Amber
Rail Freight Corridor

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AMBER RAIL FREIGHT CORRIDOR
IMPLEMENTATION PLAN

RFC 11 CID BOOK 5

PKP POLSKIE LINIE KOLEJOWE S.A. | ŽSR | MÁV | GYSEV Raaberbahn | VPE | Slovenske železnice SŽ-Infrastruktura

Table of Contents

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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 (Amber RFC), 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 Amber RFC connects Slovenia, Hungary, Slovakia and Poland. The RFC Regulation requires that the aforementioned Member States concerned set up the new Amber RFC 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 priament 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 Amber RFC. 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 Amber RFC, the measures taken so far and the planned procedures for its operation.

The Implementation Plan is also to be published on the website of Amber RFC, 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 Amber RFC Members

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

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

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

For the monitoring of the performance of the corridor, Amber RFC will use the common Key Performance Indicators (KPIs) adopted by the RFCs and RNE. The results will be published in the corridor Performance Monitoring Report on a yearly basis.

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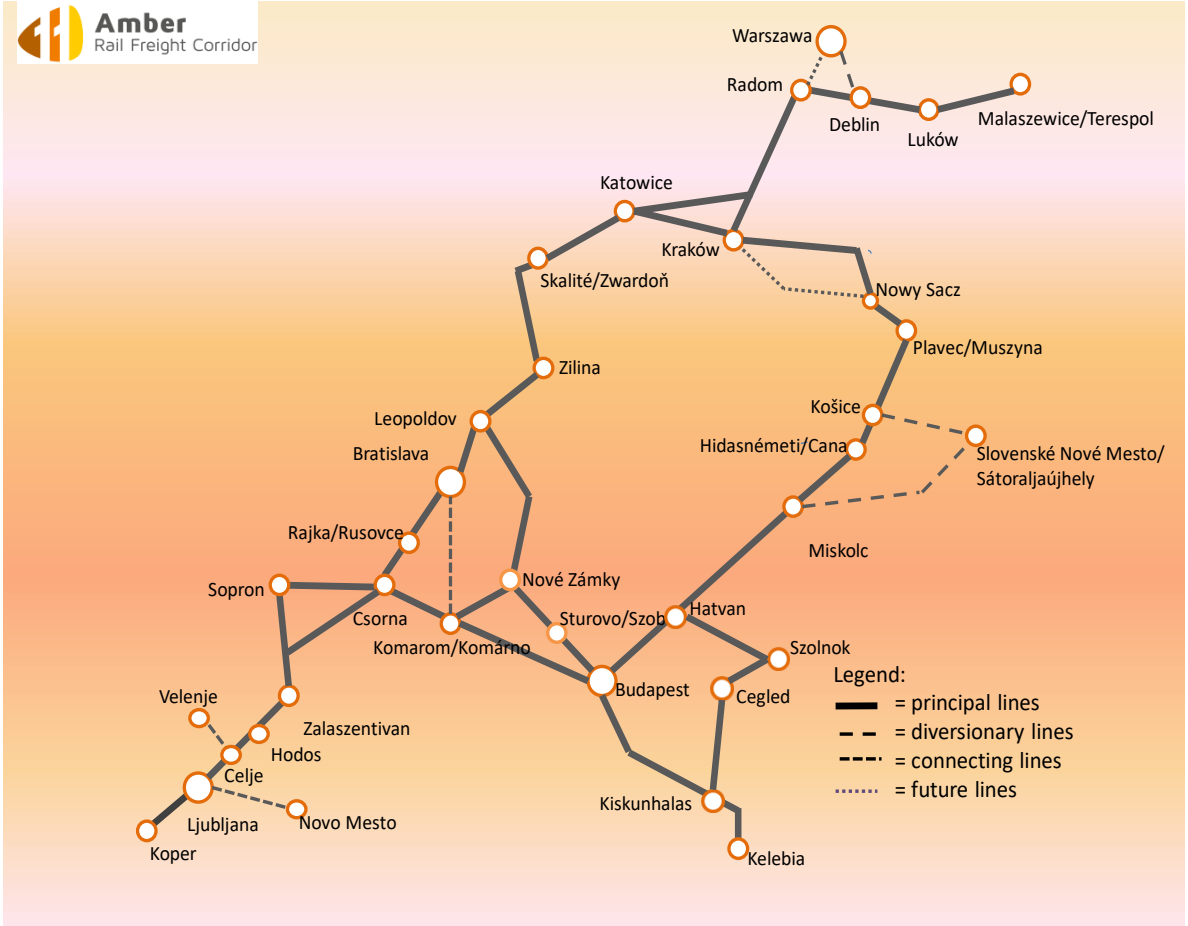
From the collected data there is an outlined a map in the figure below.



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

POLAND

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%	-		-

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 - Palárikovo	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	Palárikovo- 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%		-	

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%			

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	-				

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	-	-				

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	-	700	C2	100	7,4	8	C21/340	GC	-	-			
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Sárospatak - Sátoraljaújhely	9,600	1	-	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	-				

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%			

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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	C3 - 20,0	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

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2.2 Connection with Other Corridors

The Amber RFC 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 Amber RFC 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

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,	63,9
Zidani Most - Pragersko	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI, ADIF, SNCF, HŽ	RFC 5, RFC 6,	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,	38
Ljubljana-Novo mesto	PKP, ŽSR, SŽDC, OeBB infra, SŽ-I, GYSEV, MÁV, VPE, RFI	RFC 5,	76

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2.3 Terminals

We describe in this chapter the Amber RFC in terms of the categories of tracks and terminals that the corridor members identified for having relevance for the RFC. It also contains information about the location of the marshalling yards and terminals where customers can plan their activity on the Amber RFC.

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)

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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,

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
Principal lines	Divača - Koper
	Ljubljana - Divača
	Zidani Most - Ljubljana
	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 yards	Ljubljana Zalog, Celje tovorna, Koper tovorna

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2.4 Bottlenecks

This chapter provides information about the infrastructural bottlenecks on the sections of Amber RFC, 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 Amber RFC 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.

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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	-	-	-

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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
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	-

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	-	-	-	-

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

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	31/12/2020	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	-	-	-

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

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2.5 Amber RFC Governance

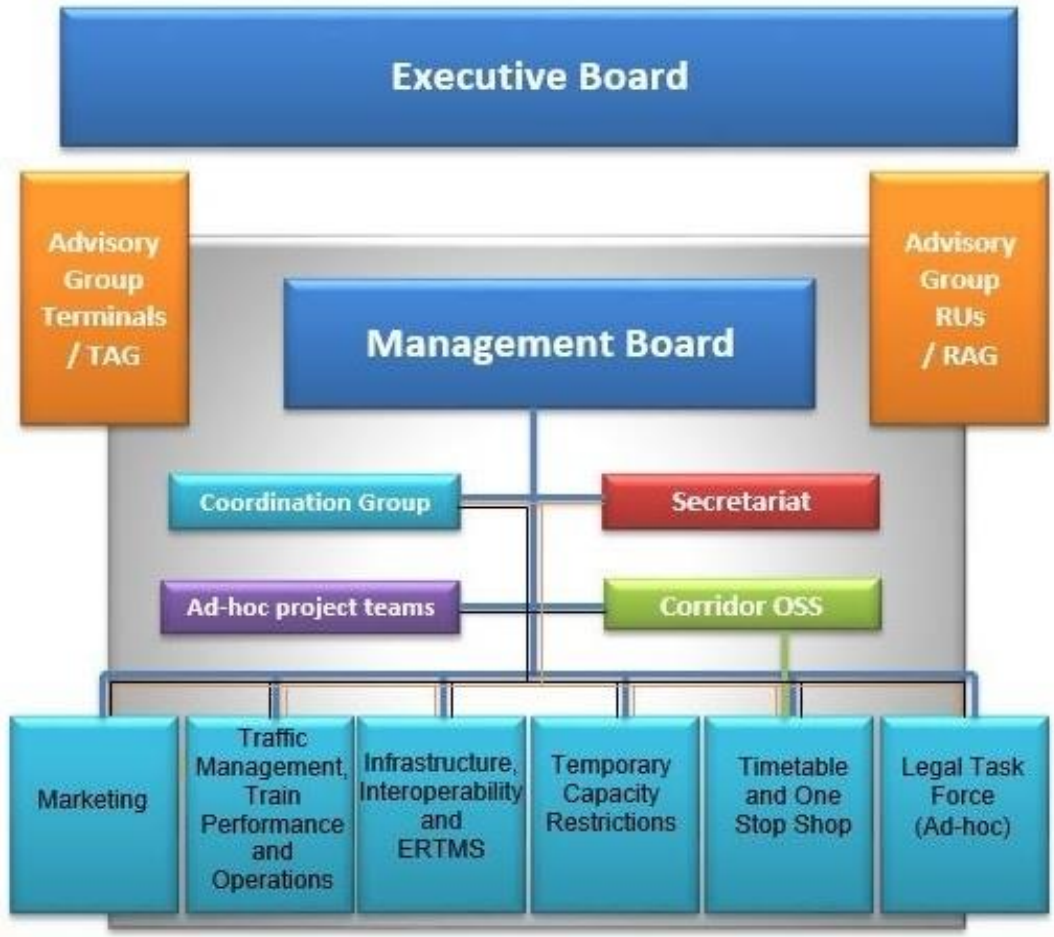
2.5.1 Regulation requirements

The Regulation (EU) No 913/2010 defines the corridor governance structure on two levels. The establishment of the Amber RFC 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 Amber RFC are illustrated in the following schematic structure:

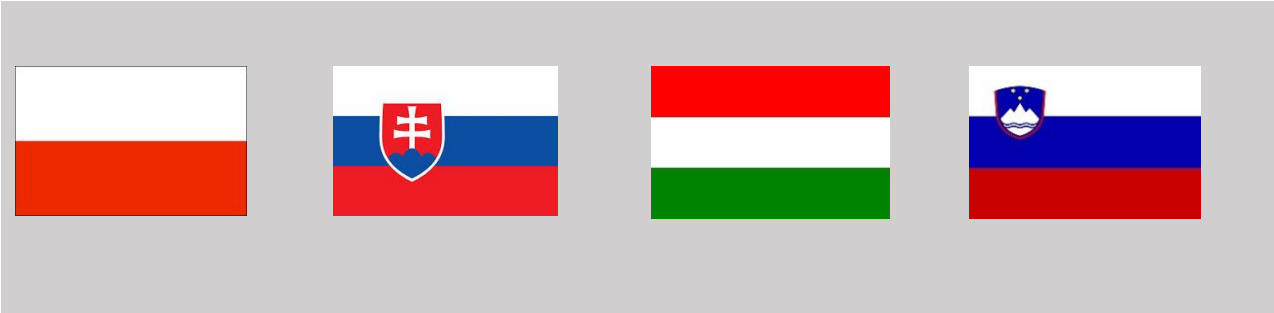


The Executive Board (EB)

The Executive Board of Amber RFC 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 Amber RFC 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 Amber RFC was the signing of a Memorandum of Understanding (MoU) among the 6 (six) stakeholders involved in Amber RFC:

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 Amber RFC. The first official meeting of the MB took place on 15-16 June 2017 in Ljubljana.

The MB members of Amber RFC, based on the number of activities and the volume of tasks for the timely corridor establishment, decided, that the Amber RFC will be formed without any legal entity and corridor seat. The decision of possibly forming a legal structure (e.g. EEIG) on Amber RFC 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. Amber RFC 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 Amber RFC.

Advisory Groups (AGs)

On 12 December 2017, the MB of Amber RFC formally approved the establishing templates for the set-up of the Amber RFC **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 Amber RFC.

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 Amber RFC 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 Amber RFC. 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 Amber RFC 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 will be 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 2.5.2, 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 Amber RFC 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 Amber RFC

The Amber RFC 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 (Amber RFC) - 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 Amber RFC 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 Amber RFC, was set up in December 2017.

In particular, the Coordination Group carries out the following activities:

- ensures a high-level general follow-up and coordination of the activities defined by the MB,
- contributes to prepare working documents for the decision of the MB and to their implementation;
- together with the Secretariat advises and supervises the work of the Working Groups;
- supervises the timely implementation of the Corridor project plan;
- ensures an efficient communication flow between the RFC members, acting as contact point between national and corridor level;
- ensures that the first Corridor Information Document (CID books including Implementation Plan) are prepared according to the agreed timeline.

The Coordination Group organizes at least three personal meetings per year and videoconference meetings when needed.

Functioning of the Coordination Group, as coordinator of activities and supervisor of draft documents for WGs, as well as supporting body for the preparation of decisions and organizational matters to the MB, is undertaken by SŽ-I.

Secretariat

The MB decided to set up a Secretariat for the Amber RFC. 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 Amber RFC. 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 Amber RFC. Working groups are composed of experts appointed by the Members of the Amber RFC 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 Amber RFC 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.

Temporary Capacity Restrictions WG (TCR WG)

This Working Group is in charge of the following tasks:

- collect, publish and aim to harmonise the TCRs along the Amber RFC;
- exchange of crucial information between IMs and AB on Amber RFC (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

This Working Group is in charge of the following tasks:

- 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 ŽSR leads this Working Group.

Legal Task Force (ad hoc WG)

The Legal Task Force is an interim working group of all IMs and AB legal representatives that supports the MB and corridor organization with their legal knowledge and expertise. The Legal Task Force 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 a new Working Groups may be set up when needed (to deal with issues that may arise in a later period).

Corridor-One Stop Shop (C-OSS)

The MB establishes the representative model of C-OSS as single contact point for applicants on the Amber RFC. 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.

2.5.3 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.

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).

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. For Amber RFC, the compliancy with this Handbook will be assured, most probably for the timetable year 2020.

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 Europen 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. Amber RFC follows the work of this platform and will adapt the necessary measures in case of conclusions. For information purposes, the 11 sector priorities are as follows:

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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.

3 Essential elements of the Transport Market Study of Amber Rail Freight Corridor

INTRODUCTION

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.

3.1 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.

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

The establishment of the Amber RFC 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.

3.2 Methodology of work and methods of investigation

The statistical and analytical data required 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 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 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	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

3.2.1 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 Amber RFC, 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.

3.2.2 Methods used in TMS elaboration

The individual results 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, 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.

3.3 Characteristics of Amber Rail Freight Corridor

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.

Amber RFC 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

Deadline for making Amber RFC operational: by 30.01.2019

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

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

Graphical representation of Amber RFC

Figure 1: Graphical representation of Amber RFC routing

3.4 Summary of economic and transport analysis for Amber RFC Corridor

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 Amber RFC were analysed.

On the basis of the collected and evaluated main statistical economic data in the countries of the Amber RFC, 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 (Real GDP growth rate and prognosis in % for 2010 - 2020). 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 (IEF, GCI, HDI, ETI),
- increase in living standards of the population: it is assumed based on the Amber RFC 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 Amber RFC countries within the international indices (IEF, GCI, HDI, ETI). Industry structure, history, skilled labour force, geographic position and infrastructure of the Amber RFC 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 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 (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 Amber RFC 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 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 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 Amber RFC 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 Amber RFC 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.

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 Amber RFC 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 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 countries of the Amber RFC 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 Amber RFC 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 Amber RFC. Increase in performances will be affected by the Amber RFC 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 Amber RFC 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 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 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 Amber RFC infrastructure managers and ministries involved to invest in the lines of the 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),

- 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 Amber RFC 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 Amber RFC services between the Amber RFC countries and the EU countries: due to the increasing level of trade between the Amber RFC countries and other EU member states,
- growth in demand for transport services within the Amber RFC countries: due to the increasing level of trade between the Amber RFC 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 Amber RFC; 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 Amber RFC 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 Amber RFC 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.

3.5 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 Amber RFC. The development of transport performances is concluded on the basis of the prognosis that includes three scenarios for the Amber RFC: 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:

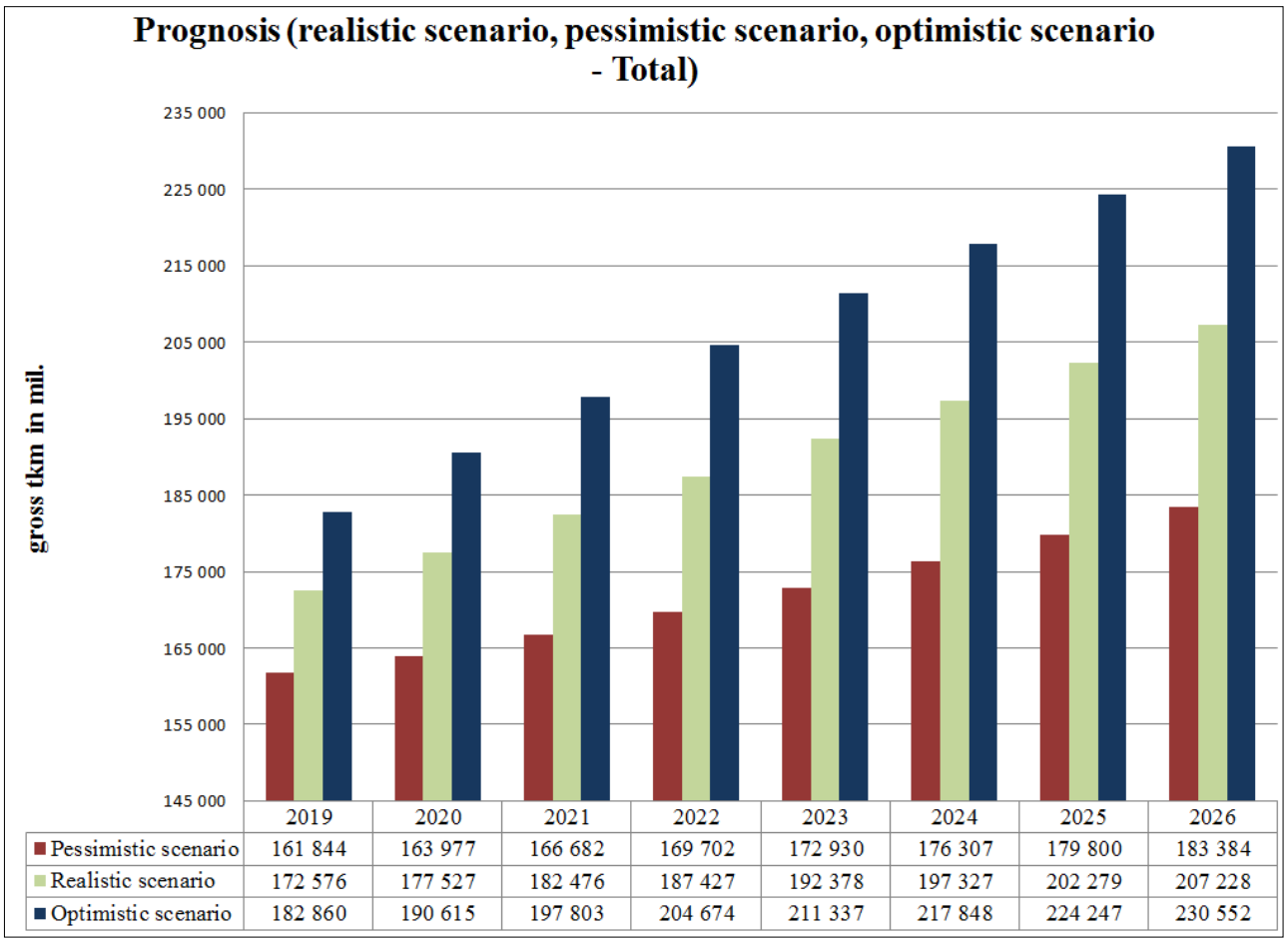
Target date Required. The data point for which you want to predict a value. Target date can be date/time or numeric – the period 2019-2026.

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 Amber RFC 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.

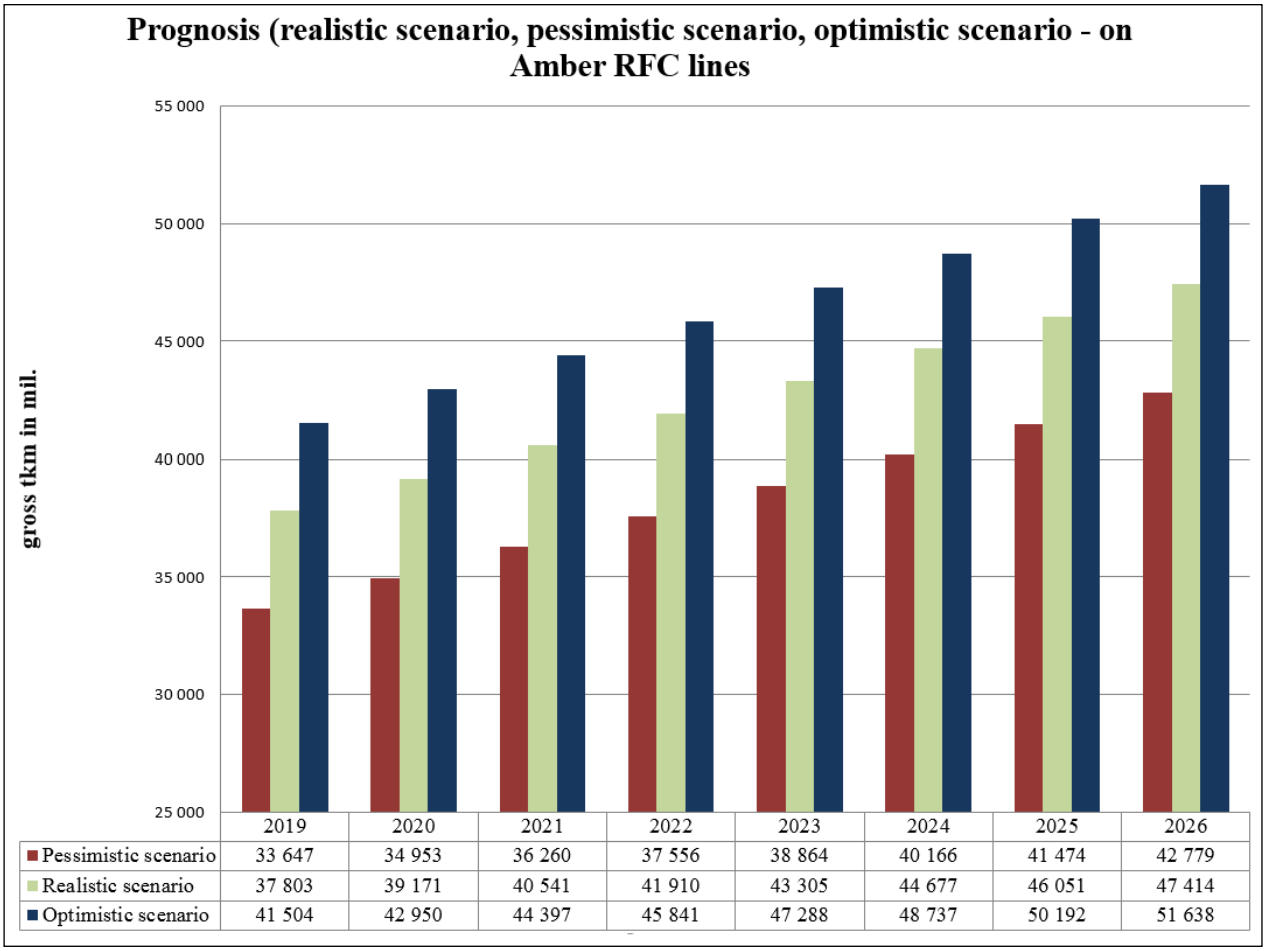
Seasonality Optional. A numeric value. The default value of 1 means program detects seasonality automatically for the forecast and uses positive, whole numbers for the length of the seasonal pattern. 0 indicates no seasonality, meaning the prediction will be linear – the used value 1 based on which the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

Graph 1 for graphical comparison shows the overall prognosis of the development of rail freight transport performances in the Amber RFC 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 Amber RFC 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



	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 Amber RFC 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 Amber RFC,
- 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 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,
- 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.

3.6 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 Amber RFC 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 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 the import and export of goods within the selected countries, e.g. the increase in import 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 (results from the economic analysis show increase of consumption in chapter of TMS: Economic analysis),
- growth of international trade of the Amber RFC 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 Amber RFC countries and exports of 2 336 000 tons goods from the Amber RFC countries to Serbia,
- requirement of fast, reliable and safe transport of goods from non-EU countries to the Amber RFC 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 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 transport flows in Eastern Asia – Central Europe route: 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 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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3.7 Graphical representation of Amber RFC – 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 Amber RFC 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 Amber RFC routing.

Figure 1: Proposed route alignment of Amber RFC

Based on the proposed routing of the Amber RFC, 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 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 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/Amber RFC 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.

3.6 SWOT analysis of Amber corridor

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 Amber RFC.

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 corridor is shown in diagram below.

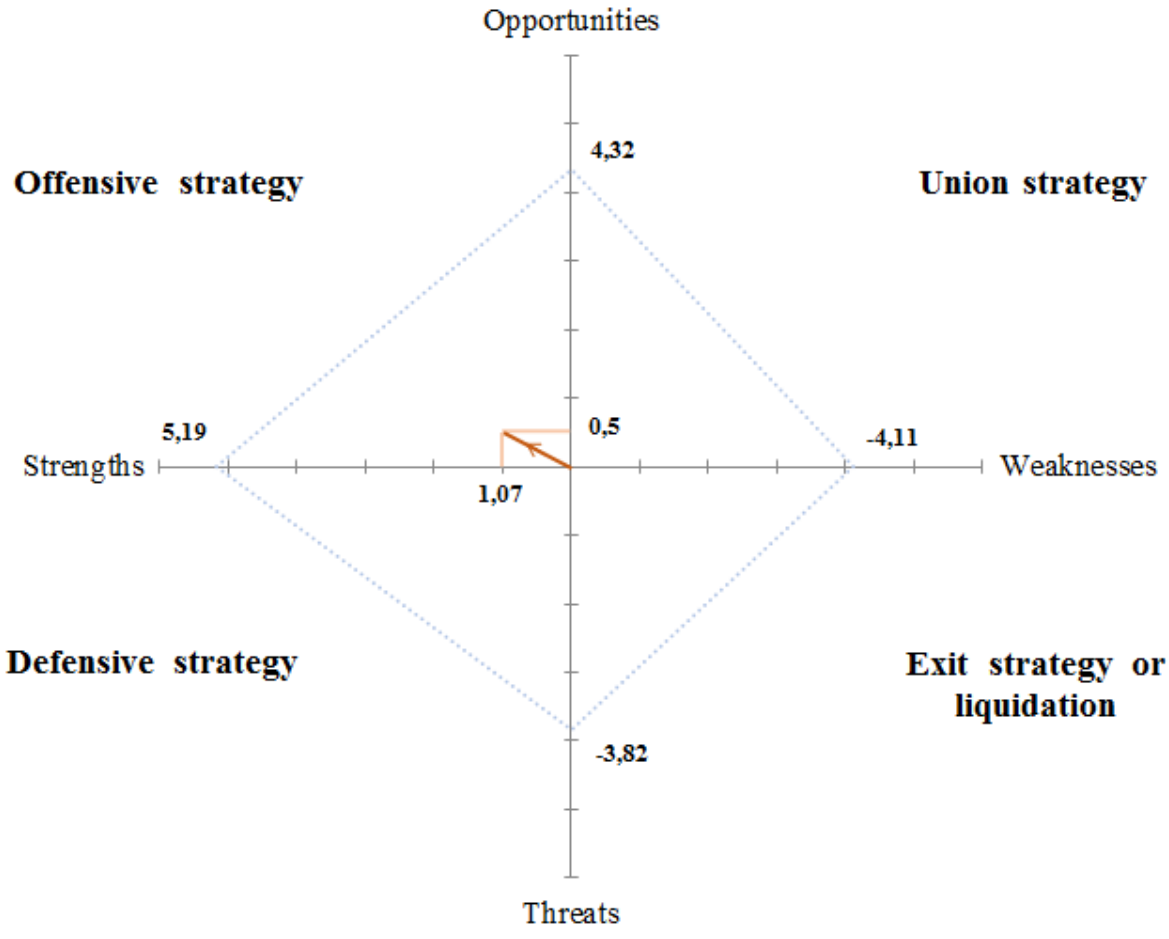


Figure 1: Matrix of model strategies for the Amber RFC

**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.

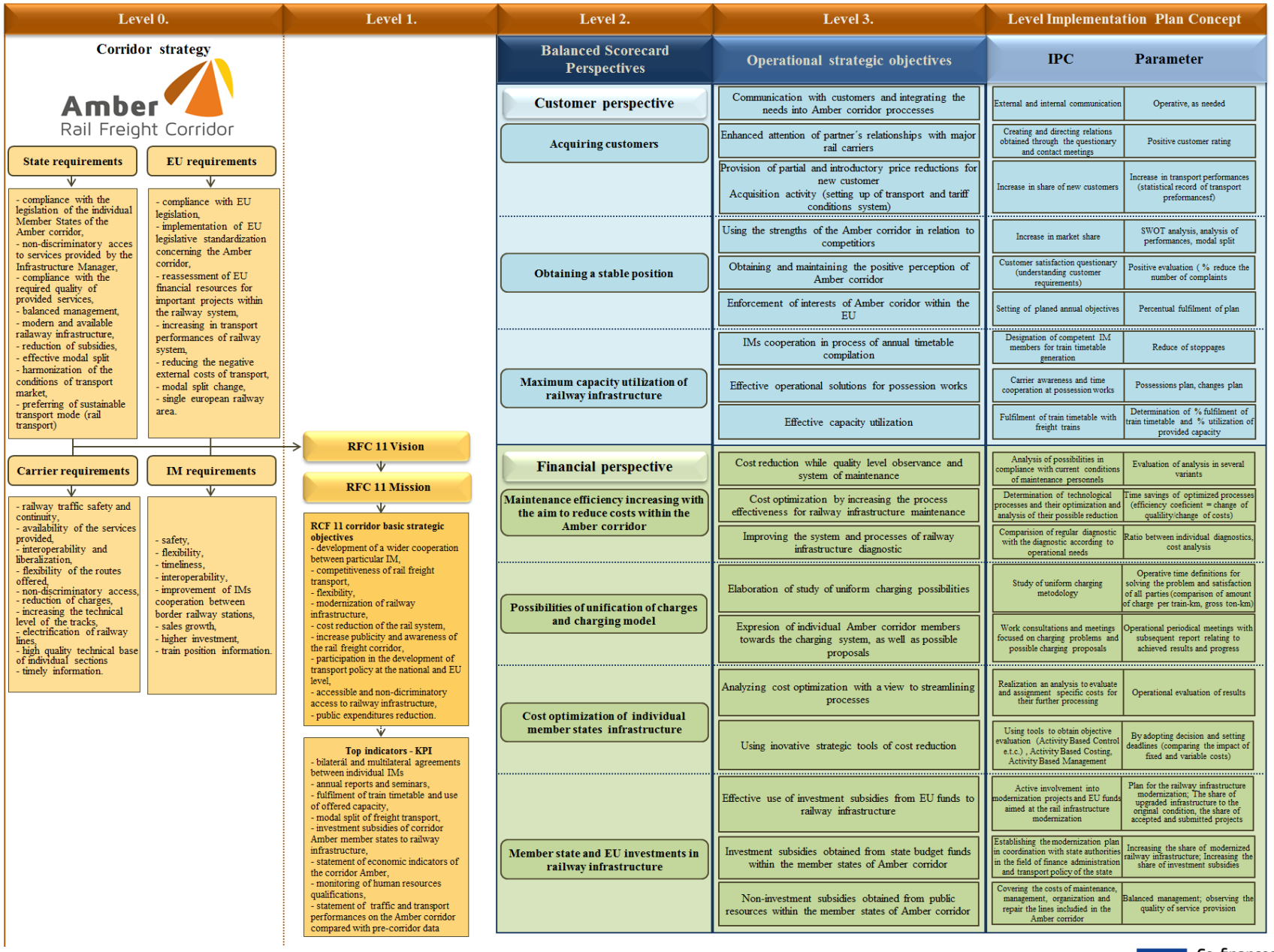
Based on the resultant strategy, it is necessary to take the following measures for the Amber RFC:

- 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

3.9 Strategic map of Amber RFC

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

Figure 2: Map Balanced Score Card of Amber RFC



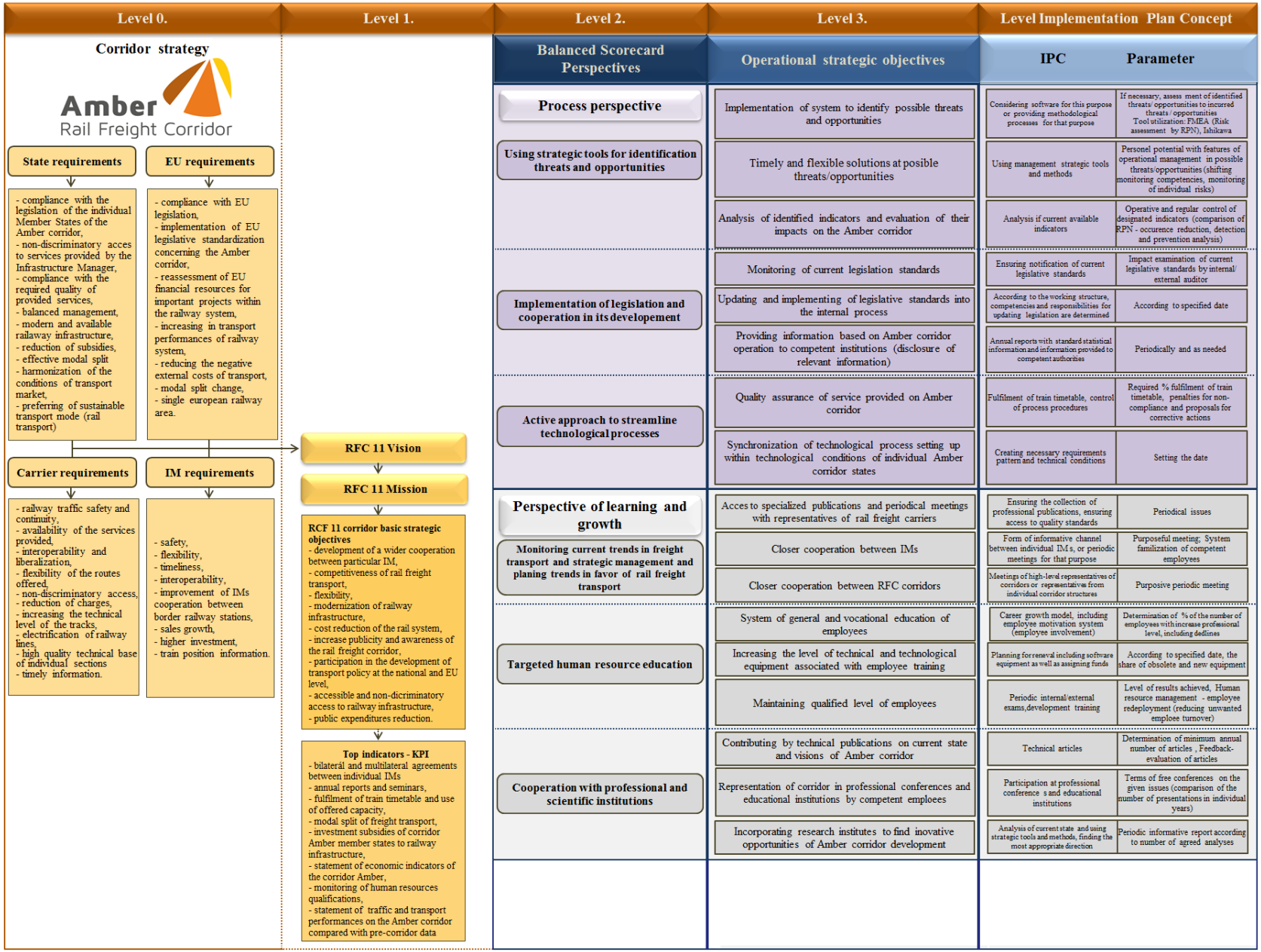


Figure 3: Map Balanced Score Card of Amber RFC

3.10 Amber RFC 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 Amber RFC 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 Amber RFC 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 railway

infrastructure development in line with customer needs and creation of competitive environment in the European and international transport system.

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Brand Amber RFC – 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: 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 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 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

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 Amber RFC 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 Amber RFC 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 Amber RFC 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 Amber RFC and to fulfilits strategic objectives resulting from the corridor vision and assigned mission, the followingmeasures are proposed:

- ensure proper cooperation of the Infrastructure Managers and the Allocation Body with the market players of the logistic chain concerned in the Amber RFC, within the given legal environment according to the best possible ways - the IMs are independent entities that run their bisuness on multiannual contracts with their governments. They have the tools for any cooperation with neigbouring IM or other IMs on Corridor. Such measures also go in line with the foreseen infrastrucuture 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 Stetement will be fulfilled on the medium and long term,
- ensure effective maintenance of railway infrastructure included in the Amber RFC – individual infrastructure managers,
- ensure proper and effective transport management, coordination of temporary capacity restrictionsand fair capacity allocation – individual infrastructure managers and allocation body of the Amber RFC,
- adaptation of traffic management rules to the needs of rail freight transport – individual infrastructure managers of the Amber RFC,
- 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 Amber RFC 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 Amber RFC, individual infrastructure managers and allocation body,
- 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, Member States and the EU Commission,
- 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 vision and missionin 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 theTEN-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 concerened 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 Amber RFC 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 Amber RFC carry out the coordination process under overall surveillance of the Management Board. As a result, Amber RFC 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 Amber RFC takes the relevant RailNetEurope (RNE) guidelines into account.

More details are provided in CID Book 4 – 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.

EU legislation

- 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 Amber RFC until December 2018.

Other documents

- 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 Amber RFC 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.

4.2.3. Tasks and organisation

The tasks of the C-OSS of Amber RFC 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 Amber RFC
- display available capacity of Amber RFC 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 Amber RFC website:
    - network statements of national networks regarding Amber RFC, as included in Book 2
    - list, characteristics, conditions and method of access to the terminals along Amber RFC, as included in Book 3
    - functioning of the C-OSS, capacity allocation, authorised applicants and traffic management, including in the events of disturbance, as described in Book 4
    - Implementation Plan of Amber RFC, as included in Book 5

A representative model of the C-OSS was adopted for Amber RFC where one IM is designated to act on behalf of all Amber RFC in the corridor with support of a coordinating IT tool. The C-OSS reports to the MB of Amber RFC and carries out its activities in a transparent, impartial and non-discriminatory manner, respecting the confidentiality of information.

More details are provided in CID Book 4 – Procedures for Capacity and Traffic Management, chapter 2 Corridor OSS.

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4.3 Capacity Allocation Principles

The capacity of Amber RFC 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 Amber RFC. 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 CID Book 4 – Procedures for Capacity and Traffic Management, chapter 3 Capacity allocation

4.4 Applicants

Applicants other than railway undertakings or the international groups of railway undertakings are enabled to request capacity on Amber RFC. 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 CID Book 4 – Procedures for Capacity and Traffic Management, chapter 3 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 Amber RFC 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 was adopted, as referred to in Chapter 2.5.3 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.. European Rail Infrastructure Managers agreed on international processes described in the “Handbook for International Contingency Management”. An important new element is an international re-routing overview for the Rail Freight Corridors (RFC) and re-routing scenarios for the critical routes.

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 Amber RFC.
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 Amber RFC 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 Information provided

Information on the conditions of use of Amber RFC are published in the CID books. The CID contains general information about Amber RFC (the information included in the Network Statements for national networks of the corridor's IMs/AB that relate to Amber RFC, 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 follows the common structure recommended by RNE, which aims at progressive harmonisation of the document throughout all RFCs. The information presented in the CID are organised in 5 books:

- Book 1 – Generalities
- Book 2 – Network Statement Excerpts
- Book 3 – Terminal Description
- Book 4 – Procedures for Capacity and Traffic Management
- Book 5 – Implementation Plan

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 Amber RFC website, after their publication.

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4.8 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.

4.8.1 Performance Monitoring Report

The measurement of performance of rail freight transportation on Amber RFC 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

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	Commercial 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	Number of train runs (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***	Traffic volume (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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On Amber RFC the following common KPIs will be measured:

- Capacity management: measuring the performance of Amber RFC in constructing, allocating and selling the capacity of the corridor (in line with Articles 13 and 14 of the Regulation), monitored in terms of
  - Volume of offered capacity (PCS)
  - Volume of requested capacity (PCS)
  - Volume of requests (PCS)
  - Volume of capacity (pre-booking phase, PCS)
  - Number of conflicts (PCS)
  - Volume of requested reserve capacity (km*days requested)
  - Volume of requested reserve capacity (number of PCS dossiers requested)
  - Commercial speed of PaPs (PCS)
- The KPIs of Operations, which measure the performance of the traffic running along Amber RFC monitored in terms of punctuality, volume of traffic and delay reasons
  - Punctuality at origin (TIS)
  - Punctuality at destination and predefined points (TIS)
  - Number of train runs (TIS)
  - Delay reasons (TIS). This KPI is connected to Punctuality at origin and Punctuality at destination.
- The KPIs of Market development, which measure the capability of the Amber RFC in meeting the market demands are monitored in terms of
  - Traffic volume (from national database)
  - Relation between the capacity allocated by the C-OSS and the total allocated capacity

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://www.rne.eu/rneinhalt/uploads/RNE_Guidelines_KPIs_of_RFCs.pdf).
The results of all KPIs shall be published in the Annual Report of Amber RFC, as required by article 19(2) of the Regulation.
The Management Board has the right to establish Amber RFC related specific indicators in case of necessity.

4.8.2 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 Amber RFC must become operational on 30 January 2019, the first yearly user satisfaction survey (USS), as requested by article 19(3) will take place in 2020 most probably under RNE’s umbrella. In order to improve the services and performance of the corridor, the results of the USS will be analysed and published on the website, consequently, the customers’ increased involvement into further market surveys and problem-solving will be applied.

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

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!

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5 Objectives / Performance

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 Amber RFC 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 Amber RFC
- To contribute to the interoperability of the rail system within Amber RFC

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, Amber RFC 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.

5.3 KPIs

Amber RFC'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 Amber RFC 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://www.rne.eu/rneinhalt/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 Amber RFC can only result from the proper involvement of all the concerned parties.

6 Investment plan

The Amber RFC 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 Amber RFC.

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.

Amber RFC 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 CID Book in Chapter 4 List of Measures and in CID Book 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 Amber RFC, the IMs/AB will be able to offer more capacity and higher quality

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 Amber RFC 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 Amber RFC 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 CID Book in Chapter 4 List of Measures and in CID Book 4 Procedures for Capacity and Traffic Management.
With regard to bottlenecks, in addition to the information provided in this CID Book in Chapter 2.4 Bottlenecks, Amber RFC 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, Amber RFC 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.

The elaboration of a comprehensive “Study on bottlenecks along RFC Amber No.11” shall be carried out 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 shall 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	-	-	-

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

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

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

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

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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

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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

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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

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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 RFC Czech-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 RFC Czech-Slovak
- section Petőháza - Győr* is overlapping section with RFC Orient/East-Med and the future extension of RFC Czech-Slovak

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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 the projects

Amber RFC 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 (see at point 5.2 Interoperability) 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		

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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	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		

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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		

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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		

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

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	C21/340
				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))	C21/340
				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	C21/340
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	C21/340
				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	C21/340

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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				

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 Amber RFC. The tables in Chapter 6.1 describe the intentions of Amber RFC 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.

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.

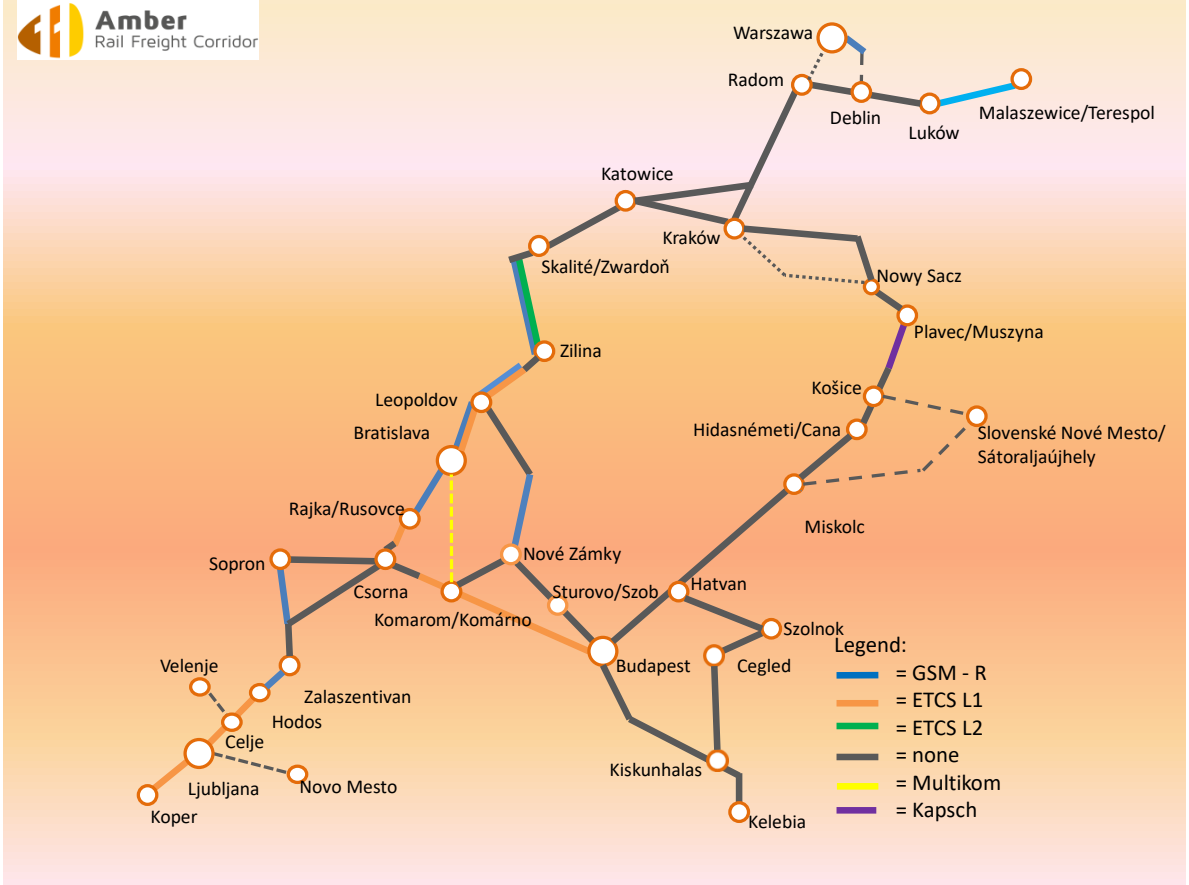
Hungary (MÁV): The corridor’s lines are electrified with an alternating current AC 25 kV / 50 Hz. Some sections have a lower loading capacity and speed allowance than the directive prescribes. Three sections are equipped with the ETCS level no. 1. At present, the GSM-R system is implemented in two parts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

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



6.4 Reference to Union Contribution

The Amber RFC is 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.
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 Amber RFC 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.

The main specific objectives of the Action are:

- To establish and run the Amber RFC governance structures, including Executive Board, Management Board and the Advisory Groups in line with Article 8 of the RFC Regulation;
- To draw-up the corridor Implementation Plan, including the Investment Plan, in line with Article 9 of the RFC Regulation;
- To draw up the corridor Pre-arranged train paths (PaPs), and to establish and run the corridor One-Stop-Shop (C-OSS) for the allocation of such pre-arranged paths in line with Articles 13 and 14 of the RFC Regulation;
- To provide information on the conditions of use of the freight corridor by drawing-up and regularly updating the Corridor Information Document (CID) in line with article 18 of the RFC Regulation;
- To implement a customer and stakeholder oriented approach through a Customer Information Platform (CIP) providing precise information on the RFC, the conduction of a satisfaction survey, in line with Article 19 of the RFC Regulation, and publicity and marketing activities, and
- To elaborate a comprehensive study on the infrastructure of the corridor identifying the relevant bottlenecks and potential measures for improvements.

Scope and expected results of the Action

To deliver on the general and specific objectives, the Action will i.a. result in establishing all the compulsory governance structures, plus a corridor secretariat, a coordination group and working groups. Among the topics to be addressed there will be assessment of the legal and practical aspects for establishing a legal structure for the RFC Amber – including its form (e.g. a European economic interest grouping (EEIG)) and location – and, if approved by the governance structure of the corridor, the necessary steps for its establishment.

In line with the RFC Regulation, the Action will also draw up the Implementation Plan and the Corridor Information Document (CID). To this regard, it must be noted that that the Transport Market Study (TMS), the essential elements of which will be included in the Implementation Plan, is being elaborated separately from this Action.

In addition, the Action will:

- Establish the C-OSS for application for infrastructure capacity;
- Contribute to the visibility of the RFC Amber among potential customers, political decision-makers, cooperation partners, media and other stakeholders through dedicated publicity measures;
- Ensure inclusion of information about RFC Amber to RailNetEurope's (RNE) Customer Information Platform (CIP), and
- Draw-up a study on bottlenecks along the corridor, including the assessment of ERTMS deployment.

The expected result of the Action is to have the rail freight corridor operational and to run it according to the RFC Regulation and market requirements:

- Aiming at the development of products for RFC Amber to support modal-shift and increase rail freight traffic along the corridor;
- Facilitating connections between the Adriatic seaports in the Republic of Slovenia, inland waterway ports on the Danube in Hungary and the Slovak Republic;
- Improving connections to major intermodal rail-road terminals in the Member States involved and providing a direct route for freight east of the Alps, and
- Improving rail freight traffic in both directions, from the Adriatic to Poland and further towards the eastern border of the EU.

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

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