202
			gross tkm in mill.	6 153	6 494	6 836	7 178	7 520	7 862	8 204	8 546
MAV Zrt. + GYSEV	Passenger transport	total	train-km in thous.	84 133	85 145	86 157	87 169	88 181	89 194	90 206	91 218
			gross tkm in mill.	17 749	17 899	18 200	18 449	18 828	19 341	19 598	19 754
		on RFC	train-km in thous.	21 772	22 230	22 636	22 947	23 345	23 705	24 116	24 393
			gross tkm in mill.	5 108	5 316	5 504	5 812	6 063	6 313	6 749	7 040
	Freight transport	total	train-km in thous.	17 634	17 778	18 155	18 669	19 327	19 679	20 018	20 512
			gross tkm in mill.	22 253	22 695	23 324	23 995	24 512	24 847	25 186	25 532
		on RFC	train-km in thous.	7 558	7 753	8 049	8 656	8 873	9 361	9 765	10 587
			gross tkm in mill.	9 050	9 955	10 584	11 197	11 740	12 110	12 717	13 058
SŽ - I	Passenger transport	total	train-km in thous.	8 964	8 840	8 726	8 576	8 398	8 297	8 164	7 964
			gross tkm in mill.	1 164	1 135	1 101	1 094	1063	1048	1016	984
		on RFC	train-km in thous.	6 412	6 446	6 480	6 514	6 548	6 583	6 617	6 652
			gross tkm in mill.	642	631	619	603	587	571	549	536
	Freight transport	total	train-km in thous.	9 066	9 238	9 412	9 586	9 761	9 936	10 111	10 287
			gross tkm in mill.	9 350	9 847	10 344	10 841	11 338	11 835	12 332	12 828
		on RFC	train-km in thous.	7 490	7 793	8 095	8 398	8 700	9 002	9 305	9 607
			gross tkm in mill.	7 581	7 948	8 315	8 681	9 048	9 414	9 781	10 147
Total	Passenger transport	total	**train-km in thous.**	**287 730**	**295 355**	**303 114**	**310 930**	**318 792**	**326 790**	**334 808**	**342 800**
			gross tkm in mill.	**64 454**	**65 014**	**66 003**	**67 142**	**68 508**	**70 115**	**71 520**	**72 881**
		on RFC	**train-km in thous.**	**52 203**	**53 024**	**53 848**	**54 614**	**55 489**	**56 347**	**57 268**	**58 068**
			gross tkm in mill.	**13 087**	**13 409**	**13 759**	**14 252**	**14 705**	**15 170**	**15 826**	**16 353**
	Freight transport	total	**train-km in thous.**	**119 831**	**120 713**	**122 227**	**124 097**	**126 257**	**128 214**	**130 238**	**132 483**
			gross tkm in mill.	**162 887**	**165 234**	**168 340**	**171 803**	**175 317**	**178 800**	**182 402**	**186 101**
		on RFC	**train-km in thous.**	**28 841**	**30 041**	**31 341**	**32 955**	**34 177**	**35 671**	**37 081**	**38 908**
			gross tkm in mill.	**35 483**	**37 781**	**39 805**	**41 812**	**43 750**	**45 514**	**47 516**	**49 250**

Graph 9 for graphical comparison shows the overall prognosis of the development of rail freight transport performances in the Amber RFC countries for all scenarios. Subsequently, graph 10 for graphical comparison shows the overall development of rail freight transport performances forecasted on the lines included in the Amber RFC for all scenarios.



	2019	2020	2021	2022	2023	2024	2025	2026
Pessimistic scenario	162 887	165 234	168 340	171 803	175 317	178 800	182 402	186 101
Realistic scenario	172 576	177 717	183 047	188 421	193 638	198 668	203 704	208 745
Optimistic scenario	182 336	190 266	197 825	205 112	212 028	218 603	225 068	231 448

Graph 9: Comparison of prognosis scenarios of total freight transport performances



	2019	2020	2021	2022	2023	2024	2025	2026
Pessimistic scenario	35 483	37 781	39 805	41 812	43 750	45 514	47 516	49 250
Realistic scenario	37 803	40 145	42 207	44 251	46 227	48 024	50 064	51 830
Optimistic scenario	40 277	42 685	44 798	46 893	48 914	50 749	52 839	54 641

Graph 10: Comparison of prognosis scenarios of freight transport performances on the Amber RFC lines

Based on the graphical representation of the prognosis of the development of total rail freight transport performances, we can conclude in both comparisons the forecasted linear increase in transport performances in all scenarios. The prognosis shows a more significant difference between the pessimistic and the realistic scenario, mainly influenced by the risks of the forecast model and the input data.

Based on the findings from the forecast, we can conclude:

- increase in transport performances in rail freight transport system,
- higher increase in rail freight transport performances on the lines included in the Amber RFC,
- general increase in rail passenger transport performances (total: gross tkm, train-km),
- increase in transport performances and resulting savings in negative social costs generated by transport,
- increased demands on capacity and technical parameters of lines included in the Amber RFC,
- requirements for modernization, reconstruction and optimization of the Amber RFC railway infrastructure and related rail, road, water and intermodal infrastructure,
- higher quality of communication and information technologies required,
- pressure on higher reliability of the rail system,
- requirement to meet the technical specifications for interoperability in rail passenger and freight transport,
- increase in international rail freight transport performances by approximately 3 – 6 % per year,
- pressure on the harmonisation of charges between rail and road freight transport,
- development of transport performances below the pessimistic scenario in the event of a significant impact of defined forecast risks.

7 ANALYSIS OF PORT OF KOPER IN THE REPUBLIC OF SLOVENIA

The Port of Koper lies in the Republic of Slovenia, in the northern part of the Adriatic Sea. Due to its exceptional location, it connects the Central and Eastern Europe with the Mediterranean. It is currently one of the most important seaports in the Southern Europe. It is also an important intermodal centre connected to the Trans-European Transport Network.

Vision until 2030: the Port of Koper (Luka Koper) wants to be the leading operator of port services between the seaports in the Southern Europe and the global provider of logistics solutions for the region of Central and Eastern Europe.

Mission: provide a reliable port system, development and support of global logistics solutions to the heart of Europe according to the demands of the economy and the most demanding clients.

Basic objectives resulting from the vision and mission:

- Flexible, modern and competitive port provider,
- Reliable and efficient contractor of quality port services,
- A successful business system of long-term stability,
- Promoter of complete logistics solutions,
- Optimal use of a single track railway: on average 82 freight trains per day, i.e. 14.2 million tonnes of cargo by rail,
- Diligent institutionalised stakeholder of sustainable development.

Due to its location, the Port of Koper is connected to the following major European transport networks and corridors:

1. CNC corridors:
   - Baltic – Adriatic Corridor,
   - Mediterranean Corridor.
2. Rail Freight Corridors (RFCs) :

- **RFC 5 (Baltic – Adriatic):** Gdynia – Katowice – Ostrava / Žilina – Bratislava / Vienna / Klagenfurt – Udine – Venice / Trieste/ Bologna / Ravenna / Graz – Maribor – Ljubljana – **Koper** / Trieste,
- **RFC 6 (Mediterranean):** Almería – Valencia / Madrid – Zaragoza / Barcelona – Marseille – Lyon – Turin – Milan – Verona – Padua / Venice – Trieste / **Koper** – Ljubljana – Budapest – Zahony (Hungarian – Ukrainian border),

- **RFC 10 (Alpine-Western Balkan):** Salzburg – Villach – Ljubljana –/ Wels/Linz – Graz – Maribor – Zagreb – Vinkovci/Vukovar – Tovarnik – Beograd – Sofia – Svilengrad (Bulgarian-Turkish border),
- **RFC 11 (Amber): Koper** – Ljubljana/Zalaszentivan – Sopron/Csorna/(Hungarian – Serbian border) – Kelebia – Budapest – Komárom – Leopoldov/Rajka – Bratislava – Žilina – Katowice/Kraków – Warszawa/Łuków – Terespol – (Polish – Belarusian border)

3. Transport networks according to the European agreement on important international combined transport lines and related installations.

7.1 Basic information about the Port of Koper

The Port of Koper is managed and developed by Luka Koper d. d., a public limited company (in 2016 there were 886 employees). It is responsible for maintaining the high level of shipping and cargo traffic operations in the Port of Koper. The services are available day and night, 365 days a year. The Port of Koper includes 12 terminals with a total quay length of 3 300 meters designed for handling and storing the part load consignments, oversize loads, containers, RO-RO technology, cars and dry bulk and liquid cargoes.

The Port of Koper is part of the North Adriatic Ports Association (NAPA), which also includes the ports of Trieste, Venice, Ravenna and Rijeka. The combination of these ports represents the most inexpensive waterway connecting the Europe with the Far East (http://www.portsofnapa.com/about-napa). It is a multimodal gateway created for major European markets. The Association also deals with coordinated planning of road, rail and maritime infrastructures as well as harmonization of regulations and procedures in the field of port services provision.

The Port of Koper, with its significant position in the Southern Europe, is the member of the following international organization:

1. ESPO (The European Sea Ports Organisation) represents the port authorities, port associations and port administrations of the seaports of 23 Member States of the European Union and Norway at EU political level.
2. MedCruise (The Association of Mediterranean Cruise ports) has 72 members representing more than 100 Mediterranean ports, including the area of the Black Sea, the Red Sea and the Near Atlantic, as well as 32 associated members representing other associations.
3. FEPORT (The Federation of European Private Port Companies and Terminals) was established in 1993 and represents the interests of a large variety of terminal operators and stevedoring companies performing operation in the ports. It currently includes more than 400 terminals in the seaports of the European Union and more than 1200 companies.

Basic technical characteristics of the Port of Koper:

Total port area:	2 800 000 m^2
Enclosed warehousing area:	247 000 m^2
Covered storage area:	76 000 m^2
Open storage area:	900 000 m^2
Pier total length:	3 300 m
Maximum sea depth:	18 m

Basic technical characteristics of the container terminal:

Total terminal area:	270 000 m^2
Stacking area:	180 000 m^2
Pier length:	596 m
Railway tracks (number x length in m):	5 x 700 m, 2 x 270 m, 2 x 300 m
Storage capacity – marine terminal:	19 130 TEU
Storage capacity – empty containers:	9 547 TEU

Equipment	Lift capacity (ton)
3 STS panamax cranes	40 (40 feet)/ 45 (2 x 20 feet) under spreader
4 STS post-panamax cranes	51 (40 feet)/ 65 (2 x 20 feet) under spreader
4 STS Super post-panamax cranes	51 (40 feet)/ 65 (2 x 20 feet) under spreader
22 Rubber – Tyred G/C (storage area)	40 t
3 Rail Mounted Gantries (railway)	40 t
12 Reach Stackers	42 – 45 t
8 ECH – empty container handler	7 – 9 t

The basic port activity is carried out at specialised terminals, which are technically and organisationally suitable for handling and warehousing of specific cargo groups. The port has a railway and road connection, production facilities, workshops, garages and other necessary complementary facilities.

In addition to basic services, the additional services are provided in the port (e.g. stripping and stuffing of containers, dewaxing and waxing of vehicles, mechanical, painting and body repair services, bananas palletization, wood protection against mould and pests etc.).

The Port of Koper has 12 specialized terminals:

- Container Terminal
- Car and Ro-Ro terminal
- General cargo terminal
- Reefer terminal
- Timber terminal
- Dry bulk terminal
- Silo terminal
- Alumina terminal
- Iron ore and coal terminal
- Liquid cargoes terminal
- Livestock terminal
- Cruise terminal

The following figure shows the structure of the Port of Koper. The white line indicates the main road infrastructure and the black line indicates the railway infrastructure network.

Figure 32: *Individual terminals and their location within the Port of Koper*
(Source: *http://www.portsofnapa.com/port-of-koper)*

The railway infrastructure within the Port of Koper ensures the efficiency and broad possibilities of transporting all goods handled in all twelve terminals of the port. The infrastructure also provides necessary transport services for Central and Eastern Europe.

The following table shows the individual scheduled routes including their frequency from the Port of Koper.

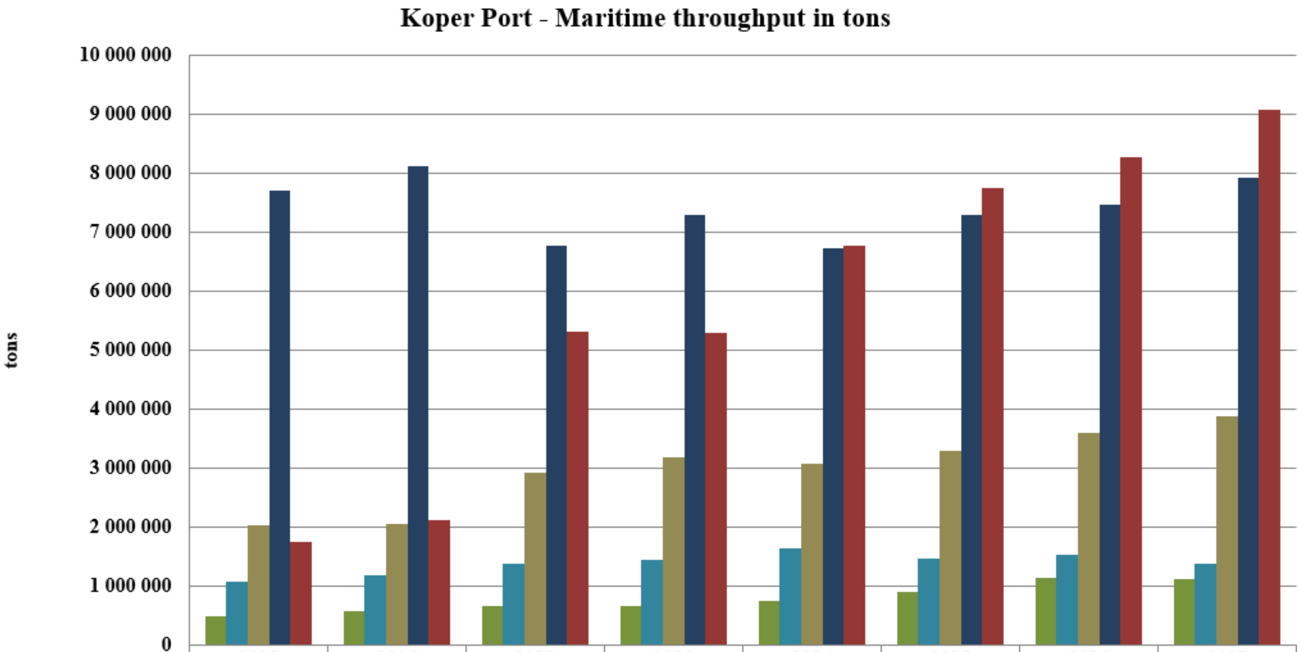
Table 37: Overview of scheduled routes from Port of Koper

Country	Route	Frequency
Austria	Koper – Graz (Adria Transport)	10 x weekly
	Koper – Villach – antenna to Viena, Linz, Salzburg, Wolfurt (RCO/ Adria Kombi)	up to 5 trains/ week
	Koper – Enns (Metrans)	2 x weekly (via Ybbs – Krems)
Hungary	Koper – Budapest BILK (Adria Kombi)	7 trains weekly
	Koper – Budapest Mahart (Metrans)	Up to 14 trains/ week
	Koper – Budapest Törökbálint (Integrail)	3 trains/ week
	Koper – Budapest Mahart (Integrail)	2 x weekly
	Koper – Budapest Mahart (EP Cargo)	2 x weekly
Slovakia	Koper – Bratislava (Adria Kombi)	4 trains/ week
	Koper – Dunajská Streda – various destinations (Metrans)	Up to 14 trains/ week
	Koper – Žilina –KIA (Metrans)	Up to 7 trains/ week
Czech republic	Koper – Dobra u Fridku Mystku (Adria Kombi – dedicated)	4 trains/ week
	Koper – Ostrava (Metrans)	2 x weekly
	Koper – Paskov (AWT dedicated)	1 x weekly
	Koper – Dunajska Streda – Zlin – Prague (Metrans – via Dunajska Streda	Daily
Poland	Koper – Wroclaw (Siechnice) – Ostrava – Koper (Baltic Rail)	2 trains/ week
Germany	Koper – Ljubljana – München (Adria Kombi)	5 trains/ week
	Koper - München (Adria Kombi)	3 x weekly (direct service)
Slovenia	Koper – Ljubljana – Celje – Maribor (Adria Kombi)	2 trains/ day
Bulgaria	Koper – Sofia (Adria Kombi)	Spot train
Romania	Koper – Arad (Adria Transport)	1 train/ week
Italy	Koper – Padova (Adria Kombi dedicated)	1 train/ week
Serbia	Koper – Novi Sad (via Budapest) (Adria Kombi/ Transagent d.o.o.)	Weekly service
	Koper – Ljubljana – Beograd (Adria Kombi)	2 x weekly
Croatia	Koper – Ljubljana – Zagreb (Adria Kombi)	2 x weekly

Source: www.luka-kp.si

7.2 Analysis of the Port of Koper throughput

The significant location and the technical and technological facilities of the Port of Koper have a favourable effect on the demand for the services provided. The interest in the services of the Port of Koper by the transport operators can be determined using the analysis of the reached throughput. Based on the need to determine the demand for the port services provided and demonstrate strategic importance for the Amber corridor, the following graph analyses the throughput reached in the Port of Koper in the period 2005 – 2017. The analysis is focused on the throughput of goods handled in tons.

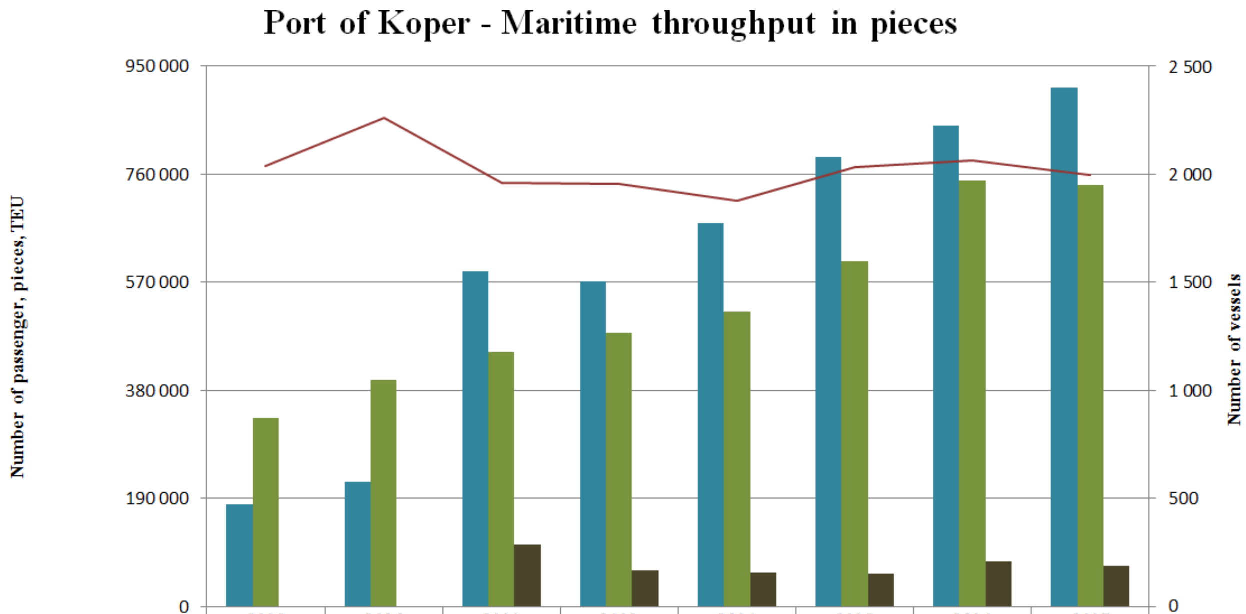


	2005	2006	2011	2012	2014	2015	2016	2017
Vehicles	483 426	570 214	665 878	674 692	763 621	902 168	1 139 559	1 123 779
General cargo	1 087 303	1 180 924	1 383 354	1 438 833	1 643 552	1 475 076	1 534 204	1 377 702
Liquid bulk cargo	2 030 570	2 052 321	2 922 891	3 194 636	3 073 620	3 297 225	3 592 947	3 876 535
Dry bulk cargo	7 702 234	8 106 467	6 769 845	7 280 490	6 724 354	7 295 426	7 469 514	7 917 542
Containers	1 762 569	2 120 807	5 309 346	5 292 047	6 760 204	7 741 976	8 274 429	9 071 413

Graph 11: Overview of achieved throughputs in tons in Port of Koper
(Source: Annual reports of Luka Koper, Port of Koper)

The analysis showed the overall increase in throughput over the analysed period. In total, 23 366 959 tons of goods were handled in 2017 (by 6% more than in 2016) which represents an increase of 78.84 % in comparison with 2005. During 2014 – 2017 there was an increase in all monitored goods except for General cargo, where a fluctuating trend was recorded. The most significant increase among the surveyed goods was achieved in the container transport. In 2017, container throughput accounted for 38.8 % of total throughput, while in 2005, it accounted for only 13.5 %. Based on these facts, we can deduce potential for increase in container transport in the coming years.

The following graph shows the progress of the reached throughput in number of pieces, TEU, and passengers in the period 2005 - 2017.



	2005	2006	2011	2012	2014	2015	2016	2017
Containers (TEU)	179 745	218 970	589 314	570 744	674 033	790 736	844 776	911 528
Vehicles (pieces)	332 271	399 099	447 689	480 328	518 900	607 326	749 006	741 253
N. of passengers	0	0	108 729	64 455	58 970	57 893	78 923	72 175
N. of vessels	2 038	2 262	1958	1 954	1 878	2 032	2 061	1 995

Graph 12: Overview of reached throughput in quantified amount in the Port of Koper (Source: Annual reports of Luka Koper, Port of Koper)

Based on the figures in the graph, we can confirm an increase of throughput in the number of containers and vehicles. On the contrary, the number of passengers has a decreasing trend and the number of vessels has a fluctuating trend. In 2017, 911 528 TEU were handled in the Port of Koper, which is by 731 783 TEU more than in 2005. With the throughput of TEU the Port of Koper is now classified as the first in the Adriatic region. In the case of the number of pieces of vehicles handled, there is increase by 123.1 % in 2017 compared to 2005.

Investments are necessary to maintain the current state and the subsequent development of the Port of Koper within the competitive fight. The following table shows the development of investments in real estate, machinery and equipment in the Port of Koper.

Table 38: Investment development in Port of Koper in 2012 - 2016

Year	2012	2013	2014	2015	2016
Luka Koper, d. d.	17 768 219	14 522 369	28 485 811	36 871 798	60 313 916
Luka Koper Group TOTAL	18 639 095	14 825 864	29 958 975	37 402 753	61 781 064

Source: Annual Report of Luka Koper

Investments have a generally increasing trend. The Luka Koper,d.d. made investments in the amount of EUR 60 313 916 EUR in 2016, what is by 23 442 118 EUR more than in the previous year. In 2016, Luka Koper, d.d. invested EUR 18.1 million in the ordered 12 new high-capacity cranes. From the point of view of increasing competitiveness and capacity, it is the most effective valuation of investment resources with planning for the future. Within the container terminal, the funds have been invested in the new RMG technology that allows simultaneous handling of five train sets as well as the use of cranes for large container handling (capacity 20 000 TEU). By 2020, the capacity of the container terminal is planned to increase to 1.3 million TEU per year.

The important facts and opportunities for the Amber corridor:

- nearly two thirds of the cargo arrives to and leaves the port by rail,
- the Hungarian railway operating company Integrail will establish a new container block train connection between the Port of Koper container terminal and the Budapest Mahart Container Center terminal. The service runs from 15 March 2018 through two trains a week.
- the Slovenian railway operator Adria Kombi introduced a new direct railway service between Luka Koper Container Terminal and DUSS-Terminal München-Riem. The service runs from March 6, 2018 three times per week in both directions. The Germany represent an important market for the Port of Koper, from the fruit and vegetable supplies from the Mediterranean countries to the transport of Volkswagen vehicles. The Bavaria is one of the most developed and the export-oriented Germany regions that represent a big potential for the Port of Koper.
- in September, 2017, the Czech railway operator, EP Logistics started a new direct block train connection between Luka Koper Container Terminal to Budapest Mahart Terminal.

On the basis of the presented facts about the Port of Koper, which concerned the location, division, technical and technological equipment and demand for its services, we can confirm its strategic importance for the Amber corridor. The port is an important gateway especially for the goods transported in TEU from Asia to the European hinterland, mainly to Central and Eastern Europe. This creates the possibilities to get transportations for the Amber corridor, as an increase in the intermodal transport performances can be expected in the next period. The development of the port, its services and the resulting demand from transport operators create a perspective for effective and efficient cooperation between the Port of Koper and the Amber corridor. Within the cooperation, it will be possible to provide better intermodal transport and logistics services, which will lead to higher rail freight performances. The transportations for the automotive and machine industries are a great opportunity for cooperation between the Port of Koper and the Amber corridor. An increased need for transport of mineral resources, mainly gasses and iron ore is expected in the future. This implies the need for the necessary cooperation (strategic partnership) between the Port of Koper and the Amber corridor, which can also contribute to an increase in the port throughput and its overall development and position.

8 TRANSPORT POTENTIAL OF SELECTED COUNTRIES

Worldwide growth in international trade, including trade between EU countries and selected countries, directly creates demand for transport services. Continuously increasing demand for transport services, particularly in the international transport of goods, creates a number of possibilities for the provision of rail transport services. The opportunity to acquire a significant share in the transport market is mainly due to the requirements for long and medium distance transport in international transport. Many suppliers from selected countries currently prefer and require the high quality, reliable and cost-effective transport services. For the described reasons and the geographical routing of the Amber RFC, it is necessary to examine the transport potential of the selected countries, on the basis of which the measures for support of rail freight services can be identified. An examination of the transport potential is carried out for the following countries:

- China,
- Russia,
- Belarus,
- Serbia,
- Turkey,
- Ukraine

The selection of countries was based on the geographical location of the Amber RFC, the current trade in international trend and possible cooperation between countries.

Table 39 contains a summary of the basic data on selected analysed countries.

Table 39: Overview of basic information on countries under consideration

Country	China	Russia	Belarus	Serbia	Turkey	Ukraine
Population (2016)	1 379 000 000	144 342 396	9 507 120	7 057 412	79 512 426	45 004 645
Area (km^2)	9 596 961	17 075 200	207 595	88 361	783 356	603 628
Length of operated railway lines (km)	121 000	86 000	5 470	3 809	12 532	21 640
Length of motorway (km)	136 000	806	-	782	2 289	199
Road length (km)	4 696 300	1 396 000	86 900	44 637	426 906	169 496

Source: Eurostat, National statistics office

The economic growth directly affects the production of final products and services in individual countries. This production consequently creates demand for transport services which is important for the provision of rail transport services. Table 40 therefore analyses the GDP development in the analysed countries in the period 2010 – 2016.

Table 40: Analysis of GDP development in individual countries under consideration

Country	Measure/ Year	2010	2012	2014	2015	2016
China	GDP growth (annual %)	10,6	7,8	7,3	6,9	6,7
	GDP (current US $) in trillion	6,101	8,561	10,482	11,065	11,199
Russia	GDP growth (annual %)	4,5	3,6	0,7	-2,8	-0,2
	GDP (current US $) in trillion	1,525	2,210	2,064	1,366	1,283
Belarus	Real GDP growth rate-volume	7,8	1,7	1,7	-3,8	-2,6
	GDP in million EUR, current prices*	-	-	-	-	-
Serbia	Real GDP growth rate-volume	0,6	-1,0	-1,8	0,8	2,8
	GDP in million EUR, current prices*	29 766	31 683	33 319	33 491	34 617
Turkey	GDP growth (annual %)	8,5	4,8	5,2	6,1	3,2
	GDP (current US $) in billion	771,877	873,982	934,168	859,794	863,712
Ukraine	GDP growth (annual %)	4,2	0,2	-6,5	-9,8	2,3
	GDP (current US $) in billion	136,013	175,781	133,503	91,031	93,27

**GDP and main components (output, expenditure and income)*
Source: Eurostat, World Bank national accounts data, OECD National Accounts data files

The GDP analysis in Table 40 showed an upward trend in the countries concerned, except Russia and Ukraine. The highest GDP was recorded in the China and Russia, while the lowest in Serbia. The GDP growth rate was highest in China and Turkey. The lowest growth rate was recorded in Belarus and Russia. Based on the analysis carried out, it is possible to assume the GDP growth in individual countries with different growth rates, with possible negative development, too.

Table 41 analyses the import and export of goods in total value (in euros) to/from the EU countries and specifically from/to the Amber RFC countries and from/to selected countries in the period 2010 – 2016.

Table 41: Import and export value from/ to the EU in mill. €

Country	Country/ Year	2010	2012	2014	2015	2016
Import value from the EU in mill. €						
China	Total EU 28 countries	283 931	292 122	302 518	350 847	344 915
	Total Amber RFC countries	16 443	16 794	18 978	22 416	23 837
Russia	Total EU 28 countries	162 079	215 131	182 384	136 388	118 892
	Total Amber RFC countries	23 817	34 334	27 672	19 590	15 551
Turkey	Total EU 28 countries	43 062	48 822	54 415	61 663	66 765
	Total Amber RFC countries	2 471	2 809	3 415	4 290	4 355
Belarus	Total EU 28 countries	2 672	4 619	3 444	3 725	2 948
	Total Amber RFC countries	175	225	203	233	227
Serbia	Total EU 28 countries	4 349	5 053	7 110	7 879	8 739
	Total Amber RFC countries	988	1 125	1 406	1 584	1 920
Ukraine	Total EU 28 countries	11 547	14 647	13 734	12 844	13 159
	Total Amber RFC countries	2 489	3 779	3 496	3 018	3 377
Export value to the EU in mill. €						
China	Total EU 28 countries	113 454	144 227	164 623	170 357	169 664
	Total Amber RFC countries	3 488	4 279	4 681	4 395	4 741
Russia	Total EU 28 countries	86 308	123 469	103 225	73 745	72 338
	Total Amber RFC countries	10 311	14 078	12 335	9 011	8 879
Turkey	Total EU 28 countries	61 929	75 491	74 719	78 962	77 890
	Total Amber RFC countries	4 205	4 722	4 662	5 429	5 434
Belarus	Total EU 28 countries	6 631	7 847	7 458	5 704	4 983
	Total Amber RFC countries	305	309	339	267	230
Serbia	Total EU 28 countries	7 881	9 660	10 357	11 155	11 664
	Total Amber RFC countries	2 225	2 750	3 136	3 206	3 424
Ukraine	Total EU 28 countries	17 413	23 866	16 988	14 033	16 565
	Total Amber RFC countries	5 034	6 647	5 282	4 713	5 369

Source: European Commission – Trade – EU Trade Helpdesk – Statistics

The analysis carried out in Table 41 showed the value increase in import of goods from China, Turkey, Serbia, Ukraine to the EU countries and the Amber RFC countries. On the contrary, the decrease in import was recorded from Russia and Belarus. This negative trend is highly influenced by EU sanctions against Russia. Export of goods from the Amber RFC countries and the EU countries to the analysed countries showed a directional inequality. The highest export was made to the China, while the lowest one to Belarus.

Table 42 analyses the import and export of goods in total weight (in tonnes) to/from the EU countries and specifically from/to the Amber RFC countries and from/to analysed countries in the period 2010 –2010 – 2016.

Table 42: Import and export quantity from/to the EU in 1000 t

Country	Country/ Year	2010	2012	2014	2015	2016
Import quantity from the EU in 1000 t						
China	Total EU 28 countries	54 040	49 275	59 161	59 311	59 571
	Total Amber RFC countries	2 666	2 816	3 606	3 550	4 081
Russia	Total EU 28 countries	402 496	393 610	403 956	404 071	425 812
	Total Amber RFC countries	61 072	59 410	57 737	54 833	54 939
Turkey	Total EU 28 countries	24 363	22 451	24 885	27 239	29 738
	Total Amber RFC countries	968	1 097	1 244	1 373	1 421
Belarus	Total EU 28 countries	8 749	10 889	10 805	12 900	13 148
	Total Amber RFC countries	321	284	267	401	604
Serbia	Total EU 28 countries	5 261	4 505	5 636	6 012	7 516
	Total Amber RFC countries	1 145	918	1 492	1 353	1 839
Ukraine	Total EU 28 countries	46 407	51 882	56 513	54 656	54 975
	Total Amber RFC countries	15 172	16 478	16 829	15 764	16 468
Export quantity to the EU in 1000 t						
China	Total EU 28 countries	33 228	40 892	43 338	46 142	49 407
	Total Amber RFC countries	654	766	1 026	1 103	1 254
Russia	Total EU 28 countries	24 436	29 325	24 928	16 649	15 115
	Total Amber RFC countries	3 341	4 301	3 949	2 397	2 170
Turkey	Total EU 28 countries	39 523	45 715	47 050	44 839	46 874
	Total Amber RFC countries	1 754	1 677	1 504	1 369	1 846
Belarus	Total EU 28 countries	2 484	3 040	3 297	3 350	3 034
	Total Amber RFC countries	87	84	79	60	57
Serbia	Total EU 28 countries	5 444	5 480	5 627	6 821	6 796
	Total Amber RFC countries	2 017	1 606	1 891	2 012	2 336
Ukraine	Total EU 28 countries	7 990	9 771	8 896	9 504	9 492
	Total Amber RFC countries	3 167	3 982	4 049	4 720	4 859

Source: European Commission – Trade – EU Trade Helpdesk – Statistics

The transport performance analysis in Table 42 showed an increase in import of goods from all selected analysed countries to the EU countries and the Amber RFC countries. At the same time, a significant share of import of goods within the Amber RFC countries was showed. The most important importers of goods are Russia, China and Ukraine. Export of goods from the Amber RFC countries and the EU countries to the analysed countries showed a directional inequality. The highest export was achieved to the China and Turkey, while the lowest one to Belarus.

The development of indicators in Tables 41 and 42 is highly influenced by the political, trade and economic relations of all parties concerned. As a result of economic growth in most countries surveyed, we can assume an increase in import of goods and an increase in demand for international transport services.

On the basis of the analysis carried out in Tables 40-42, it can be concluded:

- economic growth in most of selected countries: shown by the analysis of the economic development of individual examined countries and the growth of international trade, the expected GDP growth in China is at 6 % and Turkey at 3 %,
- increase in number of goods transported from/to the EU 28 countries (including a share of the Amber RFC countries) from the selected countries: results from the analysis of trade between the Amber RFC countries and the selected countries. The analysis showed general growth in imports and exports of goods within the selected countries, e.g. the increase in imports from Turkey to the Amber RFC countries from 968 000 tons in 2010 to 1 421 000 tons in 2016.
- increase in demand for transport services from China, Ukraine and Russia: affected by the trade between the Amber RFC countries and the selected countries, economic development of selected countries and consumption of the Amber RFC countries (higher consumption results from the economic analysis carried out in Chapter 4),
- growth of international trade of the Amber RFC countries with Serbia,
- sufficient increase in demand for transport services from Serbia: confirmed by the growth of trade, imports of 1 839 000 tons of goods from Serbia in 2016 to the Amber RFC countries and exports of 2 336 000 tons goods from the Amber RFC countries to Serbia,
- pressure on fast, reliable and safe transport of goods from the selected countries to the Amber RFC countries as well as the EU countries: affected by the higher value of the goods transported, pressure on keeping the agreed arrival times, motivation of shift of transport performances from water to rail freight transport,
- sufficient potential for international rail transport from/to the selected countries from the EU 28 countries (including a share of the Amber RFC countries): confirmed by the gradual increase in number of goods transported within the selected countries and the EU countries,
- strategic importance of the Amber RFC for transportations East Asia – Central Europe: results from the geographical routing of the Amber RFC and technical condition of the railway lines,
- lowest transport potential for the Amber RFC can be expected from/to Belarus: shown by the results of import and export analysis with Belarus showing the lowest number from the selected countries,
- import of goods to the EU countries from the analysed countries has a generally increasing trend and such a trend can be expected also in the future, based on the GDP development in the analysed countries..

For the Amber RFC, the sufficient possibilities of new transport opportunities within the analysed countries are being created. New transport opportunities, that would be suitable for the transport by rail, can be expected in Serbia, Ukraine, Turkey and Russia. Within these countries, the opportunities for international cooperation and the subsequent provision of comprehensive transport services are created, in particular through intermodal transport and transport of bulk substrates, gases and oil. Based on the development of transport flows, a directional inequality can be assumed.

Within acquisition the transportations and significant position of rail freight transport on the international transport services market, high quality railway infrastructure, available, reliable and cost-attractive services and technological undemandingness of transport of goods are necessary. In particular, it is necessary to take measures to reduce the technological lost times at the border crossings with selected countries resulting from the legislation and technical parameters of lines and rolling stock. It is important to eliminate the bottlenecks at border crossings.

9 AMBER RFC GRAPHICAL REPRESENTATION

All analysed data, from which the results and conclusions presented in the previous Chapter were subsequently defined, were necessary to define exactly the Amber RFC routing and to divide all proposed lines into the principal, diversionary and connecting lines of the established corridor. The results of the draft for the precise routing of the established Amber RFC and the technical parameters of the lines are given in the continuation of Chapter 9.

The subchapter contains a graphical representation of all lines (principal, diversionary, connecting) which will included in the Amber RFC in individual member states of the corridor. In the following figure, routing of the whole Amber RFC is shown for overall geographic overview of the corridor routing within the railway infrastructure of the member states.

Figure 33: *Preliminary graphical representation of Amber RFC routing*
(Source: ŽSR, VVÚŽ)

Republic of Poland

The initial routing of the principal line of the Amber RFC corridor in the Republic of Poland is at the Terespol border crossing with the Republic of Belarus in the direction Łuków – Dęblin – Radom. For connection of the capital of the Republic of Poland – Warszawa with the principal line, the connection Radom - Warszawa is being considered and at the same time with the diversionary line Dęblin – Tłuszcz – Warszawa. From the railway station Radom, the principal line continues to the railway station Tunel where it is branched in the direction Tunel – Mysłowice Brzezinka – Oświęcim and Tunel – Podłęże. The line section Podłęże – Oświęcim creates again the connection of these branched routes. The rail connection with the Slovak Republic for the needs of the Amber RFC is through the border crossings Zwardoń (PL) – Skalité (SK) and Muszyna (PL) – Plaveč (SK). The connection to the railway border crossing Zwardoń – Skalité is through the principal line from the direction Oświęcim. The connection to the railway border crossing Muszyna – Plaveč is through the principal line in branching Kraków - Podłęże - Tarnów – Nowy Sącz. Construction of a new line Tymbark – Podłęże is planned and, once completed, it will become part of the principal line. The graphical representation of the Amber RFC routing on the territory of the Republic of Poland is shown in Fig. 34.

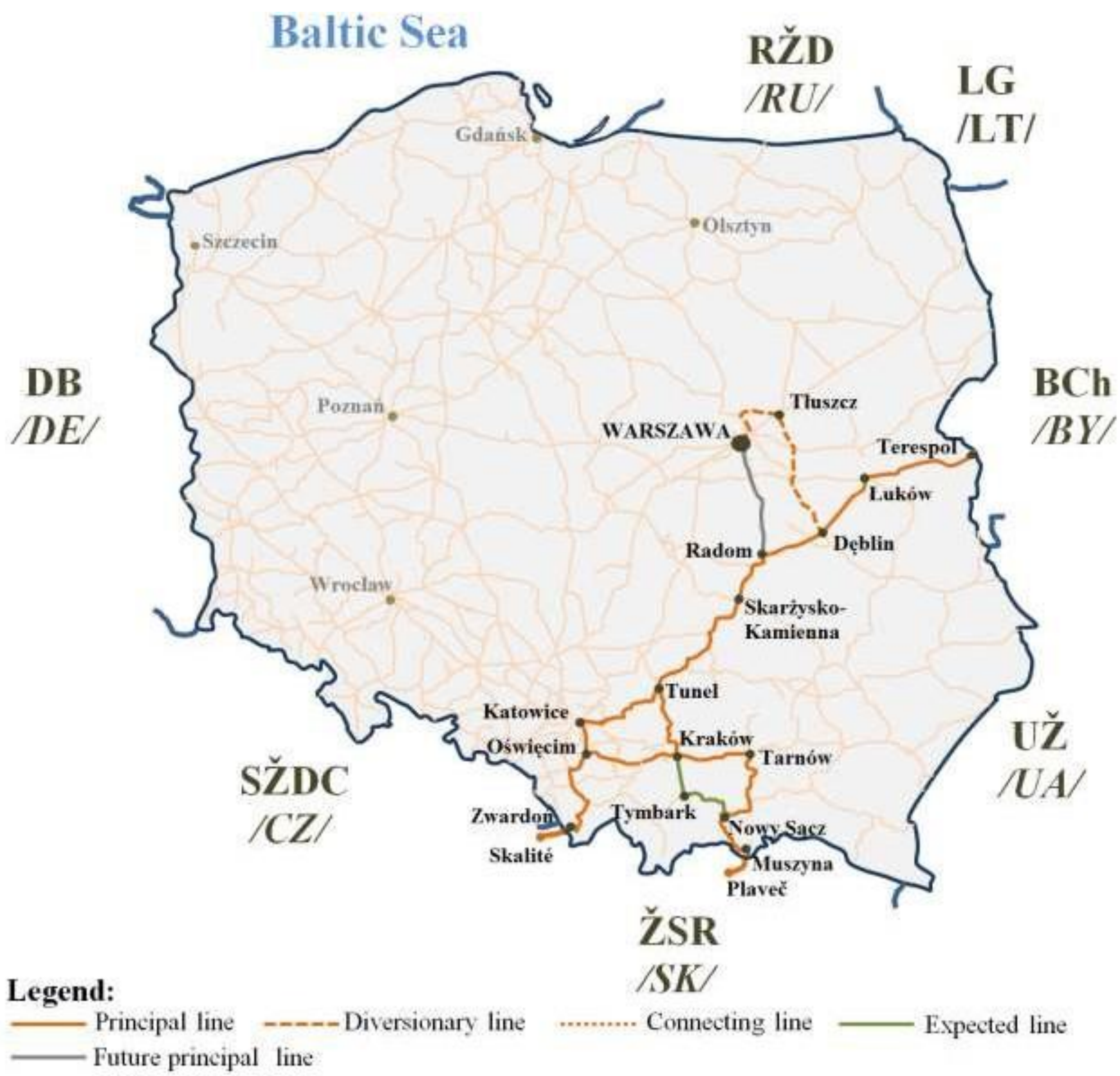


Figure 34: *Graphical representation of Amber RFC routes on PKP PLK network*

(Source: ŽSR, VVÚŽ)

Slovak Republic

The continuation of the Amber RFC on the territory of the Slovak Republic is realized in two branches through the railway border crossings Muszyna (PL) – Plaveč (SK) and Zwardoń (PL) – Skalité (SK). From the railway border crossing Plaveč, the principal line continues in transit in the direction north - south in the direction Prešov – Kysak – Košice – Čaňa št. hr. (SR) – Hidasnémeti (HU) to Hungary. The corridor is connected from the transport point of Košice to Hungary also via an diversionary line in the direction of Košice – Michaľany – Slovenské Nové Mesto – Sátoraljaújhely. Another proposed principal line passes through the border crossing Zwardoń – Skalité and continues Žilina – Trenčín – Leopoldov where the principal line is branched into the following branches:

- Leopoldov – Bratislava – Bratislava-Petržalka – Rusovce (SK) – Rajka (HU),
- Leopoldov – Galanta – Nové Zámky/ – Komárno (SK) – Komárom (HU),
  – Nové Zámky/ - Štúrovo (SK) – Szob (HU).

For technological and operative reasons, these branches are connected by the connecting line Bratislava – Dunajská Streda – Komárno. Note: When it comes to terminals, generally all terminals along designated lines should become designated to the corridor as well, except if a terminal does not have any relevance for the traffic in the corridor or where a private terminal decides not to take part in a corridor. The feeder lines from/to the terminals are designated as 'connecting lines'. The graphical representation of the Amber RFC routing on the territory of the Slovak Republic is shown in Fig. 35.

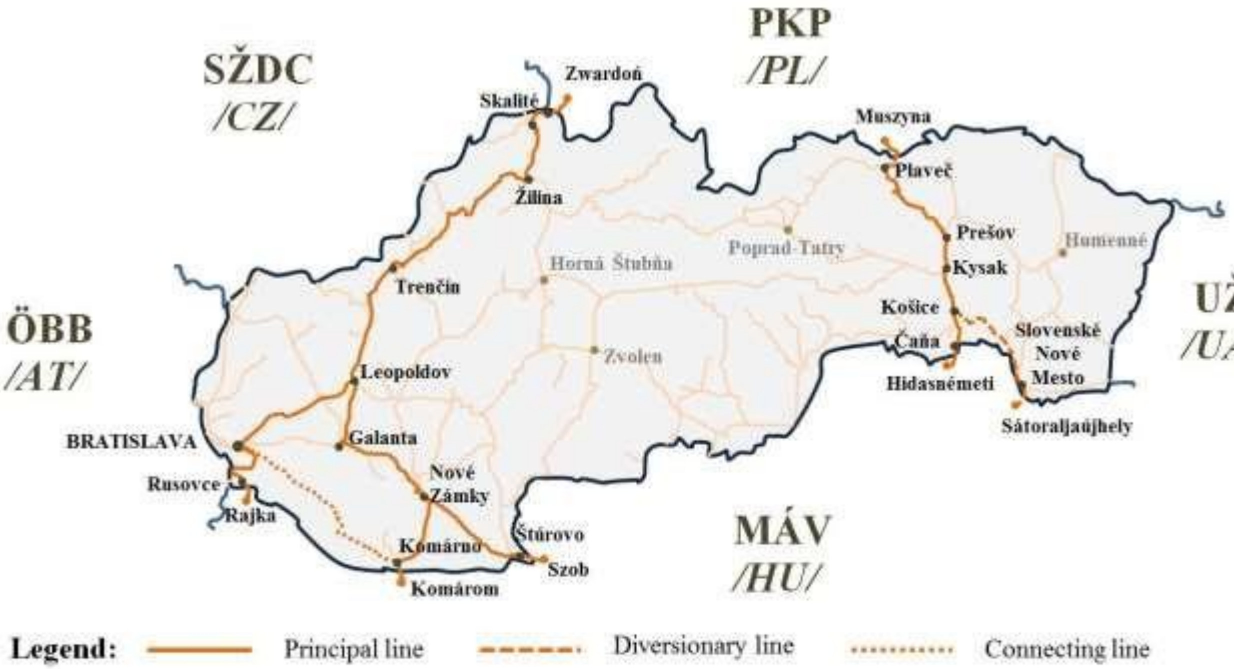


Figure 35: *Graphical representation of Amber RFC routes on ŽSR network*
(Source: ŽSR, VVÚŽ)

Hungary

The capital of Hungary – Budapest is located on the principal line as the important connection point of the lines from the Slovak Republic in the subsequent continuation of the corridor principal line to the Republic of Slovenia where this principal line provides the connection with the Balkan area through the Republic of Serbia through the railway border crossing Kelebia. Based on the transport potential and demand from carriers, the route Hatvan – Kelebia was designed and subsequently incorporated within the Amber RFC as the principal line in routing Hatvan – Szolnok – Cegléd – Kinskunfélegyháza – Kiskunhalas – Kelebia The direction of the principal line from the border crossing Čaňa (SK) – Hidasnémeti (HU) is through the transport node Miskolc leading to Budapest through the railway station Füzesabony. Miskolc is also connected with the Slovak Republic by a diversionary line from direction of Slovenské Nové Mesto (SK) – Sátoraljaújhely (HU) – Mezőzombor – Miskolc. The further connection of Budapest with the Republic of Slovakia is through the border crossings Štúrovo (SK) – Szob (HU), Komárno (SK) – Komárom (HU) and Rusovce (SK) – Rajka (HU) which are located on the principal line. These border crossings continue in the direction Csorna – Szombathely – Zalaszentiván – Zalalövő and then continue to the Republic of Slovenia through the border crossing station Hodoš on the Slovenian side. From both Csorna and Szombathely branches of the principal line continues to Sopron. The graphical representation of the Amber RFC routing on the territory of Hungary is shown in Fig. 36. GYSEV lines are indicated in yellow.

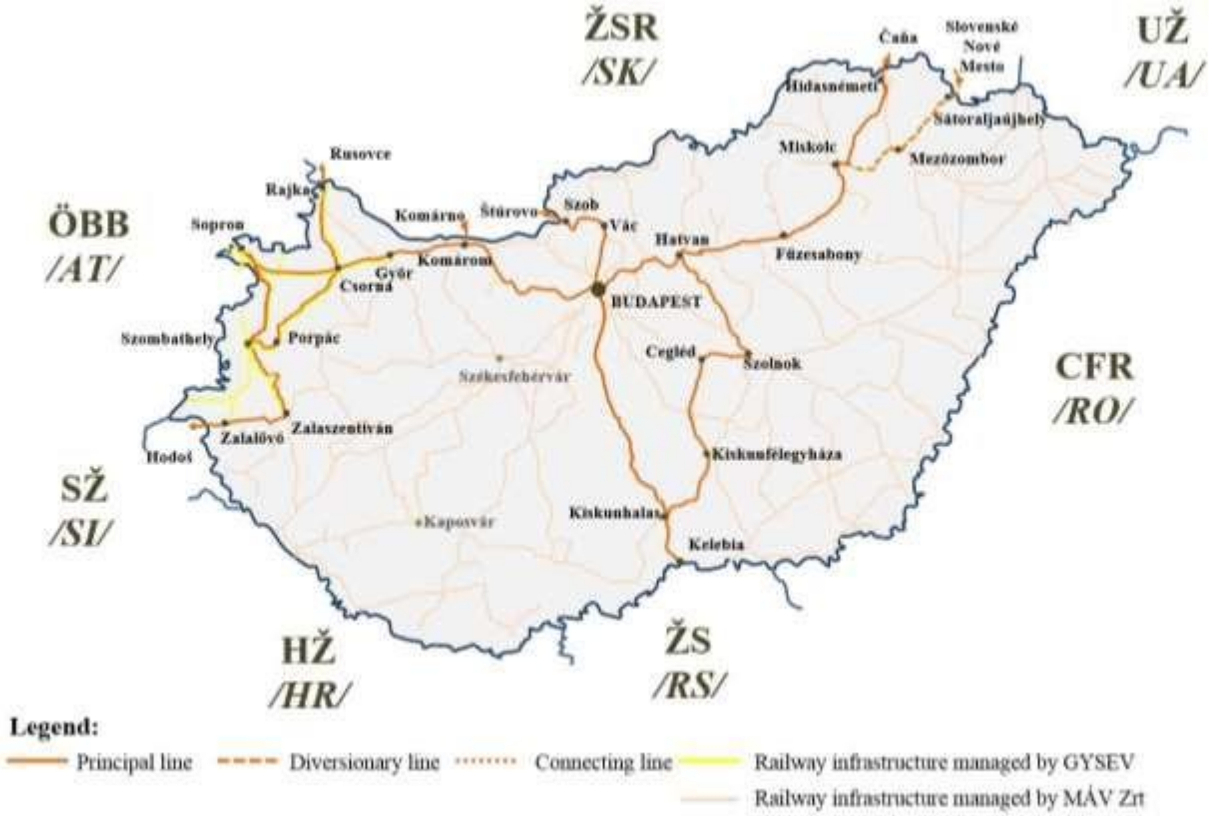


Figure 36: *Graphical representation of Amber RFC routes on MÁV and GYSEV network (Source: ŽSR, VVÚŽ)*

All track sections on the route Hidasnémeti s. b. – Budapest are to be classified as the principal lines of the Amber RFC. Justification: the route is a direct continuation of the principal lines from the Republic of Poland and the Slovak Republic; individual track sections on the route meet the technical requirements for the principal line (electrification, maximum train length, traffic density of the line); the classification of the lines creates better opportunities for investments in their modernization; potential of higher transport performances due to better corridor services; there are several transport possibilities on the eastern corridor route, e.g. from the Port of Koper, transport of final products from the factory in Haniska near Košice, goods transport from Asia to Hungary, etc.

Republic of Slovenia

The principal line on the territory of the Republic of Slovenia passes in the direction southwest and is directed at Zalalövő (HU) – Hodoš (SI) – Pragersko – Celje – Ljubljana – Divača – Koper. The connecting lines to the principal line are directed at Velenje – Celje and Novo Mesto – Ljubljana. The graphical representation of Amber RFC on the territory of Slovenia is shown in Fig. 37.

Figure 37: *Graphical representation of Amber RFC routes on SŽ-I network*
(Source: ŽSR, VVÚŽ)

9.1 Technical parameters of Amber RFC

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

Description of stations:

- Border station of neighbouring country on the principal line
- Border station of neighbouring country on the diversionary line
- Station lying on a principal line (selected station)
- Station lying on a diversionary line (selected station)
- 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)
- Non-electrified

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:

9, G2, G

Intermodal freight code (P/C)

1	P/C 50/370
2	P/C 70/390
3	P/C 70/400
4	P/C 80/400
5	P/C 80/401
6	P/C 82/412
7	P/C 90/410
8	P/C 99/429
9	P/C C21/C340

9, G2, G

Interoperational gauge

G1	Interoperational gauge G1
G2	Interoperational gauge G2
0B	PpB/0-SM
1B	PpB/1-SM
1C	PpC/1-SM
2C	PpC/2-SM

9, G2, G

ERTMS equipment

G	GSM-R
E	ETCS
Z	Zugfunk

Description of technical parameters of line:

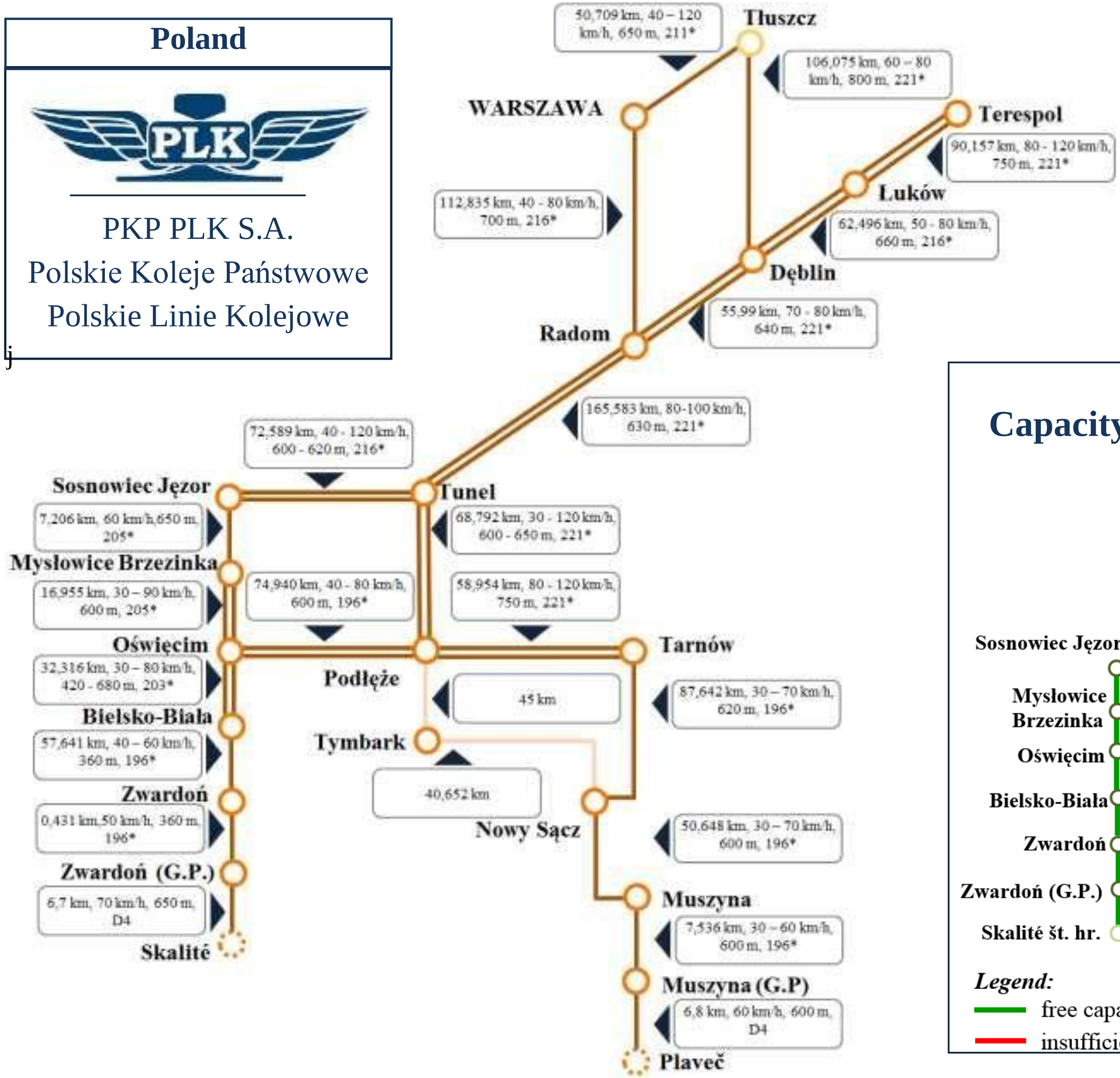
10 *km, 120 km/h, 700 m, D4* Distance, maximum speed, maximum length of train, axle load

Technical data of the lines are listed in Appendix A

Poland

PKP PLK S.A.
Polskie Koleje Państwowe
Polskie Linie Kolejowe

j

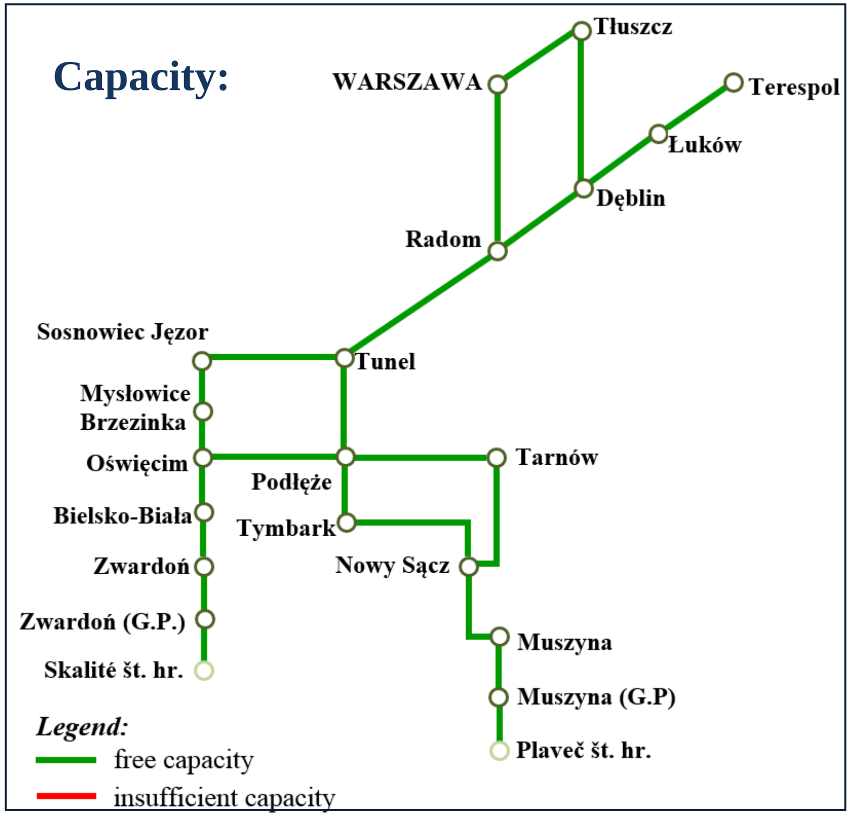


Note:

Expected line: Nowy Sącz - Tymbark - Podłęże

* Line category regarding axle load

source: member of Amber RFC from Poland



Loading gauge and ERTMS equipment

Poland

PKP PLK S.A.
Polskie Koleje Państwowe
Polskie Linie Kolejowe

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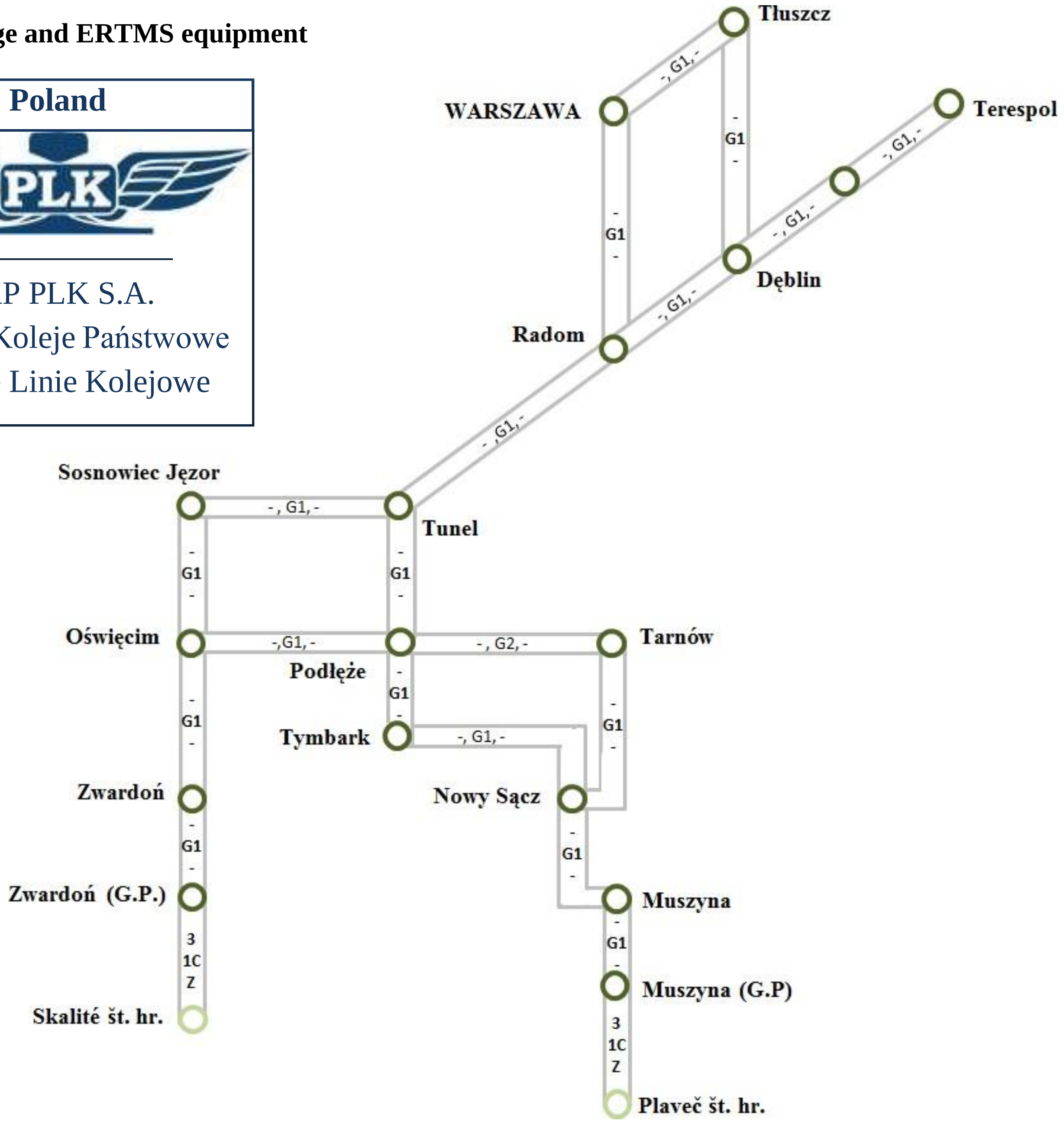
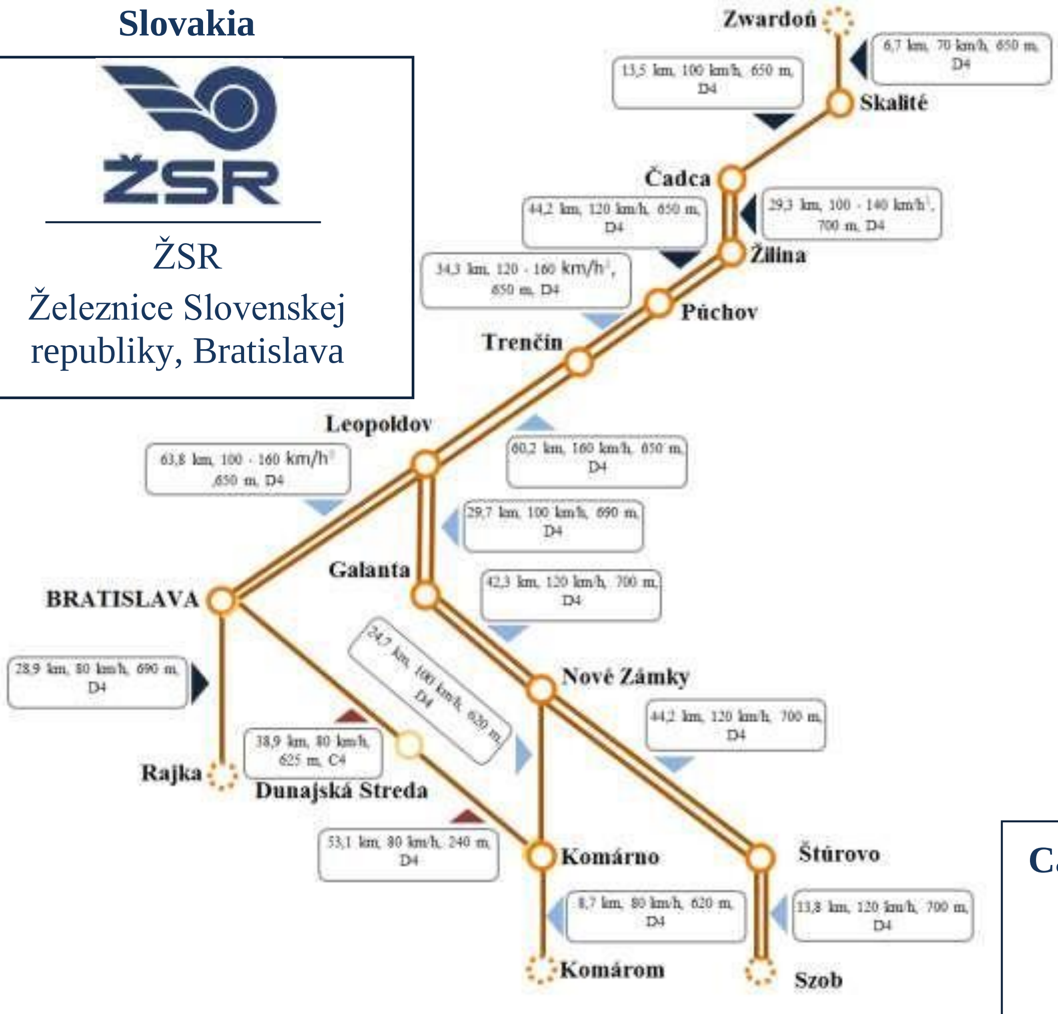
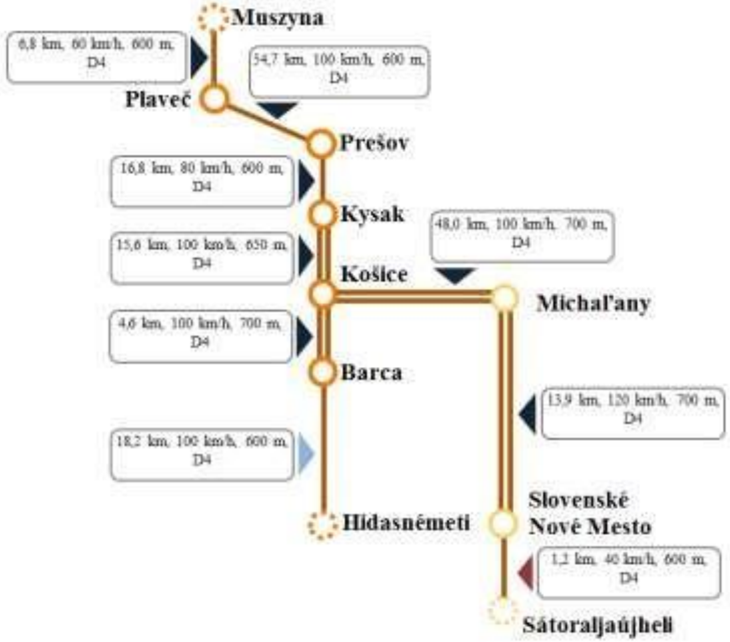


Slovakia

ŽSR

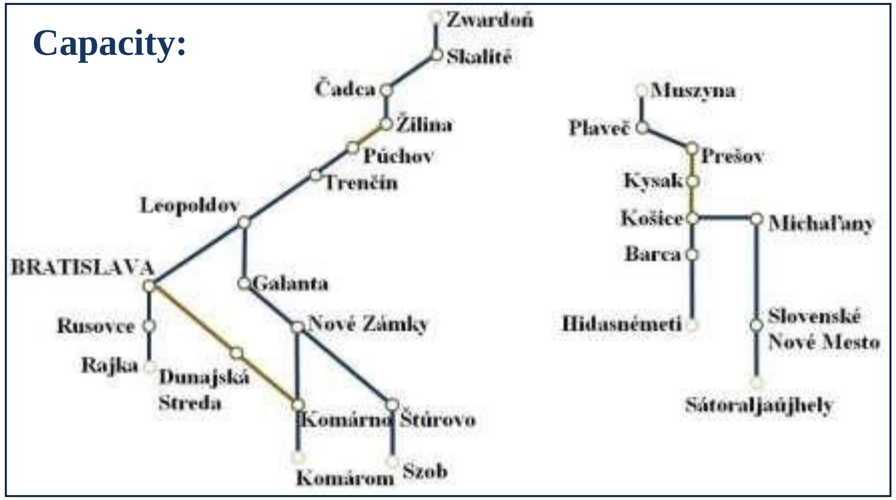
Železnice Slovenskej republiky, Bratislava





Note:
Different maximum speed (km/h) in the section:
[1]Žilina – Krásno nad Kysucou: 19,3 km, 140 km/h
Krásno nad Kysucou – Čadca: 10 km, 100 km/h
[2]Púchov – Trenčianska Teplá: 26,8 km, 160 km/h
Trenčianska Teplá – Trenčín: 7,5 km, 120 km/h
[3]Bratislava hl. St. – Bratislava Rača: 7,4 km, 100 km/h

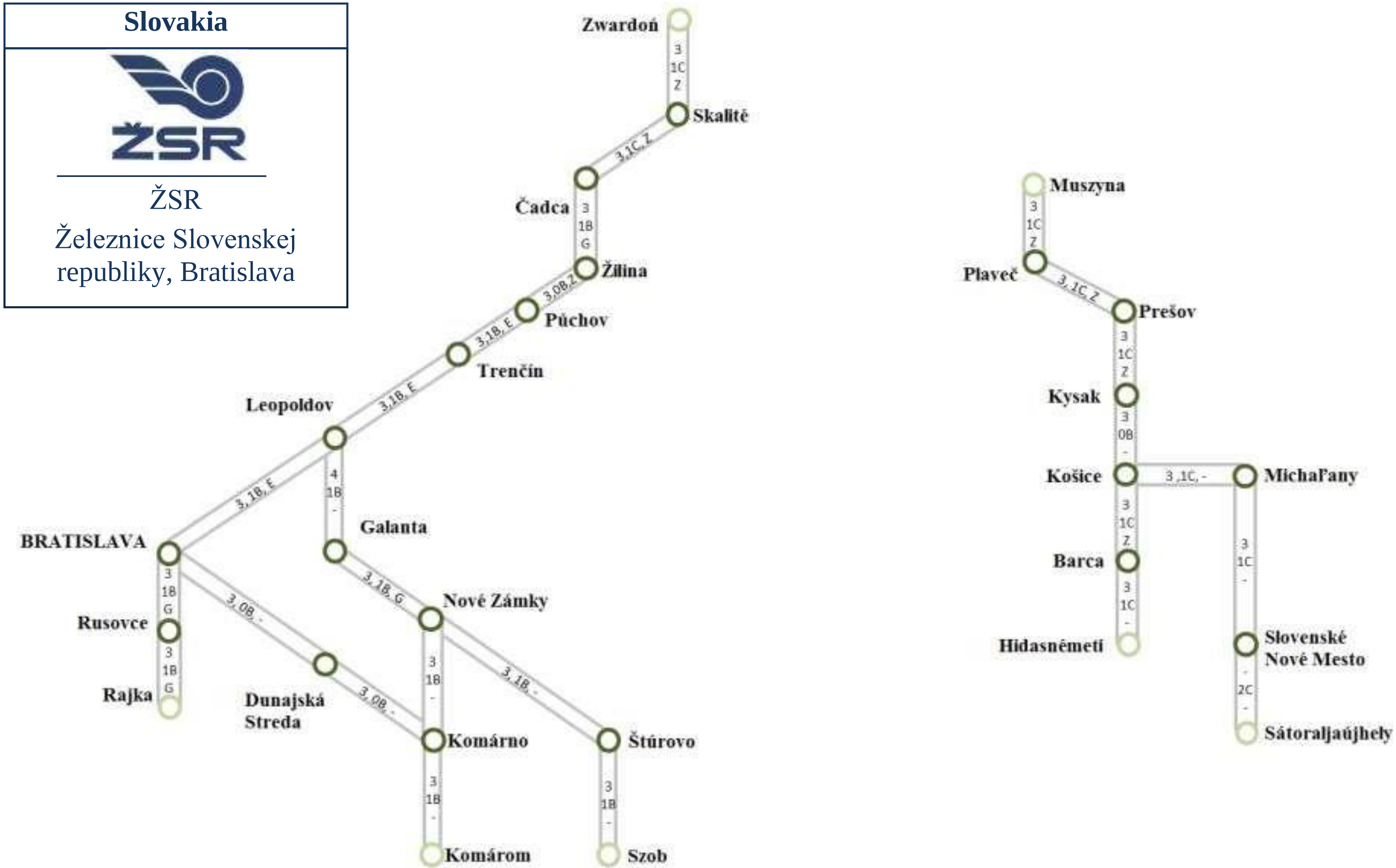
Capacity:



Loading gauge and ERTMS equipment

Slovakia

ŽSR
Železnice Slovenskej republiky, Bratislava

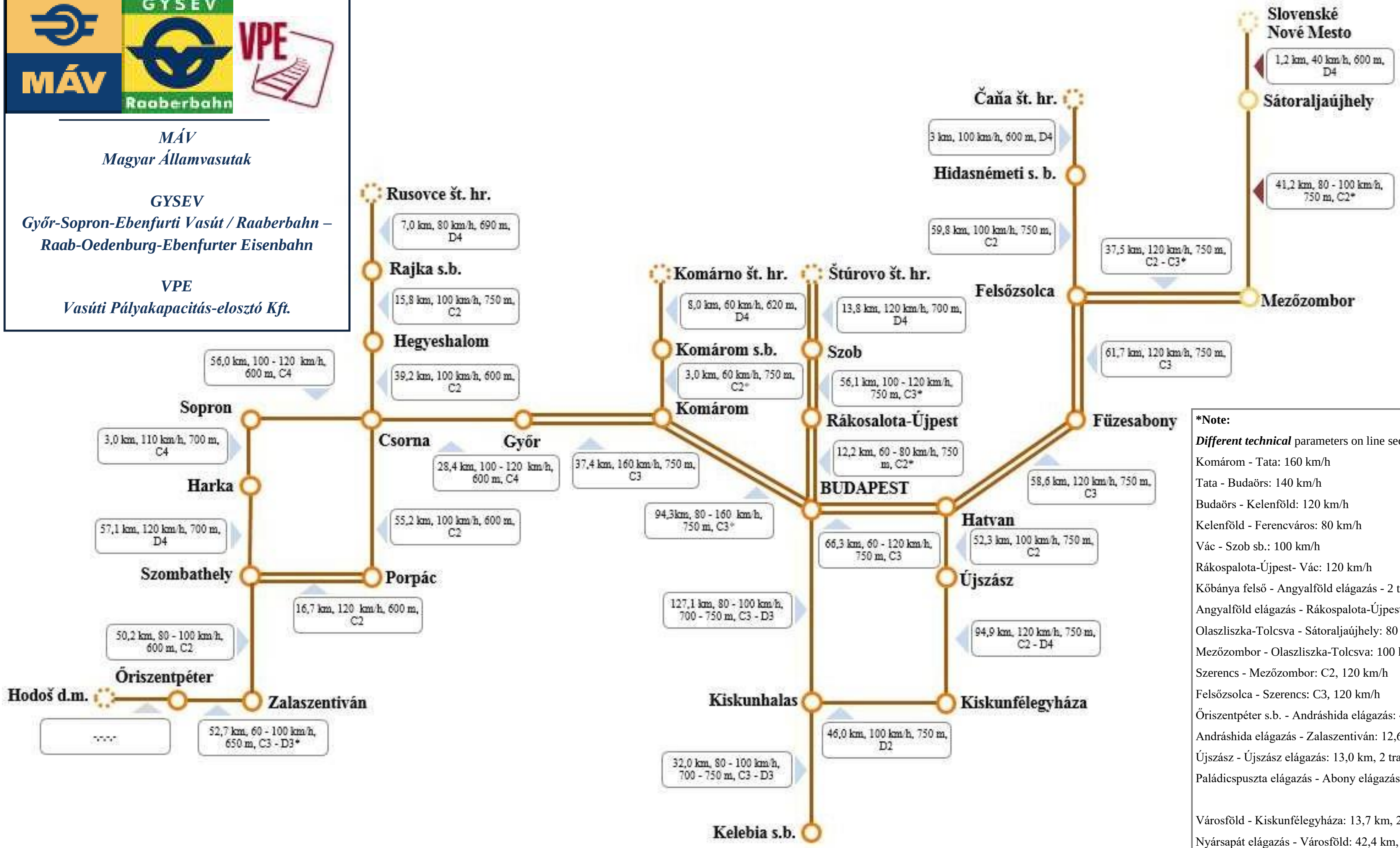


Hungary

MÁV
Magyar Államvasutak

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

VPE
Vasúti Pályakapacitás-elosztó Kft.



***Note:**

Different technical parameters on line section:

Komárom - Tata: 160 km/h
Tata - Budaörs: 140 km/h
Budaörs - Kelenföld: 120 km/h
Kelenföld - Ferencváros: 80 km/h
Vác - Szob sb.: 100 km/h
Rákospalota-Újpest- Vác: 120 km/h
Kőbánya felső - Angyalföld elágazás - 2 tracks, 80 km/h
Angyalföld elágazás - Rákospalota-Újpest: 1 track, 60 km/h
Olaszliszka-Tolcsva - Sátoraljaújhely: 80 km/h
Mezőzombor - Olaszliszka-Tolcsva: 100 km/h
Szerencs - Mezőzombor: C2, 120 km/h
Felsőzsolca - Szerencs: C3, 120 km/h
Őriszentpéter s.b. - Andráshida elágazás: 40,1 km, D3
Andráshida elágazás - Zalaszentiván: 12,6 km, C3
Újszász - Újszász elágazás: 13,0 km, 2 tracks, C2
Paládicspuszta elágazás - Abony elágazás: 23,4 km, 2 tracks, D4
Városföld - Kiskunfélegyháza: 13,7 km, 2 tracks, D3
Nyársapát elágazás - Városföld: 42,4 km, 1 track, D3
Harkakötöny elágazás - Balotaszállás elágazás: 1,8 km, 1 track, C2, 700 m., 40 km/h

Loading gauge and ERTMS equipment

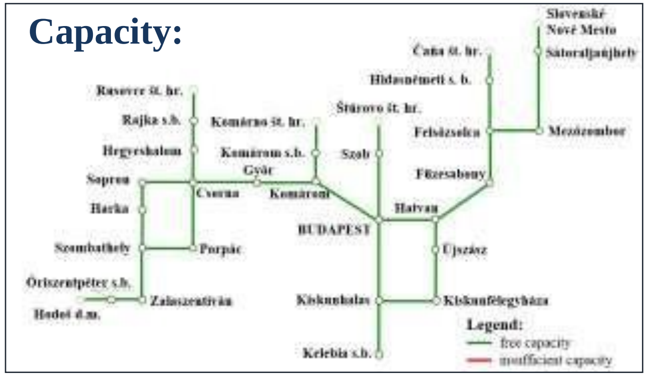
Hungary

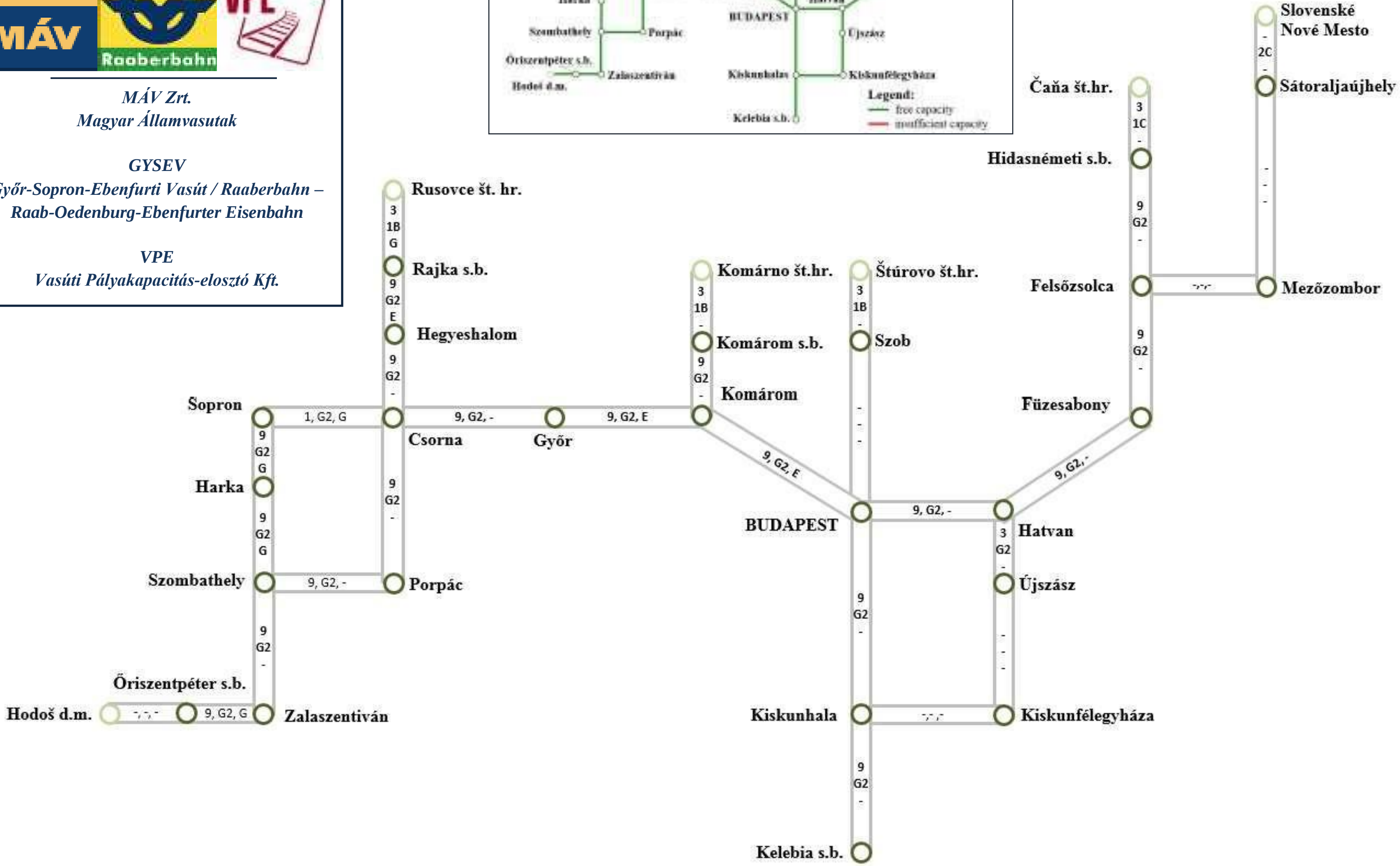
MÁV Zrt.
Magyar Államvasutak

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

VPE
Vasúti Pályakapacitás-elosztó Kft.

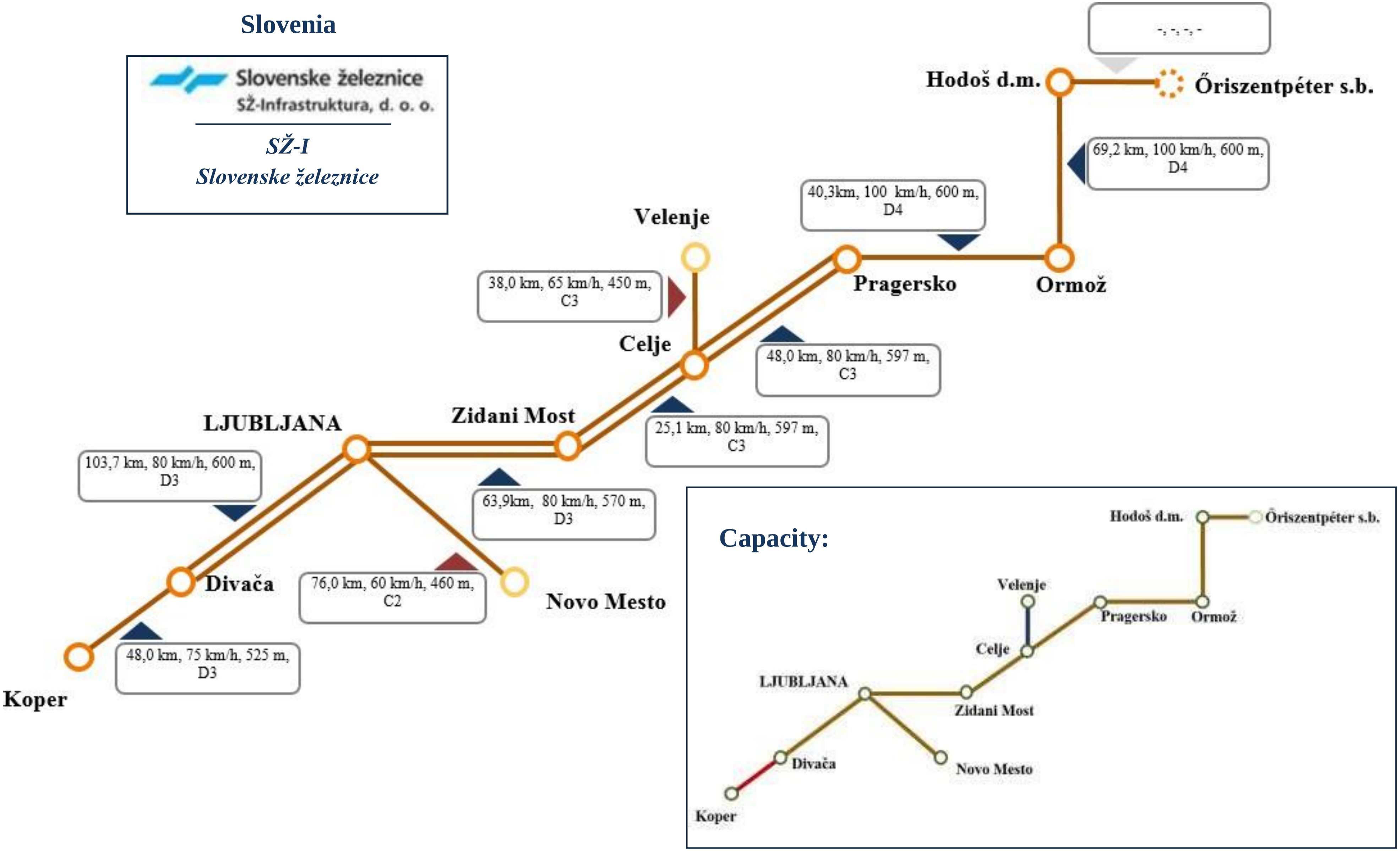
Capacity:





Slovenia

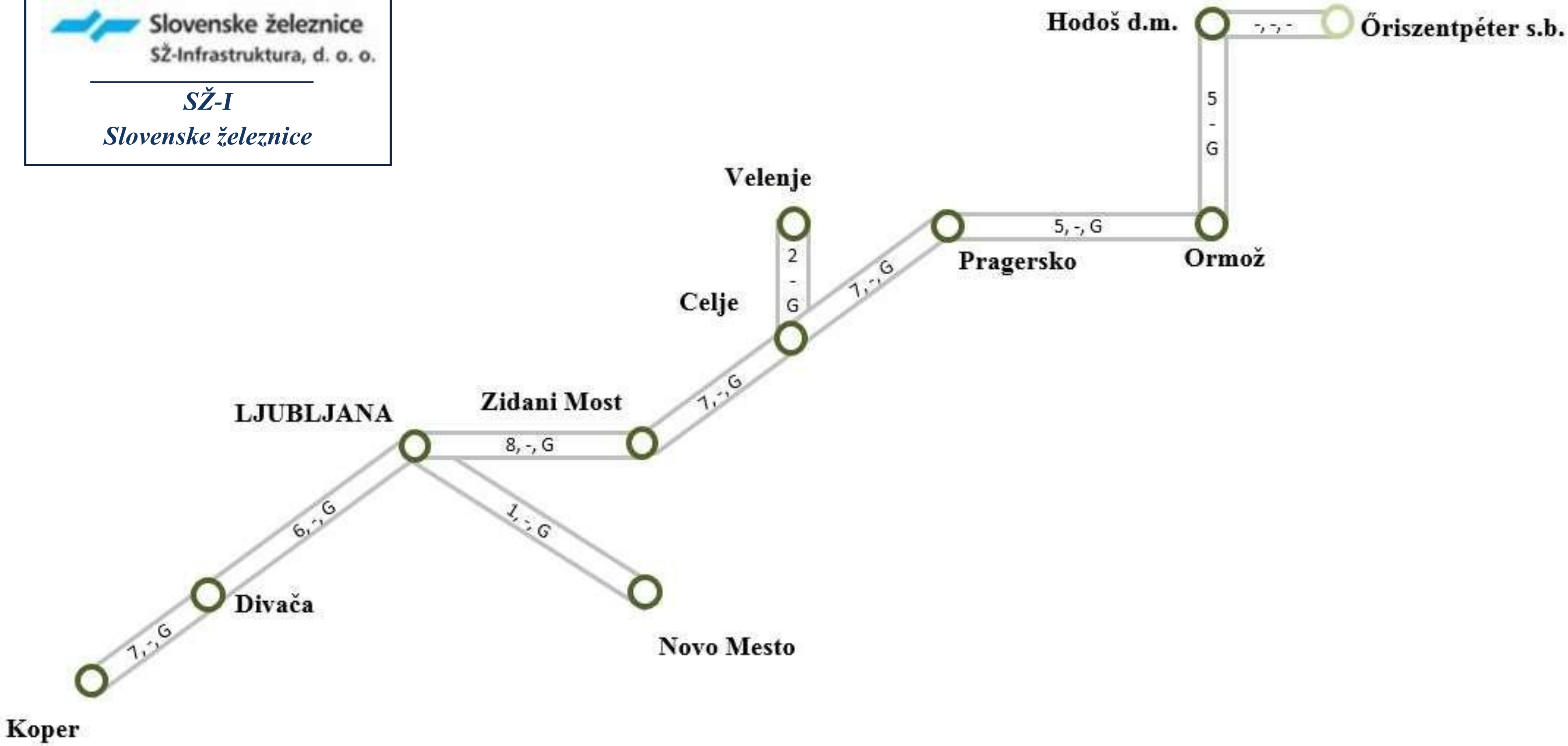
SŽ-I
Slovenske železnice



Capacity:

Loading gauge and ERTMS equipment

Slovenia
SŽ-I *Slovenske železnice*



The rail freight services are directly linked to the marshalling yard services (in particular wagon loads) and intermodal terminal services (in particular loading, unloading, transhipment and administration as regards the transport units of intermodal transport). The graphical representation of the location of marshalling yards and intermodal terminals on the lines included in the Amber RFC is shown in Fig. 38.

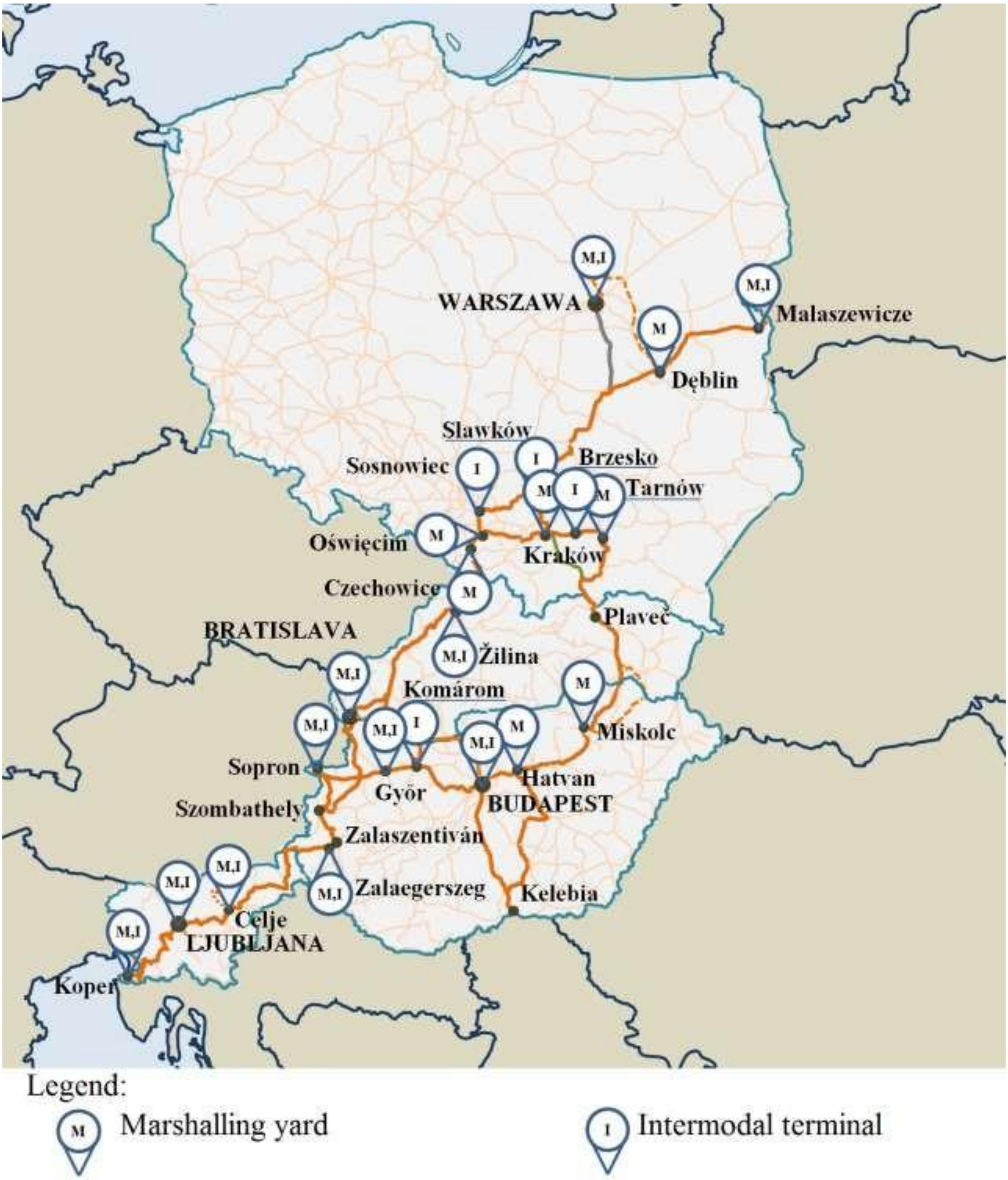


Figure 38: *Graphical representation of Marshalling yards and Intermodal terminals on Amber RFC (Source: ŽSR, VVÚŽ)*

Figure 39 shows the position of rail border crossings with countries outside the EU. Subsequently, Figure 40 shows the position of major ports and airports located in the territory of the Amber RFC countries.

Figure 39: *Rail border crossings – with countries outside the EU*
(Source: ŽSR, VVÚŽ)

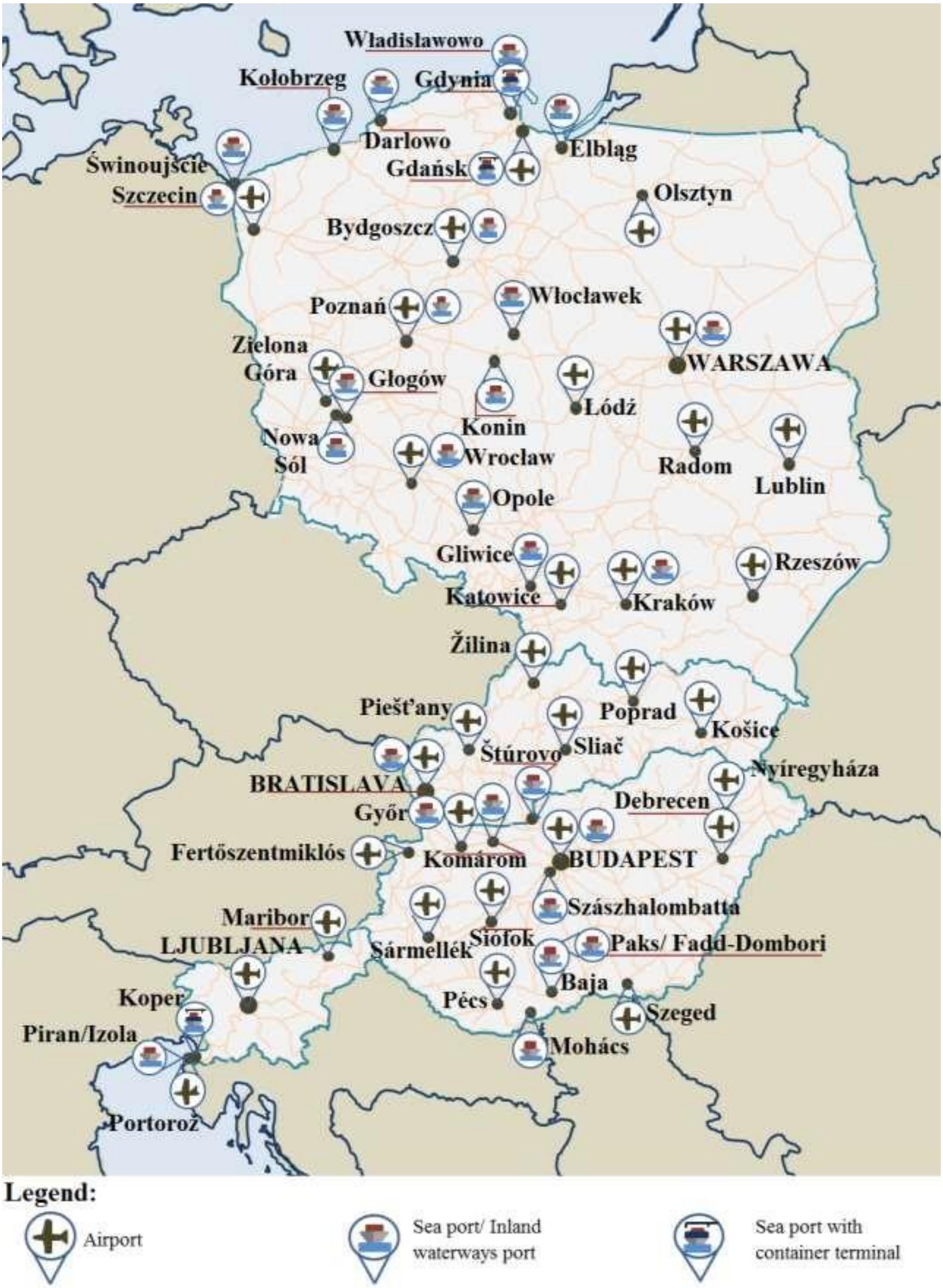


Figure 40: *Position of ports and airports*
(Source: ŽSR, VVÚŽ)

Table 43 contains a list of significant transport points located in the territory of the Amber RFC countries and lines.

Table 43: Traffic points of Amber RFC

Node name	*ITT	Marshalling yard	Other services
Poland	Terminal kontenerowy Warszawa Główna Towarowa Loconi Intermodal Terminal Kontenerowy Warszawa	Warszawa Główna Towarowa Warszawa Praga	
	EUROTERMINAL Sławków	Jaworzno Szczakowa	
	Brzeski Terminal Kontenerowy/ KARPIEL Brzesko		
		Tarnów Filia	
		Kraków Nowa Huta	
	PKP Cargo Centrum Logistyczne Małaszewicze EUROPORT Małaszewicze Terminal przeładunkowy Wólka/Tradetrans Tranzgaz	Małaszewicze/Cargotor	
		Oświęcim	
	Terminal Sosnowiec Południowy		
		Czechowice Dziedzice	
		Dęblin	
Slovak Republic	Bratislava SPaP, ÚNS	Bratislava východ	
	Žilina	Žilina-Teplička	
Hungary			Őriszentpéter/loading place
			Andráshida/loading place Zalalövő/loading place
			Zalaegerszeg/scale & refuelling & loading place
			Zalaszentiván/loading place
	Sopron Intermodal Terminal	Sopron marshalling yard	
	Győr ÁTI Depo	Győr-Rendező	Győr-Rendező/scale & loading place Győrszentiván/loading place Nagyszentjános/loading place Ács/loading place
	Komárom-Rendező		Komárom/refuelling & loading place Komárom-Rendező/scale & loading place Almásfüzitő/loading place Tata/loading place
			Tatabánya/loading place Bicske/loading place Herceghalom/loading place Biatorbágy/loading place Budaörs/loading place
	Budapest Szabadkikötő Logisztikai Zrt.	Ferencváros	Ferencváros/scale & refuelling & loading place Soroksári út rendező/scale & loading place
	BILK	Soroksári út rendező	Soroksár/loading place

Hungary			Dunaharaszti /loading place Taksony/loading place Délegyháza/loading place Kiskunlacháza/loading place Dömsöd/loading place Kunszentmiklós-Tass/loading place
			Bösztör/loading place Szabadszállás/loading place Fülöpszállás/loading place Csengőd/loading place Kiskőrös/scale & loading place Soltvadkert/loading place Kiskunhalas/scale & refuelling;
			Balotaszállás/loading place Kisszállás/loading place Kelebia/scale & loading place
			Rákos/scale & loading place
		Hatvan-Rendező	Isaszeg/loading place Gödöllő/loading place Aszód/loading place Hatvan/refuelling & loading place Hatvan-Rendező/scale
			Hort-Csány/loading place Vámosgyörk/loading place
			Kál-Kápolna/loading place Füzesabony/scale & refuelling & loading place
		Miskolc-Rendező	Mezőkövesd/loading place Mezőkeresztes-Mezőnyárád/loading place Nyékládháza/loading place Miskolc-Tiszai/loading place Miskolc-Rendező/scale & refuelling Miskolc-Gömöri/loading place
			Felsőzsolca/loading place
			Hidasnémeti/loading place
Slovenia	Ljubljana Moste	Ljubljana Zalog	
	Port of Koper Koper	Koper tovorna	
	Celje tovorna	Celje tovorna	
			Gorenje Velenje
			Revoz Novo mesto

Source: Member from countries of Amber RFC

9.2 Basic information on Małaszewicze dry port

The Małaszewicze dry port, located close to Terespol railway station, which is extensively used in international connections running via the nearby PL/BY border crossing of Terespol-Brest, operates on the Core Network Corridor North Sea-Baltic, Rail Freight Corridor North Sea-Baltic and Amber Rail Freight Corridor. It is a special place because of the EU border and customs border. Here lies the junction point between CIM and SMGS communication systems and 1435 mm and 1520 mm railway gauges. The difference of the gauges determines the transshipment of goods at the terminals in the area of the dry port. Małaszewicze is the biggest dry port at the eastern border of EU, it is a railway gate leading to European markets. Crucial transshipment terminals located in Małaszewicze, including a container terminal, are managed by PKP CARGO Group

Key technical specifications of the terminals of PKP CARGO Group

Total area:	1 237 000 m2
Outdoor storage area – the yard:	134 694 m2
Closed storage area:	5 300 m2
Roofed area:	3 000 m2
Storage capacity:	2 000 TEU
Transshipment capacity:	10 057 500 tonnnes per year
Container terminal:	120 000 TEU per year
Railway tracks (usable):	14 112 m (1520 mm)
	18 952 m (1435 mm)
Dual gauge railway tracks:	670 m (1435 + 1520 mm)

Equipment

Gantry cranes:	12 units
Rubber tire gantry cranes:	1 unit
Rubber tire digger:	16 units
Rubber tire loader:	5 units
Reach stackers:	3 units
Bucket elevators:	4 units

Plug in points for refrigerated containers

Forklifts with loading capacity of 1,6 to 4,5 t

Transshipment terminals

Transshipment activity is run on specialized terminals prepared technically and organizationally for transshipping and storing defined types of cargo. PKP CARGO Groups has at its disposal 7 transshipment terminals:

Table 44: Transshipment terminals of PKP CARGO Group in Małaszewicze

Transshipment point	Cargo type
Container Terminal[1]	20", 30", 40", 45" containers, HC, semitrailers
Terminal in Kowalewo[1]	cargo on pallets, big bag cargo, bundles, bags, bulk cargo (grain, pellet)
Terminal in Podsędków[1]	coal, wood, woodchips
Terminal in Raniewo[1]	coal, wood, woodchips
Universal Terminal[1]	coal, wood, woodchips, ore, metals, unit goods (machines, vehicles etc.)
Terminal in Wólka[2]	coal, wood, woodchips, fertilizers, chemicals, steel products
Terminal in Zaborze[2]	coal, wood, woodchips, fertilizers, chemicals, steel products

Source: PKP Cargo Group

[1] *run by PKP CARGO Centrum Logystyczne Malaszewicze*
[2] *run by PKP Cargo CONNECT*

The scheme below presents the layout of PKP CARGO Group transshipment terminals in the area of the Małaszewicze dry port.

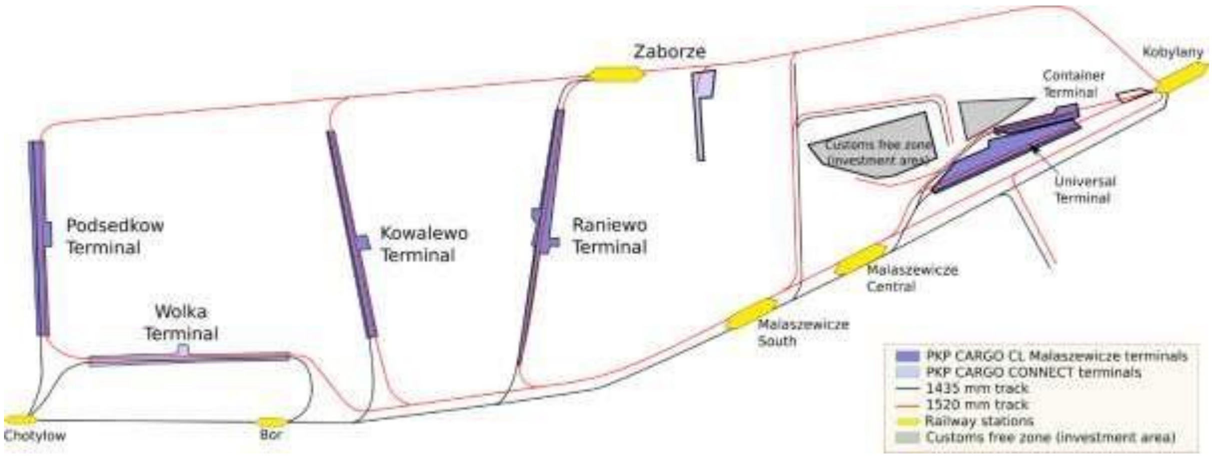


Figure 41: *Layout of PKP CARGO Group transshipment terminals and railway stations in Małaszewicze*

(Source: PKP Cargo)

It should be also mentioned that apart from the above mentioned key terminals there are also other transshipment points and terminals in the area of the dry port.

Małaszewicze dry port – a bridge connecting China and Europe

Over a few recent years there has been noticed a substantial change in the cargo turnover in Małaszewicze which is due to launching freight transport from China and making railway transport a part of the vast concept of the New Silk Road (One Belt One Road). The increasing importance of the railway transport is a result of an advantageous relation of price to time of transport and punctuality.

The vital factor having a direct influence on the cargo turnover operations between China and Europe transported by rail is the transport time. A freight train form China arrives to Europe in 11-14 days, while e.g. sea transport takes 40-50 days. These times respectively affects the possibility of a quick cargo delivery to the customers, including flexible shaping of „door-to-door" deliveries.

The fact, that the trains heading for Europe are crossing only two customs borders, i.e. the one between China and the area of Eurasian union and the next one between Eurasian union and EU customs area is an additional advantage for using the services of Małaszewicze container terminal by entrepreneurs, which also relatively decreases the amount of customs formalities related to the transport. Moreover, there is a customs-free zone functioning in the area of the Małaszewicze dry port, where cargo can be stored without the obligation to pay tax and customs charges. There is no storage time limit.

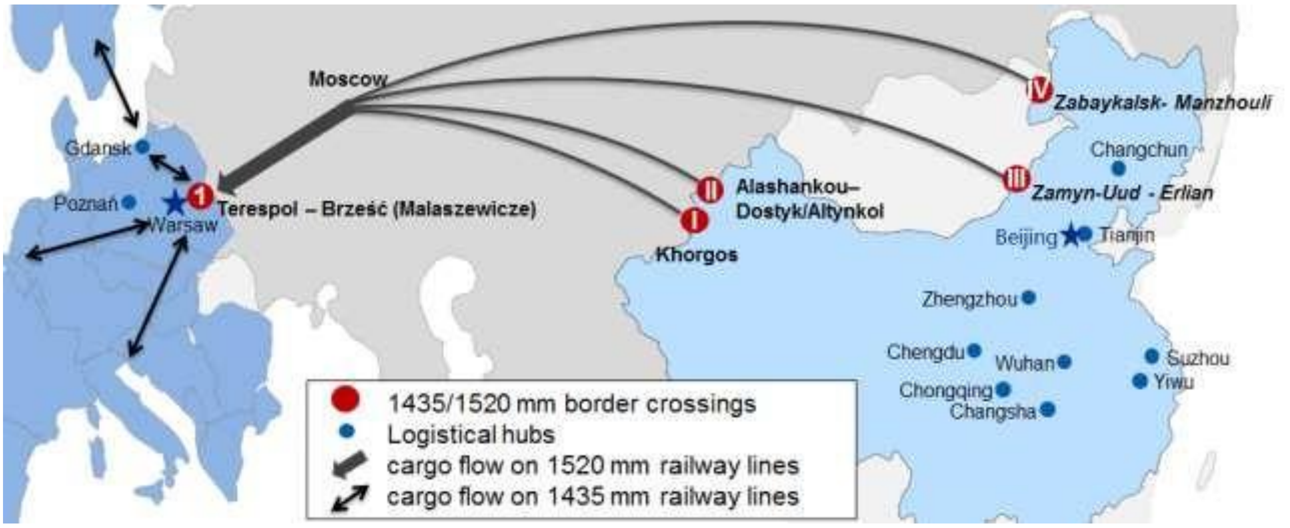


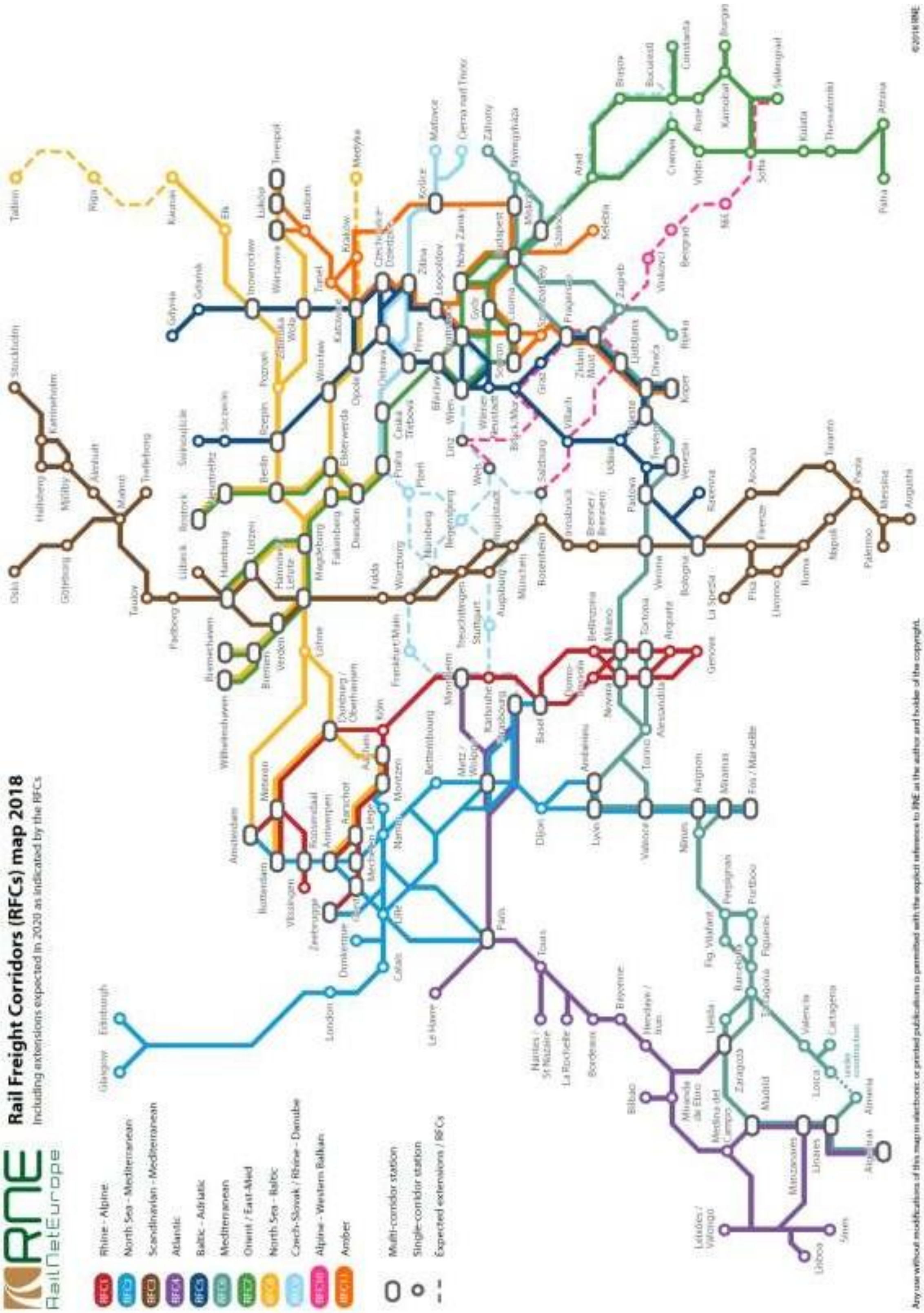
Figure 42: *Key China-Europe rail freight transport directions and border crossings (Source: PKP Cargo)*

The dry port in Małaszewicze is a land bridge connecting Europe with China. Its special location creates possibilities of bringing together the concepts of Amber Corridor and the New Silk Road. This way the goal of transport mode diversification between China and Europe would be reached. The application of land transport, mainly rail or combined sea-land transport, for the cargo transported from Asia fits the EU transport policy concept of developing sustainable transport systems.

9.3 Summary basic comparison of RFC infrastructure

The European RFC corridors have been designed primarily on the basis of direction of the main transport flows of goods within the EU and the whole Europe in order to increase the attractiveness, reliability and efficiency of the rail system, taking utmost account of the customer requirements. Each corridor has its specific role and strategic routing adapted to the transport requirements of the customers. In Table 45, a basic comparison of the infrastructure of the European RFC corridors is made for clarity and Figure 43 shows map of European RFC by Rail Net Europe.

Figure 43: *Graphical representation of corridors Rail Net Europe*



(Source: Rail Net Europe)

Table 45: 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	5 300	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	7 000	9	4	90
RFC 7 (Orient/East - Med)	8	7 700	8	16	30
RFC 8 (North Sea - Baltic)	5	6 045	6	13	171
RFC 9 (Czech - Slovak)	2	970	0	2	12
RFC 10 (Alpine -Western Balkans)	5	N/A	N/A	N/A	N/A
RFC 11 (Amber)	4	aprox. 3 400	1	2	25

Source: Annual reports of RFC corridors

**ITT- Intermodal transport terminal*

The European Amber RFC will have the second smallest length of railway lines compared to the other European RFC corridors. This fact, however, does not change the strategic importance of its routing. The Amber RFC routing will contribute especially to support of transport from/to Port of Koper and transport from/to Belarus and the Republic of Serbia. At the same time, the routing allows an effective connection with the lines of international importance in individual member states. The small length of the lines included in the Amber RFC creates the most suitable conditions for coordination of possessions, ordering of transport routes and direction of investment activities leading to the provision of high quality and available services of the railway system.

9.4 Result and summary of the findings of Chapter 9

Based on the presented data in the particular subchapters of the eighth part of the TMS we can conclude the following facts:

- all principal lines are electrified – environmental benefit, lower costs of carriers,
- most of the other lines (alternative and diversionary line) are electrified – environmental benefit, lower costs of carriers,
- different electric power supply systems – need for harmonization = subsequently, reduction of requirements for transport companies and negative effects of DC traction system,
- all lines have 1 435 mm gauge – it is not necessary to change gauge during transport,
- infrastructure included in the corridor has sufficient free capacity for increase in rail freight transport performances affected by the Amber RFC services except the line Divača and Koper. The utilization of this line is 98% because there are 82 trains/day on this single-track line,

- most included railway lines do not reach the required demands for running long trains (750 m),
- some principal railway lines included do not reach the highest level of axle load – need for reconstruction/modernization,
- the Slovak Republic has all principal lines at the highest level of axle load,
- need for complete the ERTMS (European Rail Traffic Management System) on the principal corridor lines – complying with the interoperability requirements,
- routing creates the transport potential for international rail freight transport in the south – north/east direction,
- routing creates the transport potential for international rail freight transport in the direction of countries outside the EU – EU/the Amber RFC countries,
- possible connection of broad-gauge line in the Republic of Poland with the main corridor route in the Republic of Poland,
- routing improves connection of intermodal transport terminals in the member states concerned and provides direct routing for intermodal consignments from the Port of Koper,
- facilitates transport connection between the Adriatic sea port in the Republic of Slovenia and inland waterway ports on the Danube in Hungary and the Slovak Republic,
- supports the development of rail transport with the Republic of Serbia,
- potentially improves rail transport across the EU eastern border and on the land bridge between Europe and Asia.

From the overall point of view, the proposed routing, division of particular lines, including the technical parameters of the lines are satisfying and fulfilling the conditions for providing the high-quality rail freight services. Routing creates the suitable conditions for modal split change in favour of rail freight transport in the individual countries of the Amber RFC. The establishment of the Amber RFC, based on the submitted proposal, will contribute to the EU strategic objectives in the field of effective modal split and to reduction of negative external transport costs.

10 LAST MILE

The rail freight transport is the most advantageous in the process of transport of bulk substrates from the economic and time point of view. Also, the lowest amount of negative external costs of transport is produced in this transport. Most often it is the transport of bulk substrates, gases, liquids, chemicals, cars, coiled sheet, etc. Rail freight transport has also had a significant position in the process of transport of single consignments. Endogenous and exogenous impacts have led to a long-term decrease in rail system performances in the process of transport of single consignments. A graduating international trade, showed in the previous parts of TMS between the Amber RFC countries, the EU countries and countries outside the EU, brings many opportunities for transportations having the character of single consignments. At present, there is an upward trend in the individual needs of manufacturing and trading companies demanding specific goods, which has a nature of transport of single consignments. This is due to marketing strategies aimed at individual requirements of customers. It is often the transport of goods by 1 – 8 road trains over 12 tons/day. These transportations are required by, in particular, the small and medium-sized enterprises and commercial companies.

At present and in the future, based on global direction, market liberalization, international trade activities and economic development, we can expect:

- construction of small and medium-sized production sites within the EU countries and Asia,
- construction of new logistic centres, central and distribution warehouses, large business houses,
- increase in demand for transport services for the transport of goods in international transport between production sites and logistics infrastructure,
- increase in demand for quality of transport services, particularly in terms of reliability and safety,
- need for a sufficient technical base necessary for transport of single consignments,
- pressure on reducing the negative external costs generated by increased demands for the transport of goods.

These facts create a sufficient transport potential which can largely take over the railway system. However, the use of existing rail freight transport opportunities requires a sufficient technical base that meets the technical and technological requirements on high quality, reliable, safe, available and flexible transport services. It is also an infrastructure that creates the necessary direct connection between consignors and railway undertakings. Between this stable and mobile infrastructure, we can include:

- railway sidings,
- side and front loading ramps,
- specially assigned tracks for loading and unloading of goods,
- reinforced handling surfaces (loading, unloading, movement of handling equipment, depot, etc.),
- storage areas and buildings,
- storage sidings serving for the needs of consignor,
- necessary handling equipment,
- smaller local shunting yards, indicated as transfer stations, for train formation in the vicinity of above-mentioned sites, if their primary purpose is to enable the collection and delivery of wagons/trains to such specific sites,
- local rail tracks or connecting lines leading from and to the loading facilities.

The following Figure illustrates the elements of the Last Mile and relevant Last Mile infrastructure used by HaCon.

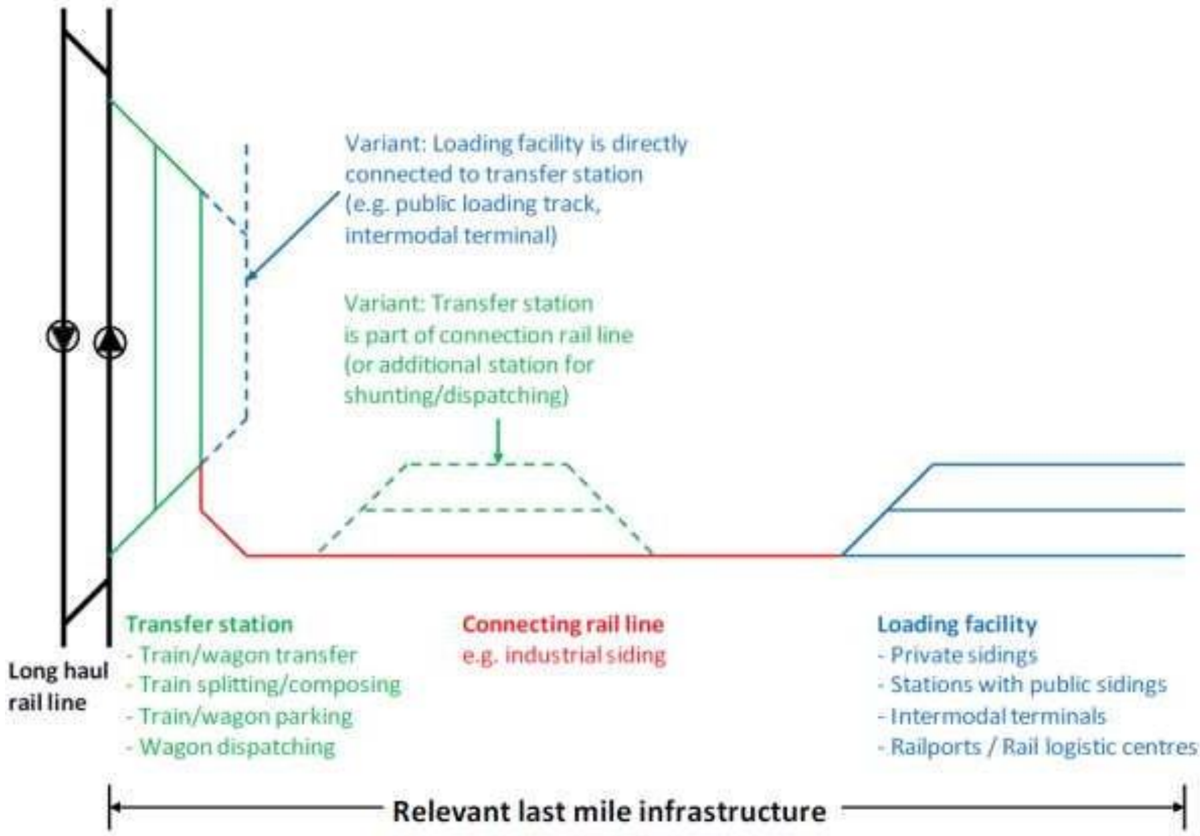


Figure 44: *Components of „last mile infrastructure"*
(Source: HaCon)

Types of last-mile infrastructure:

- Private sidings,
- Stations with public sidings,
- Intermodal terminals,
- Railports.

One main intention to establish railports was to substitute private and public sidings which were no longer served by rail. Thus, they are principally open for everybody and for all types of cargo. They do not only provide pure transhipment but also additional services like storage, consignment or road pre-/end-haulage. An example of typical railport configuration and logistics services used by DB Schenker Rail is shown in Figure 45.

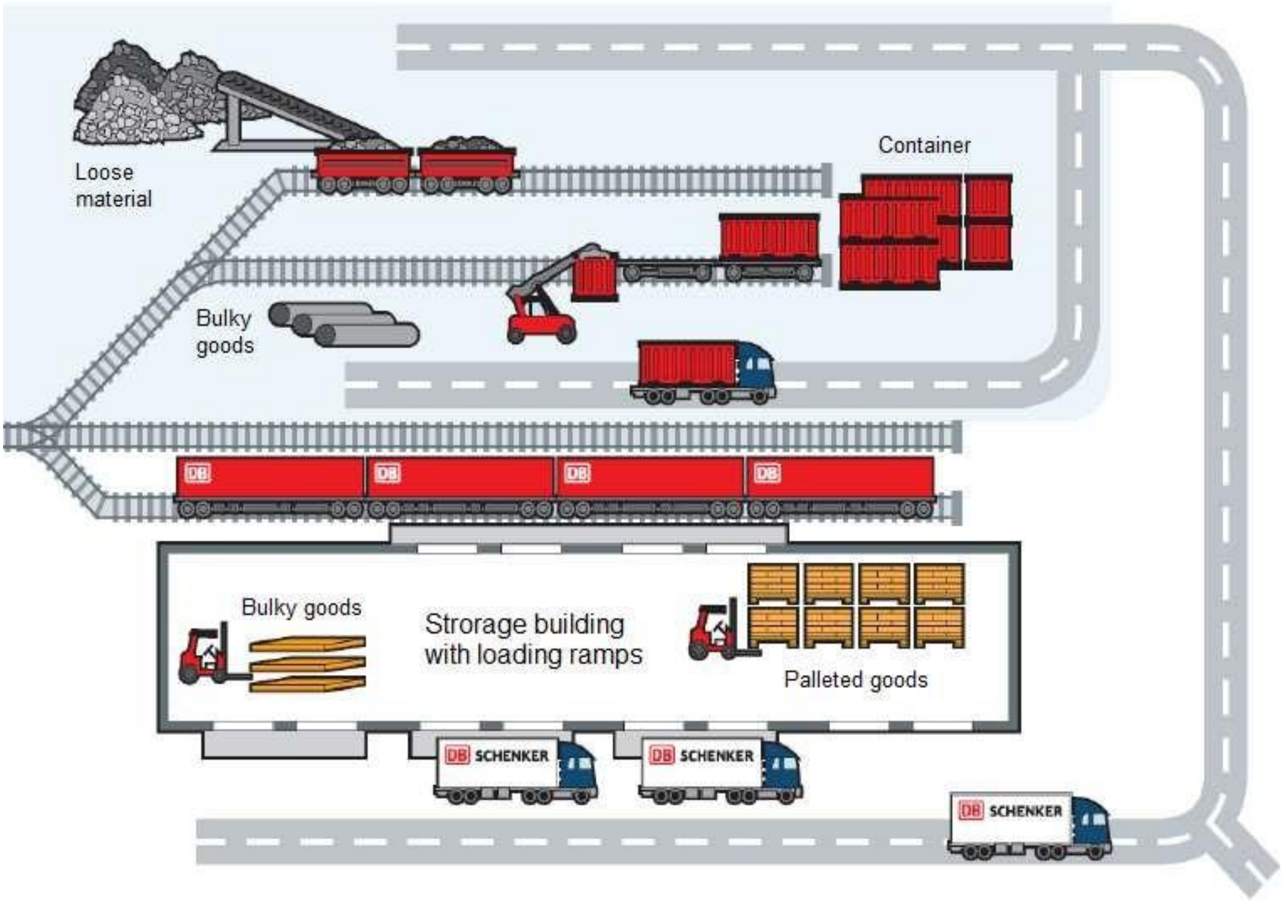


Figure 45: *Typical railport configuration and logistics services (Source: DB Schenker Rail)*

The generated demand for transport services within the requirements for single consignments (or part-load consignments) provides several opportunities for rail freight transport services. However, the specific elements of these transports require high quality and available infrastructure. One of the elements of this infrastructure is the above mentioned last mile infrastructure the operation and building of which is necessary for the competitiveness of rail freight transport to other modes of transport. High quality and available last mile infrastructure has a positive impact on the quality of rail system services and thus contributes to its competitiveness and customers' interest. However, for the use of Last mile infrastructure, it is necessary a participation of railway undertakings that are able to use this infrastructure within their business activities and creation of services. Operation, building, propagation and provision of services within Last mile require a sufficient investment and non-investment support from the state and competent government authorities. Support is necessary also from the legislative point of view to promote a shift of transport performances from more environmentally demanding modes of transport to environmentally friendly rail freight transport. Support of Last mile infrastructure and services can be ensured also from enviro resorts and funds, regional government budgets and harmonization of railway infrastructure charging.

In order to better meet the requirements of international transport customers, especially in the process of transport of single consignments and strong position of road goods transport, it is very important that reliable and transparent information services are provided within the rail freight transport in the short term. Insufficient access to information on Last mile infrastructure is a significant obstacle for rail freight transport in effective planning, especially in cross-border transport. Based on this need, the web portal within the whole EU with GIS functions has been developed which is capable to present in a transparent way all important information for various types of Last mile infrastructure. The current version of the portal is running on the internet domain „*www.railfreightlocations.eu*". GYSEV has participated as a pilot region in the elaboration of this information portal. The web page enables to search according to more detailed criteria, zooming the map or direct selection from the list. By selecting the endpoint on the map, the available detailed information on the relevant part of the Last mile infrastructure is displayed. Detailed information on the relevant part of the Last mile infrastructure illustrated by the satellite image currently includes:

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

The list of the Last mile for the Amber RFC is listed in Appendix F.

The data in Appendix F show the need to extend and subsequently precise of the Last mile infrastructure for the Amber RFC. This step is necessary for provision of required transport services and increase in rail system performances in the process of transport of single consignments.

11 COMPARATIVE ANALYSIS OF RAIL AND ROAD FREIGHT TRANSPORT WITHIN THE AMBER RFC

The comparative analysis serves for comparison of the transport time and charges within the transport routes on the selected railway routes of the Amber RFC with comparable routes of road transport. The comparison of these two indicators will provide information on charge and time competitiveness of international rail freight transport on the Amber RFC lines.

Input assumptions of comparative analysis:

- 4 model transport routes,
- observing a mandatory rest according to the European Agreement concerning work of crews of vehicles engaged in international road transport and restrictions on running time,
- average speed in international road goods transport,
- average speed of trains in international rail freight transport within the Amber RFC lines,
- average railway infrastructure charges and road goods transport charges on the lines of the Amber RFC and the relevant road network,
- distances in kilometres of individual model routes.

Table 46 provides a comparative analysis of the average running time between international rail and road freight transport for proposed model transport routes.

Table 46: 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
Koper – Košice	870	955	24 h 15 min	19 h 06 min
Terespol - Budapest	799	976	23 h 04 min	19 h 30 min
Warszawa - Miskolc	585	692	10 h 30 min.	13 h 48 min
Żywiec - Maribor	589	657	10 h 34 min.	13 h 06 min

The comparative analysis of average running time in Table 46 carried out on the model transport routes showed a shorter technological time of transport in international road goods transport on the routes Warszawa – Miskolc and Żiwiec - Maribor. A shorter technological time of transport in favour of rail transport was achieved on the routes Koper – Košice and Terespol – Budapest. The analysis showed that the total technological times of transport in rail freight transport approach the technological times of transport in road goods transport, especially in case of block train technology. The effects of services and fulfilment of the Amber RFC vision and mission will contribute to time competitiveness of international rail freight transport and at the same time, the established corridor will create the suitable conditions for high quality, reliable and safe services of the rail system. For effective use of rail freight transport, it is necessary to remain in removing barriers that hinder faster transport in international rail transport. The process of interoperability of the rail system within the EU countries helps remove barriers, too. In case of transport of bulk substrates, the rail freight transport can be considered to be competitive in the total transport time as the road infrastructure does not have sufficient capacities for the individual transport of bulk substrates.

Table 47 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 1 500 t and weight of goods of 1 000 t. The analysis does not include any supplementary charges in road and rail transport.

Table 47: Comparative analysis of charges

Route	**Road freight transport**			**Rail freight transport**		
	charge 40 t vehicle	charge in €/km	charge in €/km/tonne	charge 1 500 t train	charge in €/km	charge in €/km/tonne
Koper – Košice	244,12	0,2806	0,0128	1886,4	1,975	0,0020
Terespol - Budapest	76,5	0,0957	0,0044	3406,24	3,490	0,0035
Warszawa - Miskolc	31,9	0,0545	0,0025	2130,41	3,079	0,0031
Żywiec - Maribor	126,9	0,2154	0,0098	1648,46	2,509	0,0025

The comparative analysis of charge burden in Table 47 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. At the same time, most of road infrastructure is charged in the model calculation, while road infrastructure is often not charged on the whole transport section. 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 calculation showed sufficient competitiveness of charges in international rail freight transport against road freight transport when goods are transported in block trains.

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

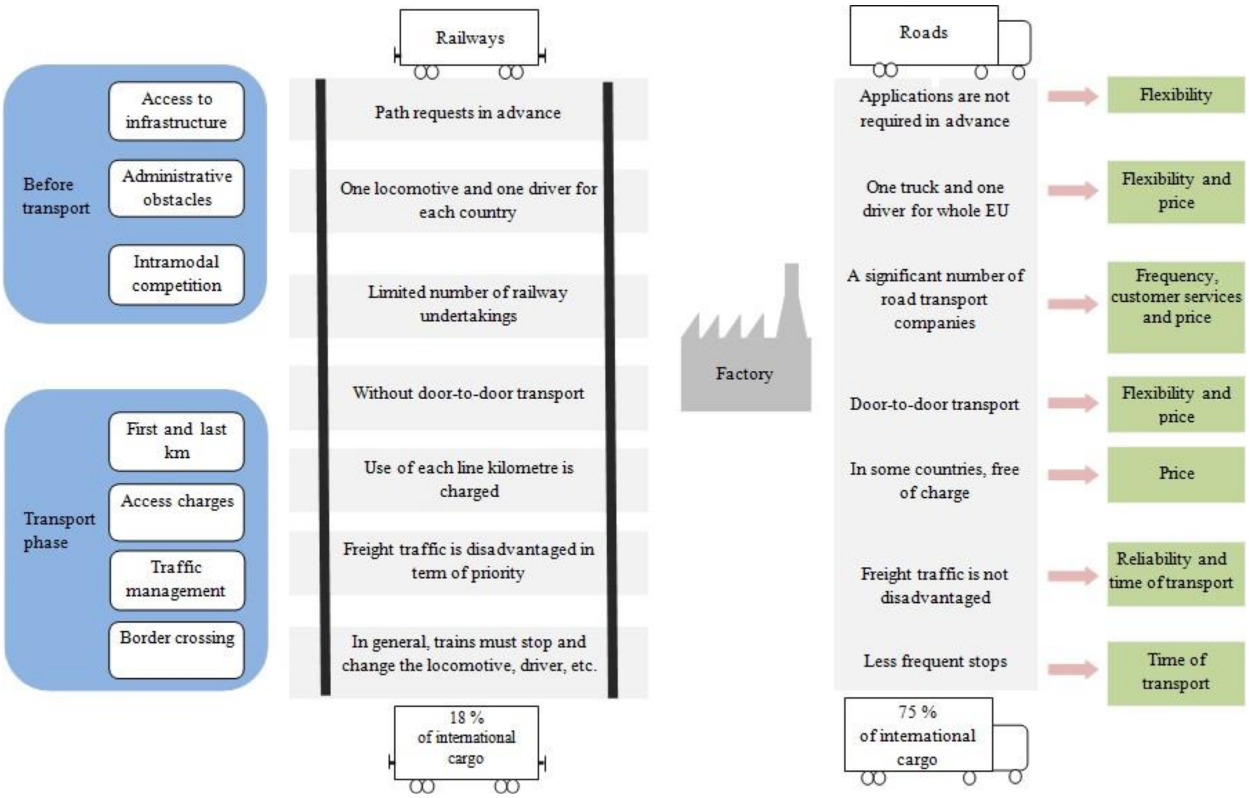


Figure 46: *Comparison of challenges of rail freight to road transport (Source: European Court of Auditors)*

11.1 Socio-economic benefits of the Amber RFC establishment

The Amber RFC establishment itself will have the following socio-economic benefits:

1. Reduction of air pollution costs:
   - negative effects on human health,
   - losses on agricultural production,
   - damage to materials,
   - impacts on biodiversity and ecosystems.
2. Reduction of greenhouse gas emissions:
   - sea level rise,
   - effects of energy use,
   - impacts on agriculture,
   - effects on water supply,
   - impacts on health,
   - impacts on ecosystems and biodiversity,
   - extreme weather conditions,

- disasters, that is, disaster risk

3. Reduction of unwanted noise emissions and consequent negative consequences.

4. Reduction of traffic accidents:
   - material damages,
   - administrative costs,
   - treatment costs,
   - losses on production or on human capital,
   - risk value.

5. Reduction of congestion.

6. Reduction of water pollution risk.

7. Reduction of vibrations and consequent negative consequences.

8. Reduction of land use and vegetation.

9. Improving quality of rail system services.

10. Reduction of running times and train delays in international rail freight transport.

11. Higher level of information exchange between infrastructure managers and carriers.

12. Cost reduction for transport companies.

13. Price competitiveness against other modes of transport.

14. Improving fluency and reliability of international rail freight transport.

15. Growth of rail system revenues.

16. Decrease in road infrastructure maintenance costs.

17. Increase of infrastructure manager revenues.

18. Decrease in non-investment subsidies in railway infrastructure from public sources.

19. Increase in investment subsidies in railway infrastructure modernization.

20. Ensuring a sustainable development of the Amber RFC countries and the EU countries.

12 SWOT ANALYSIS OF AMBER RFC

The Amber RFC will put into operation on 30.01.2019. In order to determine its direction and development, it is important to make the most objective assessment of the current inputs of the internal and external environments by which it is affected. The several methods and tools deal with the strategic planning of which SWOT analysis was selected for the purpose of selecting the strategic direction of the Amber RFC.

12.1 Characteristics of SWOT analysis process

Method of SWOT analysis consists in identifying the internal environment of the studied subject using its strengths and weaknesses and in identifying the impact of external environment using opportunities and threats, Based on recognized results a review of 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 SWOT analysis is conditioned by completion of collection and subsequent evaluation of all available data collected. Then, the created basis of SWOT analysis is qualitatively and quantitatively assessed by independent experts and stakeholders, in this case by individual members of Amber RFC. Without assessment of several experts and stakeholders, SWOT analysis has only subjective character of its maker and it is inconsistent for the adoption of strategic direction and decision-making.

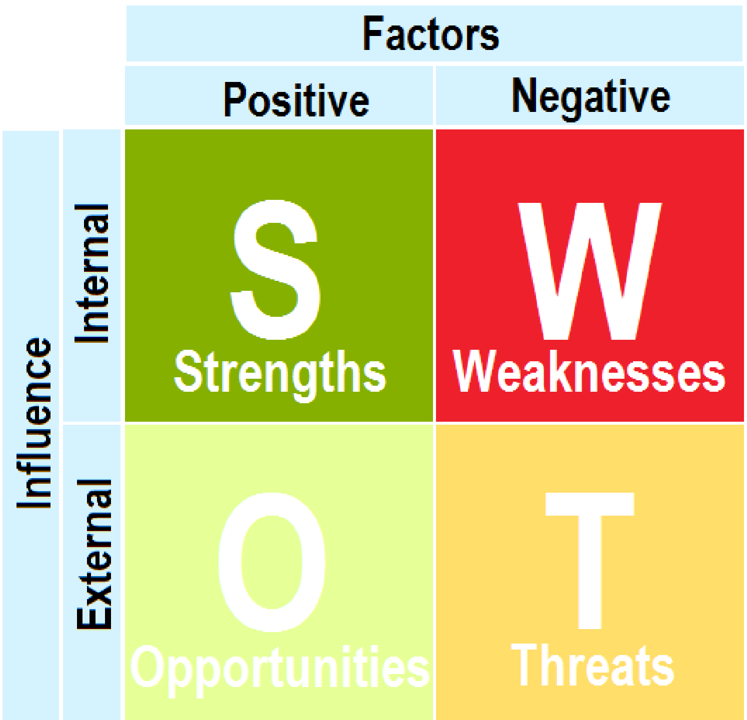


Figure 47: *Theoretical graphical representation of SWOT analysis*

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 importance. 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 Amber RFC).
- 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.

12.2 SWOT analysis of Amber RFC

The following four tables give strengths, weaknesses, opportunities and threats of internal and external environment of Amber RFC. In tables, there are assigned importance to each indicator and scores achieved (resulting importance for individual parts of SWOT analysis is an average value of importance assigned by individual parties of SWOT). These two figures are then multiplied, while their product determines the final evaluation of indicator. The data presented in the tables are the resulting average values obtained from the infrastructure managers affected by the Amber RFC, the TMS elaborator and the academic environment.

Explanation of Prioritization

Strengths and weaknesses:

- Importance. Importance shows how important a strength or a weakness is for the organization as some strengths (weaknesses) might be more important than others. A number from 0.01

(not important) to 0.99 (very important) should be assigned to each strength and weakness. The sum of all weights should equal 1.0,

- Rating. A score from 1 to 6 is given to each factor to indicate whether it is a major (6) or a minor (1) strength for the organization. The same rating should be assigned to the weaknesses where -1 would mean a minor weakness and -6 a major weakness,
- Score. Score is a result of importance multiplied by rating. It allows prioritizing the strengths and weaknesses. You should rely on your most important strengths and try to convert or defend your weakest parts of the organization.

Opportunities and threats:

- Importance. It shows to what extent the external factor might impact the business. Again, the numbers from 0.01 (no impact) to 0.99 (very high impact) should be assigned to each item. The sum of all weights should equal 1.0,
- Probability. Probability of occurrence is showing how likely the opportunity or threat will have any impact on business. It should be rated from 1 (low probability) to 6 (high probability). (For Threats -1 (low probability) to -6 (high probability)),
- Score. Importance multiplied by probability will give a score by which you'll be able to prioritize opportunities and threats. Pay attention to the factors having the highest score and ignore the factors that will not likely affect your business.

Table 48: Strengths of Amber RFC

S (Strengths)	Importance	Rating	Score
Interconnection of railway infrastructure within the countries included in Amber RFC	0,07	5	0,35
Railway system reliability	0,08	5	0,41
Available information on technical specification of corridor railway lines	0,04	5	0,18
Access to the important seaport Koper in the Republic of Slovenia	0,10	5	0,51
Thanks to the corridor strategic location and routing, good connection with other RFC corridors is guaranteed	0,08	5	0,41
Existing cooperation between individual infrastructure managers within Amber RFC countries	0,08	5	0,40
Railway infrastructure safety	0,10	6	0,54
Good technical conditions of railway infrastructure	0,08	5	0,41
Available free capacity	0,07	5	0,39
Connection by rail with countries outside the EU through BY/PL (Brest/Terespol) railway border crossing	0,10	6	0,60
Flexibility of railway infrastructure (e.g. suitable alternative routes)	0,05	6	0,28
Schengen area	0,03	6	0,21
Procurement of railway infrastructure capacity from one place C-OSS	0,05	4	0,19
Connection of railway transport with terminals within Amber RFC	0,06	5	0,31
TOTAL	**1**	**-**	**5,19**

Table 49: Weaknesses of Amber RFC

W (Weaknesses)	Importance	Rating	Score
Insufficient implementation of TEN-T infrastructure minimum standards	0,09	-4	-0,38
Enforcement of various interests of infrastructure managers of member states	0,12	-3	-0,34
Traffic restrictions related to possession causing temporary capacity constraint	0,17	-5	-0,78
Reducing the quality of rail freight services provided within Amber RFC	0,14	-3	-0,42
Poor technical condition in some sections of railway lines	0,15	-5	-0,69
Bottlenecks of capacity utilization	0,10	-5	-0,44
Insufficient technical parameters of railway infrastructure – requirements for modernization	0,11	-5	-0,57
Long waiting times at border crossings	0,13	-4	-0,50
TOTAL	**1**	**-**	**-4,11**

Table 50: Opportunities set for SWOT analysis of Amber RFC

O (Opportunities)	Importance	Probability	Score
Trend of using more environmentally friendly mode of transport (opportunity for rail transport)	0,08	4	0,35
Complete modernization of railway lines which limit the increase of line capacity	0,12	4	0,51
Investment of railway undertakings in sidings and siding operation	0,08	4	0,34
Increase in costs of road goods transport, e.g. toll charges	0,10	5	0,47
Increase in impact of transport policy of individual countries in favour of rail	0,10	5	0,47
Favourable economic growth of countries included in Amber RFC resulting in increase of import / export	0,12	5	0,56
Improving mutual cooperation between RFC corridors	0,06	5	0,30
Potential for corridor extension to the north of the Republic of Poland towards seaports	0,08	4	0,32
Connection of major economic active regions within the Amber RFC	0,09	4	0,38
Investment and modernization (e.g. construction of new line, double-tracking, station upgrade-signalling equipment, etc.)	0,08	3	0,23
Connection between inland ports on the Danube in Hungary and Slovakia	0,05	4	0,21
Connection with the lines in the Czech Republic	0,03	5	0,17
TOTAL	**1**	**-**	**4,32**

Table 51: Threats set for SWOT analysis of Amber RFC

T (Threats)	Importance	Probability	Score
Building logistic centres without connection to railway infrastructure	0,06	-3	-0,17
Lack of qualified personnel in operation	0,08	-4	-0,37
Insufficient coordination in infrastructure development work	0,09	-4	-0,37
Reducing transport volumes of international freight trains	0,10	-4	-0,34
Tendency of transport policy of individual countries to rail transport disadvantage	0,06	-3	-0,16
Unfavourable economic development within Amber RFC countries	0,07	-3	-0,21
Reducing investment subsidies for rail transport	0,07	-4	-0,30
Reducing non-investment subsidies for rail transport	0,06	-3	-0,19
Higher transport time compared to road goods transport	0,10	-5	-0,44
Lower flexibility compared to road goods transport	0,10	-5	-0,46
Insufficient coverage of railway corridor routes to cover customer needs	0,11	-5	-0,57
Stagnation (unsolved problems) in the field of maintenance and modernization	0,10	-2	-0,25
TOTAL	**1**	**-**	**-3,82**

12.3 Resulting SWOT strategy of the Amber RFC

The quantitative scores were assigned to strengths, weaknesses, opportunities and threats (risks) in SWOT analysis for the Amber RFC. Quantified assessment of internal and external environment analysis needs to be put in comparison of vectors from which we find a particular position which represents model strategy for the Amber RFC.

Based on determining the resultant vector it is possible to determine a strategy:

- offensive,
- defensive,
- union: in case of the Amber RFC, this strategy cannot be applied,
- exit: in case of the Amber RFC, the strategy cannot be applied.

Using quantified evaluation of internal and external environment it was found by comparison of vectors: ***Offensive strategy,*** as model strategy for the Amber RFC. Graphical representation of matrix of model strategies with initial strategy for the Amber RFC is shown in diagram below.

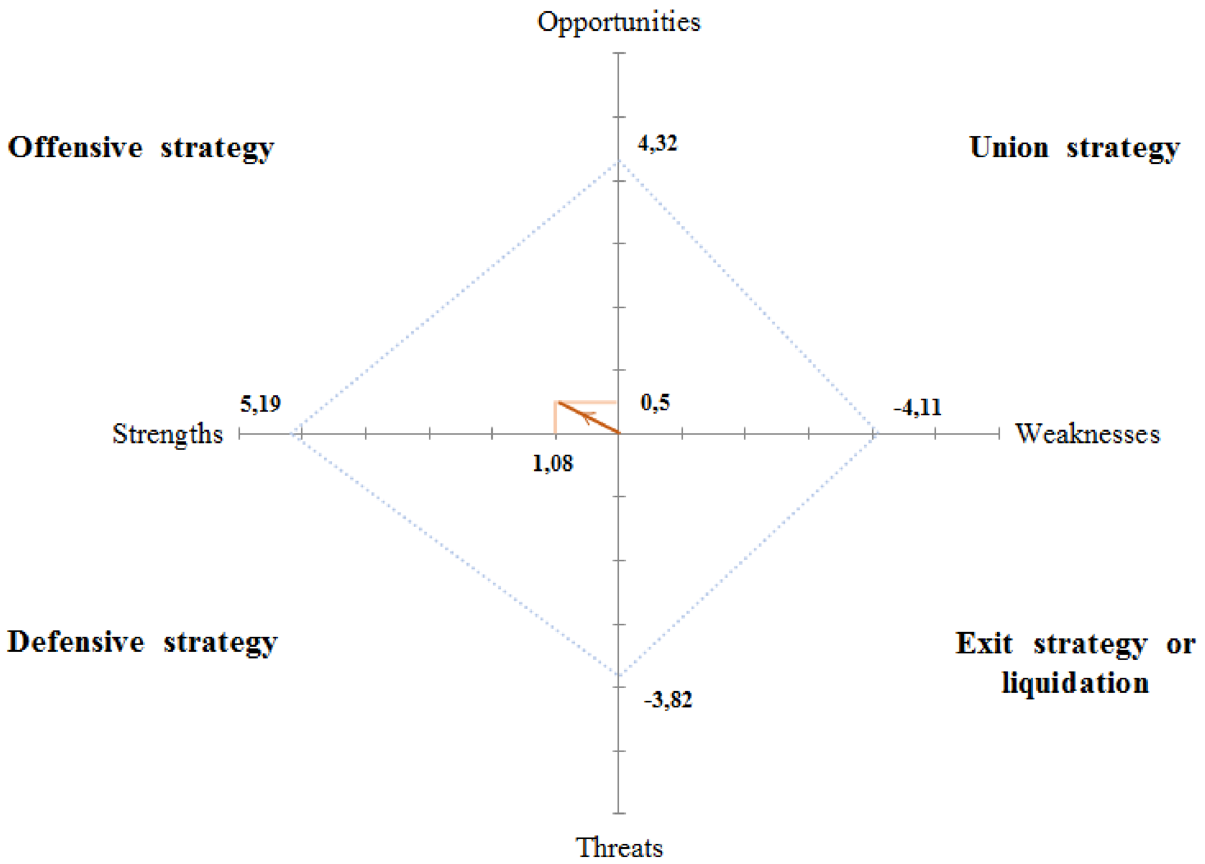


Figure 48: *Matrix of model strategies for the Amber RFC*

**Note: vector routing is the result of the difference between Opportunities and Threats, as well as the difference between Strengths and Weaknesses*

Offensive strategy is considered to be the most attractive strategic alternative. It can be used by an entity whose position is ideal with the predominant strengths over the weaknesses. Such an entity is able to use its strengths to realize the opportunities offered by the external environment. However, an entity must monitor its weaknesses and avoid defined risks. Based on the resultant strategy, it is necessary to take the following measures for the Amber RFC:

- increase the reliability of rail system services,
- developing the high-quality and available services of C-OSS,
- developing the cooperation with other RFC corridors,
- support for intermodal transport services,
- reducing the charges for local service trains,
- in operative transport management, to proceed to prioritize international freight trains,
- quality, flexible, reliable and cost-effective services of Koper seaport,
- close cooperation between infrastructure managers,

- coordination of investment projects in railway infrastructure within the Amber RFC lines,
- increased awareness of the corridor, its services and perspectives,
- exchange of information concerning operation, control and possessions,
- measures to reduce the technological times of operations for transport of goods from/to counties outside the EU,
- providing the best resources, e.g. human, IT,
- investment in interoperability,
- exclusive or dominant access to the most capable suppliers of MB Amber RFC.

The above mentioned measures result from the strategy and its characteristics. However, the Amber RFC itself cannot influence all measures mentioned. Therefore, it is necessary that the subjects, that can affect the individual measures, deal with the suggested measures (e.g. the ministries concerned, infrastructure managers, governments of individual countries, EC). The proposed strategic measures resulting from the SWOT analysis results are proposed to be implemented through the method “Attacks on competitive advantages” which is implemented with the aim to take over the market share of weaker competitors or reduce the competitive advantage of strong rivals. The attack is conducted by various methods, e.g. price reduction, effective advertising, marketing communication mix, new services, etc.

13 STRATEGIC MAP OF AMBER RFC

In order to fulfil the basic objectives of the Amber RFC, 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 under consideration 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 under consideration 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 under consideration and its performance.

Amber RFC main visions are:

- growth of rail freight transport performances,
- fulfilling the EU transport objectives and reducing the negative external costs of transport,
- strengthening rail freight position within the individual member states of the Amber RFC,
- expand cooperation with rail carriers as well as between IM,
- strengthening and developing the cooperation between RFC corridors,
- maintaining and developing the rail freight services,
- developing the services concerning free capacity allocation,
- fulfilling the basic objectives of the liberalization of rail freight services market.

Amber RFC mission consists particularly in:

- providing and improving the rail freight services (cooperation between IM, provision of important information on access to railway infrastructure, cooperation on sidings, etc.),
- creating a positive perception of rail freight transport and the Amber RFC (participations in various events, etc.),
- development and modernization of railway infrastructure,
- participation in transport policy development within the individual countries of the Amber RFC as well as at the EU level,
- promoting the development of rail freight transport as an environmentally friendly and perspective mode of transport compared to road transport,

- decreasing the transport performances of more environmentally demanding modes of transport,
- available non-discriminatory access to railway infrastructure and its capacity,
- effective transport of goods from/to EU, form/to countries outside the EU,
- reducing public spending,
- high satisfaction of all customers of the Amber RFC.

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

Figure 49: *Map Balanced Score Card of Amber RFC*

Continue of Figure 49:

Figure 50: *Map Balanced Score Card of Amber RFC*

14 AMBER RFC MARKETING STRATEGY

The draft for strategic direction of the Amber RFC is contained in chapters 12 and 13. In addition to the drafts in the above mentioned chapters, it is necessary to propose a marketing strategy which main task will be, in the first phase of the Amber RFC operation, its propagation. The chapter deals with a draft of marketing strategy in the field of propagation – marketing communication mix.

The Amber RFC is a provider of services that are characterized by:

- immateriality,
- inseparability,
- heterogeneity,
- impossibility of ownership,
- responsibility,
- longevity.

The draft of marketing communication will include:

- vision,
- mission,
- branding strategy.

The marketing strategy draft itself requires knowledge of the external and internal environment influencing on the Amber RFC. The external environment will be analysed based on the PEST (political, economic, socio-cultural and technological) analysis. The internal environment will then be examined using Porter's Five Forces of Competitive Analysis.

A) PEST analysis (external environment):

1. Political and legislative impact:

- European Union, European Commission,
- current legislation of the member states on business, transport, tax policy, labour law, sanctions, technical conditions,
- individual interests of the member states and the European Union in the field of transport policy, transport business, technical conditions,
- legislation of countries outside the EU (Ukraine, Belarus, Serbia, Turkey, China),
- international cooperation of the EU countries with countries outside the EU,
- international and internal customs legislation,
- intentions in foreign investment of individual EU countries, the Amber RFC countries, the USA, etc.,

- measures in the field of protection of national producers on the part of EU member states and the European Union,
- international law and its principles.

2. Economic impacts:
   - economic development of the corridor member states,
   - economic development of other EU countries,
   - economic development of Serbia, Ukraine, Belarus, China and Turkey,
   - economic development of the Czech Republic,
   - development of unemployment in the Amber RFC member states and other EU member states,
   - amount of investment allocated to the railway infrastructure development in the Amber RFC countries,
   - amount of investment allocated to the development of other transport infrastructure in the Amber RFC countries,
   - development of international trade,
   - development of demand for international goods transport services,
   - financial condition of the Amber RFC infrastructure managers,
   - financial condition of infrastructure managers of the Amber RFC neighbouring countries.
3. Socio-cultural impacts:
   - awareness of the population of the needs of greening transport,
   - awareness of producers and forwarders of the needs of greening transport,
   - population growth in the Amber RFC member states – higher demands on services and consumption,
   - population decline in the Amber RFC member states – lower consumption,
   - population growth in other EU member states – higher demands on services and consumption,
   - population decline in other EU member states – lower consumption,
   - change of purchasing behaviour of the population – preferring national products versus favouring substitutes made outside the home country.
4. Technological and technical impacts:
   - modification of railway infrastructure technical standards,
   - modification of technical standards of other modes of transport,
   - interoperability of rail system,
   - development in the field of railway signalling safety technology,
   - development of rail transport means,
   - development of transport means of other modes of transport,

- change of technological processes at border crossings,
- development of IT for data exchange in the field of transport services and transport operation,
- pressure on reducing the infrastructure technical restrictions,
- need of transport infrastructure modernization.

5. Environmental impacts:
   - pressure on reducing the greenhouse gas emissions,
   - reducing the transport accidents and associated pollution of natural resources,
   - pressure on increasing the energy consumption from renewable energy sources,
   - pressure on reducing the energy consumption from fossil fuels.

B) Porter's Five Forces of Competitive Analysis (internal environment):

1. Existing, current competitors:
   - road freight transport,
   - air freight transport,
   - maritime freight transport in the direction of goods from/to China,
   - RFC 5 corridor,
   - road infrastructure managers in the Amber RFC member states,
   - Gdańsk + Gdynia and Trieste seaports.
2. Substitution products:
   - road network,
   - road freight services,
   - air freight services (e.g. consignments transported by intermodal transport: electronics, spare parts, etc.),
   - multimodal transport services without the use of rail transport,
   - maritime freight services in the direction of goods from/to China,
   - allocation of international routes individually through infrastructure managers.
3. Suppliers of:
   - energies,
   - telecommunication and internet services,
   - professional studies, surveys and analyses,
   - IT and SW equipment,
   - support services in the field of rail operation,
   - repair services,
   - materials of railway superstructure and substructure,
   - construction companies carried out the modernization, reconstruction, repair, maintenance and renewal of railway infrastructure,

- office and administrative supplies.

4. Potential competitors:
   - road freight transport over 12 tonnes,
   - road freight transport up to 3,5 tonnes,
   - road freight transport from 3,5 to 12 tonnes,
   - air freight transport,
   - maritime freight transport in the direction of goods from/to China,
   - RFC 5 corridor.
5. Stakeholders:
   - railway undertakings,
   - intermodal operators.

These analyses serve for a draft of vision, mission and use of communication mix tools.

The vision is a starting point of the strategic management process and represents a set of specific ideals and priorities of the entity. It is an image of its successful future based on the fundamental values or the philosophy with which the goals and plans of the entity are connected. The vision gives an answer to the question: how will the entity look in the future. The vision must be clearly formulated, realistic and well communicable. The basis of each vision is the result to be achieved in the customer's interest. The specific content of the vision then depends on the entity itself and the sector in which the subject operates. Three basic objectives of vision:

- express the general direction,
- motivate people to move right,
- quickly and effectively coordinate efforts of people.

Draft of the Amber RFC vision: Provision of effective, available and flexible services for corridor users on the up-to-date, interoperable and safe railway infrastructure in order to increase the overall attractiveness of rail services and thus to contribute to an increase in rail freight transport performances and subsequent fulfilment of environmental objectives of the EU and the whole human population.

Well formulated mission can be a useful tool for strategy formulation, but also for day-to-day management decisions. The entity's mission presents not only the intention of entity existence itself, but also, towards other entities of market, the standards of behaviour of the whole organization, and, last but not least, the values respected by entity. The mission has the following functions:

- expresses the basic strategic intention of the owners and top management of the organization,

- has an external information character towards the public and stakeholders, suppliers, customers, interest groups, etc.,
- has an internal information character as the basic standard of management and employees behaviour.

Draft of the Amber corridor mission: Continuously build quality services for transport of goods, environment and public resources. Provide quality, available and non-discriminatory services to all corridor users and cooperate effectively with terminals. Cooperate with EU authorities, corridor member states authorities, intermodal operators and other RFC corridors. Create full-value mutual business relationships with major suppliers. Contribute to railway infrastructure development in line with customer needs and creation of competitive environment in the European and international transport system.

Brand Amber RFC – is a promise to the customer to provide specific benefits that are related to the product. Brand is name, title, sign, expression or their combination. Its purpose is to distinguish the product or service of one provider or group of providers from competitors. Brand is not created only by a logo, a visual style, a specific product, but also services and service associated with the main product, company and its image and brand communication.

Requirements: Amber RFC brand evaluation

- short, appropriate graphic processing - fulfilled,
- simply rememberable – fulfilled,
- easily identifiable - fulfilled,
- original, overtime - fulfilled,
- not inspiring negative associations - fulfilled,
- registered and legislatively protected – not fulfilled, need to supplement,
- applicable internationally - fulfilled.

The name of the corridor, including its logo, is recommended to be used in all documents dealing with the issue of the corridor and the RFC corridors, international rail freight transport, legislation, correspondence, commercial relation and marketing communication. The logo and name meet the conditions for the given type of propagation and clearly identify the surveyed corridor. Colours fit to its basic name – the Amber RFC.

The following table contains a draft for the use of marketing communication tools for the Amber RFC based on its main objectives and services provided. At the same time, the marketing communication strategy is designed based on the analysis of external and internal environment of the Amber RFC.

Table 52: Draft for marketing communication application

Point	Use	Application
Advertising	yes	Leaflets, brochures, emails sent to railway undertakings, intermodal operators and forwarders
Sales support	no	-
On-line sales	yes	Through the C-OSS office, propagation of C-OSS on websites of infrastructure managers
Public relations	yes	Through email, social networks, discussion forums
Sponsorship	no	-
On-line marketing communication	yes	Through email, social networks, discussion forums, website, EC websites, websites of infrastructure managers
Guerrilla marketing	no	-
Product placement	yes	-
Content marketing	yes	Through email, social networks, discussion forums
Experiential marketing	yes	Propagation by scientific and professional articles dealing with transport of goods, transport, ecology, savings in social transport
Green marketing	yes	Environmental benefits published at website, in studies, TMS, promotional products, conferences

15 CONCLUSIONS AND RECOMMENDATIONS

The aim of the presented transport market study was a comprehensive assessment of transport, traffic, technological and social effectiveness of the Amber RFC. Consequently, on the basis of verified and consistent knowledge available, propose the strategy for the establishment of the Amber RFC. The strategic recommendation itself for the Amber RFC is listed in Chapter 12, while Chapter 13 contains a draft of strategic map for the surveyed corridor. The international rail freight corridor Amber will be established on 30.01.2019 and it should ensure, in particular, coordination between the various parties concerned, more effective transport management, increase awareness and overall quality of rail system services, non-discriminatory access to infrastructure, increase in transport performances, support shift of transport performances from more environmentally demanding modes of transport to rail freight transport as well as improve continuity of transport across member states, focusing on sufficient priorization of rail freight transport.

On the basis of the economic, transport, traffic and technical analyses carried out, the comparison of modal split and other important qualitative and quantitative transport indicators, we can conclude that the establishment of the Amber RFC is, from socio-economic point of view, justified and necessary for the development of international rail freight services. The socio- economic benefits of the Amber RFC establishment are presented in subchapter 11.1.

The basic routing of the Amber RFC was determined by Commission Implementing Decision (EU) No 2017/177 of 31 January 2017. Another objective of the study was the assessment of the given basic routing according to the Implementing Decision, where the individual routes are divided by importance (TMS results: Koper – Ljubljana- Zalaszentiván/ -Sopron – Csorna/ - Rajka –Bratislava – Leopoldov – Žilina - Katowice/ -Komárom – Budapest/ -Komárom -Budapest – Kelebia (Hungarian-Serbian border)/ -Budapest- Vác – Nové Zámky – Leopoldov/ Budapest- Mezőzombor-Hidasnémeti- Košice- Plaveč – Muszyna- Nowy Sącz /-Tymbark –Podłęże/-Tarnów – Podłęże/ -Podłęże- Tunel- Dęblin- Terespol – (Polish-Belorusian border). A draft of exact routing and technical parameters of the individual lines is contained in Chapter 9. The routing draft itself is based on the research and analysis of the available statistical data.

The routing and geographical location of the Amber RFC provide a sufficient transport potential within the corridor countries, the EU countries as well as new transport opportunities from/to the Serbia and other countries outside the EU examined. In the TMS the routing creates the suitable conditions for corridor extension which is conditioned, in particular, by transport requirements. The analyses of assessing the transport opportunities showed an increase in demand for transport services, particularly in international trade, with an upward trend in the following period. The research showed the competitiveness of international rail freight services on the Amber RFC lines at the time of transport and charging, compared to road freight transport. However, it is necessary to support services for single wagon load transport which are, inter alia, influenced by the Last mile infrastructure. The average speed of international freight trains will increase due to the Amber RFC services which will contribute to the attractiveness of the rail system services. Based on the routing, the Amber RFC can be included in the EU strategic transport infrastructure. Proven economic development in the examined countries as well as the forecast of transport performance development showed an increase in transport performance after the corridor establishment. The corridor establishment will contribute to meeting the EU transport policy objectives and creating the single European railway area necessary to modal split change. The modal split change will greatly contribute to decrease in social transport costs. At the same time, the sustainable development of the EU countries will be ensured.

Based on the comprehensive results of the presented transport market study, in order to ensure the further development of the single European railway area, fulfilling the EU and the Amber RFC objectives in the field of transport policy, we recommend to:

- provide services planned by the Amber RFC: drafting the international timetable, provision of capacity, one contact point,
- designate the Amber RFC infrastructure based on the results in Chapter 9: classification of individual lines was carried out based on the analysis of transport performances, geographic location, technical parameters of the lines and traffic flows,
- adopt a strategy draft based on the results of the SWOT analysis: since SWOT analysis is a tool for finding strategic direction,
- proceed to measures proposed in the SWOT analysis: the measures proposed in SWOT analysis are based on the current state and should contribute to the fulfilment of the basic objectives of the Amber RFC,
- as part of the strategy, proceed on the basis of the BSC strategic map: the draft of strategic map is based on the current state and the fulfilment of the individual parts of BSC will lead to meet the individual objectives of the Amber RFC (vision, mission, strategic objectives),
- take measures relating to marketing: marketing proposals should contribute to the promotion of the Amber RFC and its basic services,
- create a corridor website and an interactive corridor map: at least to provide the basic information on the Amber RFC, corridor routing, technical characteristics of the lines and corridor services.

Based on the TMS's comprehensive results, in order to further development of the Amber RFC and the fulfilment of its strategic objectives resulting from the corridor mission and vision, we propose the following measures:

- ensure proper and effective maintenance of railway infrastructure included in the Amber RFC – individual infrastructure managers,
- ensure proper and effective transport management, coordination of possessions – individual infrastructure managers of the Amber RFC,
- adaptation of transport management rules to the needs of rail freight transport – individual infrastructure managers of the Amber RFC,
- in ensure proper transport management and capacity allocation,
- increase number and quality of international rail freight capacities - C-OSS office: due to low free capacity on some line sections of the Amber RFC lines,
- increase and adapt the investment resources in modernization of the basic and connecting transport infrastructure within the corridor – Member States,
- start active cooperation with other RFC – the Amber RFC, individual infrastructure managers,
- cooperate permanently and effectively with intermodal operators, railway undertakings and carriers – the Amber RFC,
- complete the information on the Last mile infrastructure of the Amber RFC and take measures for its modernization, reconstruction and support – the Amber RFC, infrastructure managers, countries,
- elaborating a draft of interactive questionnaire available on the Amber RFC internet domain to obtain effective and quick feedback and specification for a particular customer and his/her needs – the Amber RFC and RNE,
- continuously improve the quality of marketing activity, especially marketing communication – the Amber RFC, infrastructure managers, carriers and intermodal operators,
- as appropriate, cooperation with scientific and educational institutions to address strategy and strategic management – the Amber RFC,
- regular evaluation of fulfilment of the Amber RFC main objectives.

Proposal of measures for support of the Amber RFC development and fulfilment of its strategic objectives resulting from its mission and vision in the technical field:

- unification of the traction system within the Amber RFC principal lines (elaborating the analysis and possible implementation and investment plan),

- improving the technical parameters of the principal lines to increase the level of axle load and maximum train length according to TEN-T and AGTC requirements,
- reduce the technological time of consignment dispatch from/to countries outside the EU: change of legislation, transport requirements, harmonization of transport and technical regulations,
- improve the exchange of information between infrastructure managers and railway undertakings.

At EU and international level, to support green rail freight transport, we propose to take the following measures:

- internalisation of negative external costs of transport – the European Parliament and the Council, the European Commission, individual member states,
- extend the network of local and regional intermodal transport terminals and small Marshalling yards that can provide high quality and competitive intermodal transport services – individual member states, the EU,
- initiative and reconsideration of the possibility of harmonizing the rail infrastructure charging model within the lines included in the RFC corridors – individual member state, the EU,
- proceed to reduce transport infrastructure charges for local service trains, siding trains, trains serving terminals – individual infrastructure managers, individual member states based on liberalization charging principles.

These recommendations and suggestions are based on the results of the TMS and empirical knowledge of the professional public, university staff, staff of the infrastructure managers and carriers. The suggestions are intended to ensure a higher quality of railway system services and, in particular, international rail freight services. A well-set and distributed service will contribute to higher demand for rail freight services, effective modal split, savings in negative external costs of transport and sustainable development. This will contribute to fulfilling the vision and mission of the Amber RFC and thus meeting the EU’s transport objectives.

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Appendix A – Analysis of rail transport, xls. format

Appendix B – Supplementary data – Poland

Appendix C – Supplementary data – Slovakia

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Appendix E – Supplementary data - Slovenia

Appendix F – List of Last mile

Appendix G – Modal split

Appendix H – Maximum gradient on the Amber RFC lines

Appendix B

Supplementary data - Poland

The following table provides an analysis of investments in railway and road infrastructure in the Republic of Poland in the period 2014 – 2017.

Table 1: Analysis of investment subsidies in Poland

State expenditures-whole infrastructure	**2014**	**2015**	**2016**	**2017**
Investment subsidies in mill. PLN (1 EUR = 4,144 PLN)				
rail	75,98	25,20	4 932,59	5 750,28
road	9 405,46	11 488,17	15 731,41	19 002,74

Source: member of corridor from Poland

Appendix C

Supplementary data - Slovakia

Table 1 contains an analysis of the average utilization of maximum capacity offered on ŽSR lines in the period 2013 – 2017.

Table 1: Analysis of line capacity utilization

Description /Year	2013	2014	2015	2016	2017
Average share of (in %) use of maximum offered capacity on all corridor lines	27,08	28,95	32,88	35,00	34,22
Average share of (in %) use of maximum offered capacity on regional lines	29,21	29,91	29,95	29,17	28,88
Average share of (in %) use of maximum offered capacity on potential lines of Amber RFC	25,89	28,34	32,35	33,48	32,97

From the data in Table 1, we can confirm sufficiently free capacity for international trains, certified trains and trains using European rail freight corridors. Sufficiently free capacity is currently demonstrated also on the lines that have potential to be included in the Amber RFC.

Table 2 provides an analysis of average revenues for the use of railway infrastructure for rail passenger and freight transport on the lines that have the potential to be included in the Amber RFC. At the same time, Table 2 contains the list of the planned investment within these lines.

Table 2: Analysis of average revenues

Indicators/Year	2013	2014	2015	2016	2017
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for freight transport	17 842	18 881	20 099	21 642	16 856
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for passenger transport	22 231	22 786	25 691	25 106	18 874

Table 3: Investments in railway infrastructure

Expected investments	Impact of investment	Expected investment amount (EUR)	Expected investment time span
Modernization of corridor st. border ČR/SR – Čadca – Krásno nad Kysucou, section Čadca – st. border ČR/SR, 3rd construction	Modernization of existing double-track railway line which is a part of the TEN-T network and the European railway corridor no VI. The length of section is 4,904 km	83 211 776	2019/2021
Modernization of corridor st. border ČR/SR – Čadca – Krásno nad Kysucou, section Čadca – Krásno nad Kysucou (out of) 1st and 2nd construction	Modernization of existing double-track railway line which is a part of the TEN-T network and the European railway corridor no VI. The length of section is 9,4 km	220 000 000	2021/2023
Modernization of the railway line Púchov - Žilina, for the line speed up to 160 km/h	Modernization of the line Púchov – Žilina, for the line speed up to 160 km/h Stage I (Púchov - Považská Teplá)	392 720 001	2016/2020
Completion of Žilina – Teplička marshalling yard and following railway infrastructure at Žilina node, realization	Modernization of the railway node Žilina is necessary prerequisite for the full development of a transit railway corridor in the north – south direction meeting the requirements of TSI – technical specifications for interoperability of conventional rail systems in Europe.	390 723 415	2019/2022

Table 4: Average charges for railway infrastructure – rail freight transport

Line section	Charges (€)		
	Transport of containers	Transport of chemicals	Transport of standard goods
	Access charges for intermodal train (ca. 40x40´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,)
114 B Čadca - Zwardoń PL	72,58	91,43	82,01
106 D Žilina–Čadca–Mosty u Jablunkova (only to Čadca)	117,27	145,81	131,54
107 A Muzsyna PL – Plaveč – Kysak	232,74	304,34	268,54
109 B Hidasnémeti HU – Čaňa – Barca	51,72	68,76	60,24
105 A Košice – Kraľovany (len po Kysak)	116,79	131,6	124,2
D Barca St 1 – Košice nákl.stanica (koľ.101)	66,75	70,12	68,44
106 A Kraľovany – Žilina - Púchov (od Žilina zriaď. stanica)	167,32	209,51	188,42
105 A Púchov - Bratislava hlavná stanica	475,86	624,69	550,27
128 A Leopoldov – Galanta	123,22	150,89	137,06
120A Szob HU – Štúrovo – Bratislava hl.st. (od Nových Zámkov)	284,95	370,91	327,93
120 B Komárom HU – Komárno – Nové Zámky	119,56	151,09	135,32
124 A Komárno – Bratislava-Nové Mesto	252,94	324,89	288,91

Supplementary data - Hungary

Tables 1 and 3 give an overview of the investment and non-investment subsidies in railway infrastructure of Hungary in the period 2013 – 2017.

Table 1: Analysis of investment subsidies focused on railway infrastructure

On the lines listed in Appendix A Sheet MÁV Zrt. GYSEV VPE 1 (name of section, railway station, etc.)	Investment subsidies in mill. €				
	2013	2014	2015	2016	2017+
MÁV Zrt.					
Győr - Ferencváros	0,86	2,51	0,85	2,55	1,13
Őriszentpéter s.b. - Zalaszentiván	0,32	1,36	0,85	2,04	0,00
Kőbánya felső - Felsőzsolca	1,22	2,56	2,41	4,06	1,3
Felsőzsolca - Hidasnémeti s.b.	0,00	0,06	0,1	0,34	0,00
Ferencváros - Kelebia s.b.	0,54	0,43	3,31	0,39	0,13
Hatvan - Újszász	0,35	0,68	0,49	0,68	0,83
Újszász - Újszász elágazás	0,01	0,01	0,35	0,00	0,06
Újszász elágazás - Paládicspuszta elágazás	0,00	0,00	0,11	0,00	0,02
Paládicspuszta elágazás - Abony elágazás	0,03	0,06	0,16	0,04	0,02
Abony elágazás - Nyársapát elágazás	0,03	0,00	0,00	0,00	0,00
Nyársapát (incl.)- Városföld (excl.)	0,11	0,36	0,12	0,33	0,24
Városföld (incl.) - Kiskunfélegyháza (excl.)	0,07	0,16	0,05	0,16	0,17
Kiskunfélegyháza (excl.) - Harkakötöny elágazás (excl.)	0,10	0,01	0,01	0,17	0,06
Other	78,62	72,58	76,6	71,17	53,14
TOTAL	**82,26**	**80,78**	**85,41**	**81,93**	**57,10**
GYSEV					
Rajka s.b. - Hegyeshalom	0	0,177	2,578	0	0
Sopron - Győr	0	1,472	0,306	0	0
Hegyeshalom - Porpác	0,637	4,672	39,503	0	0
Porpác – Szombathely	0	0	0,224	0	0
Szombathely - Zalaszentiván	0	0,07	1,591	48,245	0
TOTAL	**0,637**	**6,391**	**44,202**	**48,245**	**0**

Table 2: Analysis of non-investment subsidies

Non-investment subsidies in mill. EUR	2013	2014	2015	2016	2017
MÁV Zrt.	138,40	140,93	149,38	145,76	128,71
GYSEV	5,036	9,269	17,627	N/A	N/A

Tables 3 and 4 contain data on the selected economic and charge indicators of railway infrastructure, separately for GYSEV and MÁV Zrt.

Table 3: Analysis of selected economic indicators of transport infrastructure – GYSEV

Indicators/Year	2013	2014	2015	2016	2017
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for freight transport	15 645	15 870	13 429	11 035	12 911
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for passenger transport	42 034	32 988	34 211	32 263	33 864
Average operational cost (EUR) per 1 km of corridor lines	90 107	91 948	91 282	87 811	94 224
Average operational cost (EUR) per 1 km of other lines	19 839	19 161	19 559	19 074	20 190
Average non-investment subsidy from public resources (EUR) per 1 km of railway infrastructure	23 012	22 753	23 860	25 107	29 171

Table 4: Analysis of selected economic indicators of transport infrastructure – MÁV Zrt.

Indicators/Year	2013	2014	2015	2016	2017
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for freight transport	62 287	62 620	66 434	65 858	53 483
Average amount of revenues (EUR) from carriers per 1 km of track to be included in corridor for passenger transport	131 948	129 382	135 792	139 740	103 057
Average operational cost (EUR) per 1 km of corridor lines	122 873,2	122 953	129 438	130 645	128 137
Average operational cost (EUR) per 1 km of other lines	31 775,5	29 920,2	33 483,1	29 327,9	35 916,16
Average non-investment subsidy from public resources (EUR) per 1 km of railway infrastructure	19 100	19 449	20 615	20 116	17 762

Appendix E

Supplementary data - Slovenia

The following table gives an analysis of capacity utilization of SŽ-I lines in the period 2013 – 2017.

Table 1: Statistical average of capacity utilization

Description/Year	2013	2014	2015	2016	2017
Average share (in %) of use of offered maximum capacity on corridor lines	69,15	69,15	70,58	70,58	74,29
Average share (in %) of use of offered maximum capacity on regional lines	52,25	52,58	53,72	53,72	55,86
Average share (in %) of use of offered maximum capacity on lines considered in the Amber RFC	65,17	65,17	66,00	66,00	69,34

The analysis of statistical capacity utilization showed a gradual increase in utilization of available line capacity on the corridor lines and lines considered for the Amber RFC. The utilization of the line between Divača and Koper is 98% because there are 82 trains/day on this single-track line. At the moment this line doesn't have enough free capacity for foreseen increase in transport performances at Amber RFC. Studies for the construction of the second track on the line Koper – Divača are on going and the upgrade of the line between Divača and Koper is an absolute priority.

Table 2: Analysis of investment subsidies focused on railway infrastructure

On the lines of the Amber RFC	Investment subsidies in mill. €			
	2013	2014	2015	2016
Infrastructure maintenance*	59,69	77,12	64,56	52,89
Modernization of railway crossings*	0,40	0,77	0,13	0
GSMR*	3,83	50,47	86,39	0
ECTS* (corr D)	9,46	13,62	19,48	0
Maintenance works for public benefit*	23,98	0,94	2,16	0
Anti-noise barriers*	0,04	0,41	0,69	0
Interventions / interventions projects*	0,64	0,40	0,47	0
New railway line Koper - Divača	2,38	1,87	1,62	0
Upgrading of railway line Pragersko - Hodoš	66,64	144,22	160,87	0
Upgrading of line section Pragersko - Ptuj	0,02	0,01	0	0
Upgrading of line section Poljčane - Pragersko	1,51	6,01	19,39	0
Investment measures - upgrading Koper - Divača	46,68	29,90	38,05	0
Upgrading of line section Dolga gora - Poljčane	2,00	0	26,53	0
Upgrading of line section Zidani most - Celje	0	3,43	2,59	0
On other lines				
Infrastructure maintenance*	0	0	0	12,41
New railway line Trst - Divača	0,33	1,31	1,58	0
Modernisation of Kočevje railway line	7,32	1,59	0,07	0
New railway line Ljubljana - Kranj - Jesenice	0,33	0,37	0,8	0

*Ministry of finance of Republic of Slovenia: Explanation of the annual accounts of the SI budgets for year

The analysis of investment in railway infrastructure in the Republic of Slovenia, given in Table 2, showed a significant share of investment directed to the lines to be included in the Amber RFC. Investments directed to railway infrastructure directly affect the quality of rail transport services provided. Therefore, the correct allocation of investment sources to individual railway infrastructure projects is important. This fact applies to all countries of the Amber RFC.

Table 3 contains an analysis of the development of revenues from charges for the use of SŽ-I rail infrastructure in the period 2013 – 2016.

Table 3: Infrastructure access charges

Year	In €
2013*	9 128 258,98
2014*	9 624 400,08
2015*	9 973 046,49
2016**	9 029 756,00

*source Annual report of Public Agency of the Republic of Slovenia for Railway Transport (AŽP) for 2013 -2015

**at 31st of July 2016 the AŽP finished with the calculation of infrastructure charges and SŽ-Infrastruktura started at 1st of August 2017 with access fee charging

List of the Last mile of the Amber RFC

Republic of Poland

Object	Type of equipment	Address of equipment	Contact details
Area of Małaszewicze / Terespol			
PKP Cargo Centrum Logistyczne Małaszewicze	Intermodal transport terminal	ul. Kolejarzy 22B 21-540 Małaszewicze Poland	PKP CARGO Centrum Logistyczne Małaszewicze sp. z o.o. T +48 83 343 75 63 F +48 83 343 75 63 sekretariat@clmalaszewicze.pl www.clmalaszewicze.pl
EUROPORT Małaszewicze Duże	Intermodal transport terminal	ul. Warszawska 1C, 21 540 Małaszewicze Duże Poland	EUROPORT Małaszewicze Duże T + (+48) 83 343 89 59 T +48 83 375 03 40 biuro@cleuroport.pl www.cleuroport.pl
Terminal przeladunkowy Wólka	Intermodal transport terminal	21 512 Zalesie Poland	Terminal przeladunkowy Wólka T + 48 22 534 04 13 T +48 83 375 04 49 info@pkpcc.comsk wolka@tradetrans.pl www.tradetrans.eu
Transgaz S.A.	Intermodal transport terminal	21 512 Zalesie Poland	Transgaz S.A T +48 83 374-15-37, 374-15-38 T +48 600 078 499 transgaz@transgaz.pl www.transgaz.pl
Area of Warszawa			
Terminal Kontenerowy Warszawa – PKP Cargo Connect Sp. z o.o.	Intermodal transport terminal	ul. Marywilska 39 03 328 Warszawa Poland	PKP Cargo Connect Sp. z o.o. T +48 22 534 04 13 info@pkpcc.coml www.tradetrans.eu
Loconi Intermodal Terminal Kontenerowy Warszawa	Intermodal transport terminal	ul. Jagiellońska 88 00 992 Warszawa Poland	Loconi intermodal Terminal, Warszawa T +48 58 354 71 58 T +48 50 21 77 722; T +48 51 57 70 348 loconi@loconi.pl depot.waw@loconi.pl www.loconi.pl
Polzug Terminal Kontenerowy Pruszków	Intermodal transport terminal	ul. Skorupki 5 00 546 Warszawa Poland	Polzug Terminal Kontenerowy Pruszków T +48 22 33 63 400 warszawa.info@polzug.pl www.polzug.de
Terminal Kontenerowy Warszawa Główna Towarowa SPEDCONT Sp. z o.o.	Intermodal transport terminal	ul. J. Ordona 2a 01-237 Warszawa Poland	Spedcont Ireneusz Marczak T + 48 22 836 81 31 T + 48 42 613 74 23 tkwarszawa@spedcont.pl www.spedcont.pl bok@spedcont.pl
Area of Katowice			

Terminal Kontenerowy Gliwice - PKP CARGO CONNECT Sp. z o.o.	Intermodal transport terminal	ul. Władysława Reymonta 32 44 100 Gliwice Poland	Terminal Kontenerowy Gliwice - PKP CARGO CONNECT T +48 32 23 18 877 info@pkpcc.com e.sobczyk@pkpcc.com
Terminal Sosnowiec Poludniowy (Spedycja Polska Spedcont Sp. z o.o.)	Intermodal transport terminal	ul. Kościelna 60 41-200 Sosnowiec Poland	Spedcont Krzysztof Ptak T +48 42 613 74 23 F +48 32 293 30 63 tksosnowiec@spedcont.pl bok@spedcont.pl www.spedcont.pl
Euroterminal Sławków	Intermodal transport terminal	CHL Groniec 41-260 Sławków Poland	Euroterminal Sławków T +48 32 71 42 400 T +48 32 714 24 54 info@euterminal.pl www.euterminal.pl
Polzug Terminal Dąbrowa Górnicza	Intermodal transport terminal	ul. Koksownicza 6 42 523 Dąbrowa Górnicza Poland	Polzug Terminal Dąbrowa Górnicza. T +48 32 792 70 91 T +48 32 75 01 570 dabrowa.terminal@polzug.pl www.polzug.de
PCC Intermodal - Terminal PCC Gliwice	Intermodal transport terminal	Portowa 28 44 100 Gliwice Poland	PCC Intermodal S.A. Terminal T + 48 32 30 18 471 depot@ppc.eu www.pccintermodal.pl
Brzeski Terminal Kontenerowy – Karpiel sp. z o.o.	Intermodal transport terminal	ul. Przemysłowa 6 32 800 Brzesko Poland	Brzeski Terminal Kontenerowy – Karpiel T +48 14 68 45 050 T +48 784 497 327 biuro@karpiel.info.pl info@karpiel.info.pl www.karpiel.info.pl
Terminal kontenerowy Włosienica	Intermodal transport terminal	ul. Długa 1 32 642 Włosienica Poland	Terminal kontenerowy Włosienica T + 48 33 84 29 001 T + 48 53 79 99 735 railpolska@railpolska.pl mariusz.bialek@railpolska.pl www.balticrail.com www.railpolska.pl
PCC INTERMODAL - Terminal Kolbuszowa	Intermodal transport terminal	ul. Ks Ludwika Ruczki 3C 36 100 Kolbuszowa Poland	PCC INTERMODAL T +48 58 58 58 200 info.intermodal@pcc.eu terminal.debica@pcc.eu
Lubelski Terminal Kontenerowy	Intermodal transport terminal	Drzewce 1 24 150 Nałęczów Poland	Lubelski Terminal Kontenerowy T +48 60 24 74 641 biuro@ltk-intermodal.pl Darek@ltk-intermodal.pl
Erontrans Terminal Kontenerowy w Radomsku	Intermodal transport terminal	ul. Młodzowska 3 97 500 Radomsko Poland	Erontrans Terminal Kontenerowy T +48 58 773 93 00 erontrans@erontrans.pl
Loconi Intermodal S.A. Terminal Kontenerowy Radomsko	Intermodal transport terminal	ul. Kraszewskiego 36 97 500 Radomsko Poland	Loconi Intermodal S.A T +48 502 177 614 loconi@loconi.pl depot.rad@loconi.pl

Erontrans Terminal Kontenerowy w Strykowie	Intermodal transport terminal	ul. Batorego 27 95 010 Stryków Poland	Erontrans Terminal Kontenerowy T +48 58 773 93 00 erontrans@erontrans.pl
Terminal Kontenerowy Łódź Chojny	Intermodal transport terminal	ul. Śląska 3A 93 155 Łódź Poland	Terminal Kontenerowy Łódź Chojny T +48 502 177 614 loconi@loconi.pl depot.lcj@loconi.pl
SPEDCONT Terminal Kontenerowy Łódź Olechów	Intermodal transport terminal	ul. Tomaszowska 60 93 235 Łódź Poland	SPEDCONT Terminal T +48 42 613 74 23 bok@spedcont.pl sekretariat@spedcont.pl

Slovak Republic

Object	Type of equipment	Address of equipment	Contact details
Bratislava			
Bratislava Palenisko	Intermodal transport terminal	Pribinova 24 82109 Bratislava Slovakia	SPaP a.s. T +421 2 58271 111, F +421 2 58271 114 spap@spap.sk www.spap.sk
Bratislava UNS/ Slovnaft	Terminal	Vlečka Slovnaft, a.s. Vlčie hrdlo 1 824 12 Bratislava Slovakia	Slovnaft a.s., Bratislava Ing. Ján Čerepán jan.cerepan@slovnaft.sk
UKV Terminal Bratislava ÚNS	Intermodal transport terminal	Lúčna ul. 12 82109 Bratislava Slovakia	Rail Cargo Operator - CSKD s.r.o. František Papuga T +421 903 744 857 F +421 903 744 857 papuga@intrans.sk www.railcargo.com
Bratislava východ	Marshalling yard		www.zsr.sk
Devínska Nova Ves	Marshalling yard		www.zsr.sk
Dunajská Streda	Intermodal transport terminal	Povodská 18 92901 Dunajská Streda Slovakia	Metrans (Danubia) a.s. Mr. Jiri Samek T +420 267 293 102 samek@metrans.cz www.metrans.eu
Nové Zámky	Marshalling yard		www.zsr.sk
Komárno zr.st.	Marshalling yard		www.zsr.sk
Štúrovo	Marshalling yard		www.zsr.sk
Terminál Žilina	Intermodal transport terminal	Bratislavská cesta 60 010 01 Žilina Slovakia	Rail Cargo Austria AG Fagan Miroslav T +421-903-507-205 fagan@intrans.sk www.railcargo.com/de
Terminál Košice	Intermodal transport terminal	Areál prekladisko Haniska 040 66 Košice Slovakia	Metrans (Danubia) a.s. Jiri Samek T +420 267 293 102 samek@metrans.cz www.metrans.eu

Hungary

Object	Type of equipment	Address of equipment	Contact details
Sopron			
Sopron Terminal	Intermodal transport terminal	Ipar krt. 21 9400 Sopron Hungary	Gysev Cargo Zrt Tóth Péter T 0036 99 577161 F 0036 99 577334 toth.peter@gysevcargo.hu www.gysevcargo.hu
Railport Sopron	Railport/Rail logistic centre	Sopron Hungary	DB Schenker Rail dbschenker.hafas.de
Logistics Service Centre Sopron	Railport/Rail logistic centre	Ipar körút 219400 Sopron Hungary	GysevCargo László Cseh T +36(99)517 267 or 427, F +36(99)517 314 cseh.laszlo@gysevcargo.hu www.gysevcargo.hu
Győr			
Terminal ÁTI Győr	Intermodal transport terminal	Kandó K. u. 17 9025 Győr Hungary	ÁTI DEPO ZRt., T +36 96 512 991 www.atidepot.hu
Port of Győr-Gőnyű	Intermodal transport terminal	Kikötö 1 H-9011 Györ-Károlyháza Hungary	Kikötö Zrt. Mr. Ákos Pintér T +36 96 544 200 F +36 96 544 204 pinterportofgyor.hu
Railport Győr	Railport/Rail logistic centre	Győr Hungary	DB Schenker Rail dbschenker.hafas.de
Győr	Marshalling yard		-
Hegyeshalom	Marshalling yard		-
Komárom	Marshalling yard		-
Miskolc	Marshalling yard		-
Budapest			
Budapest Szabadkikötő	Terminal	Weiss Manfréd út 5-7 H-1211 Budapest Hungary	T +36 1 278 3102 F + 36 1 276 3978 info@bszl.hu
Budapest BILK	Intermodal transport terminal	Európa útca. 4 1239 Budapest Hungary	BILK Kombiterminal Co. Ltd. Mr. Istvan Huszti T +36 1 289 6000 F +36 1 289 6060 bilkkombi@bilkkombi.hu www.railcargobilk.hu
Ferencváros	Marshalling yard		-

Republic of Slovenia

Object	Type of equipment	Address of equipment	Contact details
Luka Koper – Port of Koper	Intermodal transport terminal	Luka Koper d.d. Vojkovo nabrežje 6501 Koper Slovenia	Luka Koper d.d. Andrej Cah T +386 5 6656 905 Andrej.cah@luka-kp.si www.luka-kp.si
Ljubljana			
Ljubljana Container Terminal	Intermodal transport terminal	Letališka 14 1000 Ljubljana	Slovenske železnice - SŽ-TP d.o.o. Robert Gaber Roman Bricelj

		Slovenia	T +00386 1 29 13136, 12620 F +386 1 29 12 619 robert.gaber@slo-zeleznice.si roman.bricelj@slo-zeleznice.si www.slo-zeleznice.si/en
Ljubljana Zalog	Marshalling yard		Slovenske železnice - SŽ-TP d.o.o. www.slo-zeleznice.si/en
Maribor	Land Terminal Marshalling yard	Vodovodna ul.34 2000 Maribor Slovenia	Slovenske železnice - SŽ-TP d.o.o. Robert Gaber T +00386 1 29 13136 F +386 1 29 12 619 robert.gaber@slo-zeleznice.si www.slo-zeleznice.si/en
Celje	Land Terminal Marshalling yard	Kidričeva ulica 34 3000 Celje Slovenia	Slovenske železnice - SŽ-TP d.o.o. Robert Gaber T +00386 1 29 13136 F +386 1 29 12 619 robert.gaber@slo-zeleznice.si www.slo-zeleznice.si/en
Sežana	Private Terminal	Partizanska cesta 79 6210 Sežana Slovenia	Adria terminali, d.o.o. Aleš Miklavec T 00 386 5 731 22 01 ales.miklavec@luka-kp.si http://www.adria-terminali.si/
Novo mesto	Private Terminal	Belokranjska 4 8000 Novo mesto Slovenia	Revoz, podjetje za proizvodnjo in komercializacijo avtomobilov Novo mesto, d.d (shortened Revoz, d.d.) Janez Rom T 00 386 7 331 50 00 janez.rom@renault.com http://www.revoz.si/en/
Velenje	Private Terminal	Partizanska 12 3320 Velenje Slovenia	Gorenje, gospodinjski aparati, d.d. (shortened Gorenje, d.d.) Slavica Papinutti T 00 386 3 899 10 00 slavica.papinutti@gorenje.com http://www.gorenje.co.uk/

Modal split

a. Comparison of modal split in passenger transport in Poland

Year	Railway transport		Air transport		Road transport (Passenger cars)		Road transport (Motor coaches, buses and trolley buses)		Total mill. pkm
	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	
2010	17 921	**6,98**	8 273	**3,22**	188 810	**73,57**	41 651	**16,23**	256 655,00
2012	17 826	**6,90**	11 864	**4,59**	189 324	**73,26**	39 419	**15,25**	258 433,00
2014	16 015	**6,02**	13 811	**5,19**	197 032	**74,07**	39 158	**14,72**	266 016,00
2015	17 367	**6,46**	13 486	**5,01**	200 570	**74,56**	37 580	**13,97**	269 003,00
2016	19 175	**6,96**	15 591	**5,66**	203 783	**74,02**	36 774	**13,36**	275 323,00

Source: Statistics Poland /www.stat.gov.pl/, Transport – activity results in 2016

b. Comparison of modal split in freight transport in Poland

Year	Railway transport		Road transport		Inland waterways transport		Maritime transport		Pipeline transport		Air transport		Total mill. tkm
	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	
2010	48 795	**15,8**	214 204	**69,5**	1 030	**0,3**	19 773	**6,4**	24 157	**7,8**	114	**0,04**	308 073
2012	48 903	**15,0**	233 310	**71,6**	815	**0,3**	20 299	**6,2**	22 325	**6,9**	123	**0,04**	325 775
2014	50 073	**14,4**	262 860	**75,5**	779	**0,2**	13 621	**3,9**	20 543	**5,9**	146	**0,04**	348 022
2015	50 603	**14,0**	273 107	**75,7**	2 187	**0,6**	12 739	**3,5**	21 843	**6,1**	156	**0,04**	360 635
2016	50 650	**13,1**	303 560	**78,7**	832	**0,2**	8 242	**2,1**	22 204	**5,8**	190	**0,05**	385 678

Source: Statistics Poland /www.stat.gov.pl/, Transport – activity results in 2016

c. Comparison of modal split in passenger transport in Slovakia

Year	Railway transport		Air transport		Inland waterways transport		Individual road transport		Road public transport		Urban public transport		Total mill. pkm
	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	
2010	2309	**6,49**	835	**2,35**	3	**0,01**	26 879	**75,54**	4 436	**12,47**	1 119	**3,14**	35 581
2012	2500	**6,93**	939	**2,60**	4	**0,01**	26 900	**74,59**	4 584	**12,71**	1 137	**3,15**	36 064
2014	2583	**7,11**	895	**2,46**	11	**0,03**	27 251	**74,97**	4 495	**12,37**	1 115	**3,07**	36 350
2015	3411	**9,08**	978	**2,60**	13	**0,03**	27 531	**73,32**	4 499	**11,98**	1 119	**2,98**	37 551
2016	3595	**9,39**	651	**1,70**	8	**0,02**	27 836	**72,71**	4 996	**13,05**	1 197	**3,13**	38 283

Source: Statistical office of the SR /www.statistics.sk/,EC - Statistical pocketbook 2017

d. Comparison of modal split in freight transport in Slovakia

Year	Road transport		Railway transport		Waterways transport		Air transport		Pipeline transport		Total mill. tkm
	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	
2010	27 411	**64,22**	8 105	**18,99**	2166	**5,07**	0,008	**0,00**	5000	**11,71**	42 682,01
2012	29 504	**69,63**	7 591	**17,91**	1078	**2,54**	0,008	**0,00**	4200	**9,91**	42 373,01
2014	31 304	**69,03**	8 829	**19,47**	684	**1,51**	31,597	**0,07**	4500	**9,92**	45 348,60
2015	33 525	**70,22**	8 439	**17,68**	674	**1,41**	106,833	**0,22**	5 000	**10,47**	47 744,83
2016	36 106	**70,69**	9 111	**17,84**	740	**1,45**	117,981	**0,23**	5000	**9,79**	51 074,98

Source: Statistical office of the SR /www.statistics.sk/

e. Comparison of modal split in passenger transport in Hungary

Rok	Railway transport		Inland waterways transport		Road transport		Air transport		Total mill. pkm
	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	
2010	7 692	9,36	14	0,02	68 845	83,82	5 586	6,80	82 137
2012	7 806	9,83	11	0,01	68 661	86,46	2 934	3,69	79 412
2014	7 738	9,41	9	0,01	70 163	85,32	4 323	5,26	82 233
2015	7 609	8,98	9	0,01	72 221	85,25	4 875	5,75	84 714
2016	7 653	8,70	10	0,01	74 300	84,44	6 032	6,85	87 995

Source: Hungarian Central Statistical Office /www.ksh.hu/

f. Comparison of modal split in freight transport in Hungary

Year	Road transport		Railway transport		Inland waterways transport		Pipeline transport		Total mill. tkm
	mill. tkm	%	mill. tkm	%	mill. tkm	%	mill. tkm	%	
2010	33 721	66,71	8 809	17,43	2 393	4,73	5623	11,12	50 546
2012	33 735	66,47	9 230	18,19	1 982	3,91	5802	11,43	50 749
2014	37 517	67,86	10 158	18,37	1 811	3,28	5801	10,49	55 287
2015	38 352	69,11	10 010	18,04	1 824	3,29	5 305	9,56	55 491
2016	40 006	68,55	10 528	18,04	1 975	3,38	5850	10,02	58 359

Source: Hungarian Central Statistical Office /www.ksh.hu/, Eurostat, EC – Statistical pocketbook 2017

g. Comparison of modal split in passenger transport in Slovenia

Year	Passenger cars		Buses and Coaches		Railways		Tram and Metro		Total mill. pkm
	mill. pkm	%	mill. pkm	%	mill. pkm	%	mill. pkm	%	
2010	25 600	83,0	3 200	10,4	813	2,6	1 226	3,98	30 839,00
2012	25300	83,5	3 200	10,6	742	2,4	1 060	3,50	30 302,00
2014	25600	82,9	3 400	11,0	697	2,3	1 179	3,82	30 876,00
2015	26 000	82,2	3 600	11,4	709	2,2	1 332	4,21	31 641,00

Source: Republika Slovenija –Statistični Urad /www.stat.si/, Eurostat, EC – Statistical pocketbook 2017

h. Comparison of modal split in freight transport in Slovenia

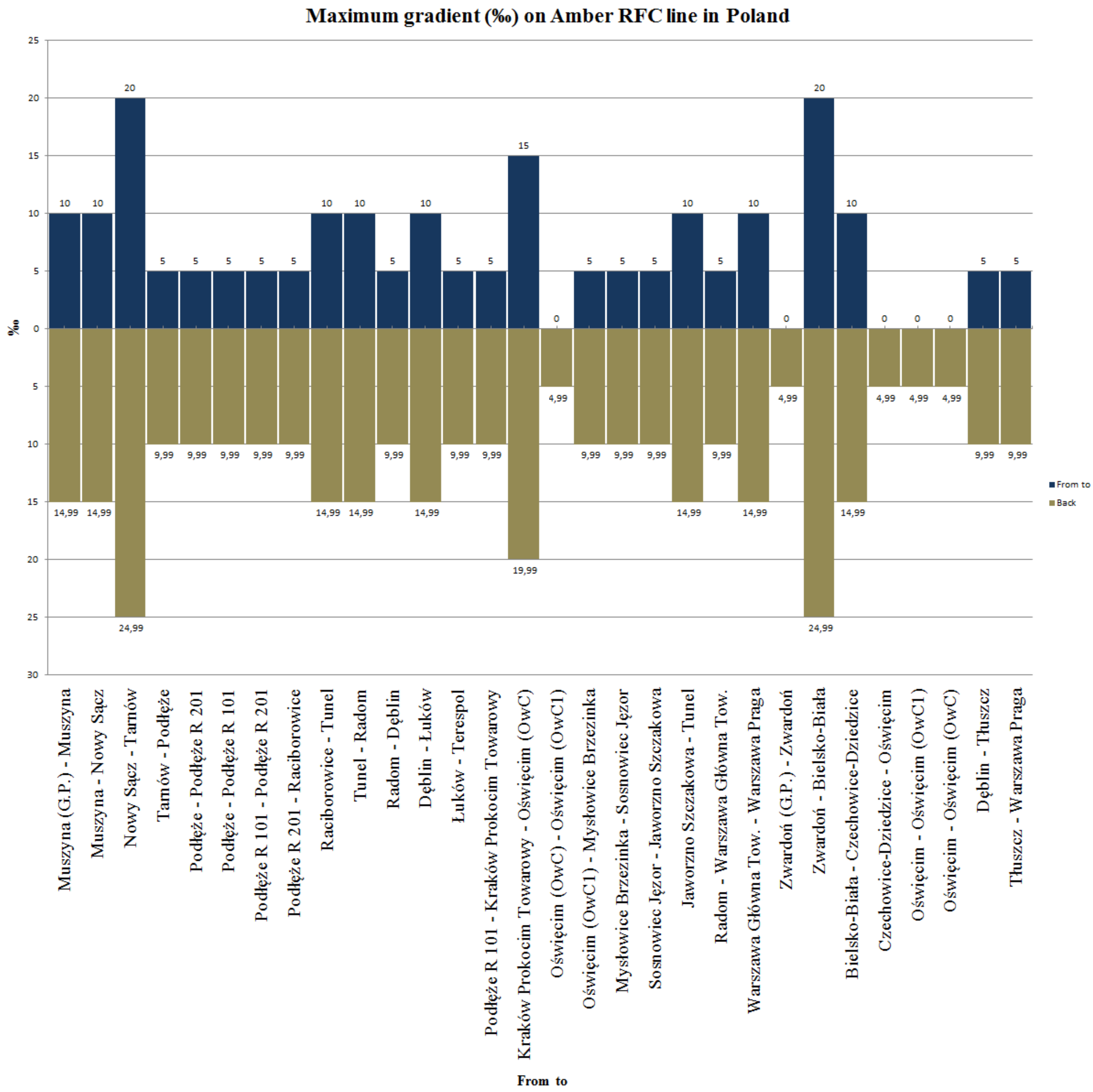
Year	Road transport		Railway transport		Air transport		Total mill. tkm
	mill. tkm	%	mill. tkm	%	mill. tkm	%	
2010	15 931	82,32	3421	17,68	1,5	0,01	19 353,5
2012	15 888	82,07	3470	17,92	1,1	0,01	19 359,1
2014	16 273	79,83	4110	20,16	1,1	0,01	20 384,1
2015	17 909	81,09	4175	18,90	1	0,00	22 088,1
2016	18 707	81,10	4360	18,89	0,9	0,00	23 075,1

Source: Republika Slovenija –Statistični Urad /www.stat.si/, Eurostat

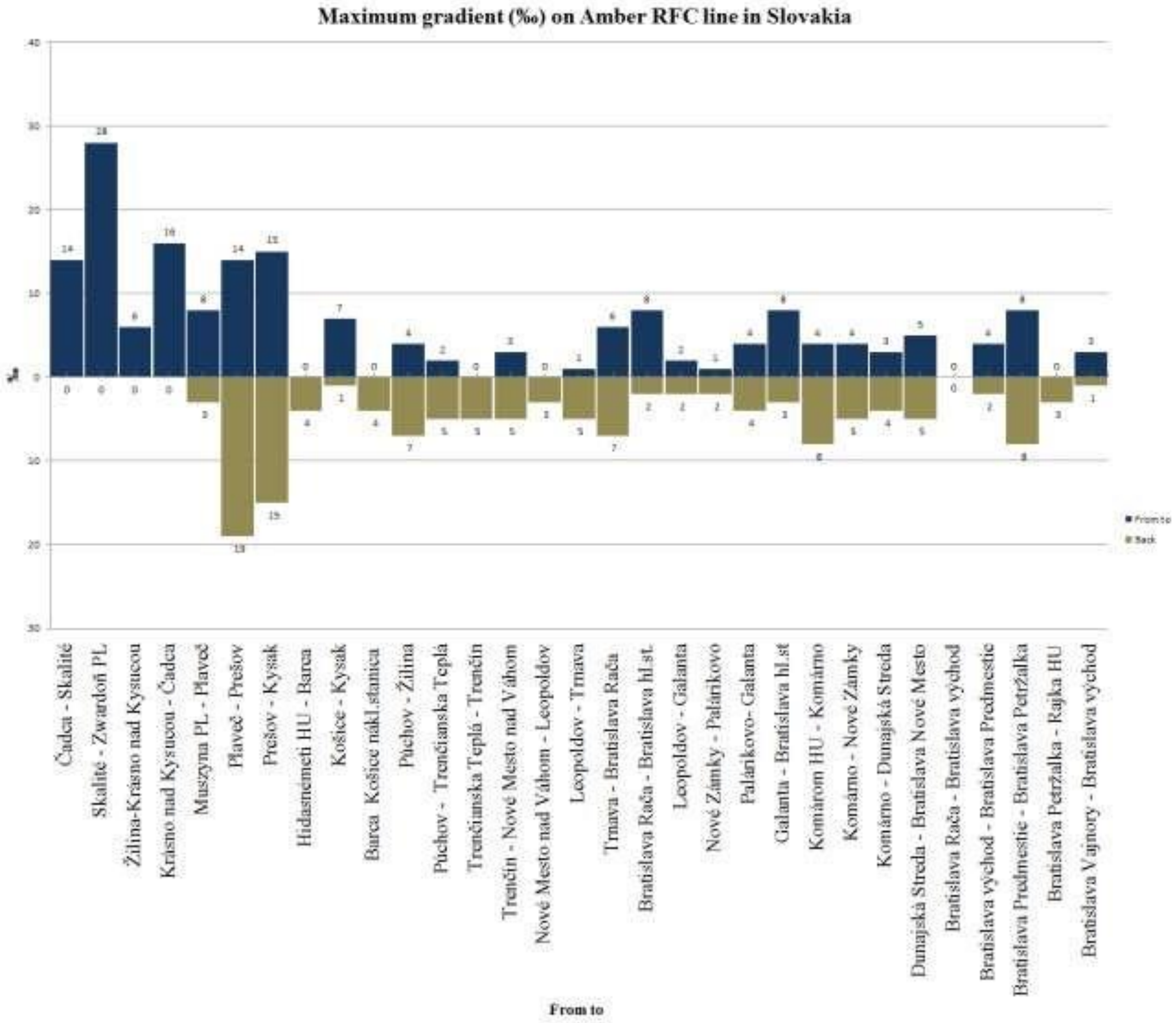
Appendix H

Maximum gradient on the Amber RFC lines

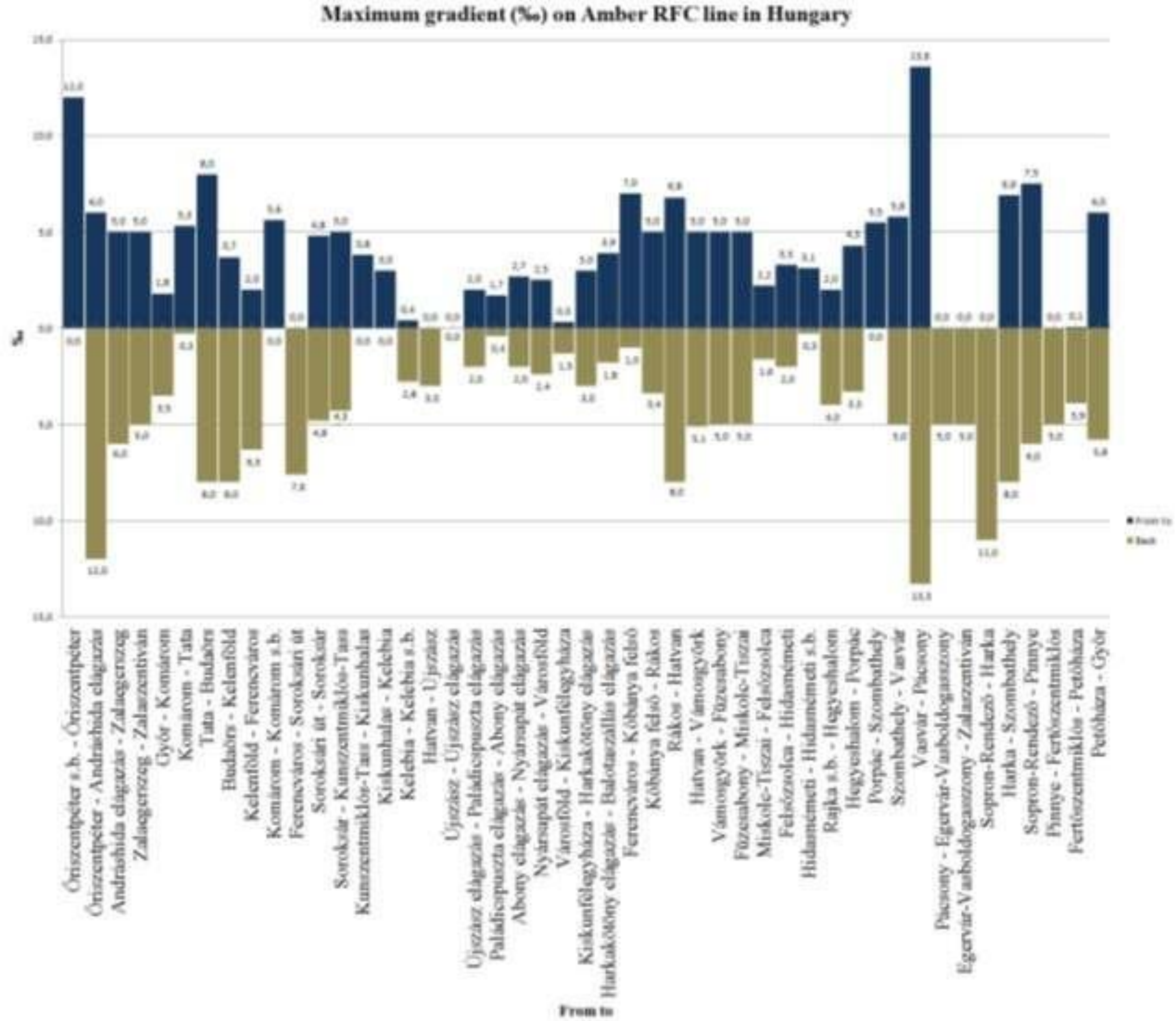
Gradient in Poland



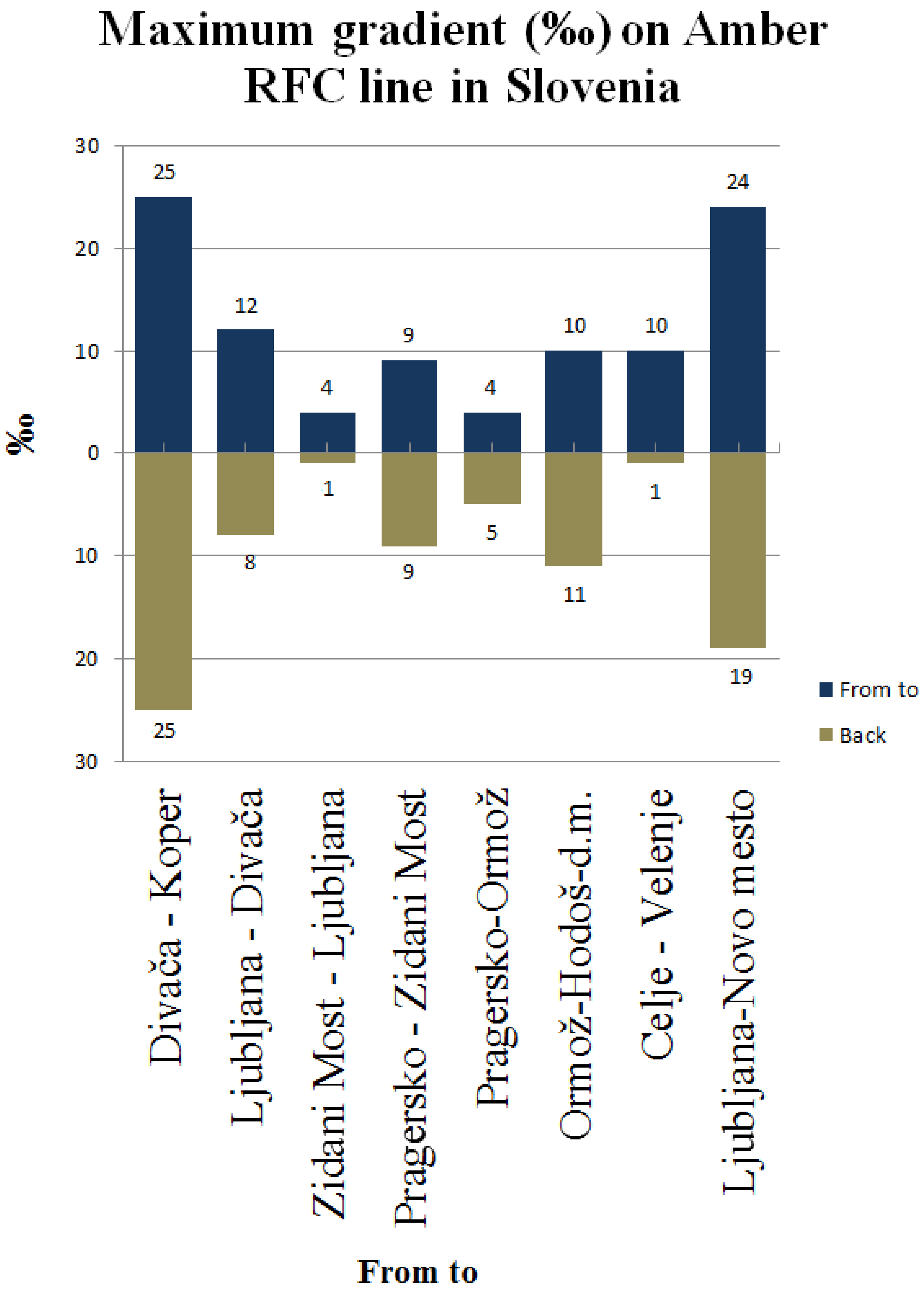
Gradient in Slovakia



Gradient in Hungary



Gradient in Slovenia



Amber Rail Freight Corridor

Assessment of KPIs for TT2020

Co-financed by the European Union
Connecting Europe Facility

Amber Rail Freight Corridor

Outcome from the MB meeting why KPIs are needed for:

- planning and setting RFC objectives
- steering RFC business activities
- increasing the added value and the quality of international rail freight
- assessing the achievement of objectives
- achieving the customers' expectations and
- preparing useful reports

in order to assess the overall performance of RFC organization.

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Background

Article 19 (2) of Regulation (EU) 913/2010 requires the Management Board (MB) of the Rail Freight Corridors (hereinafter: RFCs) to *monitor the performance of rail freight services on the freight corridor and publish the results of this monitoring once a year*.

The RFCs are free to choose their own Key Performance Indicators (KPIs) to fulfil this requirement of the Freight Regulation – fallowing the harmonisation of the used KPIs.

RNE guideline „Key Performance Indicators of Rail Freight Corridors“ provides recommendations for using a set of KPIs commonly applicable to all RFCs.

In accordance with Article 14 of the Freight Regulation the Executive Board with his Framework for Capacity Allocation (FCA) is also a decision-making body for monitoring the capacity allocation procedure.

Selection and publication of KPIs:

The selection of the KPIs shall remain within the responsibility of RFCs decision-making bodies (MB by taking ExBo FCA)

The KPIs of the RFCs may include a set of commonly agreed KPIs and individual KPIs.

The description of the KPIs (including definition, calculation formula, targets, source of data and data processing tool, publication of the results, etc.) should be published in the Corridor Information Document (CID).

Set of KPIs applicable for Amber RFC*

- The CG assessed which KPI should be used by Amber RFC for TT2020 and a recommendation for MB was made. There was hesitation about KPIs no 7 and 8 but at the end of the day they are recommended, too.

- The KPIs will be produced, as appropriate, by C-OSS representative (supported by WG TT/C-OSS where needed) and by WG TM,TP&O.

- Once ready, the KPIs will be delivered to WG Marketing, which will integrate the KPIs in the yearly performance monitoring report of Amber RFC.

*RNE IT tools (PCS and TIS, the data processing tool is RNE OBI) shall be used for the KPIs calculation.

No	Business area	KPI (Source of data)	Timeframe	Recommend to MB (Y/N)	Entity in charge
1	Capacity mngmt*	Volume of offered capacity (PCS)	At X-11 and at X-2	Y	C-OSS
2	Capacity mngmt	Volume of requested capacity (PCS)	At X-8	Y	C-OSS
3	Capacity mngmt	Volume of requests (PCS)	At X-8	Y	C-OSS
4	Capacity mngmt	Volume of capacity (pre-booking phase) (PCS)	At X-7.5	Y	C-OSS
5	Capacity mngmt	Number of conflicts (PCS)	At X-8	Y	C-OSS
6	Capacity mngmt	Volume of requested RC - km*days (PCS)	X+12	Y	C-OSS
7	Capacity mngmt	Volume of requested RC - dossiers (PCS)	X+12	Y (To be aligned with other RFCs)	C-OSS
8	Capacity mngmt	Average planned speed of PaPs (PCS)	X-10.5	Y (Common calculation methodology is there)	C-OSS

*Capacity management: meaning the performance of the RFC in constructing, allocating and selling the capacity of the RFC.

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No	Business area				
9	Operations *	Punctuality at origin (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
10	Operations	Punctuality at destination (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
11	Operations	Overall number of trains on the RFC (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
12	Operations	Delay reasons (TIS) The KPI is connected to Punctuality at origin and Punctuality at destination.	To be determined	Y	WG TM,TP&O

*Operations: meaning the performance of the traffic running along the RFCs monitored in terms of punctuality and volume of traffic.

No	Business area				
13	Market* dev.	Overall number of trains per border (IMs' national tools)	In January after the timetable year concerned	Y	WG TM,TP&O
14	Market dev.	Ratio of the capacity allocated by the C-OSS and the total allocated capacity (PCS for the nominator; IMs' national tools for the denominator)	In December before the start of the timetable year	Y	WG TT/C-OSS C-OSS

*Market development: the capability of the RFC in meeting the market demands will be monitored.

Amber Rail Freight Corridor

Annex 2

PROCESS DESCRIPTIONS FOR CORRIDOR-OSS

(in reference to clause 3.1 and 4 of the C-OSS contract)

1. **CONSTRUCTION AND PREPARATION OF PRE-ARRANGED PATHS (PAP)**
2. **ALLOCATION: HANDLING PAP AND PAP PLUS (INCL. FEEDER ETC.)**
3. **POST-ALLOCATION: MONITORING**
4. **PREPARATION AND ALLOCATION OF RESERVE CAPACITY (RC)**
5. **OTHER PROVISIONS**

1. CONSTRUCTION AND PREPARATION OF PRE-ARRANGED PATHS (PAP)

1. Call for PAP construction

1.1. The C-OSS starts the process of PAP construction by addressing the concerned IM/AB in August/September and requiring the elaboration of the national PAP segments incl. border harmonization until end of December on basis of the conclusions of the capacity estimation for the corridor. In the event a common offer on an overlapping section with another RFC was decided by the Management Board, the C-OSS contacts the C-OSS of that RFC in order to coordinate the construction and publication of the common offer.

1.2. To ensure a consolidated way of PAP construction the C-OSS may give indications on the required amount and train parameters of PAP and/or a particular type of PAP to be used if he has received respective recommendation by the Management Board (MB) based on the analysis of the transport market study, wishes of customers or other sources and taking into account the estimated market demand and C-OSS's own experience. The C-OSS may also indicate the direction of the construction (backwards/forwards) with regard to identified reference points. C-OSS transmits these figures/data together with milestones/deadlines to all IM/AB together with the mandate to start PAP planning/construction.

2. Monitor PAP construction

2.1. The C-OSS relies on a consecutive bilateral harmonization of the border times of the national PAP segments between the concerned IM/AB. The IM/AB shall inform the C-OSS about the interim results of the border harmonization and any difficulties occurring. The C-OSS shares this information continuously with all IMs/AB along the corridor and - if necessary- provides support and guidance to the IM/AB in case of difficulties.

3. Review and finalize PAP offer

3.1. The C-OSS assembles the path segments delivered by the IM/AB in one document (excel) and checks the consistency of the PAPs. The C-OSS detects any need for adaptations and approaches the IMs/AB concerned to introduce the adaptations.

3.2. If necessary the C-OSS organizes a meeting for finalizing the PAP offer with all concerned parties (C-OSS, all IMs/AB, TT experts and/or national OSS, and - depending on their involvement - terminals).

4. Information and involvement of the MB

4.1. The C-OSS forwards the final PAP offer to the Management Board in December for validation and as a draft version to RNE for inclusion in PCS. In case of a still pending need for adaptation of the PAP offer the C-OSS especially addresses the concerned IM/AB and asks for an evaluation / delivery of revised PAP until 20th December at the latest. The C-OSS will inform the Management Board and RNE about the outcome immediately.

4.2. The validation by the Management Board shall be done until end of the year. No reaction is assumed as validation.

5. Publish and promote PAP

5.1. After validation by the Management Board the C-OSS takes the necessary actions for publishing the PAPs in PCS and other further communication channels (e.g. website of corridor, events, messages to be published by IMs/AB ect.). For this purpose the C-OSS provides a user-friendly format of the PAP path catalogue.

5.2. The C-OSS promotes the PAP by presenting them to the customers (e.g. customer letter, RAG/TAG, customer meetings, conferences etc.).

2. ALLOCATION: HANDLING PAP AND PAP PLUS (INCL. FEEDER /ADJUSTMENTS/ PAP ON MULTIPLE CORRIDORS)

A. Registration and Checking of PAP applications

1. Collect path applications referring to PAP

1.1. The C-OSS receives and collects all path requests for PAP placed via PCS. All PAP on the corridor are displayed in PCS and can therefore only be requested via PCS as unique booking tool. The applicant submits the path request by choosing a concrete PAP and opening a PCS dossier for it. The path request may contain feeder/outflow paths and/or minor adjustments to the displayed PAP (differing train parameters, other stops which do not affect the published border times of PAP). The C-OSS reads the dossier and ensures further treatment.

1.2. Applications for PAP placed directly at involved IM/AB (e.g. by using national booking tools, by traditional OSS network, by reference in a PCS dossier) will only be considered by the C-OSS if the concerned IM/AB has on a voluntarily basis redirected the applicant to place a correct PAP request in PCS and the request in PCS Is received by the C-OSS on time.

1.3. Applications for PAP placed via other channels to the C-OSS (e.g. e-mail, fax, telephone, RNE paper template) will have to be redirected to PCS. The C-OSS will inform the applicant accordingly and provide basic support for using PCS. The C-OSS is not entitled to open PCS dossiers for the applicant.

2. Register the path application

2.1. The C-OSS establishes and maintains a path register for all incoming PAP applications in PCS containing a dossier number, name of applicant, requested PAP segment, requested running days and specifying the follow-up activities of the C-OSS concerning the concrete path request. This register has to be made available to the concerned IM/AB at any time (see contact list) and in a simplified form allowing for business confidentiality to all concerned applicants.

2.2. In the register the C-OSS shall distribute the path applications to the following categories:

1 Pure PAP
Request fully in line with PAP or PAP segment (See chapter B)

2 PAP plus feeder/adjustment
Request fully in line with PAP or PAP segment and feeder path required in addition (PAP see Chapter B, Feeder see Chapter C); request referring to PAP segment(s) but requiring minor changes of running times and/or parameters which do not affect the PAP border times (See chapter C)

3 PAP with involvement of other corridors
Request is fully in line with PAP or PAP segments and requiring PAP on other corridors (see Chapter B and C) as well as including feeder/outflow on other corridors.

3. Check applications with regard to C-OSS competence

3.1. The C-OSS evaluates his competence for the further treatment of the incoming PAP applications immediately after receipt and sorts out the following request types:

– Applications for passenger trains
– Applications with major changes (e.g. changing all fixed PAP border times). Depending on which PaP segment the major change is required, the C-OSS might treat it partly. For example, if the major change refers to the last PaP segment of a journey, the C-OSS will treat the first PaP segments.

The C-OSS will conduct/be responsible for any application of PAP and RC for corridor infrastructure capacity for freight trains crossing at least one border on a corridor and for which the capacity request was done in PCS and decide on capacity allocation in accordance with the FCA . .

3.2. The C-OSS forwards those applications immediately to the concerned IM/AB (see contact list in annex) for further exclusive treatment and refrains from any further activity concerning these applications.

3.3. The C-OSS informs the applicant that he is not competent for this request and that it has been handed over to the concerned IM/AB for further exclusive treatment.

3.4. If the path request contains elements of another corridor and/or there is common offer with another RFC, the C-OSS will immediately contact the other concerned C-OSS to commit on a ""coordinating C-OSS"" who will ensure the further management of the PCS dossier (in principle this should be the C-OSS according to the start PAP segment requested). In any case the ""coordinating C-OSS"" will forward the element of the PAP request concerning the other corridor to the concerned C-OSS without further delay and ask for the result of the allocation decision of the other C-OSS to be communicated to the "coordinating C-OSS“ until end of April at the latest.

4. Check the quality of the path request

4.1. The C-OSS checks immediately after receipt if the path request is complete and consistent (e.g. technical parameters, running times etc.). If special national mandatory parameters are required the concerned IM/AB (see contact list) will support the C-OSS in checking the consistency with regard to these parameters. The C-OSS assumes that the applicant has accepted the published PAP characteristics by requesting the selected PAP.

4.2. In case of missing or inconsistent data the C-OSS will directly contact the leading applicant and require the relevant data updating/changes within 5 working days.

4.3. The C-OSS checks if the leading applicant has clarified the request within the required timeframe. If the applicant does not clarify the required data the C-OSS will inform the leading applicant that further treatment of the request is not possible.

5. Check the legitimation of the applicants

5.1. The C-OSS checks the legitimation of the applicants per involved path segments immediately after receipt of the path request on basis of a list of applicants per IM/AB if applicable.

5.2. If the C-OSS detects a missing legitimation he informs without further delay the concerned IM/AB (see contact list in the annex) and asks for checking the legitimation within 5 working days. This check should be done in the same timeframe than the clarification of the request by the applicant (according to A 4.2). The C-OSS informs the applicant that he will refrain from any further treatment as long the legitimation isn’t clarified.

5.3. The C-OSS checks if the concerned IM/ AB could clarify the legitimation. In case of no answer by the concerned IM/AB until X-7.5 the C-OSS will not consider the pending request in the PAP pre-allocation but park it until clarification is done. If requested by the applicant, a partial treatment of the path request on international segments not affected by missing/unclear legitimation will be ensured by the C-OSS.

5.4. Applicants shall assign the RU responsible for train run as early as possible but at least until the individual deadlines stipulated in the national laws or rules of the concerned IM/AB (as long as no corridor specific deadline has been agreed upon in the Management Board).

6. Confirm further handling of path requests or execute rejection of path request

6.1. The C-OSS sends a message to the applicant to confirm the receipt of the path application by the C-OSS and announce further treatment according to the defined category after having positively executed the checks (depending on the PCS function availability).

6.2. The C-OSS updates the path register accordingly to the results of the checks (incl. closing of dossiers, which means path rejection)

7. Handle late path requests (if applicable) and change request

7.1. The C-OSS considers all PAP applications which are placed in PCS after publication of the path catalogue at X-11 until the RNE deadline for path applications for the annual timetable at X-8.
The C-OSS updates the published path catalogue by withdrawing the booked/allocated PaP. The non-booked PaPs will be treated in accordance with chapter B point 4.3.

7.2. Change requests for PAP placed by the applicant after the X-8 deadline until X-5 will be treated by the C-OSS according to the following rule: "Downsizing" changes to the PAP request (e.g. cancellation of running days, shortening of route by deleting entire PAP segments, lower parameters) which do neither affect the international character of the PAP nor the ranking of the request in the allocation decision according to B 1.2. will be handled by the C-OSS and documented in the PCS dossier and the path register accordingly. "Substantial" changes to the PAP request affecting the border times and the ranking of the request in the allocation decision according to B 1.2 will be assumed as withdrawal/complete cancellation of the PAP request. Those change requests will then be forwarded to the concerned IM/AB for further treatment as late requests in remaining capacity.

7.3. The C-OSS will inform the applicant that late and/or change path request will be handed over to the concerned IM/AB for further exclusive treatment and that the C-OSS will refrain from any follow-up. The allocation decision will be taken after the finalization of the annual timetable at X-3,5 only. The Corridor OSS will communicate the path offer to the applicant on behalf of the concerned IM/AB if the C-OSS has been the entry point of the request.

B. <u>Allocation decision on PAP</u>

1. Execute the allocation decision

1.1. The C-OSS will evaluate/consider for the allocation decision on an equal basis all valid path requests out of the categories specified hereafter and placed on-time before the deadline at X-8:

Category 1 all requests aiming at pure PAP;

Category 2 the core PAP part of the PAP plus feeder requests; in case of requests with adjustments the C-OSS only considers PAP path segments not substantially affected by the required adjustment (e.g. adjustment not influencing the fixed border times);

Category 3 the PAP part of the ""own"" corridor.

1.2. The C-OSS decides which PAP segment is to be allocated to which applicant. In case of conflicting applications the C-OSS decides on basis of the priority rules described in the FCA. The allocation decision has to be taken until end of April.

1.3. The C-OSS may offer alternative PAP to an applicant with lower priority. The applicant has to commit to this offer within 5 working days – otherwise the application with lower priority will be forwarded to the concerned IM/AB to be handled in the regular elaboration process of the annual timetable (for a tailor-made offer or national catalogue path). The C-OSS may in case of competing requests also contact the applicant with higher priority and propose a shifting of the PAP / an alternative solution if this enables both competing applicants to receive a satisfying offer. The alternative solutions depend on the agreement of both applicants to be given to the C-OSS until end of April.

1.4. In case of PAP requests involving 2 or more corridors, the C-OSS has to consider the allocation decision of the other concerned C-OSS. If the published TT does not fit at connecting point of both corridors the "coordinating C-OSS" may offer an alternative PAP itself or require an alternative PAP from the other involved C-OSS to build a harmonized TT offer for the applicant. The applicant has to commit to this alternative offer within 5 working days - otherwise the application will be forwarded to all concerned IM/AB to be handled in the regular elaboration process of the annual timetable (for a tailor-made offer).

2. Inform coordinating C-OSS

2.1. In case of PAP requests involving 2 or more corridors the C-OSS sends the result of its pre-allocation decision to the coordinating C-OSS, 2 working days before end of April.

3. Update path register and path catalogue

3.1. The C-OSS marks the result of the allocation decision in the path register at the latest in the first days of May of each year. In case of PAP plus feeders/adjustments and PAP on multiple corridors the indication in the path register will be done as a pre-allocation only (as connectivity of feeders and adjustments and/or with other corridors still to be checked).

4. Inform concerned IMs/AB

4.1. The C-OSS will inform the concerned IM/AB on the pre-allocation decision automatically via PCS for inclusion in the draft timetable.

4.2. Path applications which could not be met due to conflicts and the execution of the priority rules mentioned above (applications with lower priority) are forwarded by the C-OSS to the concerned IM/AB at the latest in the first days of May with the demand to provide a draft offer until one week before the RNE deadline for the draft offer. Those applications with lower priority will be handled by the concerned IM/AB as on-time applications for the annual timetable and will therefore be included in the regular construction process of the annual timetable.

4.3. All non-booked PAP will be referred to the MB by the C-OSS. Until the end of April the MB will decide if the non-booked PAP will:

a) be returned to the concerned IMs/AB to allow for an efficient use of the not requested PAP capacity in the regular annual timetable process – in which case the C-OSS will hand over the non-booked PAP to the concerned IMs/AB also until the second working day of May ; or
b) be used as late PAP – in which case they will be retained by the C-OSS to run the late PAP requests process in accordance with RNE guidelines.

5. Inform applicants

5.1. The C-OSS provides interim information to the applicants on the status of their application at the beginning of May. The interim information informs the applicants with higher priority about the allocation decision in their favor and announces the formal draft path offer which will be given on behalf of the concerned IM/AB by the C-OSS with the draft timetable offer in X-5 via PCS.

5.2. The C-OSS informs the applicants with lower priority that did not accept an alternative PAP offer at the beginning of May that their path requests have been forwarded to the concerned IM/AB for further treatment in the regular process for establishing the annual timetable and that the C-OSS will provide the draft path offer on behalf of the concerned IM/AB with the draft timetable offer in X-5 via PCS.

5.3. The C-OSS informs the applicants for PAP plus feeder and/or adjustments and/or involving multiple corridors on the pre-allocation of the PAP segment at the beginning of May and announces the forwarding of the feeder and/or adjustments to the concerned IM/AB. Without further notice the applicant agrees to be contacted by the concerned IM/AB bilaterally for the fine-tuning of the feeder/adjustment/connecting paths. The C-OSS will also announce the provision of a consolidated answer by X-5 for those requests.

C. <u>Monitoring PAP Plus</u>

1. Forward of feeders and/or adjustments and/or connections with other corridors

1.1. The C-OSS forwards the requested feeder path and/or adjustment to the concerned IM/AB at the latest in the first days in May for elaboration of a timetable offer fitting to the PAP already reserved (pre-allocated).

1.2. The C-OSS will document the forwarding in the path register without further delay.

1.3. In case of feeders affecting two or more IM/AB the C-OSS may monitor the construction process e.g. by indication of construction direction (if required by the applicant).

1.4. Questions occurring during the path elaboration process (e.g. concerning feeders/connection construction) may be discussed and arranged between concerned IM/AB and applicant bilaterally - if this procedure is agreed upon by the customer. In this case the C-OSS has to be informed without further delay about any adjustment resulting from this coordination. Therefore this information shall be documented in the path register in written form by the concerned IM/AB.

2. Receive the TT offer elaborated by the concerned IM/AB

2.1. At the latest one week before the RNE deadline for the draft timetable, the draft timetable offers for feeders and adjusted PAP segment(s) shall be handed over from the concerned IM/AB to the C-OSS. Also tailor-made TT offers for applicants with lower priority and for connection of 2 or more corridors shall by handed over from the concerned IM/AB to the C-OSS.

2.2. If no draft TT offer has been delivered at all until 4 days before the internal deadline (see point 2.1) the C-OSS shall make a reminder to the concerned IM/AB. If no answer is given, the C-OSS shall then inform the Management Board legal representative of the IM/AB which did not deliver the required path offer and ask for clarification within 3 working days.

2.3. If no draft TT offer has been delivered even after intervention of the concerned legal representative of the Management Board here above mentioned, the C-OSS will ask the applicant if to keep the pre-allocated PAP or to forward the entire path request to the concerned IM/AB for delivering a tailor-made path (including corridor segment and feeder) in the regular elaboration process of the annual timetable.

2.4. The C-OSS will consolidate the timetable (PAP plus feeder and/or adjustments and/or connections with other corridors) and update the path register to display a consolidated overview of the PAP plus offer and inform all concerned IM/AB automatically via PCS.

D. <u>Communicating offer to applicant</u>

1. Communicate the draft timetable offer

1.1. At the RNE deadline for draft TT (X-5) the C-OSS communicates the draft timetable offer for every valid PAP request to the applicants via PCS. The C-OSS hereby stresses the fact that he is acting on behalf of the concerned IM/AB and that the appropriate contract will have to be concluded between the concerned IM/AB and the applicant on basis of applicable national law and of the IM/AB's conditions. If the publication via national tools is still necessary, the IM/AB have to ensure that there are no differences to the PCS publication. In any case it has to be made clear that the legally binding TT including feeder/outflow path is shown in PCS.

2. Handle applicant observations for PAP

2.1. The C-OSS monitors the applicant observations placed by the applicant on the draft timetable offer PAP in PCS. For that purpose the C-OSS requires an answer by the concerned IM/AB until one week before the deadline for the final TT offer (at X-3,5). This procedure only concerns justified observations related to the original path request - whereas modifications to the original path requests will be handed over to the concerned IM/AB for further exclusive treatment without further involvement of the C-OSS.

3. Communicate the final timetable offer

3.1. At the RNE deadline for final TT (X-3,5) the C-OSS communicates the final timetable offer for every valid PAP request to the applicants via PCS. The C-OSS hereby stresses the fact that he is acting on behalf of the concerned IM/AB and that the appropriate contract will have to be concluded between the concerned IM/AB and the applicant on basis of applicable national law and of the IM/AB's conditions. If the publication via national tools is still necessary, the IM/AB have to ensure that there are no differences to the PCS publication. In any case it has to be made clear that the legally binding TT is shown in PCS.

3. POST-ALLOCATION: MONITORING

A. <u>Documentation of indicators for PAP</u>

1. Number of PAP offered

1.1. The C-OSS analyses the published PAP path catalogue and documents the number of offered PAP at least per national segments. The number of running days should be considered in this analysis. This analysis is done until end of January.

2. Number of PAP requested until X-8

2.1. The C-OSS registers all requests referring to PAP and placed at the C-OSS in due time (before the RNE deadline for the annual timetable at X-8) according to article 13.5 of EU Regulation 913/2010. The registration is done in PCS and includes information on the date of the request and the name of applicant.

2.2. Whereas in the path register the names of the applicants are shown - the C-OSS will only indicate the number and the core characteristics of the path requests for monitoring reasons (such as requests affecting 1,2,3,4 IMs/ABs, requests with/without feeders, requests aiming at x running days; PAP adjustments requested). If possible for internal reasons a rate/percentage of requested PAP in relation to the path catalogue shall be shown (e.g. x % of the PAP offered have been requested). The indication is done until end of April. Rejected applications (incl. the reason) should also be listed.

3. Number of conflicting requests

3.1. On basis of the conflicting requests (double booking) detection done in PCS, the C-OSS indicates the number of conflicts (in relation/percentage of path requests) and the sections where conflicts occur (and the number of applications concerned). The indication is done until end of May. If possible it shall also be indicated by which means the conflicts could be solved (coordination, alternative PAP accepted by customer, tailor-made paths requested from concerned IM/AB).

3.2. If return of PaPs is decided by the MB, the C-OSS documents the number of returned PAPs to the IM/AB after the pre-allocation at X-7, 5.

4. Number of PAP allocated

4.1. The C-OSS indicates the number of the PAP offered at X-5 by the C-OSS on behalf of the concerned IM/AB. The indication is done after the publication of the draft TT offer on basis of PCS dossiers shifted in the draft TT offer phase (at the latest until end of July). It shows explicitly the share/ percentage of PAP and PAP plus feeder.

4.2. The C-OSS indicates the number of the PAP allocated at X-3,5 by the C-OSS on behalf of the concerned IM/AB. The indication is done after the publication of the final TT offer on basis of PCS dossiers shifted in the final TT offer phase (at the latest until end of August). It shows explicitly the share/ percentage of PAP and PAP plus feeder.

4.3. With regard to PAP offered but not contracted by the applicants as well as PAP cancellations the C-OSS will indicate the number of contracted PAP (= PAP in active TT in PCS) in relation to the PAP offered (indicator 5) until end of November in the evaluation report.

5. Number of late paths requests for PAP if applicable

5.1. If late PAP are decided by the MB, the C-OSS indicates the number of late paths requests received by the C-OSS after X-8 until X-2 (forwarded to IM/AB) The indication is done until end of October. The registration is done in PCS and includes information on the date of the request and the name of applicant.

B. Documentation of indicators for reserve capacity

1. Number of capacity slots offered

1.1. The C-OSS indicates the contingent of “capacity slots” for RC requests per day/segment (flexible RC approach) offered as reserve capacity after X-2. The number of running days offered should be considered in the indication. The indication is done until end of October (X+10).

2. Number of capacity slots allocated

2.1. The C-OSS indicates the number of capacity slots allocated by the C-OSS on behalf of the concerned IM/AB. For this purpose the C-OSS maintains and updates a register monthly to show the number of paths allocated out of reserve capacity for one timetable year.

C. Documentation of other capacity-related indicators

1. The C-OSS will deliver other indicators related to corridor capacity that may be adopted by the MB and fall within the competence of the C-OSS.

1.1. The timing and format of the delivery will be agreed between the MB and the C-OSS.

2. The C-OSS will be consulted by the MB prior to adoption of any such indicator.

D. Evaluation report for the MB and ExBo

1. Elaborate the report

1.1. The C-OSS summarizes the indicators collected for PAP and for reserve capacity and, as the case may be, for other capacity-related indicators, in one report (power point summary). The report shall be available end of November.

1.2. For internal reasons only the C-OSS shall also analyses the compliance of the IM/AB with the C-OSS process (e.g. on-time delivery of feeders, support in checking the requests etc.) by showing defaulting behavior.

1.3. The C-OSS collects any available information on the customers' satisfaction on basis of outcome of a questionnaire decide by the MB.

2. Present the report

2.1. The C-OSS participates on request to the relevant meetings of the MB and the ExBo to present the report.

2.2. The C-OSS collects the feedback of the MB and the ExBo on the report and if necessary develops measures for improvement within the MB.

4. PREPARATION AND ALLOCATON OF RESERVE CAPACITY (RC)

1. Call for Reserve Capacity

1.1. The C-OSS starts the process of RC by addressing the concerned IM/AB in July and requiring the indication of a contingent of “capacity slots” for RC requests per day/segment (flexible RC approach) until end of July on basis of the conclusions of the capacity estimation for the corridor.

1.2. The C-OSS may also ask IMs/AB for guaranteed reference journey times per segment(s). Milestones/deadlines will be transmitted as well.

2. Review and finalize RC Offer and inform the MB

2.1. The C-OSS assembles the RC path segments delivered by the IM/AB in one document (excel) and detects need for adaptations. In case of inconsistencies the C-OSS clarifies them in cooperation with the concerned IM/AB.

2.2. The C-OSS forwards the assembled RC offer to the MB on end of September for validation by the MB and as a draft version to RNE for inclusion in PCS. No reaction is assumed as approval. In case of a need for adaptation the C-OSS especially addresses the MB legal representative of the concerned IM/ AB and asks for an evaluation/delivery of revised RC without further delay.

3. Publish RC offer

3.1. The C-OSS publishes the RC offer in PCS and on the website of Amber corridor at X-2.

4. Allocate and administrate RC

4.1. The C-OSS collects all path requests for RC placed via PCS until 30 days before the day of operation. Applications placed via other channels (e.g. e-mail, fax etc.) will have to be redirected to PCS. The C-OSS informs the applicant accordingly. The application will only be considered with the date of the PCS application.

4.2. The C-OSS checks the application with regard to C-OSS competence, quality of request and legitimation of applicants. ""Wrong requests"" (= national paths, passenger paths) will be forwarded to the concerned IM/AB for further treatment and the applicant will be informed accordingly. Requests with unclear/missing data will be presented to the applicant and to the concerned IM/AB for clarification. The clarification has to be provided within 5 working days. If no clarification could be reached the C-OSS rejects the path application. The delivery of feeder/outflow paths is based on the construction process as described in Art. 48 of EU Directive 2012/34.

4.3. The C-OSS forwards the request to the concerned IM/AB in the order that the C-OSS can forward to the applicant a harmonized offer. In this matter the C-OSS gives each IM/AB a timeframe for his offer which has to respect the offer of the precedent IM/AB. The C-OSS executes the allocation decision on basis of the date when the request has been placed following the "first come, first served principle".

4.4. The C-OSS updates the electronic versions of the RC path catalogue by withdrawing the allocated paths and informs the concerned IM /AB.

4.5. The C-OSS communicates the path offer to the applicants on behalf of the concerned IM/AB. He specifies that he is acting on behalf of the concerned IMs/AB and that the appropriate contract will have to be concluded between the concerned IMs/AB and the applicant on basis of applicable national law and of the IMs/AB's conditions.

5 OTHER PROVISIONS

1. In addition to the tasks described in chapters 1-4, the C-OSS performs the following activities.

    1.1. The C-OSS acts as a single point of contact for the applicants and coordinator of information

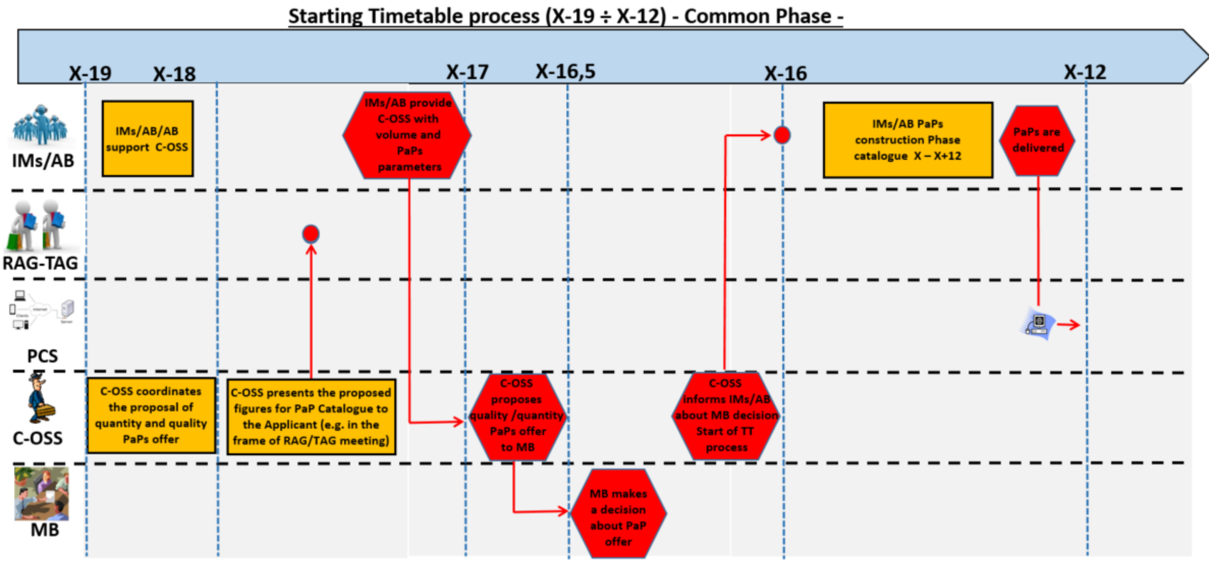
1.2. The C-OSS supplies the following information contained in the CID and published on Amber RFC website:

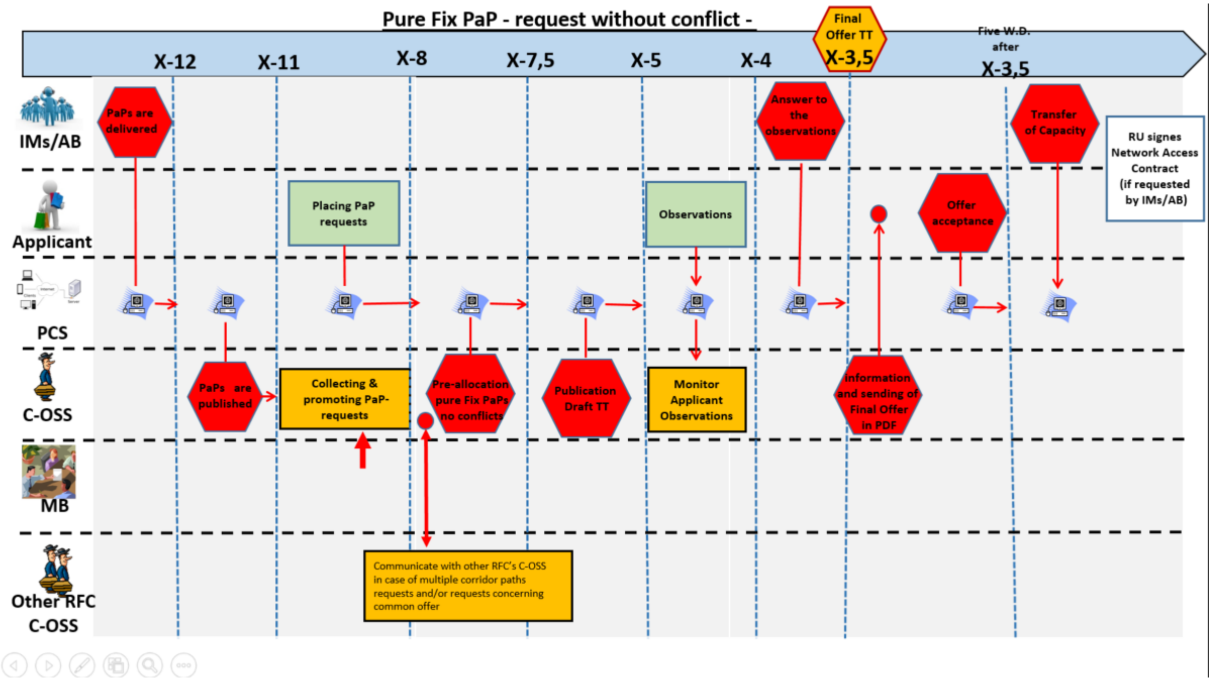
a) network statements for national networks regarding Amber RFC, as included in Book 2
b) list, characteristics, conditions and method of access to the terminals along Amber RFC, as included in Book 3
c) functioning of the C-OSS, capacity allocation, authorised applicants and traffic management, including in the events of disturbance, as described in Book 4
d) implementation plan of Amber RFC, as included in Book 5.

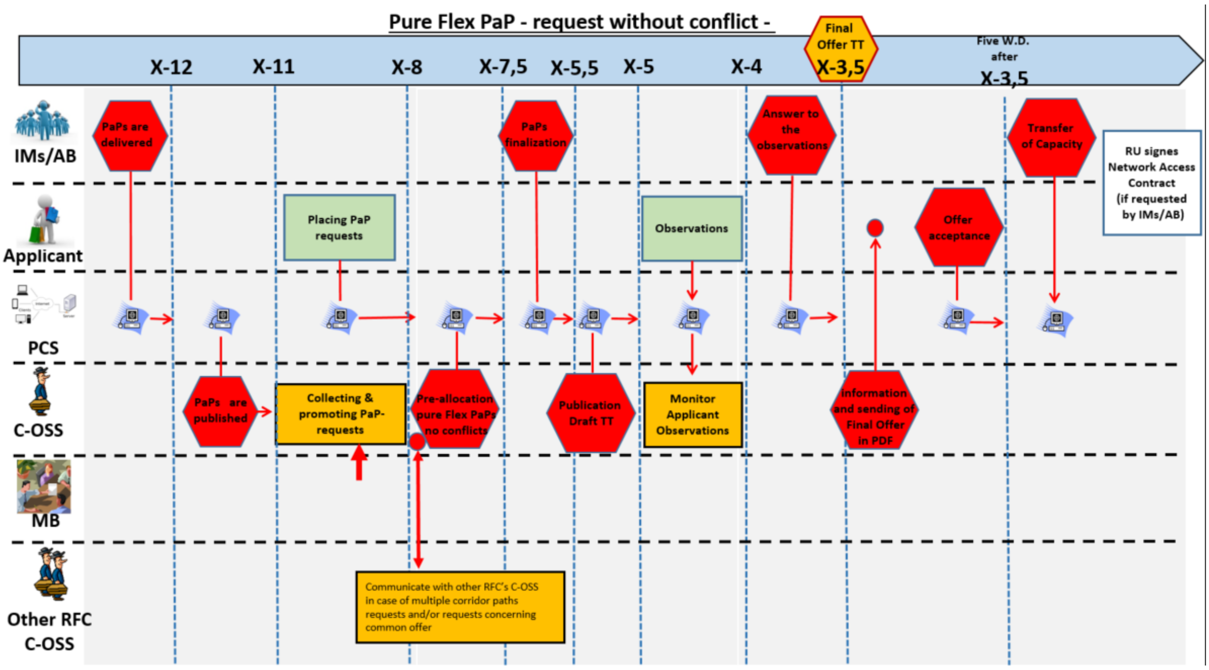
1.3. If requested by applicants, the C-OSS provides assistance, if possible, with regard to capacity in the running timetable, other than RC, for freight trains crossing at least one border on a corridor, contact the involved IMs/AB and facilitate the coordination of the allocation process done by the involved IMs/AB.

2. Main activities and deadlines for the process are visualised on the charts below

Activities and deadlines for the process




Pure Fix PaP - request without conflict -
Final Offer TT
X-12
X-11
X-8
X-7,5
X-5
X-4
X-3,5
Five W.D. after X-3,5
IMs/AB
Applicant
PCS
C-OSS
MB
Other RFC C-OSS
PaPs are delivered
Placing PaP requests
Observations
Answer to the observations
Offer acceptance
Transfer of Capacity
RU signes Network Access Contract (if requested by IMs/AB)
PaPs are published
Collecting & promoting PaP-requests
Pre-allocation pure Fix PaPs no conflicts
Publication Draft TT
Monitor Applicant Observations
Information and sending of Final Offer in PDF
Communicate with other RFC's C-OSS in case of multiple corridor paths requests and/or requests concerning common offer


Pure Flex PaP - request without conflict -
Final Offer TT
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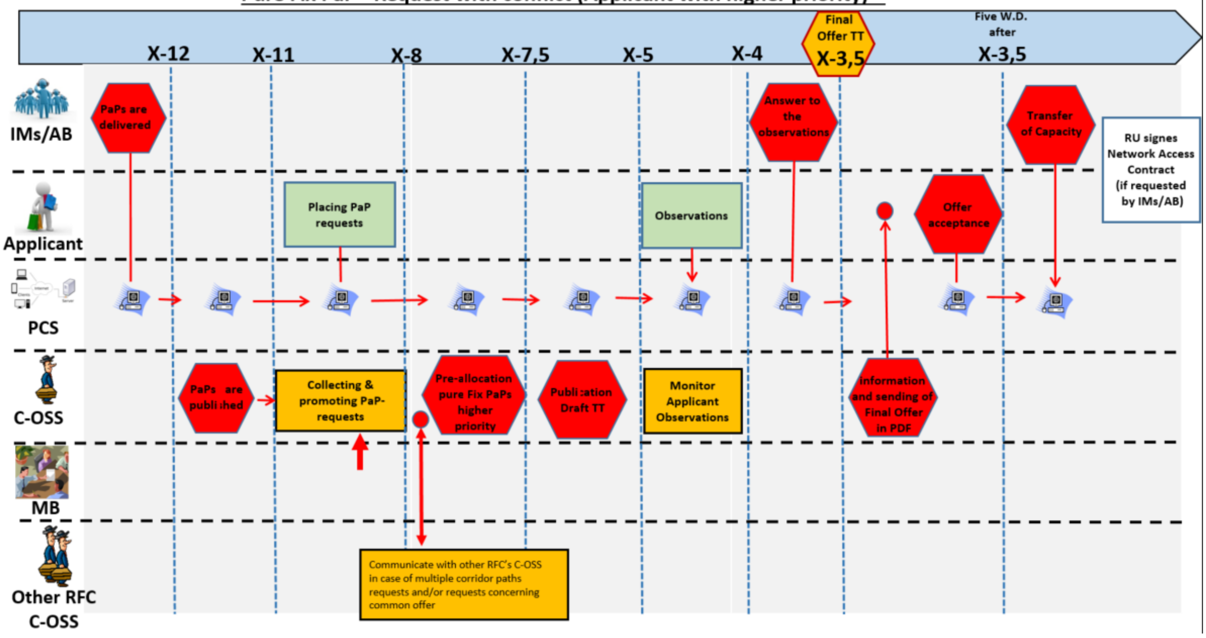
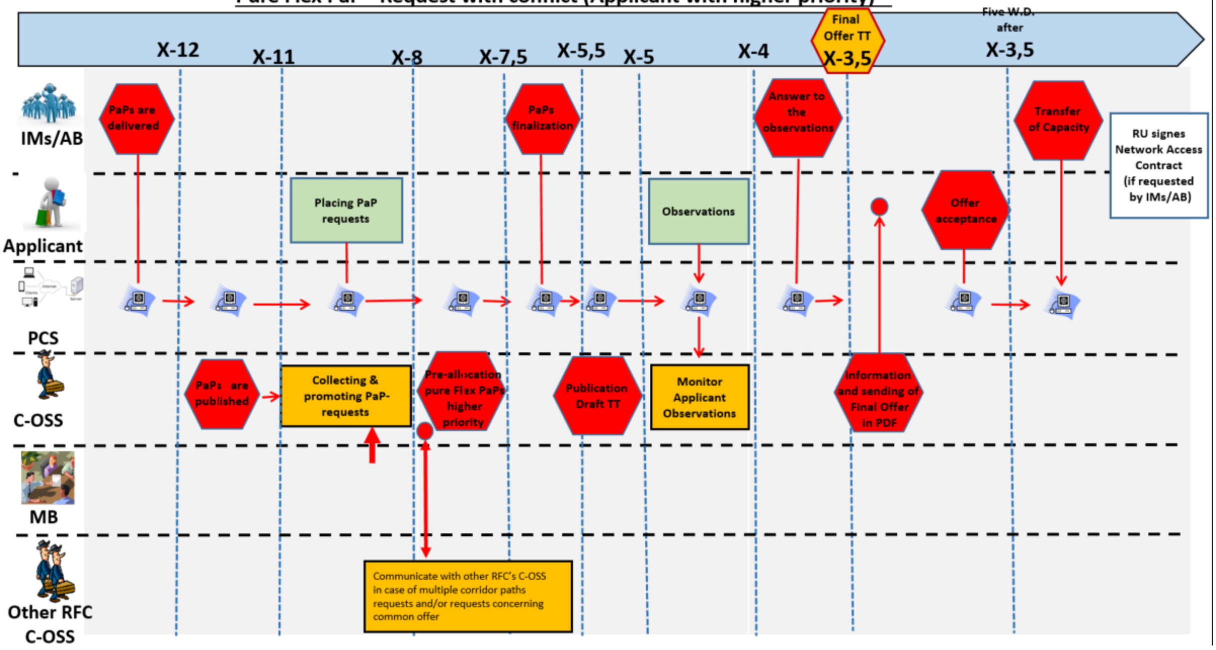
Communicate with other RFC's C-OSS in case of multiple corridor paths requests and/or requests concerning common offer

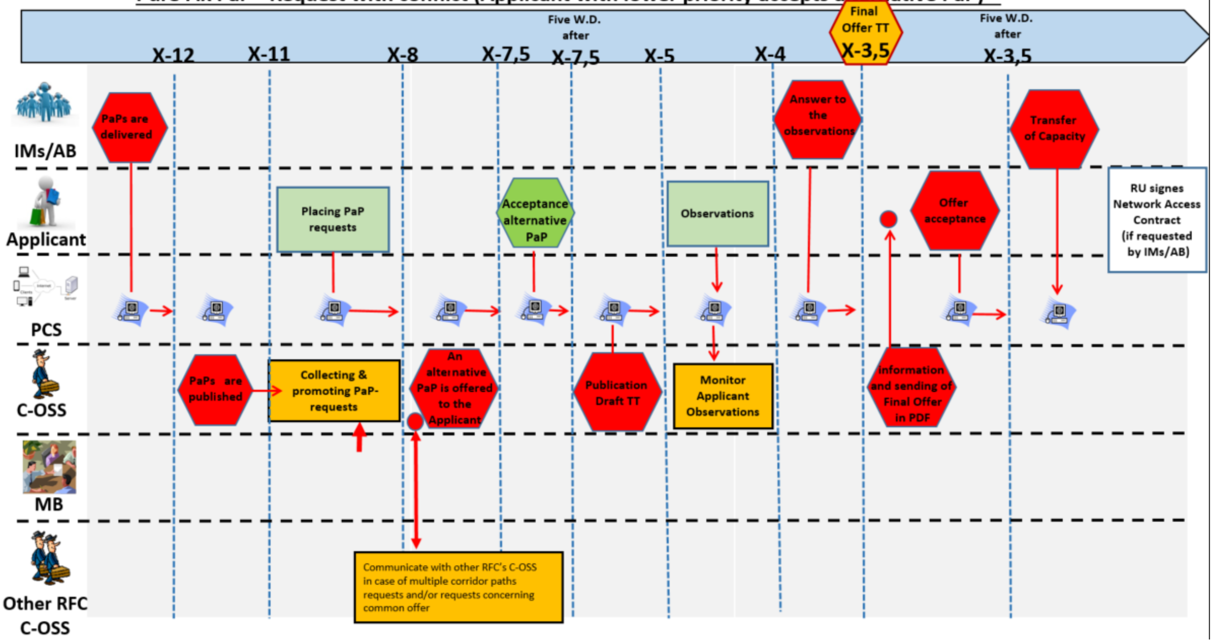
Pure Fix PaP - Request with conflict (Applicant with higher priority) -



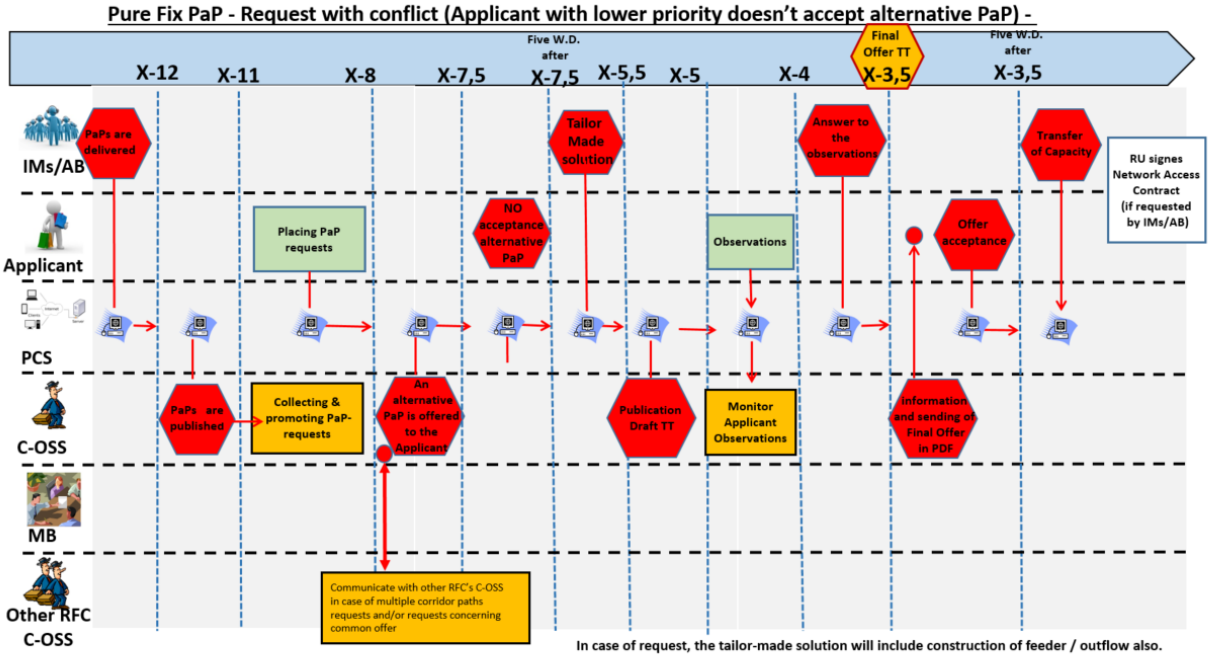
Pure Flex PaP - Request with conflict (Applicant with higher priority) -



Pure Fix PaP - Request with conflict (Applicant with lower priority accepts alternative PaP) -

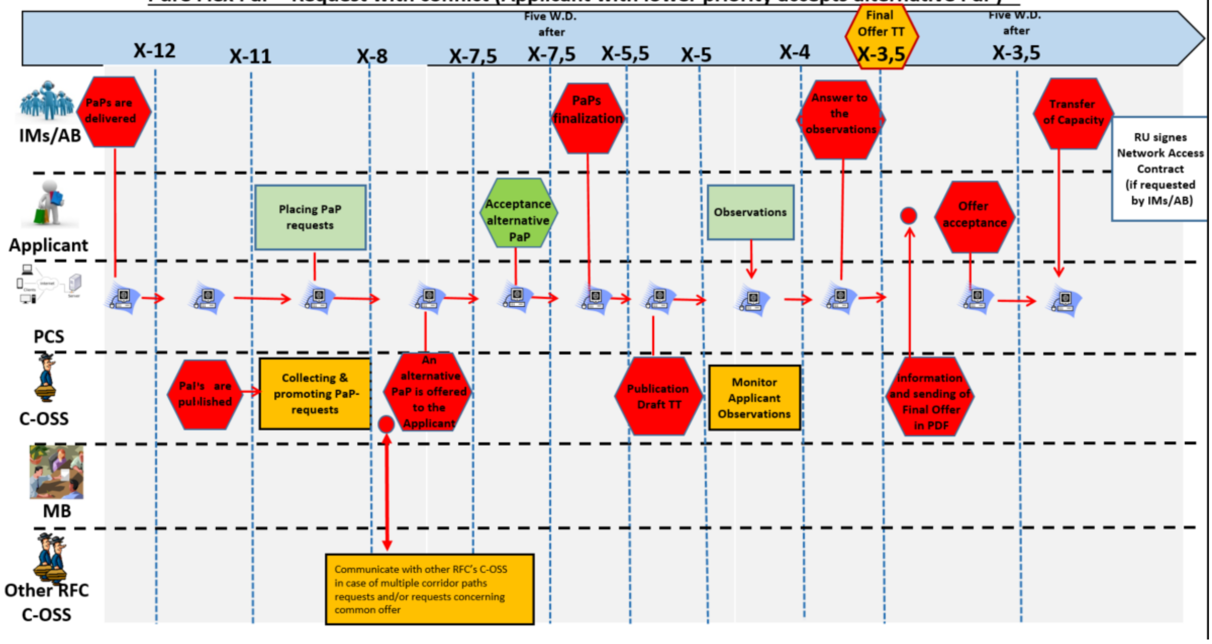


Pure Fix PaP - Request with conflict (Applicant with lower priority doesn't accept alternative PaP) -



In case of request, the tailor-made solution will include construction of feeder / outflow also.

Pure Flex PaP - Request with conflict (Applicant with lower priority accepts alternative PaP) -



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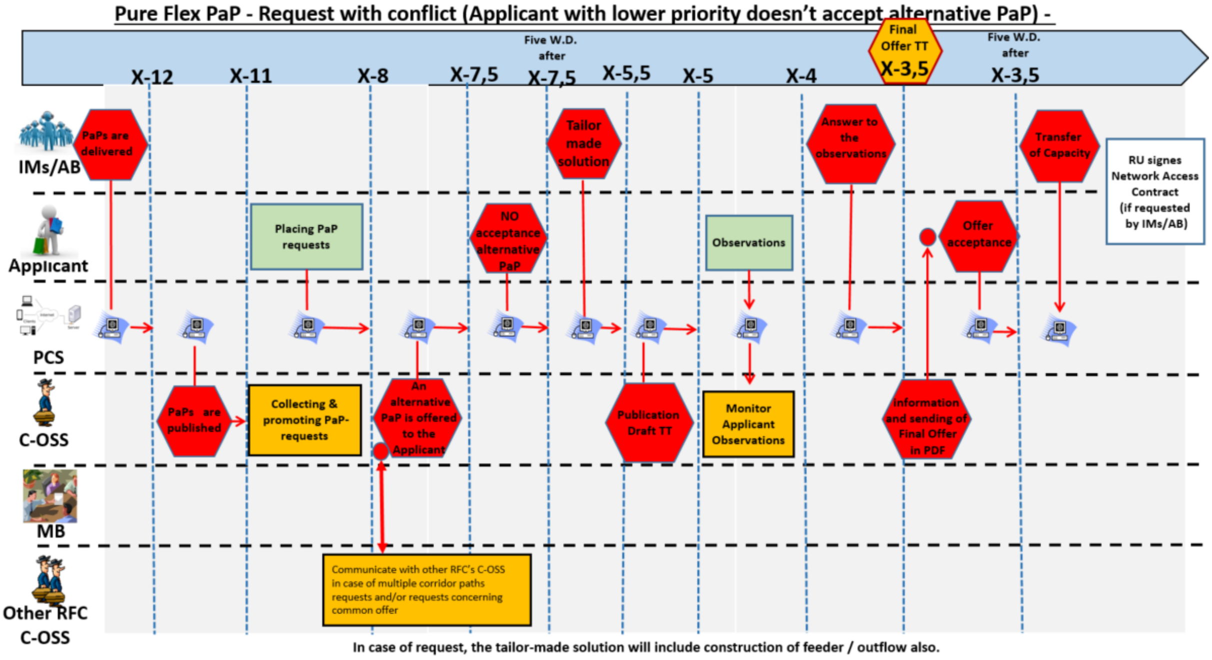

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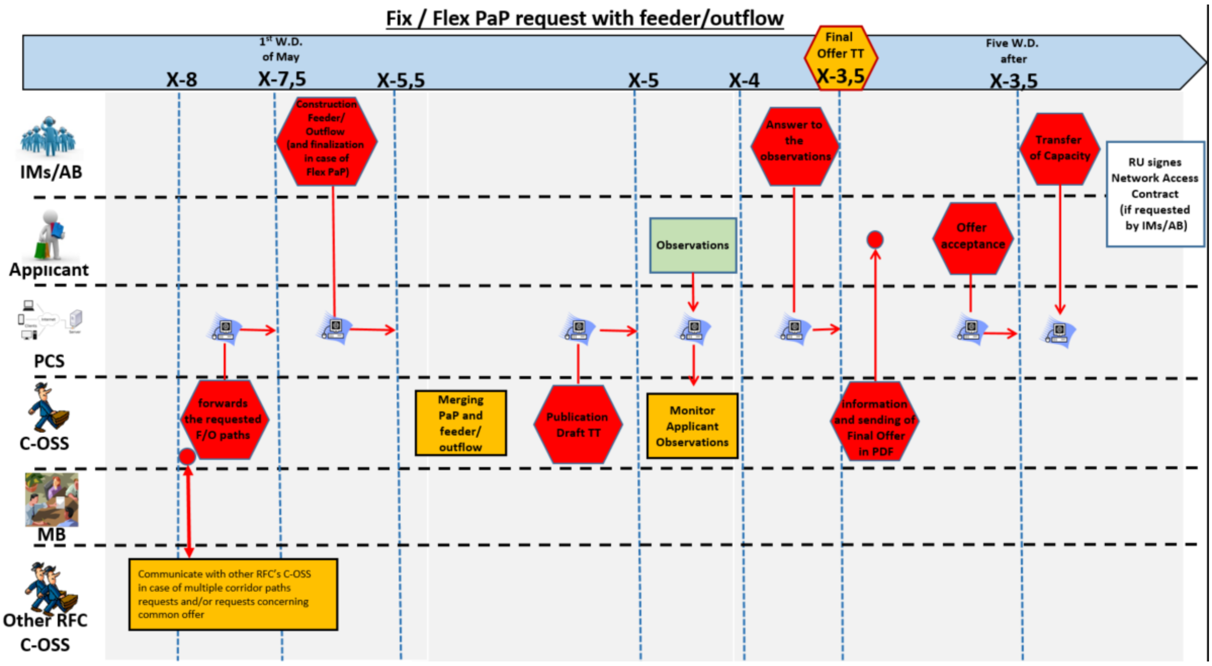
Fix / Flex PaP request with feeder/outflow
1st W.D. of May
Final Offer TT
Five W.D. after
X-8
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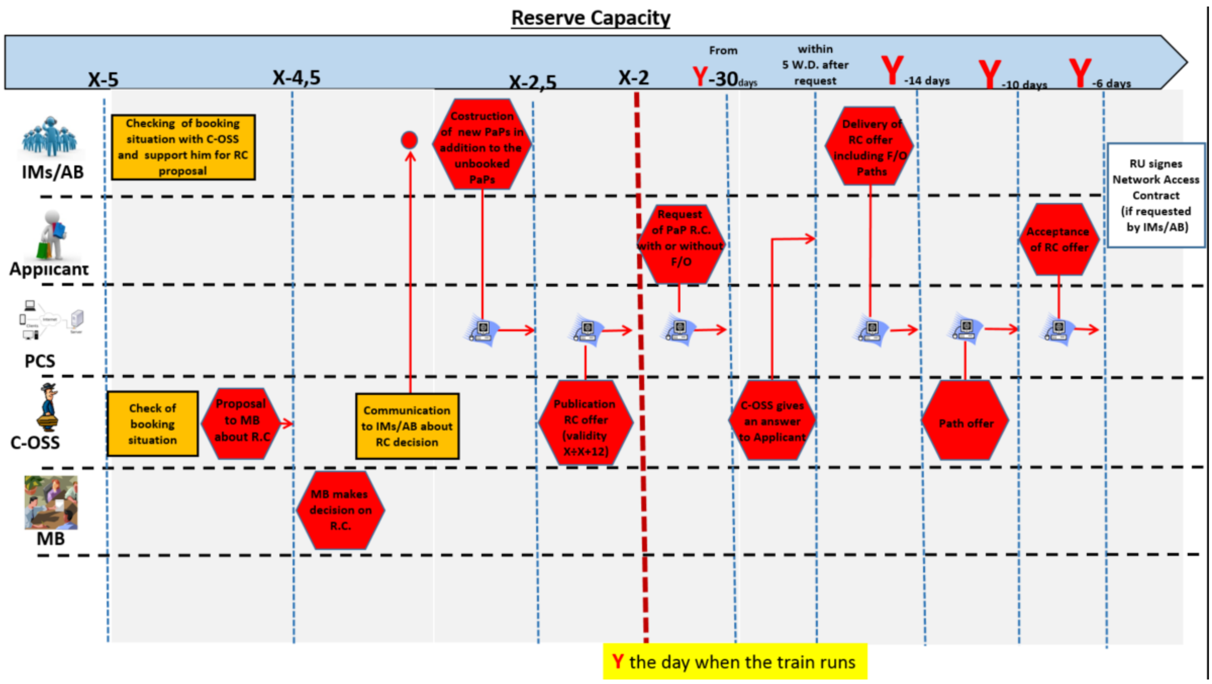
X-5,5
X-5
X-4
X-3,5
X-3,5
IMs/AB
Applicant
PCS
C-OSS
MB
Other RFC C-OSS
Construction Feeder/ Outflow (and finalization in case of Flex PaP)
Answer to the observations
Transfer of Capacity
RU signes Network Access Contract (if requested by IMs/AB)
Observations
Offer acceptance
forwards the requested F/O paths
Merging PaP and feeder/ outflow
Publication Draft TT
Monitor Applicant Observations
Information and sending of Final Offer in PDF
Communicate with other RFC's C-OSS in case of multiple corridor paths requests and/or requests concerning common offer


Reserve Capacity
X-5
X-4,5
X-2,5
X-2
From
Y-30days
within 5 W.D. after request
Y -14 days
Y -10 days
Y -6 days
IMs/AB
Applicant
PCS
C-OSS
MB
Checking of booking situation with C-OSS and support him for RC proposal
Costruction of new PaPs in addition to the unbooked PaPs
Delivery of RC offer including F/O Paths
RU signes Network Access Contract (if requested by IMs/AB)
Request of PaP R.C. with or without F/O
Acceptance of RC offer
Check of booking situation
Proposal to MB about R.C
Communication to IMs/AB about RC decision
Publication RC offer (validity X+X+12)
C-OSS gives an answer to Applicant
Path offer
MB makes decision on R.C.
Y the day when the train runs

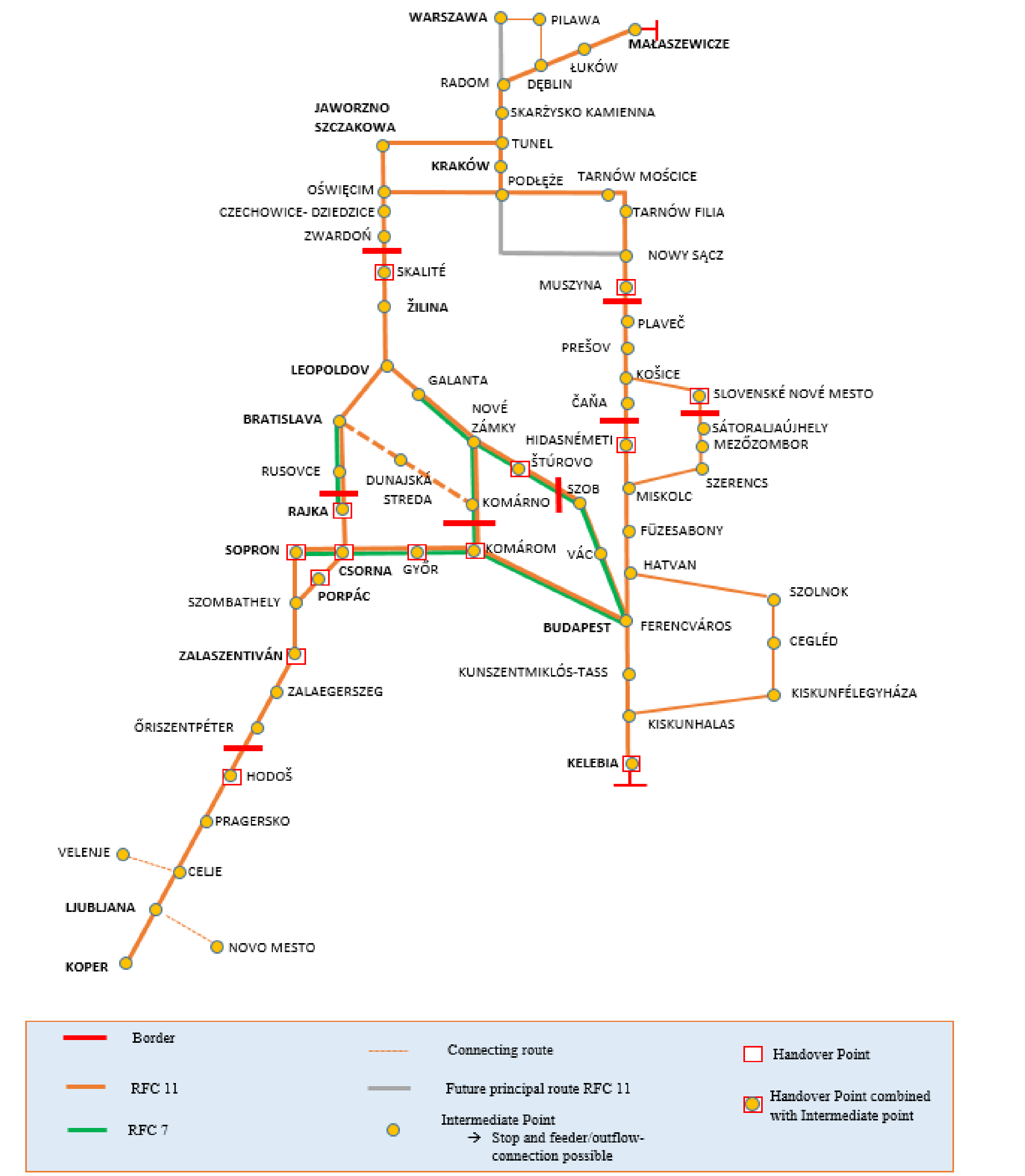
Annex 1.1 to Annex 2 of C-OSS Contract
Detailed workflow description for the Collaborative Model on the overlapping sections of
Amber RFC and RFC Orient/East – Med

Agreement between the Management Board of Amber RFC and Management Board of RFC Orient/East - Med (OEM RFC)

In 2019 the Amber RFC will be operational and will offer PaPs for TT 2020. Amber RFC will have common offer on overlapping sections with RFC Orient/East – Med.
In order to optimize the usage of the scarce capacity in the bottleneck sections and to avoid negative competition between the corridors a *Collaborative Model* was chosen to regulate the workflow of C-OSS managers. The C-OSS of the involved RFCs will be responsible for uploading and allocating the PaP offer on the overlapping sections as described below. The responsible C-OSS will publish PaPs for sections in accordance with responsibility marking another RFC as "Participating RFC" in the PaP dossiers. Applicants will still experience a single point of contact as C-OSS mangers work strongly together.

C-OSS of RFC Orient/East-Med will be responsible for publication and uploading the PaP offer on overlapping sections with Amber RFC on sections: Bratislava-Rajka, Galanta via Nové Zámky – Štúrovo, Nové Zámky to Komárom, Sopron-Győr, Győr-Ferencváros, Štúrovo-Ferencváros,

The following picture gives a brief overview on the main cornerstones of the Collaborative Model.



C OSS of the concerned RFCs collaborates as a network within the operational cooperation framework between the involved RFCs. Each C-OSS is responsible for selling the capacity on overlapping sections as described above.

Advantages:

- C-OSS of the concerned RFCs **have a coordinated offer**
- Collaboration leads to the **best capacity offer** for applicants
- Applicants have **a single point of contact** as all C-OSS collaborate and act as one virtual C-OSS
- **Clear sales competences between** the C-OSS

The following process description regulates all tasks and processes necessary to provide our applicants with the best possible support by optimizing the allocation between involved RFCs. The described tasks and processes are relevant for the C-OSS of involved corridors.

Topic	Responsible Actor	Description
Understanding the applicants' capacity needs		
Capacity wishes of applicants	C-OSS of the involved RFCs for their sections	C-OSSs send "capacity wish list template" to applicants operating on their sections. Applicants aggregate their capacity wishes for all RFCs in one document and send it back to any C-OSS.
PaP construction		
Preparation of PaP Kick-Off workshop with IMs if necessary	C-OSS of the involved RFCs	Harmonization of the expectations of the PaPs to be constructed by the IMs. Basis is the capacity wish list template and last year's experiences.
Kick-Off PaP construction if necessary	C-OSS of the involved RFCs for their sections	Individual workshops on involved RFCs. No need for C-OSS cross-participation due to coordination beforehand.
PaP construction	IMs	IMs construct the PaP segments.
PaP harmonization	C-OSS of the involved RFCs	C-OSSs together will monitor the process and check harmonization of RFC's PaP offer.
PaP publication		
PCS upload	C-OSS of the involved RFCs For their sections	Upload of PaP offer to PCS. Each C-OSS for its sections in accordace with described responsibility.
Website	C-OSS of the involved RFCs for their corridor	RFC OEM PaP catalogue shows also harmonized Amber RFC PaPs on overlapping sections Amber RFC PaP catalogue shows also harmonized RFC OEM PaPs on overlapping sections
Applicant request PaP		
Applicant request	Applicant	Applicant orders PaPs via PCS.
Pre-Allocation PaP		

No conflict Pre-Allocation at x-7,5	C-OSS of the involved RFCs for their sections	Pre-Allocation is done in PCS.
Conflict solving	C-OSS of the involved RFCs together	PCS displays to all C-OSS the conflicts. Coordination between C-OSS necessary: Each C-OSS calculates for the conflict path in its sections the K-value. Then, all K-values are summed up for the priority calculation.
Alternative PaP / path	C-OSS of the involved RFCs for their sections	Communication of alternative options (different PaP or tailor-made path to be constructed later by the IMs) is done by the C-OSS with the conflict in its sections.
Draft and Final offer PaP		
Check and Publication of Draft- / Final offer	C-OSS of the involved RFCs for their setions	Each C-OSS double-checks the offer of the IMs and publishes them via PCS.
Reserve Capacity Publication		
PCS upload	C-OSS of the involved RFCs For their sections	Upload of RC offer to PCS. Each C-OSS for its sections.
Website	C-OSS of involved RFCs for their corridor	RC Catalogue will be published on the website
Applicants request Reserve Capacity		
Applicant request	Applicant	Applicant orders Reserve Capacity via PCS.
Pre-Allocation Reserve Capacity		
Pre-Allocation rules	C-OSS of the involved RFCs for their sections	"First come – First serve".
TT Construction	C-OSS of the involved RFCs together	Order of TT construction in case more than one RFCs are involved shall depend on the construction starting point.
Deadlines for ordering	C-OSS of the involved RFC for their sections	All involved RFCs have the same 30-day rule.
Draft and Final offer Reserve Capacity		
Check and Publication of Draft- / Final offer	C-OSS of the involved RFCs for their sections	Each C-OSS double-checks the offer of the IMs and publishes them via PCS.
After Sales / Applicants contact		

Applicants questions or requests	C-OSS of the involved RFCs for their corridor	An applicant chooses the C-OSS according to the focus market of his question, or a preferred language or further reasons If a question refers to many markets an applicant still will have a single point of contact as all C-OSS closely collaborate and act as one virtual C-OSS to an applicant.
Applicants acquisition	C-OSS of the involved RFCs for their corridor	C-OSS applicant's care will be done by each C-OSS for its corridor with a regional focus. C-OSS can collaborate based on best practice approaches. Examples: • Common C-OSS applicant's visits for an applicant that operates trains in relevant corridors. • Regional applicant's conferences organized by the C-OSS of the concerned RFCs.

Annex 1.2 to Annex 2 of C-OSS Contract
Detailed workflow description for the Collaborative Model on the overlapping sections of Amber RFC and RFC Mediterranean

Agreement between the Management Board of Amber RFC and the General Assembly of RFC Mediterranean

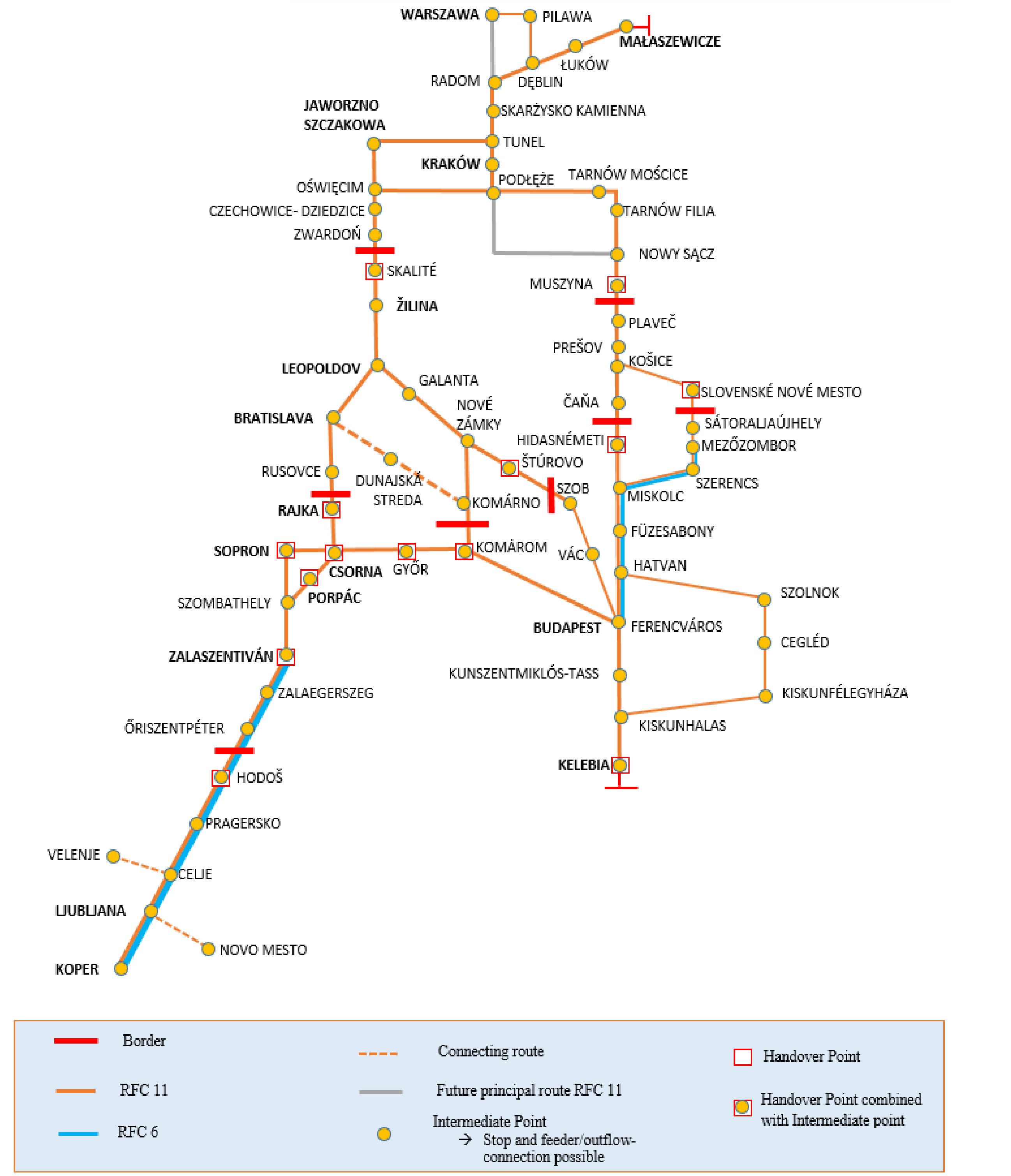
In 2019 the Amber RFC will be operational and will offer PaPs for TT 2020. Amber RFC will have common offer on overlapping sections with RFC Mediterranean
In order to optimize the usage of the scarce capacity in the bottleneck sections and to avoid negative competition between the corridors a *Collaborative Model* was chosen to regulate the workflow of C-OSS managers. The C-OSS of the involved RFCs will be responsible for uploading and allocating the PaP offer on the overlapping sections as described below. The responsible C-OSS will publish PaPs for sections in accordance with responsibility marking another RFC as "Participating RFC" in the PaP dossiers. Applicants will still experience a single point of contact as C-OSS managers work strongly together.
C-OSS of RFC Mediterranean will be responsible for publication and uploading the PaP offer on overlapping sections with Amber RFC on the following sections with Pap ID defined by C-OSS of Amber RFC :

- **Koper- Divača-Ljubljana**
- **Lubljana-Zidani Most – Pragersko**
- **Pragersko-Ormož –Hodoš**

On the following sections, each C-OSS will publish the Paps offered to their RFC's on the Hungarian Network:

- **Hodoš-Zalaszentiván**
- **Ferencváros- Szerencs -Mezőzombor.**

The following picture gives a brief overview on the main cornerstones of the Collaborative Model.



SŽ – Infrastruktura, d. o. o.
MÁV Hungarian State Railways Private Company Limited by Shares
Győr-Sopron-Ebenfurti Railways Private Company Limited by Shares
VPE – Hungarian Rail Capacity Allocation Office
Železnice Slovenskej republiky
PLK Polskie Linie Kolejowe Spółka Akcyjna

C OSS of the concerned RFCs collaborates as a network within the operational cooperation framework between the involved RFCs. Each C-OSS is responsible for selling the capacity on overlapping sections as described above. **Advantages:** • C-OSS of the concerned RFCs **have a coordinated offer** • Collaboration leads to the **best capacity offer** for applicants • Applicants have **a single point of contact** as all C-OSS collaborate and act as one virtual C-OSS • **Clear sales competences between** the C-OSS

The following process description regulates all tasks and processes necessary to provide our applicants with the best possible support by optimizing the allocation between involved RFCs. The described tasks and processes are relevant for the C-OSS of involved corridors.

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Capacity wishes of applicants	C-OSS of the involved RFCs for their sections	C-OSSs send "capacity wish list template" to applicants operating on their sections. Applicants aggregate their capacity wishes for all RFCs in one document and send it back to any C-OSS.
PaP construction		
Preparation of PaP Kick-Off workshop with IMs if necessary	C-OSS of the involved RFCs	Harmonization of the expectations of the PaPs to be constructed by the IMs. Basis is the capacity wish list template and last year's experiences.
Kick-Off PaP construction if necessary	C-OSS of the involved RFCs for their sections	Individual workshops on involved RFCs. No need for C-OSS cross-participation due to coordination beforehand.
PaP construction	IMs	IMs construct the PaP segments.
PaP harmonization	C-OSS of the involved RFCs	C-OSSs together will monitor the process and check harmonization of RFC's PaP offer.
PaP publication		
PCS upload	C-OSS of the involved RFCs For their sections	Upload of PaP offer to PCS. Each C-OSS for its sections in accordace with described responsibility.
Website	C-OSS of the involved RFCs for their corridor	RFC Med PaP catalogue shows also harmonized Amber RFC PaPs on overlapping sections. Amber RFC PaP catalogue shows also harmonized RFC Med PaPs on overlapping sections
Applicant request PaP		
Applicant request	Applicant	Applicant orders PaPs via PCS.
Pre-Allocation PaP		

No conflict Pre-Allocation at x-7,5	C-OSS of the involved RFCs for their sections	Pre-Allocation is done in PCS.
Conflict solving	C-OSS of the involved RFCs together	PCS displays to all C-OSS the conflicts. Coordination between C-OSS necessary: Each C-OSS calculates for the conflict path in its sections the K-value. Then, all K-values are summed up for the priority calculation.
Alternative PaP / path	C-OSS of the involved RFCs for their sections	Communication of alternative options (different PaP or tailor-made path to be constructed later by the IMs) is done by the C-OSS with the conflict in its sections.
Draft and Final offer PaP		
Check and Publication of Draft- / Final offer	C-OSS of the involved RFCs for their setions	Each C-OSS double-checks the offer of the IMs and publishes them via PCS.
Reserve Capacity Publication		
PCS upload	C-OSS of the involved RFCs For their sections	Upload of RC offer to PCS. Each C-OSS for its sections.
Website	C-OSS of involved RFCs for their corridor	RC Catalogue will be published on the website
Applicants request Reserve Capacity		
Applicant request	Applicant	Applicant orders Reserve Capacity via PCS.
Pre-Allocation Reserve Capacity		
Pre-Allocation rules	C-OSS of the involved RFCs for their sections	“First come – First serve”.
TT Construction	C-OSS of the involved RFCs together	Order of TT construction in case more than one RFCs are involved shall depend on the construction starting point.
Deadlines for ordering	C-OSS of the involved RFC for their sections	All involved RFCs have the same 30-day rule.
Draft and Final offer Reserve Capacity		
Check and Publication of Draft- / Final offer	C-OSS of the involved RFCs for their sections	Each C-OSS double-checks the offer of the IMs and publishes them via PCS.
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