AMBER RAIL FREIGHT CORRIDOR

IMPLEMENTATION PLAN

Annex of the CID Book 2023

10 January 2022

Table of contents

1 Introduction 6

1.1 Legal Background 6

1.2 Aim of the Implementation Plan 7

1.3 Aim of RFC Amber Members 7

1.4 Specific objectives of RFC Amber 9

2 Corridor description 12

2.1 Key Parameters of Corridor Lines 12

2.2 Connection with Other Corridors 31

2.3 Terminals 35

2.4 Bottlenecks 36

2.5 Governance of RFC Amber 53

2.5.1 Regulation requirements 53

2.6 EU level cooperation 63

2.6.1 Cooperation with other Rail Freight Corridors 63

2.6.2 Coordination at EU-level 63

3 Market analysis Study 65

3.1 Introductory remarks 65

3.2 Objective of the Transport Market Study 65

3.3 Methodology of work and methods of investigation 66

3.3.1 Material used in TMS elaboration 67

3.3.2 Methods used in TMS elaboration 68

3.4 Characteristics of RFC Amber 68

3.4.1 RFC Amber basic structure 68

3.4.2 Analysis of capacity and bottlenecks 70

3.5 Economic and transport analysis of RFC Amber 70

3.6 Prognosis of transport performance development 73

3.7 Transport potential of selected countries 78

3.8 Graphical representation of RFC Amber – Proposal of corridor routing 80

3.9 SWOT analysis of RFC Amber 82

3.10 Strategic map of RFC Amber 83

3.11 RFC Amber marketing strategy 86

3.12 Conclusions and recommendations 88

4 List of Measures 91

4.1 Coordination of planned Temporary Capacity Restrictions 91

4.2 Corridor-OSS 91

4.2.1 Documentation related to C-OSS 92

4.2.2 Requirements resulting from RFC Regulation 92
4.2.3 Tasks and organisation 93
4.3 Capacity Allocation Principles 94
4.4 Applicants 94
4.5 Traffic Management 95
4.6 Traffic Management in Event of Disturbance 95
4.6.1 Definition of disturbance 96
4.6.2 Communication procedure 96
4.7 Quality Evaluation 98
4.7.1 Performance Monitoring Report 98
4.7.2 User Satisfaction Survey 101
4.8 Corridor Information Document 101
5 Objectives and Performance on the Corridor 103
5.1 Punctuality 103
5.2 Capacity 103
5.3 KPIs 105
6 Investment plan 106
6.1 Capacity Management Plan 106
6.1.2 Methodology 106
6.1.3 Plans for removal of bottlenecks 107
6.1.3.1 Bottlenecks on Polish section 109
6.1.3.2 Bottlenecks on Slovakian section 114
6.1.3.3 Bottlenecks on MÁV section in Hungary 115
6.1.3.4 Bottlenecks on GYSEV section in Hungary 121
6.1.3.5 Bottlenecks on Slovenian section 123
6.2 List of investment projects 124
6.2 Deployment Plan 134
6.3 Reference to Union Contribution 136
7 Annexes 137
7.1 Memorandum of Understanding of establishing of ExBo for RFC Amber 137
7.2 Memorandum of Understanding of establishing of MaBo for RFC Amber 137
7.3 Framework for Capacity Allocation 137
7.4 Letter of Intent concerning the establishment of Advisory Groups for RFC Amber 137
7.5 Advisory Group Rules of Consultation for RFC Amber 137
7.6 Transport Market Study for RFC Amber 137
7.7 The description of the KPIs for RFC Amber 137
7.8 Process descriptions for Corridor-OSS (C-OSS contract annex 2) for RFC Amber 137

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

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

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 cross-border freight traffic. The general objective of the RFC concept is making rail freight more competitive, of which on of the tools of fostering cooperation 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 Groupsfor railway undertakings and terminals, through consultation procedures and regular customer satisfactionsurveys.

The RFCs are based on Regulation (EU) No 913/2010 (RFC Regulation) of the European Parliament and of the Council of22 September 2010 concerning a European rail network for competitive freight, which entered into force on 9 November 2010. It defines nine initial RFCs, of which six had to be established until November 2013 and the remaining three until November 2015[1]; the RFC Regulation also provided the possibility for the establishment of further RFCs on the initiative of Member States concerned. The first, entirely new, further RFC is the Amber Rail Freight Corridor (RFC Amber), which was approved in December 2016 by the Single European Rail Area Committee (SERAC) and for which the legal base was published on 31 January 2017 in the Official Journal of the European Union. According to Commission Implementing Decision (EU) 2017/177, the route of RFC Amber connects Slovenia, Hungary, Slovakia and Poland.

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

1.2 Aim of the Implementation Plan

Initially, the members of the Management Board defined in this document the conditions for making the corridor operational and formanaging 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. Besides the above enumerated major activities, the continuity of day-to-day operations will be ensured also in the future according to the RFC Regulation.

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 thatshall 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 article9 of the RFC Regulation and to the European Commission the main characteristics of the RFC Amber, the measures taken so far and the planned procedures for its operation.

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

1.3 Aim of RFC Amber Members

In accordance with Article 8 of the Regulation, the governance structure of the Corridor assembles the following entities:

Executive Board (ExBo): composed of the representatives of the Ministries of Transport along the Corridor Members of the ExBo of Corridor Amber are as follows:

- Ministry of Infrastructure and Construction of Republic of Poland
- Ministry of Transport and Construction of the Slovak Republic
- Ministry for Innovation and Technology of Hungary
- Ministry of Infrastructure and Spatial Planning of the Republic of Slovenia

Management Board (MB): composed of representatives of the IMs and (where applicable) ABs along the Corridor which are responsible for the implementation of the Corridor within their home organisations. The Management Board is the decision-making body of the Corridor.

Members of the MB of Corridor Amber are as follows:

- PKP PLK Polish Railway Lines S.A. - IM, Poland
- ŽSR - Railways of the Slovak Republic – IM, Slovak Republic
- MÁV - Hungarian State Railways Company Ltd. – IM, Hungary
- GYSEV - Győr-Sopron-Ebenfurti Vasút Zrt./ Raab–Oedenburg–Ebenfurter Eisenbahn AG – IM, Hungary & Austria
- VPE - Hungarian Rail Capacity Allocation Office, AB, Hungary
- SŽ-I - Slovenian Railways-Infrastructure d.o.o. – IM, Slovenia

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

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

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

- develop the rail freight corridor in harmony with freight market needs and customer expectations,
- to offer reliable, high-quality, competitive transport capacity in order to increase the competitiveness of customers and to promote modal shift to rail (as it is also noted in the relevant part of the Sustainable and Smart mobility Strategy)
- 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 theirsatisfaction,
- 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 transportaxes at the EU eastern border;
- to contribute to a growing market share for the environmentally most friendly landtransport 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 achievethe above goals.

1.4 Specific objectives of RFC Amber

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

1. To ensure the provision of capacity of good quality on the corridor and smooth handling ofcapacity 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 thecorridor 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 AdvisoryGroups and potential corridor customers.
6. to comply with the specific target of the European Green Deal to reduce transport-related greenhouse gas emissions by 90% by 2050 and in particular with the measures set in the Sustainable and Smart Mobility Strategy (SSMS) with its concrete goals to increase rail freight traffic with +50% by 2030 and by 100% by 2050.

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

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

As referred under objective no. 6. of this chapter, the adopted SSMS under the Comission Communication no. COM (2020) 789 defined in 10 different flagships the reachable goals. Under these flagships the following actions were of particular relevance when defining the specific strategical objectives of RFC Amber:

Action no. 43 states that "rail freight can operate reliably and be attractive to customers. However, many domestic rules and technical barriers still hinder performance. Rail freight needs serious boosting through increased capacity, strengthened cross-border coordination and cooperation between rail infrastructure managers, better overall management of the rail network, and the deployment of new technologies such as digital coupling and automation." In this point it is also written that the Commission proposed the revision of regulations governing Rail Freight Corridors and the TEN-T core network corridors, with the integration of these corridors into 'European transport corridors', focusing on 'quick wins' like train length, loading gauge and improved operational rules, alongside the completion of key missing links and the adaptation of the core network so that it is fully freight capable. "The Commission proposed to improve rules on rail capacity allocation in line with the ongoing project on the timetable redesign, to provide additional, flexible train paths."

Actions no. 61 and 62 call on the creation of a truly smart transport system, efficient capacity allocation and traffic management which must also be addressed to avoid a capacity crunch and reduce CO2 emissions e.g. by the roll out of the European Rail Traffic Management System (ERTMS). Investments in its deployment count fully for the digital spending targets and substantially towards the climate spending targets. Further efforts to develop train automation systems through joint undertakings have been taken by the Commission such as Shift2Rail. For rail automation and traffic management to become a reality on cross border main lines, the Commission proposed to update technical specifications for interoperability (TSIs) to encompass new technologies like 5G and satellite data, and provide a readily upgradeable and common system architecture. This is needed so that the ERTMS can be at the heart of a digital rail system.

Action no. 80. calls for the timely completion of the TEN-T network. "The Commission will propose to reinforce the role of the European Coordinators to drive progress on transport corridors across the continent to seek their completion by 2030." Although RFC Amber for the time being does not belong to any TEN-T core network corridor, however in the future it will be merged into a European Transport Corridor and will seek a strong cooperation with the assigned European Coordinator in order to complete the missing infrastructure gaps without delay.
More cross-border projects will be needed to integrate all Member States into the European rail system of the future, in turn establishing smooth interconnections for cross-border rail traffic across Europe.

As demonstrated in the adopted Action Plan above, RFC Amber Governance set already the major short and long term goals which were completely in line with the achievables laid down in the above points of the SSMS.

2 Corridor description

2.1 Key Parameters of Corridor Lines

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

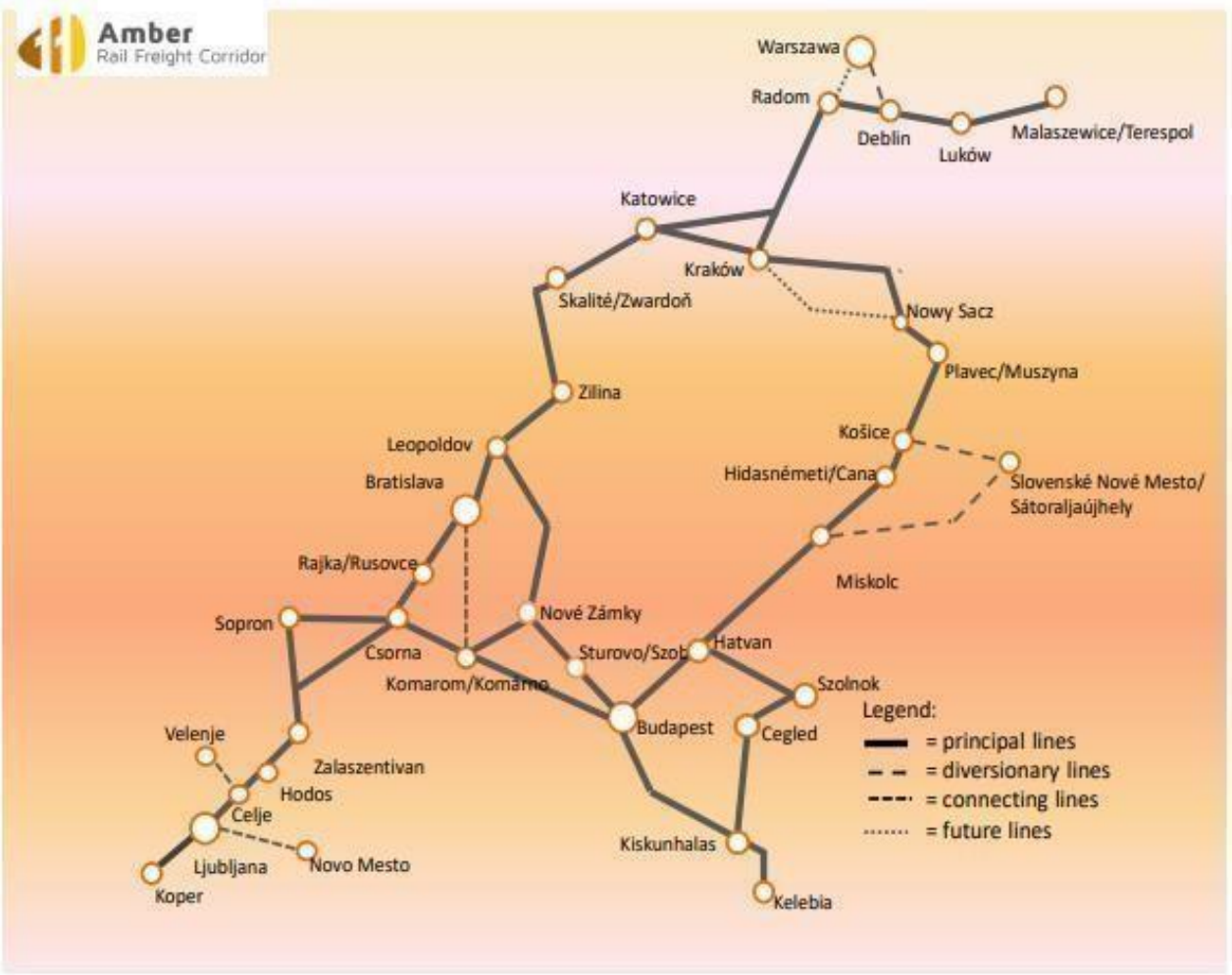
The total length of the RFC Amber No 11 is 3358,455 km. The Polish side plans to extend the Amber corridor network with newly constructed principal routes Nowy Sacz - Kraków and Radom - Warszawa inthe future. The length of the future sections will be 198,487 kms. Slovenia plans to build the second railroadline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

The length of the principal lines is 2853,471 kms, respectively 3051,958 kms in the future. The length ofthe 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 future 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

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



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

POLAND

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

Character	Line section/Terminal/Marshalling yard
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, Žilina, Košice - Haniska pri Košiciach
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,

Co-financed by the European Union
Connecting Europe Facility

HUNGARY (GYSEV)

Character	
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	
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 / shunting yards	Ljubljana Zalog, Celje tovorna*, Koper tovorna*

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%	-		-

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	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%	-		-

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	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	-
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	-

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	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	-
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	-			ETCS L2 Baseline 2	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	-	-	-	-	-

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	3 kV DC	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%			
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	-	

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	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%		-	

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	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%	Bratislava ÚNS - SPaP	-	
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 - Michaany	Diversionary line	Košice - Michaany	47,9	2	3 kV DC	670	D4	100	15	15	70/400	PpC/1-SM	GB/1-VM		53,52%			
SLOVAKIA	Michaany - Slovenské Nové Mesto	Diversionary line	Michaany - 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 oftrain (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	Intermodal freight code (P/C)	International gauge	Multinational 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	D3	120	2,5	12	C21/340	GC	1-WM	GSM-R, ETCS L1, ETCS L2				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Őriszentpéter -Andráshida elágazás	33,400	1	25kV AC	650	D3	120	12	6	C21/340	GC	1-WM	GSM-R, ETCS L1, ETCS L2				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Andráshida elágazás - Zalaszentiván elágazás	3,400	1	25kV AC	650	D3	120	6	5	C21/340	GC	1-WM	GSM-R, ETCS L2				
HUNGARY (MÁV)	(Border SLO) - Őriszentpéter - Zalaszentiván	principal route	Zalaszentiván elágazás - Zalaszentiván	4,700	1	25kV AC	650	D3	120	5,1	3	C21/340	GC	1-WM	GSM-R, ETCS L2				
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	GSM-R, 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	GSM-R, 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	GSM-R, ETCS L1 2.2.2				
HUNGARY (MÁV)	Győr - Ferencváros	principal route	Budaörs - Kelenföld	5,600	2	25kV AC	750	D3	120	5,9	1,8	C21/340	GC	1-WM	GSM-R, ETCS L1 2.2.2-				
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	GSM-R, ETCS L2			Ferencváros / MÁV	
HUNGARY (MÁV)	Komárom -Border SK	principal route	Komárom -Border SK	2,800	1	25kV AC	750	C2	80	0	4,3	C21/340	GC	1-WM	-				

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght oftrain (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	Intermodal freightcode (P/C)	International gauge	Multinational gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
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	80	0	6,5	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Felsőzsolca - Mezőzombor	37,500	2	25kV AC	750	C3	120	5	2,1	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Mezőzombor - Sárospatak	31,500	1	25kV AC	700	D2	100	7,4	8	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Sárospatak - Sátoraljaújhely	9,600	1	25kV AC	700	C2	80	0	6,6	C21/340	GC	-	-				
HUNGARY (MÁV)	Felsőzsolca - Sátoraljaújhely - (Border SK)	diversionary route	Sátoraljaújhely - Border SK	0,500	1	-	350	C3	50	0	0	C21/340	GC	-	-				
HUNGARY (MÁV)	Hatvan A elágazás - Hatvan D elágazás	principal route	Hatvan A elágazás - Hatvan D elágazás	3,800	1	25kV AC	750	C2	40	5,5	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Hatvan B elágazás - Hatvan C elágazás	principal route	Hatvan B elágazás - Hatvan C elágazás	1,100	1	25kV AC	750	C2	40	2	0	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Hatvan - Újszász	principal route	Hatvan – Újszász	52,000	1	25kV AC	750	C2	100	3	2,3	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Újszász - Újszászi elágazás	principal route	Újszász - Újszászi elágazás	13,400	2	25kV AC	750	C2	120	1,4	1,5	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Újszászi elágazás - Paládicspuszta elágazás	principal route	Újszászi elágazás - Paládicspuszta elágazás	1,100	1	25kV AC	750	C2	40	0	1	C21/340	GC	1-WM	-				
HUNGARY (MÁV)	Szolnok A elágazás - Szolnok-Rendező	principal route	Szolnok A elágazás - Szolnok-Rendező	5,200	1	25kV AC	750	C2	80	0	4,9	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	
HUNGARY (MÁV)	Szolnok B elágazás - Szolnok-Rendező	principal route	Szolnok B elágazás - Szolnok-Rendező	3,600	1	25kV AC	750	C2	60	0	6,3	C21/340	GC	1-WM	-			Szolnok-Rendező / MÁV	

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	Intermodal freight code (P/C)	International gauge	Multinational gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
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	D3	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%			

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	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%			

SLOVENIA

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum lenght of train (m)	Line category regarding axle load	Maximum speed(km/h)	maximum gradient (%)		Loading gauge			ERTMS equipment (ETCS, GSM-R)	Share of freight traffic 2016 (%)	Service		
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge			Internal terminal keeper	Marshalling yard /keeper	Other service facilities /keeper
SLOVENIA	Koper - Hodoš	Principal line	Divača - Koper	48,000	1	3 kV DC	525	D3 - 22,5	75	20	25	P/C 90/410		G2 90/410	ETCS L1 Baseline 2.3.0.d GSM-R*	84,64%	Port of Koper - PORT Koper	Koper tovorna - SŽ-I	
SLOVENIA	Koper - Hodoš	Principal line	Ljubljana - Divača	103,700	2	3 kV DC	600	D3 - 22,5	80	12	8	P/C 82/412		G2 82/412	ETCS L1 Baseline 2.3.0.d GSM-R*	71,64%			
SLOVENIA	Koper - Hodoš	Principal line	Zidani Most - Ljubljana	63,900	2	3 kV DC	570	D3 - 22,5	80	4	1	P/C 99/429		G2 99/429	ETCS L1 Baseline 2.3.0.d GSM-R*	48,32%	Ljubljana Moste - SŽ FT	Ljubljana Zalog - SŽ-I	
SLOVENIA	Koper - Hodoš	Principal line	Zidani Most - Pragersko	73,200	2	3 kV DC	597	D3 D4 – 22,5 (except station Pragersko)	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 80/410		G2 80/410	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	740	D4 - 22,5	100	10	11	P/C 80/410		G2 80/410	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	14	13	P/C 50/370		G2 60/380	GSM-R*	11,03%			Revoz Novo mesto - privat

2.2 Connection with Other Corridors

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

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

- RFC 5 is named as the Baltic – Adriatic Rail Freight Corridor
- RFC 6 is named as the Mediterranean Rail Freight Corridor
- RFC 7 is named as the Orient/East – Mediterranean Rail Freight Corridor
- RFC 8 is named as the North Sea – Baltic Rail Freight Corridor
- RFC 9 is named as the Rhine-Danube
- RFC 10 is named as the Alpine – Western Balkan Rail Freight Corridor
- RFC 11 is named as the Amber Rail Freight Corridor

We have to note that RFC Amber is currently not corresponding to the routing of any Core Network Corridor but a transformation to the ETCs is foreseen with the revision of the TEN-T and the RFC Regulations.

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

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 - Rákoselágazás	MÁV	RFC7,	2,3
Rákos elágazás - Szob - (Border SK)	MÁV	RFC7,	65,7
Komárom - Border SK	MÁV	RFC7,	2,8

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, RFC 9,	17,2
Pinnye - Fertőszentmiklós*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, RFC 9,	6,9
Fertőszentmiklós - Petőháza*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, RFC 9,	2,2
Petőháza - Győr*	DB Netz, SŽDC, ŽSR, ÖBB infra, SŽ-I, GYSEV, MÁV, VPE, OSE, NRIC, CFR	RFC 7, RFC 9,	58,1

SLOVENIA

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

2.3 Terminals

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

2.4 Bottlenecks

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

We generally divide bottlenecks into the following categories:

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

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

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

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

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: "Work on the railway lines no. 96, 105 Tarnów - Leluchów/Krynica" The implementation of the comprehensive investment project depends on the availability of funds	potentially 2030	300	ERDF 2021-2027 or Cohesion Fund 2021-2027
Poland	Muszyna - Nowy Sącz	Muszyna - Nowy Sącz	one track line, low axle load, low max train lenght, low speed				
Poland	Nowy Sącz - Tarnów	Nowy Sącz - Tarnów	section with one track, low axle load, low max train lenght, low speed				
Poland	Podłęże - Podłęże R201	Podłęże - Podłęże R201	low max train lenght	Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network	potentially 2030	**155,6**	**CEF 2021-2027**
Poland	Podłęże - Podłęże R101	Podłęże - Podłęże R101	low max train lenght				
Poland	Podłęże R 101 - Podłęże R 201	Podłęże R 101 - Podłęże R 201	low max train lenght				
Poland	Podłęże R 201 - Raciborowice	Podłęże R 201 - Raciborowice	low axle load, low max train lenght, low speed				
Poland	Raciborowice - Tunel	Raciborowice - Tunel	low max train lenght, low speed				

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	Tunel - Radom	Tunel - Radom	low max train lenght, low speed	Projects: 1) "Works on railway line no. 8 on section SkarżyskoKamienna – Kielce – Kozłów" Project will improve the technical parameters. 1) " Work on the railway line no. 8 on the Radom - Skarżysko Kamienna section" The implementation of the comprehensive investment project depends on the availability of funds	1) potentially 2030 2) potentially 2030	1) 555 2) -	1) Cohesion-Fund 2021-20272)-
Poland	Radom - Dęblin	Radom - Dęblin	low max train lenght, low speed	Project: "Work on the lines 22, 25 and 26 on the Koluszki - Tomaszów Maz. - Radom – Łuków section" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	-	-
Poland	Dęblin - Łuków	Dęblin - Łuków	low max train lenght, low speed			-	-
Poland	Podłęże R 101 - Kraków Prokocim Towarowy	Podłęże R 101 - Gaj	low axle load, low max train lenght, low speed	Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network	potentially 2030	155,6	CEF 2021-2027
Poland	Kraków Prokocim Towarowy - Oświęcim (OwC)	Kraków Prokocim Towarowy - Oświęcim (OwC)	low axle load, low max train lenght, low speed	1) Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network 2) Project: "Work on the railway line no. 94 on the Skawina – Oświęcim section" The implementation of the comprehensive investment project depends on the availability of funds	1) potentially 2030 2) potentially 2030	183	1) CEF 2) Cohesion Fund 2021-2027

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	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.	2023	183	OPIE
Poland	Oświęcim (OwC1) - Mysłowice Brzezinka	Oświęcim (OwC1) - Mysłowice Brzezinka	low axle load, low max train lenght, low speed	Project: "Work on the railway line no. 138 on the Oświęcim – Mysłowice section" The implementation of the comprehensive investment project depends on the availability of funds	potentially 2030	178	1) Cohesion-Fund 2021-2027
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	90	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	90	OPIE
Poland	Jaworzno Szczakowa - Tunel	Jaworzno Szczakowa - Tunel	low axle load, low max train lenght, low speed	Project: "Work on the railway line no. 62 on the Tunel - Sosnowiec Główny section" The implementation of the comprehensive investment project depends on the availability of funds. Project will improve technical parameters	potentially 2030	112	Cohesion-Fund 2021-2027

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	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) 2023 2) 2023	1) 202 2) 171	1) OPIE 2) OPIE

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	Warszawa Główna Tow. - Warszawa Praga	Warszawa Główna Tow. - Warszawa Praga	low axle load, low max train lenght	Project: “Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątne/Świercze) section” The implementation of the comprehensive investment project depends on the availability of funds	potentially 2030	578	Cohesion-Fund 2021-2027
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 no. 139 on the Czechowice Dziedzice – Bielsko Biała – Żywiec - Zwardoń (national border)” The implementation of the comprehensive investment project depends on the availability of funds. Project will improve technical parameters	potentially 2030	666,7	Cohesion-Fund 2021-2027
Poland	Zwardoń - Bielsko-Biała	Zwardoń - Bielsko-Biała	section with one track, low axle load, low max train lenght, low speed, high gradient				
Poland	Bielsko-Biała - Czechowice-Dziedzice	Bielsko-Biała - Czechowice-Dziedzice	low axle load, low max train lenght, low speed,	Project: “Work on the railway line no. 139 on the Czechowice Dziedzice – Bielsko Biała – Żywiec - Zwardoń (national border)” The implementation of the comprehensive investment project depends on the availability of funds. Project will improve technical parameters	potentially 2030	666,7	Cohesion-Fund 2021-2027
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 improves technical condition and includes modernization of Oświęcim station.	2023	183	OPIE
Poland	Oświęcim - Oświęcim (OwC1)	Oświęcim - Oświęcim (OwC1)	low axle load, low max train lenght, low speed,				
Poland	Oświęcim - Oświęcim (OwC)	Oświęcim - Oświęcim (OwC)	low axle load, low max train lenght, low speed,				

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	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 meet TEN-T requirements.	2022	910	OPIE
Poland	Tłuszcz - Warszawa Praga	Krusze - Legionowo Piaski	low axle load, low max train lenght, low speed,	Project: “Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątne/Świercze) section” The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	578	Cohesion Fund 2021-2027

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	after 2023	-	TBD
		Prešov - Kysak	low speed, ERTMS not full deployment	modernisation of track	after 2023	-	TBD
		Košice - Kysak	ERTMS not full deployment	ERTMS	after 2023	1,622	TBD
Slovakia	Košice – Slovenské Nové Mesto	Košice - Michaľany	High gradient, no ERTMS	Modernisation of track/remote control	after 2023		TBD
		Slovenské Nové Mesto- Satoraljaújhely (state border)	No electrification, train speed very low, no ERTMS	Modernisation/electrification of track	after 2023		TBD
Slovakia	Čadca - Skalité	Čadca - Skalité	Hing gradient, no ERTMS	Modernisation	after 2023		TBD
Slovakia	Node Bratislava	Low speed allowed among Bratislava´s stations	Geographical conditions	Feasibility study NODE Bratislava	after 2023		EU funds/state budget

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	2021	4.6	EU and Hungarian budget
Hungary	Győr - Ferencváros	Budaörs - Kelenföld	Max. axle load < 22.5t	Capacity increase on the section Budaörs–Kelenföld (4 tracks)	2026	Not known. Licensed plans will be available in the first half of 2022.	-
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	Max. speed < 100km/h Max. axle load < 22.5t	Capacity increase on the section Kelenföld–Ferencváros (3 tracks, partially 4)	2026	Not know. Under a call for tenders for construction.	-
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	-	Upgrade of the Budapest South Railway Bridge	2022	114,2	EU and Hungarian budget
Hungary	Győr - Ferencváros	Győr - Kelenföld	ETCS baseline is not interoperable	On the Kelenföld - Hegyeshalom (oh) section, the upgrade of ETCS L1 is underway, in the framework of which Baseline will be upgraded to version 3.6.0, which will ensure interoperability.	2023	19,4	Hungarian budget
Hungary	Győr - Ferencváros	Kelenföld - Ferencváros	ETCS is not deployed	Deployment of ETCS L2 on the Ferencváros - Székesfehérvár railway line	2021	15.9	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	Ferencváros - Kelebia - (Border SRB)	Ferencváros - Soroksár	ETCS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2024	-	Hungarian budget

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	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	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	Capacity increase on the section Kőbánya felső–Rákos–Rákosliget	2027	Not known yet. Licensed plans will be available in the first half of 2022.	-
Hungary	Rákos elágazás - Rákospalota-Újpest	Rákos elágazás - Rákospalota-Újpest	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Rákospalota-Újpest – Border SK	Rákospalota-Újpest – Border SK	ERTMS is not deployed.	-	-	-	-
Hungary	Rákospalota-Újpest - Border SK	Rákospalota-Újpest - Border SK	Max. axle load < 22.5t ERTMS is not deployed	Development of the section Budapest-Nyugati–Vác	2025	Not known	Hungarian budget
Hungary MÁV	Rákospalota-Újpest – Border SK	Vác – Border SK	Max. axle load < 22.5t				
Hungary	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	Capacity increase on the section Kőbánya felső - Rákos - Rákosliget	2027		-
Hungary	Kőbánya felső -Rákos	Kőbánya felső - Rákos	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	2027	-	-

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	Rákos - Felsőzsolca	Rákos - Hatvan	ETCS is not deployed	Reconstruction works of the Rákos - Hatvan railway line and the deployment of ETCS L2	2022	672.6	EU and Hungarian budget
Hungary	Rákos - Felsőzsolca	Hatvan - Füzesabony	Max. axle load < 22.5t ETCS is not deployed	Reconstruction of and ETCS deployment on the section Hatvan „A" elágazás – Füzesabony	2027	Not known. A public procurement for the preparation of licensed plans has been announced.	-
Hungary MÁV	Rákos - Felsőzsolca	Füzesabony - 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	2023	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	2023	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	2023	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)	Sátoraljaújhely - Border SK	Max. speed < 100km/h Track is not electrified	-	-	-	-

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	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	2023	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	2023	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	2023	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	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 B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-

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	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 D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
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	2022	20.0	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 - 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	2023	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	2023	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	-	-	-	-

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	-	86	-
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	-

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	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	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	-	-	-

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	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-Csorna	PetCsornaCsorna	single track line; Max. axle load <22.5t; atleast hourly regular interval commuter trains; every two hours Intercity trains; noETCS	Modernisation, upgrade of railway infrastructure, construction on 2nd track	n/a	n/a	n/a
Hungary	Csorna - 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	-	229	-

SLOVENIA

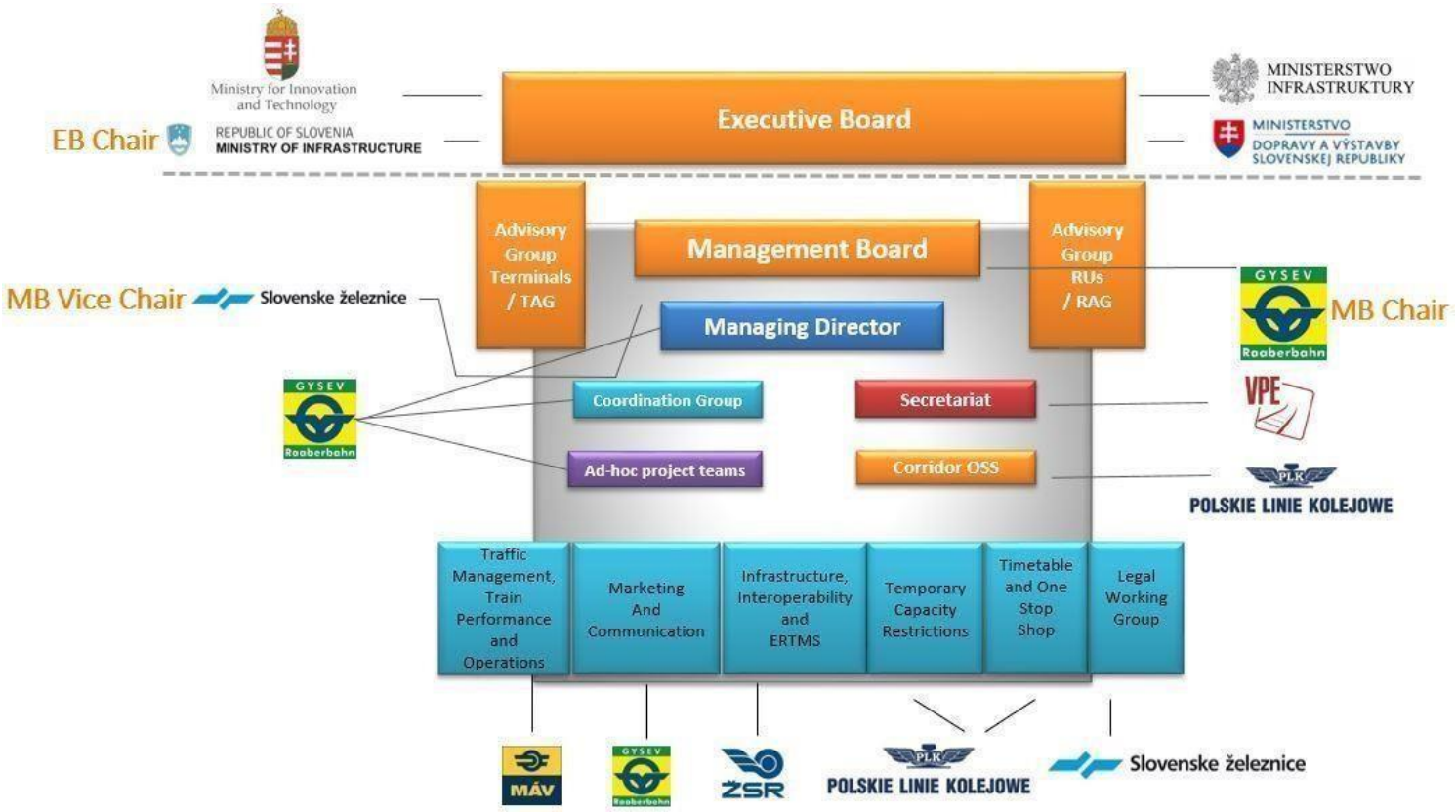
Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovenia	section Zidani Most - Pragersko	section Zidani Most - Pragersko	Higher category (C3 to D4)	Modernisation, upgrade of railway 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	2026	-	EU and Slovenian budget
Slovenia	section Ljubljana - Zidani Most	section Ljubljana - Zidani Most	Signaling, longer station tracks,	Modernisation, upgrade of railway infrastructure	after 2027	-	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	2025	-	EU and Slovenian budget
Slovenia	Station Pragersko	Station Pragersko	Modernisation, upgrade of railway station Pragersko. Creation of siding, passing tracks, longer station tracks, catenary system, …	Modernisation, upgrade of railway infrastructure	2023		EU and Slovenian budget

2.5 Governance of RFC Amber

2.5.1 Regulation requirements

The RFC Regulation defines the corridor governance structure on two levels. The establishment of the RFC Amber organizational structure was a crucial measure for creating the corridor:**The Executive Board**, which is the highest level body assigned to the corridor.

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

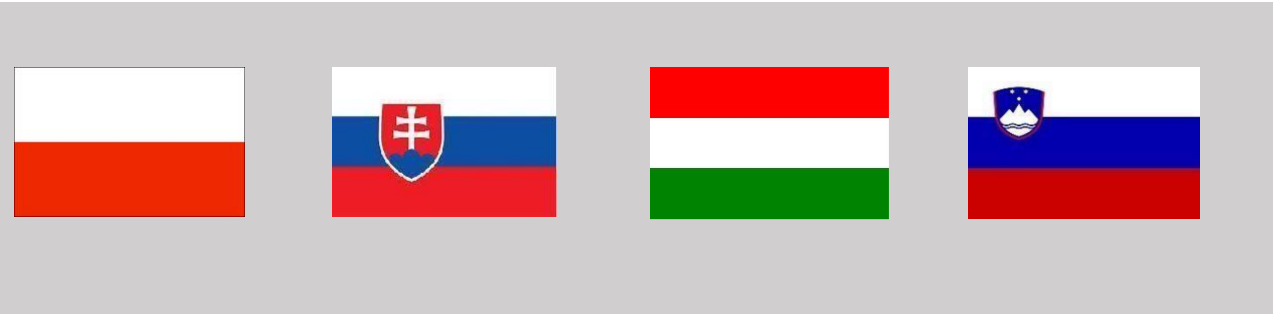


The Executive Board (EB)

The Executive Board of RFC Amber was established with the signature of the establishing Memorandum of Understanding on 5 December 2017 by the Ministers in charge of transport or of infrastructure in the involved countries. The Executive Board is 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 RFC Regulation. The MB makes its decisions based on mutual consent. The participation of each IM and AB is obligatory.

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

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 RFC Regulation, to maximize the benefits of cooperation and to agree on an appropriate governance structure for the MB of RFC Amber. The first official meeting of the MB took place on 15-16 June 2017 in Ljubljana.
The MB members of RFC Amber, based on the number of activities and the volume of tasks for the timely corridor establishment, decided, that the RFC Amber will be formed without any legal entity and corridor seat. The decision of possibly forming a legal structure (e.g. EEIG) on RFC Amber was examined withinthe frame of the period 2018-2020, given that it was also undertaken within the frame of the Programme Support Action project, a co-financing tool for the RFCs under the Connecting Europe Facility. RFC Amber be a beneficiary of this fund and be eligible for co-funding from 27 September 2017 until 31 December 2020 (extended to 30 September 2021).
For the sake of corridor establishment and considering the volume and the types of tasks, the MB decided to set up also other corridor bodies (e.g. Advisory Groups, C-OSS office) as well as the Coordination Group, a Secretariat and six Working Groups to support its work.
The organizational structure of the Corridor is laid down in the Internal Rules and Procedures of RFC Amber.

The Managing Director (MD)

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

Chairperson and the Members of the Management Board, the leaders of the RFC Amber Working Groups and with the Spokesperson of the Railway and Terminal Advisory Groups (RAG/TAG).

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

Advisory Groups (AGs)

On 12 December 2017, the MB of RFC Amber formally approved the establishing templates for the set-up of the RFC Amber **Railway Undertaking Advisory Group (RAG)** and the **Managers and Owners of the Terminals Advisory Group (TAG).** The official establishment of these two groups was achieved on 23 May 2018 at the Terminal of Brzesko in Poland. With this activity, the MB fulfilled the requirements of article 8.7 and 8.8 of RFC Regulation.

Prior to the official establishment of the Advisory Groups, the Parties held National Information Days for their customers (RUs and Terminals) where they already had the chance to give opinion on the corrdior's draft route proposal, and their comments were taken into account and incorporated to the documents of RFC Amber.

The voice of customers is taken into account via the Terminal Managers and the Railway Undertakings Advisory Groups. Participation in Advisory Groups is on a voluntary basis, the joining parties have the right to leave the groups at any time and there is always room to join for interested RUs/ Terminals/ Authorised Applicants. Advisory Groups members have a dedicated area in the RFC Amber website, where all the materials under consultation are available.

The Letters of Intent establishing the Advisory Groups and the Rules of Consultation forms an annex to the Implementation Plan. The Rules of Consultation lay down the principles for organisation and communication between the Management Board and the Advisory Groups. The governance of the internal functioning of the Advisory Groups and the organisation of their further meetings are not the task of the Management Board, it shall be defined by the AGs.

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

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

If the MB and the Advisory Group are not able to find a mutually acceptable solution the MB may refer the matter to the Executive Board of the RFC Amber. The Executive Board decides on the substance of the

problem between interested parties and informs involved parties about its opinion. In each case the MB issues a final decision.

Railway Undertaking Advisory Group (RAG)

The RAG represents a platform for railway undertakings to facilitate the exchange of information, recommendations and mutual understanding about technical and operational issues of rail operators on the RFC Amber with the MB.

At the kick-off event of 23 May 2018, the RUs highlighted the most important priorities which shall be in the focus of the Management Board.

It was mentioned that many corridors offer PaPs which are not fitting to the market needs. It was advised to the MB to make consultation with the customers before offering any PaPs. Furthermore, the MB (and its IMs) was encouraged to lobby at their national governments for the implementation of the TEN-T minimum infrastructure requirements, such as electrification, line speed of 100 km/h, axle load of 225 kN, train length of 740 meters and ERTMS deployment till 2030.

There are always problems in Europe with each corridor concerning the harmonization of TCRs. It was also mentioned that lately announced and non-announced TCRs shall be avoided as much as possible in the future.

On 18 September 2019 RFC Amber held its grand Opening in Koper, emphasizing the importance of the corridor for the development of international rail freight in Central-Eastern Europe.

The RUs were involved into the preparation process of the Bottlenck Study which was dealt with the identification of infrastructural, operational, capacity and administrative bottlenecks, referred to in Chapters, 6.3.2 and 6.4.

Managers and Owners of the Terminals Advisory Group (TAG)

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

1.1.1 Internal cooperation structure

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

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

The RFC Amber Project Management team designated by GYSEV covered the overall management of the CEF PSA Grant Agreement (No. INEA/CEF/TRAN/M2016/PSARFC11: Establishment and development of the "Amber" rail freight corridor (RFC Amber) - action number 2016-PSA-RFC11).In particular the Project Management activity included 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 was undertaken by the mandated Coordinator for the conclusion andmanagement of the Grant Agreement (action number 2016-PSA-RFC11), which was GYSEV. There were 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 originally ran from 27/09/2017 until 31/12/2020 (extended till 30/09/2021). Basically, the set- up and run of the RFC Amber is co-funded along with the necessary activities for the implementation. Besides that, a Study examining all types of bottlenecks (for ex. infrastructural, operational, administrative) was carried out.

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

Coordination Group (CG)

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

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

- elaborates and monitors the Action Plan (see more under point 1.4.) with the short-term and long-term actions to be tackled by the Executive Board/ Ministries, Management Board/ Infrastructure Managers and Allocation Body, RAG-TAG/ RUs
- ensures a high-level general follow-up and coordination of the activities defined by the MB,
- searches for compromises on issues that need consensual support by the MB,
- provides support for the Management Board for any issue which is not in the scope of the working groups;
- prepares the issues to be discussed and decisions to be taken for the subsequent Management Board meeting
- together with the Secretariat advises and supervises the work of the Working Groups;

- ensures an efficient communication flow between the RFC members, acting as contact point between national and corridor level;
- ensures that the Corridor Information Document (CID Book including the Implementation Plan as an Annex) is prepared according to the agreed timeline.

The Coordination Group organizes personal meetings and videoconference meetings when needed.

The Leader of the Coordination Group is the Managing Director.

Secretariat

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

Secretariat is in charge of the following tasks:

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

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

Working Groups

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

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

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

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 were 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 (in accordance with the key findings of the Bottleneck Study);
- collect and regularly update the infrastructure parameters constituting the RFC Amber interoperability;
- analyze the outcomes of the Transport Market Study in order to improve the quality of thecorridor;
- 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 trafficmanagement;
- 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 capacityallocation;
- 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 RFC Amber;
- exchange of crucial information between IMs and AB on RFC Amber (also about TCRs on the neighbouring RFCs);
- overview of all planned TCRs (both on the principle and diversionary corridor lines as well as on main national lines);
- adaption of corridor traffic plans in cooperation with the WG TT & OSS (in accordance with agreed TCRs);
- adequate handling of new or modified TCRs (joint review with the WG TT & OSS of the availability of capacity as well as joint consent on a timeframe for developing and offering alternative timetables).

A representative from PKP PLK leads this Working Group.

Marketing WG

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 GYSEV leads this Working Group.

Legal WG

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

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

Ad hoc Working Groups

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

Corridor-One Stop Shop (C-OSS)

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

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

- establishment and operation of the C-OSS for application for infrastructure capacity;
- coordination of capacity offer between participating Infrastructure Managers and Allocation Bodies mainly through WG Timetable and OSS;
- publication of dedicated capacity (Pre-arranged train paths (PaPs), Reserve Capacity and, if applicable, possible future capacity products that may bedeveloped);
- 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.

2.6 EU level cooperation

The RFC Regulation has enabled the legal framework for the development and significant progress of Rail Freight Corridors as well as conditions for effective coordination between Freight Corridors, National Ministries and European Commission (EC). Such of activities are carried out on different levels.

2.6.1 Cooperation with other Rail Freight Corridors

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

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

2.6.2 Coordination at EU-level

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

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

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

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

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

3 Market analysis Study

3.1 Introductory remarks

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

Increasing requirements on quality and availability of rail freight services led to the intention to establish the new European rail freight corridor Amber. The corridor establishment brought the connection between tttAdriatic 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 RFC Amber 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 was developed based on acquisition, processing and subsequent evaluation of technical, technological, transport and economic indicators obtained from various sources.

3.2 Objective of the Transport Market Study

The main objective of the TMS is was 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 could evaluate the current state-of-play, perspective, prognosis and opportunities of the corridor.

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

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

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

3.3 Methodology of work and methods of investigation

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

Table 1: Statistical and analytical indicators monitored in TMS

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

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

3.3.1 Material used in TMS elaboration

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

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

3.3.2 Methods used in TMS elaboration

The individual results of TMS of the RFC Amber were worked out using the following methods:

- method of investigating written sources – used for selecting appropriate literature for processing the theoretical and legislative part of TMS,
- method of scientific abstraction – in examining the basic theoretical and legislative basis for establishment of the European freight corridors,
- method of information gathering and processing – used for information collection and its subsequent processing,
- benchmarking – in comparison of some transport, technical andstatistical data,
- method of analysis – in processing and searching required transport and technical statistical data,
- method of graphic representation – used for graphic and visual layout of acquired and processed statistical data and other results of the study,
- method of comparative analysis – comparison in analytical part,
- method of synthesis – for summarizing information and data obtained,
- method of introduction and conclusion – used in all parts of TMS, in creating logical judgements based on theoretical, legislative and empirical knowledge,
- brainstorming – consultations with railway professionals and experts,
- methods of statistical analysis – used in researching and processing required transport, technical and economical statistic data,
- prognostic method – used in development of TMS for prognoses and forecast scenarios.

3.4 Characteristics of RFC Amber

3.4.1 RFC Amber basic structure

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

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

Member states: Slovenia, Hungary, Slovakia, Poland

Date of putting RFC Amber into operation:

14.01.2019

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

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

Graphical representation of RFC Amber

3.4.2 Analysis of capacity and bottlenecks

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

3.5 Economic and transport analysis of RFC Amber

Economic analysis

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

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

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

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

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

Analysis of transport and traffic indicators

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

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

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

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

3.6 Prognosis of transport performance development

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

Bases for forecast:

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

Forecast risks:

1. Economic cycle – recession, period of crisis during forecasted period.
2. Inaccuracy of provided data.
3. Insufficient interval of data provided.
4. Low level of investment in railway infrastructure – inadequate condition of railway infrastructure required by customers (e.g. capacity, frequent possessions).
5. Change in transport legislative measures, for example charging policy.
6. Significant shift of transport performances between the modes of transport.

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

Arguments used within the forecast:

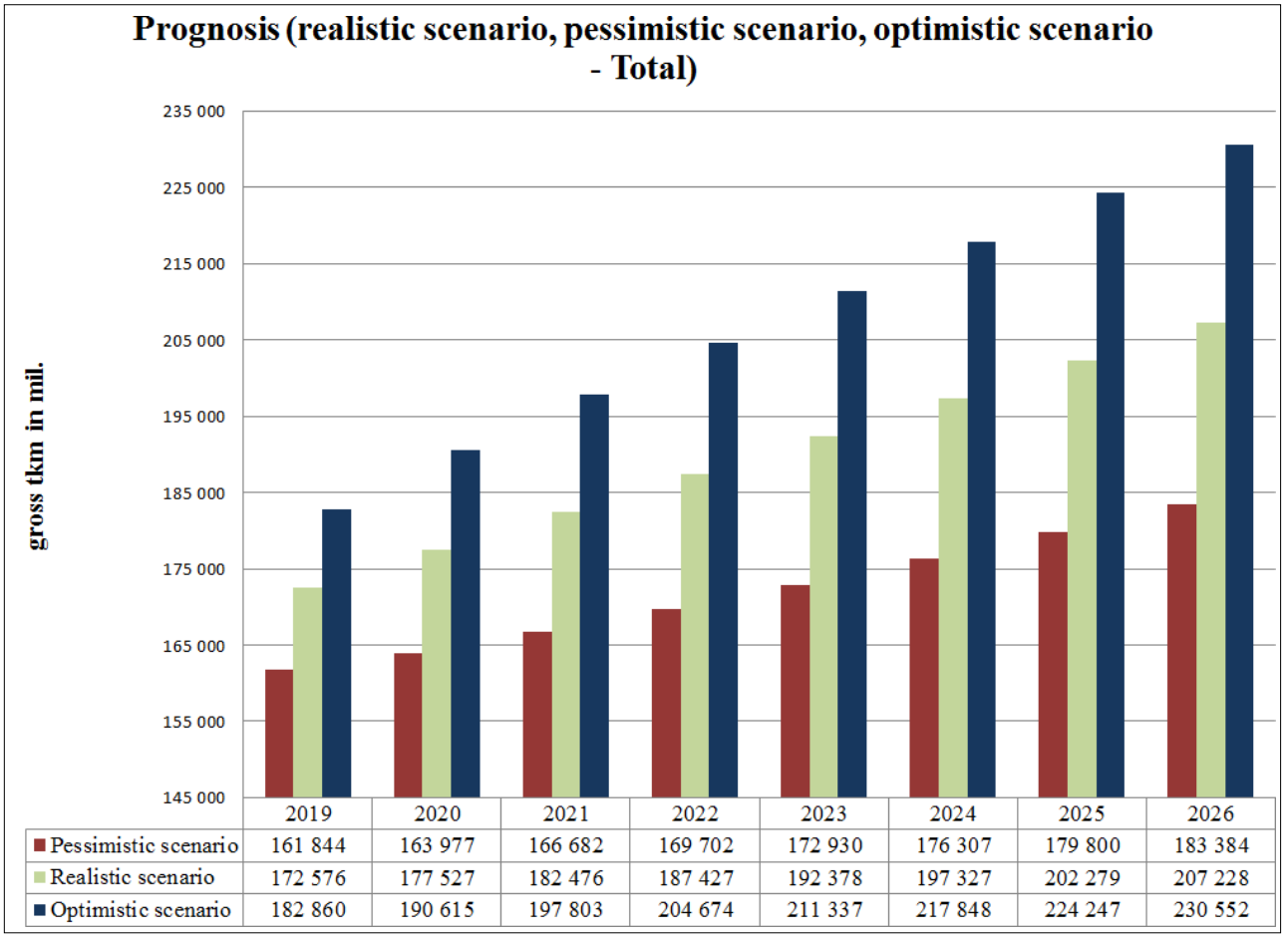
Target date Required. The data point for which you want to predict a value. Target date can be date/time or numeric – the period 2019-2026.

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

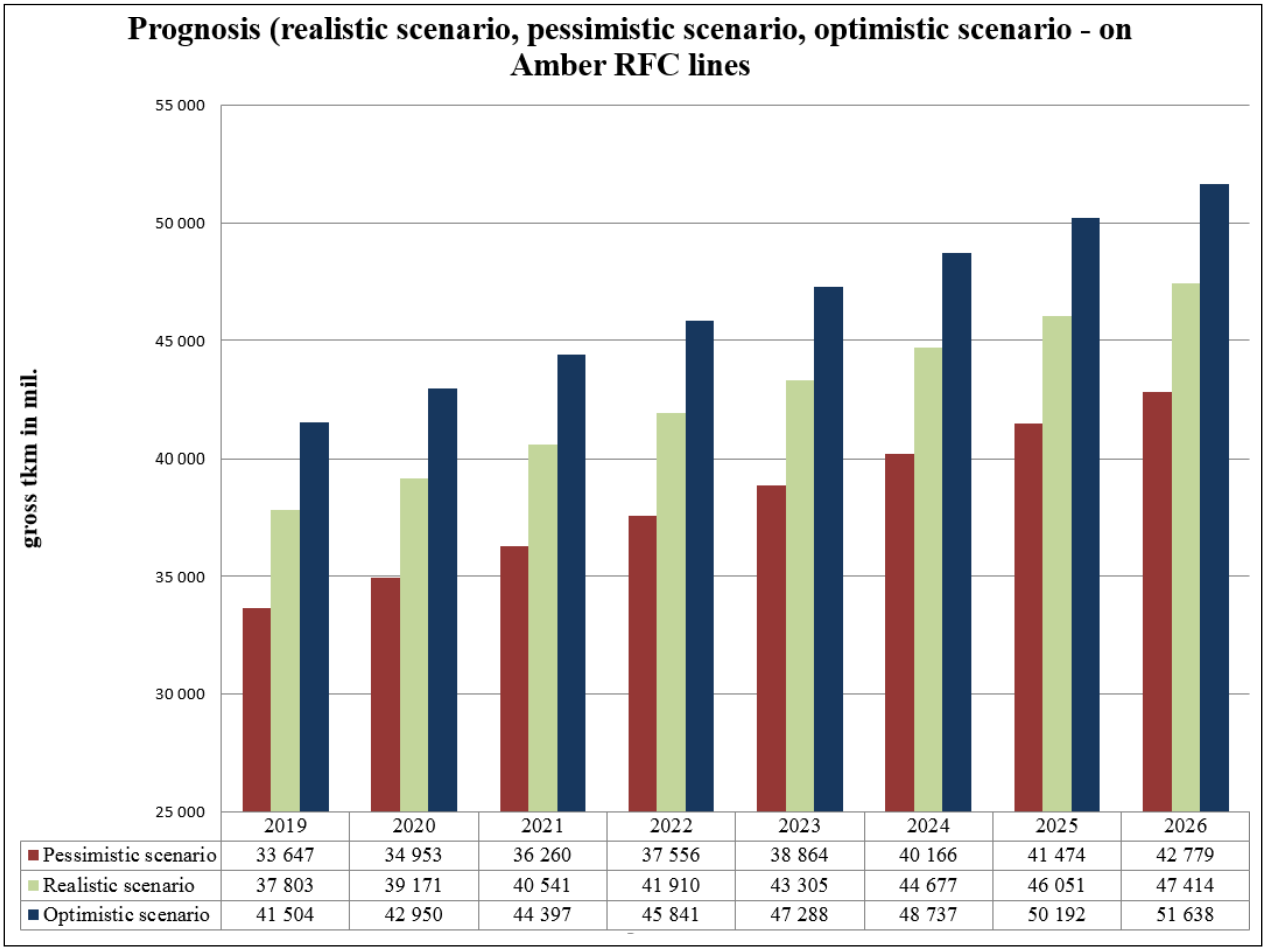
Timeline Required. The independent array or range of numeric data. The dates in the timeline must have a consistent step between them and can't be zero – the period 2015-2017.

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

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



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



	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

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

- increase in transport performances in the rail freight transport system,
- greater increase in rail freight transport performances on the lines of the RFC Amber,
- general increase in rail passenger transport performances, (total: gross tkm, train-km),
- increase in transport performances and resulting savings in social costs generated bytransport,
- increased demands on capacity and technical parameters of lines of the RFC Amber,
- requirements for modernization, reconstruction and optimization of the RFC Amber railway infrastructure and related rail, road, water and intermodal infrastructure,
- higher quality of communication and information technologies required,
- pressure on higher reliability of the rail system,
- requirement to meet the technical specifications for interoperability in rail passenger and freight transport,
- increase in international rail freight transport performances by approximately 3 – 6 % peryear,
- 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.

It is important to add that the above mentioned trends were forecasted before the outbreak of the COVID-19. Although the Although the COVID-19 pandemic put (and continues to put) a strong economic burden on rail freight, we can note positively that rail freight showed a high level of resilience even under the adverse conditions of the pandemic. Even along RFC Amber freight trains continued to cross borders relatively smoothly, in stark contrast to problems faced by other modes. These criteria might support the existence of the above-mentioned trends as well.

3.7 Transport potential of selected countries

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

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

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

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

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

3.8 Graphical representation of RFC Amber – Proposal of corridor routing

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

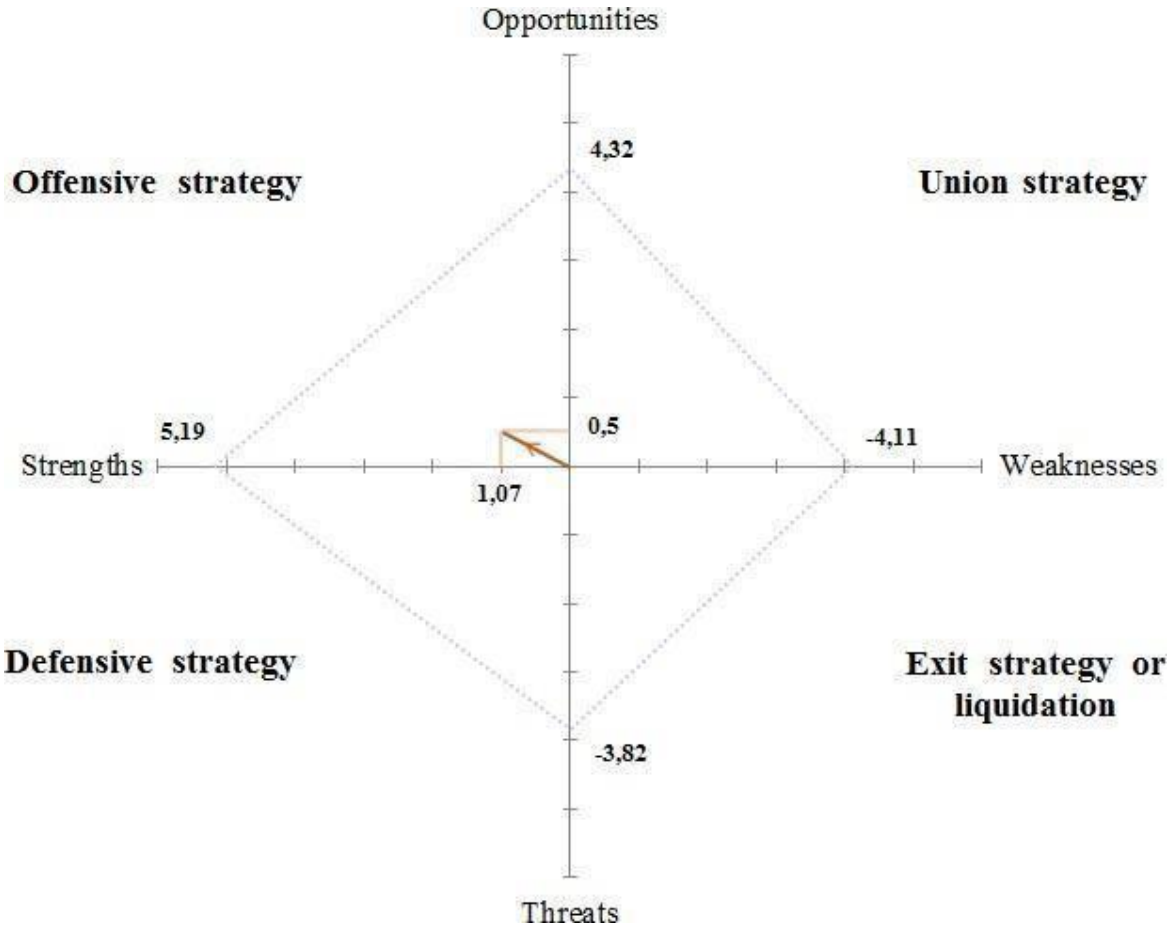
Based on the routing of the RFC Amber, we can state the following facts:

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

3.9 SWOT analysis of RFC Amber

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

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



**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 RFC Amber:

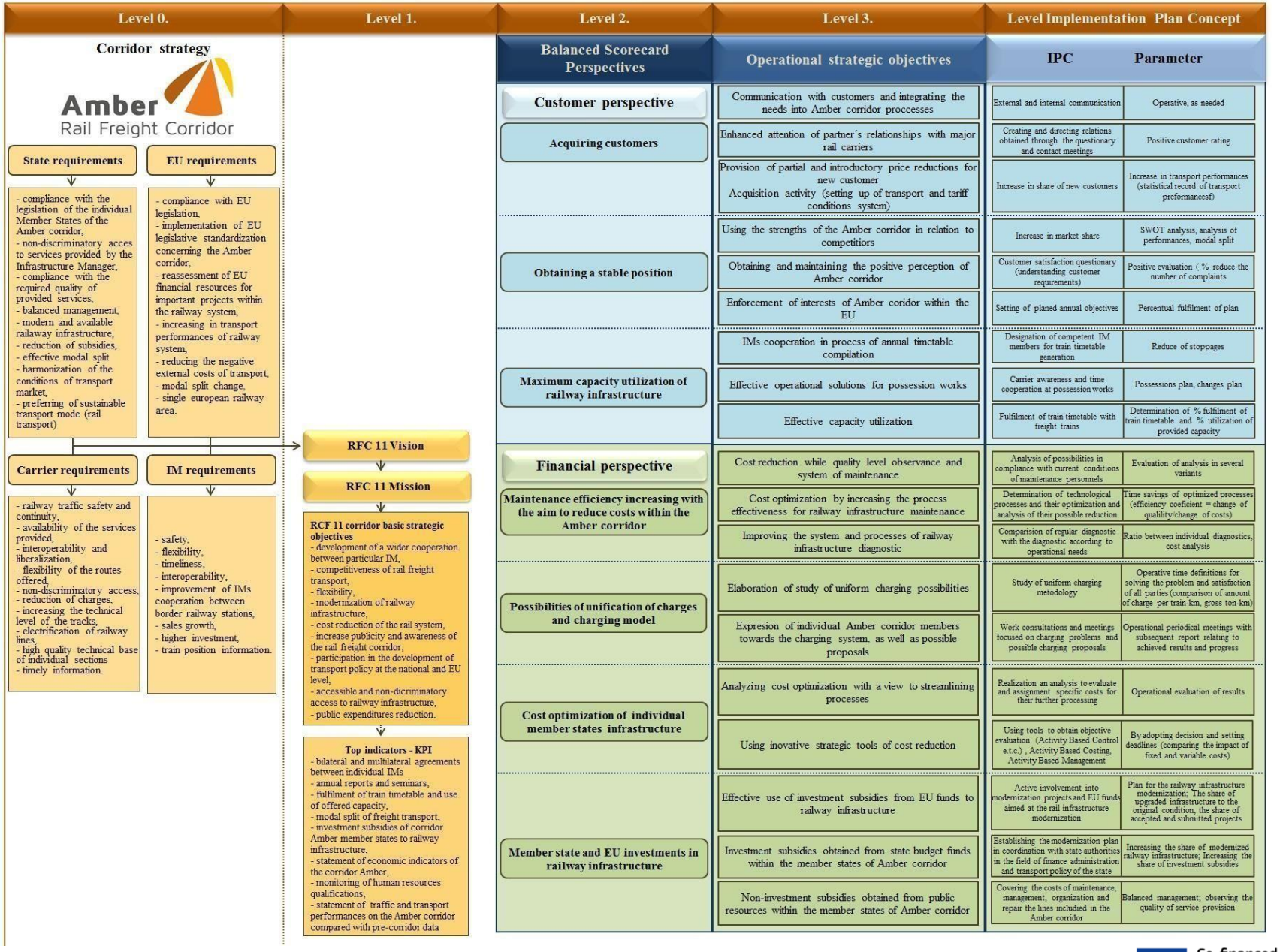
- increase the reliability of rail system services,

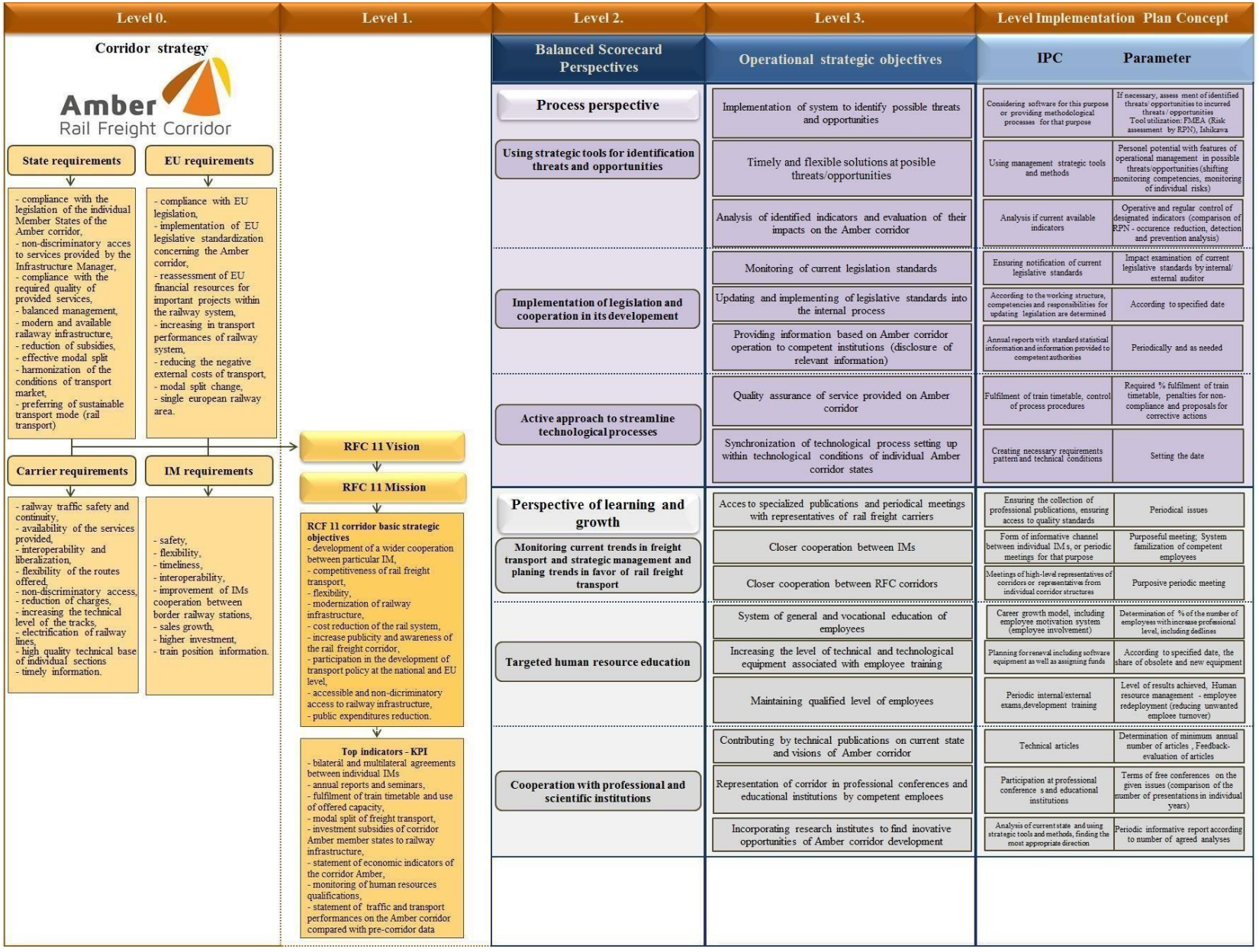
- developing the high-quality and available services of C-OSS,
- developing the cooperation with other RFC corridors,
- support for intermodal transport services,
- reducing the charges for local service trains,
- in operative transport management, to proceed to prioritize international freight trains,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

3.10 Strategic map of RFC Amber

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

Figure 2: Map Balanced Score Card of RFC Amber





Co-financed by the European Union
Connecting Europe Facility

3.11 RFC Amber marketing strategy

RFC Amber mission: Continuously develop the existing and build new quality servicesfor 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 effectivelywith terminals and meet the expectations of the end-customers. Cooperate with EU authorities, corridor member states' authorities, intermodal operators and other RFC corridors. Create full-value mutual business relationships with major suppliers. Contribute to railwayinfrastructure development in line with customer needs and creation of competitive environment in the European and international transport system.

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

Requirements: RFC Amber brand evaluation

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

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

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

Table 2: Draft for marketing communication application

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

3.12 Conclusions and recommendations

On the basis of the economic, transport, traffic and technical analyses carried out, the comparison of modal split and other important qualitative and quantitative transport indicators, we can conclude that the establishment of the RFC Amber is, from socio-economic point of view, justified and necessary for the development of international rail freight services and also facilitating shift to rail.
The routing and geographical location of the RFC Amber provide a sufficient transport potential within the corridor countries, the EU countries as well as new transport opportunities from/to Serbia and other countries outside the EU examined. In the TMS the routing creates the suitable conditions for corridor extension which is conditioned, in particular, by transport requirements. The analyses of assessing the transport opportunities showed an increase in demand for transport services, particularly in international trade, with an upward trend in the following period. The research showed the competitiveness of international rail freight services on the RFC Amber lines at the time of transport and charging, compared to road freight transport.
Rail freight is showing a high level of resilience even under the special circumstances of the pandemic. The strong efforts by all parties involved kept the wheels rolling and trains moving. This underlines the importance of measures improving the conditions for efficient and competitive rail freight operations. The further development of the Rail Freight Corridors, including RFC Amber, must be an important element of this.

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

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

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

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

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

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

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

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

4 List of Measures

4.1 Coordination of planned Temporary Capacity Restrictions

RFC Regulation, Article 12 “Coordination of works” deal withTemporary 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 thatwould 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 infrastructurenecessary to satisfy market needs. Because of strong customer demand to know in advance whichcapacity restrictions they will be confronted with, corridor TCRs have to be coordinated, taking intoaccount the interests of the IMs/AB and of the applicants.

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

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

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

4.2 Corridor-OSS

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

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
- RFC Regulation concerning a European network for competitive freight
- Framework for capacity allocation (FCA) on the Rail Freight Corridors –adopted by RFC Amber on 19th November 2018

Other documents

- RNE Guidelines for C-OSS concerning PaP and RCManagement
- 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 RFC Regulation

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

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

4.2.3 Tasks and organisation

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

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

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

4.3 Capacity Allocation Principles

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

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

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

Requests for capacity in the running timetable, other than RC, are considered as requests for tailor-made paths and are handled by the involved IMs/AB in accordance with concerning national rules. In case of appeal for assistance, the C-OSS provides support, if possible. The level of assistance by the C-OSS is determined on a case-by-case basis.
More details are provided in Chapter 4 – Procedures for Capacity and Traffic Management (part Capacity allocation).

4.4 Applicants

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

In order to use such a train path these applicants shall appoint a railway undertaking to conclude an agreement with the IMs/AB involved and in accordance with national rules of the IMs/AB involved.
More details are provided in Section 4 of the CID Book – Procedures for Capacity and Traffic Management (part Capacity allocation).

4.5 Traffic Management

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

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

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

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

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

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

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

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

4.6 Traffic Management in Event of Disturbance

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

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

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

4.6.1 Definition of disturbance

Disturbance is an incident or accident or any other occurrence that has a significant impact on the international freight traffic of RFC Amber.
In case of disturbance the affected IM should inform the neighbouring Ims as quickly as possible and indicate the proposed measures for the elimination of the effects of disturbance if needed.

4.6.2 Communication procedure

The main principle on which the communication procedure in case of disturbance is based is that the IM concerned is responsible for starting the communication; it must deliver the information as soon as possible through standard channels both to the concerned RUs on its own network and to the concerned neighbouring IMs.
In case of disturbance the responsible IM will send a message via an agreed communication channel (which can provide reliable information - if possible on harmonized basis e.g. TCCCom) to inform the neighbouring IM’s on the Corridor where the traffic will be affected. The initial message only gives information on the disturbance, its expected duration and possible trafficrestrictions.
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 messagesshould 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.

Steps of the communication flow:

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

4.7 Quality Evaluation

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

4.7.1 Performance Monitoring Report

The measurement of performance of rail freight transportation on RFC Amber lines is first of all an obligation stemming from the RFC 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 RFC Regulation), in order to assessthe overall performance of the RFC organization.

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

No	Business area	KPI (Source of data)	Timeframe	Recommend to MB (Y/N)	Entity in charge
5	Capacity mngmt	Number of conflicts (PCS)	At X-8	Y	C-OSS
6	Capacity mngmt	Volume of requested RC – km*days (PCS)	X+12	Y	C-OSS
7	Capacity mngmt	Volume of requested RC – dossiers (PCS)	X+12	Y (To be aligned with other RFCs)	C-OSS
8	Capacity mngmt	Average planned speed of PaPs (PCS)	X-10.5	Y (Common calculation methodology is there)	C-OSS
9	Operations**	Punctuality at origin (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
10	Operations	Punctuality at destination (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
11	Operations	Overall number of trains on the RFC (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
12	Operations	Delay reasons (TIS) The KPI is connected to Punctuality at origin and Punctuality at destination.	To be determined	Y	WG TM,TP&O
13	Market dev***	Overall number of trains per border (Ims' national tools)	In January after the timetable year concerned	Y	WG TM,TP&O
14	Market dev.	Ratio of the capacity allocated by the C-OSS and the total allocated capacity (PCS for the nominator; Ims' national tools for the denominator)	In December before the start of the timetable year	Y	WG TT/C-OSS C-OSS

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

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

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

The KPIs is produced, as appropriate, by C-OSS (supported by WG Timetabling & OSS) and by WG Traffic Management, Train Performance & Operations. The KPIs is yearly delivered to WG Marketing, which integrates them into the yearly activity and performance report, as requiredby article 19(2) of the RFC Regulation.

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

The Management Board has the right to establish RFC Amber related specific indicators in case of necessity.

4.7.2 User Satisfaction Survey

Knowing our customers' opinion is an essential interest of Rail Freight Corridors (RFCs) for further development. With this in mind Regulation (EU) No 913/2010 required RFCs to monitor user satisfaction on yearly basis and publish the main results of the survey.

For conducting research RNE created a common platform in 2014 embraced the cooperation of the RFCs. During the RFC Network February, 2020 the elaboration of a new system had arisen. Main orientations were the shortening and doing in house manner (without external company). The new survey was elaborated by RNE Network Assistant and RFC representatives in User Satisfaction WG, based on majority decisions. The new research launched in 2020, in the very year when RFC Amber joined to the research platform.

In the new system the target population did not change: the users of corridor lines (both having and not having corridor capacity). The CAWI type interviews were also kept: online survey has been conducted with the help of research tool Survio. However, the evaluation method, the structure of the questionnaire and the process of questioning underwent a radical transformation.

Very positive development, that all RFCs have joined the new research, also messaging for our partners that the European Rail Freight Corridors form one network, thus this common survey platform can provide us a European framework and a complex European view.

As an operating corridor RFC Amber has faced more practical issues, which influenced the most important areas for improvement: Temporary Capacity Restrictions, Infrastructure and Train Performance Management. Within this the change of importance of TCR activity is especially significant, where the item "information of works and possessions" was selected as a priority area by characteristically more respondents than a year before.

4.8 Corridor Information Document

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

The CID consists of the following sections:

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

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

The CID for the current timetabling year and the CID for the next timetabling year are continuously available on RFC Amber website.

5 Objectives and Performance on the Corridor

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

The steps needed to meet this requirement of the RFC 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 is 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 is measured by setting a threshold (30 minutes) up to which trains is considered as punctual and building up a percentage.

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

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

5.2 Capacity

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

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

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

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

Capacity related objectives

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

Interoperability objectives

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

Interoperability involves

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

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

As it is referred to in chapter 2.5.2 and chapter 6.4, RFC Amber worked on the elaboration of a detailed bottleneck study where the infrastructural, operational, administrative and capacity bottlenecks were analysed and corrective measures proposed by the Contractor. The main goal with such study is 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

RFC Amber's performance is monitored in terms of allocation process and train performance. Chapter 4.7.1 describes the full set of KPIs to be monitored by RFC Amber and the reasons why those KPIs were chosen. It also elaborates why the monitoring of KPIs matters for the RFCs and for what purpose this monitoring is done. The RNE guidelines „Key Performance Indicators of Rail Freight Corridors" will be entirely followed:

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

As regards the train performance defining of KPI's was only start after half a year of monitoring (was 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 sufficientvolume of traffic are key elements that must be checked before specific sections and specific trainsare chosen for measurement in the frame of Train Performance Management.

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

6 Investment plan

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

6.1 Capacity Management Plan

6.1.2 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 railfreight.

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 synchronized by the Ims/AB before handing over to the C-OSS. They already consider the available infrastructure capacity. Capacity of feeder/outflow and connecting sections to terminals is planned on demand by the Ims/AB on the basis of requests indicated to the C-OSS. Scheduling of this capacity also takes into account the existing condition of the infrastructure.

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

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

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

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

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

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

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

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

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

6.1.3 Plans for removal of bottlenecks

As it is referred to in chapter 2.5.2 and chapter 6.4, RFC Amber has received a grant from the European Commission under the Program Support Action for the action entitled Establishment and development of the "Amber" rail freight corridor with the action number 2016-PSA-RFC11, mainly aiming to support the set-up and further development of the corridor according to RFC Regulation.

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

The main goal with such study is 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 is available on https://rfc-amber.eu/downloads/grp/other_public_documents.

Co-financed by the European Union
Connecting Europe Facility

6.1.3.1 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€=4,50PLN May 2021)	Financial Sources
Poland	Muszyna (G.P.) - Muszyna	Muszyna (G.P.) - Muszyna	one track line, low axle load, low max train lenght, low speed	Project: "Work on the railway lines no. 96, 105 Tarnów - Leluchów/Krynica" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	**300**	ERDF 2021-2027 or Cohesion Fund 2021-2027
Poland	Muszyna - Nowy Sącz	Muszyna - Nowy Sącz	one track line, low axle load, low max train lenght, low speed				
Poland	Nowy Sącz - Tarnów	Nowy Sącz - Tarnów	section with one track, low axle load, low max train lenght, low speed				
Poland	Podłęże - PodłężeR 201	Podłęże - Podłęże R 201	low max train lenght	Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network	**potentially 2030**	**155,6**	**CEF 2021-2027**
Poland	Podłęże - PodłężeR 101	Podłęże - Podłęże R 101	low max train lenght				
Poland	Podłęże R 101 - Podłęże R 201	Podłęże R 101 - Podłęże R 201	low max train lenght				
Poland	Podłęże R 201 - Raciborowice	Podłęże R 201 - Raciborowice	low axle load, low max train lenght, low speed				
Poland	Raciborowice - Tunel	Raciborowice - Tunel	low max train lenght, low speed				

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	EndDate	Costs in mil. of Euro (1€=4,50PLN May 2021)	Financial Sources
Poland	Tunel - Radom	Tunel - Radom	low max train lenght, low speed	Projects: 2) "Works on railway line no. 8 on section SkarżyskoKamienna – Kielce – Kozłów" Project will improve the technical parameters. 3) " Work on the railway line no. 8 on the Radom - Skarżysko Kamienna section" The implementation of the comprehensive investment project depends on the availability of funds.	1) potentially 2030 2) potentially after 2030	1) 555 2) -	1) Cohesion Fund 2021-2027 2) -
Poland	Radom - Dęblin	Radom - Dęblin	low max train lenght, low speed	Project: "Work on the lines 22, 25 and 26 on the Koluszki - Tomaszów Maz. - Radom – Łuków section" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030		-
Poland	Dęblin - Łuków	Dęblin - Łuków	low max train lenght, low speed				-
Poland	Podłęże R 101 - Kraków Prokocim Towarowy	Podłęże R 101 - Gaj	low axle load, low max train lenght, low speed	Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network	potentially 2030	155,6	CEF 2021-2027
Poland	Kraków Prokocim Towarowy - Oświęcim (OwC)	Kraków Prokocim Towarowy - Oświęcim (OwC)	low axle load, low max train lenght, low speed	1) Project: Adaptation of the Krakow railway junction to the parameters of the TEN-T core network 2) Project: "Work on the railway line no. 94 on the Skawina – Oświęcim section" The implementation of the comprehensive investment project depends on the availability of funds.	1) potentially 2030 2) potentially 2030	1) 155,6 2) 311	1) CEF 2) Cohesion Fund 2021-2027
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 stationOświęcim.	2023	183	OPIE

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,50PLN May 2021)	Financial Sources
Poland	Oświęcim(OwC1) - Mysłowice Brzezinka	Oświęcim (OwC1) - Mysłowice Brzezinka	low axle load, low max trainlenght, low speed	Project: “Work on the railway line no. 138 on the Oświęcim – Mysłowice section” The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	178	1) Cohesion Fund 2021-2027
Poland	Mysłowice Brzezinka - Sosnowiec Jęzor	Mysłowice Brzezinka - Sosnowiec Jęzor	low axle load, low max trainlenght, 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 improves technical condition..	2022	90	OPIE
Poland	Sosnowiec Jęzor - Jaworzno Szczakowa	Sosnowiec Jęzor - Jaworzno Szczakowa	low axle load, low max trainlenght		2022		
Poland	Jaworzno Szczakowa - Tunel	Jaworzno Szczakowa - Tunel	low axle load, low max trainlenght, low speed	Project: “Work on the railway line no. 62 on the Tunel - Sosnowiec Główny section” The implementation of the comprehensive investment project depends on the availability of funds. Project will improve technical parameters.	potentially 2030	112	Cohesion Found 2021-2027
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) 2023 2) 2023	1) 202 2) 171	1) OPIE 2) OPIE
Poland	Warszawa Główna Tow. - Warszawa Praga	Warszawa Główna Tow. - Warszawa Praga	low axle load, low max trainlenght	Project: “Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątne/Świercze) section” The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	578	Cohesion Fund 2021-2027

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,50PLN May 2021)	Financial Sources
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 no. 139 on the Czechowice Dziedzice – Bielsko Biała – Żywiec - Zwardoń (national border)" The implementation of the comprehensive investment project depends on the availability of funds. Project will improve technical parameters.	potentially 2030	666,7	Cohesion Fund 2021-2027
Poland	Zwardoń - Bielsko-Biała	Zwardoń - Bielsko-Biała	section with one track, low axle load, low max train lenght, low speed, high gradient				
Poland	Bielsko-Biała - Czechowice-Dziedzice	Bielsko-Biała - Czechowice-Dziedzice	low axle load, low max train lenght, low speed,				
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 improves technical condition and includes modernization of Oświęcim station.	2023	183	OPIE
Poland	Oświęcim - Oświęcim (OwC1)	Oświęcim - Oświęcim(OwC1)	low axle load, low max train lenght, low speed,				
Poland	Oświęcim - Oświęcim (OwC)	Oświęcim - Oświęcim(OwC)	low axle load, low max train lenght, low speed,				
Poland	Dęblin - Tłuszcz	Dęblin - Pilawa	low speed	Project: "Work on the railway line No. 7 Warszawa WschodniaOsobowa – Dorohusk on the Warszawa – Otwock – Dęblin –Lublin section" Projects aim to improve parameters to meet TEN-T requirements.	2022	910	OPIE
Poland	Tłuszcz - Warszawa Praga	Krusze - Legionowo Piaski	low axle load, low max train lenght, low speed	Project: "Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątne/Świercze) section" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	578	Cohesion Fund 2021-2027

- section Łuków - Terespol is an overlapping section with RFC NorthSea-Baltic
- section Pilawa - Warszawa Główna Tow. is an overlapping section with RFC NorthSea-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 RFCBaltic-Adriatic

6.1.3.2 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	after 2023	-	TBD
		Prešov - Kysak	low speed, ERTMS not full deployment	modernisation of track	after 2023	-	TBD
		Košice - Kysak	ERTMS not full deployment	ERTMS	after 2023	1,622	TBD
Slovakia	Košice – Slovenské Nové Mesto	Košice - Michaľany	High gradient, no ERTMS	Modernisation of track/remote control	after 2023		TBD
		Slovenské Nové Mesto- Satoraljaújhely (state border)	No electrification, train speed very low, no ERTMS	Modernisation/electrification of track	after 2023		TBD
Slovakia	Čadca - Skalité	Čadca - Skalité	Hing gradient, no ERTMS	Modernisation	after 2023		TBD
Slovakia	Node Bratislava	Low speed allowed among Bratislava´s stations	Geographical conditions	Feasibility study NODE Bratislava	after 2023		EU funds/state budget

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

6.1.3.3 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	2021	4.6	EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Budaörs - Kelenföld	Max. axle load < 22.5t	Capacity increase on the section Budaörs–Kelenföld (4 tracks)	2026	Not known. Licensed plans will be available in the first half of 2022.	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	Max. speed < 100km/h Max. axle load < 22.5t	Capacity increase on the section Kelenföld–Ferencváros (3 tracks, partially 4)	2026	Not known. Under a call for tenders for construction.	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	-	Upgrade of the Budapest South Railway Bridge	2022	114,2	EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Győr - Kelenföld	ETCS baseline is not interoperable	On the Kelenföld - Hegyeshalom (oh) section, the upgrade of ETCS L1 is underway, in the framework of which Baseline will be upgraded to version 3.6.0, which will ensure interoperability.	2023	19,4	Hungarian budget
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	ETCS is not deployed	Deployment of ETCS L2 on the Ferencváros - Székesfehérvár railway line	2021	15.9	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	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

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	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	Kőbánya felső - Rákos elágazás	Kőbánya felső - Rákos elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	Capacity increase on the section Kőbánya felső–Rákos–Rákosliget	2027	Not known yet. Licensed plans will be available in the first half of 2022.	-
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	Rákospalota-Újpest – Border SK	Rákospalota-Újpest – Border SK	ERTMS is not deployed.	-	-	-	-
Hungary MÁV	Rákospalota-Újpest - Border SK	Rákospalota-Újpest - Border SK	Max. axle load < 22.5t ERTMS is not deployed	Development of the section Budapest-Nyugati–Vác	2025	Not known	Hungarian budget
Hungary MÁV	Rákospalota-Újpest – Border SK	Vác – Border SK	Max. axle load < 22.5t				
Hungary MÁV	Rákos - Rákos-elágazás	Rákos - Rákos-elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	Capacity increase on the section Kőbánya felső - Rákos - Rákosliget	2027		-
Hungary MÁV	Kőbánya felső -Rákos	Kőbánya felső -Rákos	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	Capacity increase on the section Kőbánya felső - Rákos - Rákosliget	2027		-

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	Rákos - Felsőzsolca	Rákos - Hatvan	ETCS is not deployed	Reconstruction works of the Rákos - Hatvan railway line and the deployment of ETCS L2	2022	672.6	EU and Hungarian budget
Hungary MÁV	Rákos - Felsőzsolca	Hatvan - Füzesabony	Max. axle load < 22.5t ETCS is not deployed	Reconstruction of and ETCS deployment on the section Hatvan „A" elágazás – Füzesabony	2027	Not known. A public procurement for the preparation of licensed plans has been announced.	-
Hungary MÁV	Rákos - Felsőzsolca	Füzesabony - 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	2023	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	2023	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	2023	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)	Sátoraljaújhely - Border SK	Max. speed < 100km/h Track is not electrified	-	-	-	-

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	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	2023	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	2023	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	2023	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	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 B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-

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	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 D elágazás - Szolnok-Rendező	Szolnok D elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
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	2022	20.0	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 - 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	2023	2.4	EU and Hungarian budget
Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	Max. axle load < 22.5t ETCS is not deployed	-	-	-	-

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	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2023	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 RFCMediterranean
- 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

6.1.3.4 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	86	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

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	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	54	n/a	n/a
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-Csorna**	**Petőháza-Csorna**	single track line; Max. axle load <22.5t; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS	Modernisation, uugrade of railway infrastructure, construction of 2nd track	n/a	n/a	n/a
Hungary / GYSEV	Csorna - 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	229	n/a

- section Sopron-Rendező - Győr* is an overlapping section with RFC Orient/East-Med and RFC Rhine-Danube

6.1.3.5 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	2026	n/a	EU and Slovenian budget
Slovenia	section Ljubljana –Zidani Most	section Ljubljana – Zidani Most	Signaling, longer station tracks,	Modernisation, upgrade of railway infrastructure	2027	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	2025	n/a	EU and Slovenian budget
Slovenia	Station Pragersko	Station Pragersko	Modernisation, upgrade of railway station Pragersko. Creation of siding, passing tracks, longer station tracks, catenary system.	Modernisation, upgrade of railway infrastructure	2023	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
- section Ljubljana is an overlapping section with RFC Baltic-Adriatic and RFC Mediterranean
- section in 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

6.2 List of investment projects

RFC Amber identified and collected a list of projects for the modernisation, upgrade and renewal of the railway infrastructure in accordance with the provisions of Art. 11 of RFC Regulation.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 indicatedin the list which are under realisation in order to show their importance for rail freight operations.

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

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	8	2023	80 - 120	22,5 / D3	740			
	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	na	160	22,5 / D3	740	3 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	-	-	-	-	-	-	-	3 kV AC		
planned	PL	PKP PLK S.A.	Tłuszcz - Warszawa Praga	Krusze	Legionowo Piaski	future diversionary	Increasing the capacity of the section Warszawa Wschodnia - Nasielsk (Kątne/Świercze)	11	2027	10	2031	t.b.a.	t.b.a.	t.b.a.	t.b.a.	t.b.a.	

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						
completed	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	2020	200	no changes	no changes	3 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	10	2022	12	2023	100-160	22,5/D3.	750	3 kV AC		
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	2	2023	10	2028	160	22,5/D3	750	3 kV AC	2	
ongoing	PL	PKP PLK S.A.	Tarnów - Podłęże	Tarnów	Podłęże	Principal	Construction of ERTMS/ETCS on TEN-T core network	1	2018	4Q4	2023	-	-	-	3 kV DC	2	
	PL	PKP PLK S.A.	Łuków - Terespol	Łuków	Terespol	Principal		1	2018	12	2023	-	-	-	3 kV AC	2	
ongoing	PL	PKP PLK S.A.	All lines and sections				Construction of GSM-R network infrastructure		2018	5	2023	n/a	n/a	n/a	n/a	n/a	n/a

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						
ongoing	Slovakia	ŽSR	Púchov – Považská Teplá	Púchov	Považská Teplá	principal	Reconstruction, modernization of track	9	2016	12	03/2021-1 line in operation 2022-2 lines operation	160	22,5/D4	According TEN-T	25 kV AC	ETCS LI	
ongoing	Slovakia	ŽSR	Bratislva Nové Mesto – Komárno	Bratislva Nové Mesto	Dunajská Streda	connecting	Local measures to increase the capacity										
ongoing	Slovakia	ŽSR	Bratislva Nové Mesto – Komárno	Bratislva Nové Mesto	Dunajská Streda	connecting	Study for double line operation finished. Start of reconstruction - TBD					According TEN-T	According TEN-T	According TEN-T			
ongoing	Slovakia	ŽSR	Bratislva Nové Mesto – Komárno	Dunajská Streda	Komárno	connecting	Local measures to increase the capacity										
ongoing	Slovakia	ŽSR	**Node Žilina**	**Žilina zr.st**	**Žilina**	principal	Modernisation of node Žilina		2020	12	2024	According TEN-T	According TEN-T	According TEN-T	25 kV AC		planned
planned	Slovakia	ŽSR	Node Bratislava	Bratislava	Bratislava	principal	Study finished. Start of modernisation - TBD					According TEN-T	According TEN-T	According TEN-T			

Note: local measures for improvement of track conditions are realized on RFC Amber lines too.

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						
ongoing	Hungary	MÁV	Budapest - Hidasnémeti	Budapest (Rákos)	Hatvan	principal	Upgrading of Budapest (Rákos) - Hatvan railway line		2018		2024	120/160	22,5	750	25 kV AC	ETCS L2	
ongoing	Hungary	MÁV	Budapest - Kelebia	Soroksár	Kelebia border	principal	Modernization of Budapest - Belgrad railway line		2022		2025	160	22,5	750	25 kV AC	ETCS L2	
planned	Hungary	MÁV	Budapest - Kelebia	Ferencváros	Soroksár	principal	Modernization of Ferencváros - Soroksár railway line		2022		2024	100/120	22,5	750	25 kV AC	ETCS L2	

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 (2021))	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

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) and upgrading signaling safety devices		2016		2022	120 km/h	22.5 t / D4	740 m	3kV DC	ETCS_L1	
ongoing	Slovenia	SŽ-I	Ljubljana	Ljubljana	Ljubljana	principal	Modernisation, upgrade of railway station Ljubljana Lack of capacity, longer station tracks, signaling		2021		2026	80 km/h	22,5 t / D4	740 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	
completed	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	

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	Year						
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Ljubljana	Divača	principal	Modernisation, upgrade of railway infrastructure, More energy for traction, signaling, longer station tracks		2018		2027	100 km/h	22,5 t / D4	740 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		2023	80 km/h	22.5 t / D4	740 m	3kV DC	ETCS_L1	

Co-financed by the European Union
Connecting Europe Facility

6.2 Deployment Plan

The collected technical parameters indicate the current state of the RFC Amber. The tables in Chapter 6.1 describe the intentions of RFC Amber Member States to achieve the required indicators.
Investments should be directed towards removing obstacles, achieving higher speed allowances, improving environmental protection, increasing capacity, etc. In order to achieve the compatibility of technical parameters, interoperability systems within the frame of Directive (EU) 2016/797, somefurther measures should be put in place. The following Technical Specifications for Interoperability(TSI) are relevant for improving the interoperability of rail subsystems or part ofsubsystems:

a/ Fixed installations TSIsINF TSI – infrastructure ENE TSI – energy
b/ Common TSIs
CCS TSI – control command and signalingSRT 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 forpassenger service
d/ Rolling Stock TSIsWAG 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 signaling 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 theETCS level no. 2. Most sections are currently under modernization, only some projects are plannedto 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 thanthe 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.

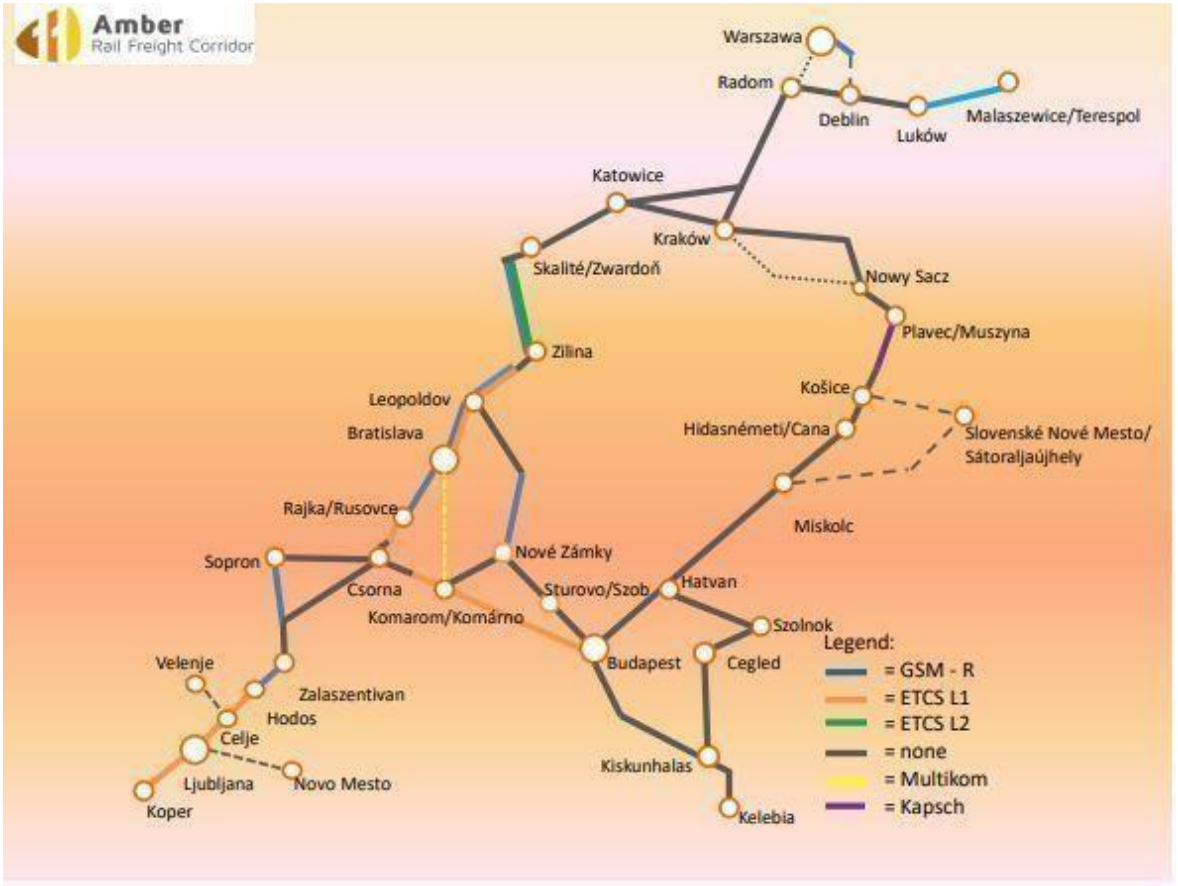
Hungary (GYSEV): The corridor's lines are fully electrified with an alternating current of 25 kV / 50 Hz AC. Some sections have a lower loading capacity and speed allowance than the directive prescribes.

Further update and 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 lowerspeed allowance than the directive prescribes. The axle load category C4 and the diesel traction are only on the connecting line.

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

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



6.3 Reference to Union Contribution

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

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

The Action is a Programme Support Action in the meaning of Article 2(7) and 7(2)(j) of the CEF Regulation (EU) n°1316/2013 establishing the Connecting Europe Facility and contributes to the preparation of the following pre-identified project on the core network: Rail Freight Corridors (RFCs) established and developed in line with RFC Regulation forming the rail freight backbone of the TEN-T Core Network Corridors.

The Project Management activity itself was undertaken by the mandated Coordinator for the conclusion and management of the Grant Agreement (action number 2016-PSA-RFC11), which was GYSEV. There were 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 ruan from 27/09/2017

until 31/12/2020. Basically, the set-up and run of the RFC Amber was 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) was 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 RFC Regulation of 22 September 2010, 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 was to establish and have the Rail Freight Corridor operational by31 January 2019, i.e. at the latest two years after the adoption of the above CommissionImplementing 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.

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

Annexes to be found in a separate document.