

AMBER RAIL FREIGHT CORRIDOR IMPLEMENTATION PLAN

Annex of the CID Book 2025

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Glossary of terms and abbreviations

AB	Allocation Body
AG	Advisory Group
BSC	Balanced Scorecard
CEF	Connecting Europe Facility
CER	Community of European Railway and Infrastructure Company
CID	Corridor Information Document
CNC	Core Network Corridor
C-OSS	Corridor 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
TA	Technical Assistance
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 to achieve a truly Single European Rail Area for rail freight and to respond to the urgent need for improvements of cross-border freight traffic. The general objective of the RFC concept is making rail freight more competitive, by 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 by strengthening 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 and reserve capacity), 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 Advisory Groups for railway undertakings and terminals, consultation procedures and regular customer satisfaction surveys.

The RFCs are based on Regulation (EU) No 913/2010 (RFC Regulation) of the European Parliament and of the Council of 22 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 2015¹; 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 Purpose of the Implementation Plan

RFC Amber published its first Implementation Plan in January 2019, in which it defined the conditions for making the corridor operational. The current document is a major update of the Implementation Plan and focuses on defining conditions, measures and principles for its continued operation and development, by systematically listing the tasks, the common rules and procedures and solutions for its fields of activity.

This document also summarizes the conclusions reached so far, and serves as a management tool for the Management Board and as a tool for the Executive Board for supervising the proper operation of the corridor. It is a steering document that shall be regularly updated and serve as a point of reference, that can continuously support the work of the members.

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

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

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

Members of the MB of RFC Amber are the following:

- PKP PLK Polish Railway Lines S.A. - IM, Poland
- ŽSR - Railways of the Slovak Republic – IM, Slovakia
- 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 railway infrastructure managers and capacity allocation body were responsible for the establishment of the Management Board (MB) which was set up and operates RFC Amber according to the requirements of the RFC Regulation. RFC Amber is committed to:

- to set up and develop a platform for efficient cooperation within the rail sector
- 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 (in line with the Sustainable and Smart Mobility Strategy (SSMS)¹)
- to operate the corridor cost-efficiently i.a. through harmonization of procedural conditions,
- to take into account the views and opinions of business partners, in particular the Railway and Terminal Advisory Groups, and to attain their satisfaction,
- to be a well-functioning part of the European railway network for competitive freight by becoming an efficient connection between the Northern Adriatic Sea and economic centres and terminals in Slovenia, Hungary, Slovakia and Poland and providing efficient links to the Euro-Asian transport routes at the EU eastern border;
- to contribute to a growing market share for the environmentally most friendly land transport mode as the backbone of a sustainable European transport system;

¹ COM/2020/789 final: Sustainable and Smart Mobility Strategy – putting European transport on track for the future

1.4 Achievements of RFC Amber

The main tasks for the first 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 of capacity requests through the Corridor- One Stop Shop)
2. to fulfil the implementation of the provisions of articles 12 to 19 of the RFC Regulation (relating to i.a. the coordination of works, C-OSS and capacity allocation, traffic management, corridor information document and quality of service)
3. to contribute to improved punctuality for international freight trains on the corridor by reducing delays for which IMs are responsible
4. to implement harmonized international IT tools and procedures
5. to introduce consultation mechanisms in order to obtain good communication with the Advisory Groups and potential corridor customers.
6. to support reaching 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 the Managing Director elaborated with the cooperation of Spokesperson of the Advisory Groups an Action Plan identifying short-term and long-term actions, which was adopted by the Management Board on 17 September 2019 in Koper. For the IMs and AB this plan included the following main activities:

- 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
- Suggestion and assessment of freight-related infrastructure investments

Results of these activities were i.a.:

- The provision of train paths (PaPs) with improved train lengths on selected sections between Southern Poland and Slovakia and between Slovakia and Western Hungary
- The booking of PaPs by applicants previously making use of other capacity products
- The operation of a TEN-T Demo-Train between Sopron and Budapest in October 2021 as the first 740 m long freight train on this route
- The successful promotion of a funding application for a triangle track in Zalaszentiván in Western Hungary, avoiding the need for change of travelling direction for all freight trains between Koper/Slovenia and Western Hungary and Slovakia
- An idea study within the project CORCAP for improvement of the Komárom-Komárno rail node

The SSMS referred to under point no. 6. above defines 10 different flagships. Under these flagships the following actions are of particular relevance for 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.”

As can be seen, RFC Amber already addressed with its activities various issues in the SMSS. Although RFC Amber for the time being does not belong to any TEN-T core network corridor in the future it is foreseen to form part of one of the European Transport Corridors. RFC AMBER is prepared to seek a strong cooperation with the assigned European Coordinator and to make sure, that its network will constitute an important and strong part of European Transport Corridors (ETCs). This ambition is also underlined by the close cooperation with the colleagues from RFC Baltic-Adriatic, with which RFC Amber has started holding joint RAG-TAG-meetings and with which it has carried out a joint case study on International Contingency Management (ICM Case Study) (together with RFCs OEM and RHD).

1.5 Corridor objectives

The Management Board of RFC AMBER has adopted five corridor objectives – in the sense of Art. 9(1c) of the RFC Regulation) – in the fields of capacity management, operations, market development and customer offer:

- **Objective 1:** Average planned speed of PaPs (Capacity Management)
- **Objective 2:** Punctuality at destination (Operations)
- **Objective 3:** Dwell times in border sections (Operations)
- **Objective 4:** Number of trains per border (Market development)
- **Objective 5:** Provision of paths with improved parameters (Customer offer)

There is no ranking among the objectives. The methodology for the selection of the objectives took into account the relevance of the objectives for customers and stakeholders (i.a. based on views expressed from RAG-TAG-Members and results from the annual customer satisfaction surveys), the possibility to monitor the achievement of the target values (where feasible and adequate monitoring should be based on the key performance indicators commonly agreed in the RFC Network) and to cover various aspects of the corridor, with the aim to have at least one objective for each of the fields capacity management, operations, market development and customer offer.

The following Working Groups have been involved in the elaboration of the objectives and their target values:

- Timetable & OSS WG
- Infrastructure & Interoperability WG
- Traffic Management, Performance and Operations WG

The Management Board decided to apply the objectives from 1 January 2024 on and set target values both for a short-term and a medium-term perspective, with monitoring done annually.

The following table contains the objectives and the respective short- and medium term target values:

Objective	Target value 2024	Target value 2028
Average planned speed of PaPs	+12,5%	+ 25%
Punctuality at destination (<= 30 min)	+ 5%	+ 12 %
Dwell times in border sections	- 10%	- 25%
Number of trains per border	+ 3%	+ 10%
Provision of paths with improved parameters	6 paths	10 paths

1.5.1 Average planned speed of PaPs

For the monitoring of the objective the KPI Average planned speed of PaPs is used, which shows the average of the planned commercial speed of the PaPs in km/h for selected connections. The KPI is calculated by dividing the length of the PaP by the planned travel time. Therefore, the Average planned speed of PaPs also includes necessary stops on the route, as well as parts with restricted speed

Often paths are adjusted from year-to-year to better fit the applicants needs, for instance considering necessary stops for train drivers or necessary waiting times at borders. Thus, increasing the average planned speed of a PaP is not only dependent on the potential train speed itself but also on the optimization of related operational processes and the production system of the railway undertaking. The sections for monitoring are selected based on available historical data and optimal geographical coverage of corridor lines.

Initially, four PaP sections have been selected:

- Tunel – Muszyna
- Žilina-zriad'ovacia stanica – Rajka
- Szombathely-Rendező – Hodoš
- Hodoš – Koper Tovorna

As for the timetable 2024 the speeds of the PaPs are between 24,62 and 61,27 km/h. The average speed is about 40 km/h.

1.5.2 Punctuality at destination

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 passing time at certain measuring points. A measuring point (here RFC exit) is a specific location on the route, where the trains running data is captured.

1.5.3 Dwell times in border sections

There are several ways to measure and calculate the dwell time on border sections. The most common one does not take into account whether a train is running in advance or is delayed. This is the real dwell, which measures the difference between the arrival and departure of the train, and calculates the average dwell time for a specific border section. RNE uses the real clean dwell, which excludes the time that the train spent running in advance. Considering that many trains have unnecessary buffer times built into their timetables and other capacity allocation specialties, the real clean dwell often gives a much better picture of the real situation than it really is. With this in mind, RFC Amber decided to use the "classic" real dwell time to measure the dwell time on border sections.

This offers several advantages over the real clean dwell:

- Although not all PMs have data available on the „classic” real dwell time on border sections, most of them use this calculation method, which makes it possible to check the reliability of the data in RNE systems in some cases. Most of the IMs are developing the necessary reports according to this calculation method.

- This method was used to measure dwell times on border sections and to do thorough border crossing analysis before and was not criticized by the RUs. The real clean dwell is a new method, and since the values are a lot better than by using the old method, its introduction might not be well received by the stakeholders.
- The calculation method and the background of the calculated value is a lot more intuitive and understandable for every stakeholder, than the clean real dwell.

1.5.4 Number of trains per border

This indicator shows the Number of commercial freight trains crossing selected border points. Loco runs and service trains are not considered. It shows real traffic data which is stemming from the IMs national systems. Figures can, however, illustrated per border sections (included more border crossing points) on a consolidated way. These border figures are calculated for calendar year.

The general rail freight traffic volume (number of trains) at the border sections of RFC Amber shows a quite stable trend since the establishment of RFC Amber (ca. 2 000 trains in PL-SK, ca. 20 000 trains in SK-HU and ca. 6000 trains in HU-SI sections).

1.5.5 Provision of paths with improved parameters

RFC Amber offered PaPs for “extra-long” trains on the section Czechowice Dziedzice – Žilina (border crossing Zwardoń – Skalité) for TT2021 and for TT2022 on section Czechowice Dziedzice – Bratislava. There were no PaPs for “extra-long” trains in the offer for TT2023. For TT 2024 it was offered again on section Czechowice Dziedzice – Bratislava. RFC Amber also offered PaP for trains with a length of 700 m in a section Bratislava ÚNS – Szombathely-Rendező.

In October 2021 a „TEN-T Demo-Train” was operated on the Sopron – Budapest section of the corridor within the CORCAP-project, forming the first 740 m long train on this route, which today is partially still limited to 650 m train length. As a result of the project, train paths with up to 700 m train length are now offered on a regular basis between the marshalling yards of Bratislava and Szombathely.

The aim is to increase number of PaPs with improved parameters to enable increasing the efficiency of rail freight traffic, and strengthening the railway’s competitive position.

2 Corridor description

2.1 Routing of RFC Amber

The principle route of RFC Amber is defined by Commission Implementing Decision (EU) 2017/177 as follows:

*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* refers to the name of the ancient Amber Road, an important trade route, which alignment is broadly follows.

2.2 Key Parameters of Corridor Lines

Key parameters of the Amber Rail Freight Corridor consist of data of principal, diversionary and connecting lines.

The total length of the RFC Amber is 3358 km. The Polish side plans to extend the Ambercorridor network with newly constructed principal routes Nowy Sacz - Kraków and Radom - Warszawain the future. The length of the future sections will be 198 kms. Slovenia plans to build the second railway line Koper - Divača. The newly constructed section will be double track line, part of the RFC's principle route in length of 27 km. The total length of the RFC Amber will reach 3584 kms inthe target state. The length of the principal lines is 2853 kms, respectively 3052 kms in the future. The lengthof the diversionary lines is 299 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 on the CIP platform:
<https://cip.rne.eu/apex/f?p=212:65:.....>

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	Border HU/SK – Čaňa – Košice
	Košice – Kysak
	Kysak – Prešov
	Prešov – Plaveč
	Plaveč – Border SK/PL
	Border HU/SK – Štúrovo
	Štúrovo – Nové Zámky
	Border HU/SK – Komárno
	Komárno – Nové Zámky
	Nové Zámky – Galanta
	Galanta – Leopoldov
	Leopoldov – Púchov
	Púchov – Žilina
	Žilina – Čadca
	Čadca – Skalité
	Skalité –Border SK/PL
	Border HU/SK – Rusovce – Bratislava-Petržalka
	Bratislava-Petržalka – Bratislava východ
	Bratislava východ – Bratislava-Rača
	Bratislava-Rača – Leopoldov
Diversionary lines	Border HU/SK – Slovenské Nové Mesto
	Slovenské Nové Mesto – Košice
Connecting lines	Komárno – Dunajská Streda
	Dunajská Streda – Bratislava-Nové Mesto
Terminals	Bratislava-Pálenisko, Bratislava ÚNS, Žilina, Žilina-Teplička, Dunajská Streda, Košice, Haniska pri Košiciach
Marshalling yards	Košice, Bratislava východ, Žilina-Teplička

HUNGARY (MÁV)

Character	Line section/Terminal/Marshalling yard
Principal routes	Border SLO - Óriszentpéter - 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 - Paládicpuszta elágazás
	Szolnok A elágazás - Szolnok-Rendező
	Szolnok B elágazás - Szolnok-Rendező
	Szolnok C elágazás - Szolnok-Rendező
	Szolnok D elágazás - Szolnok-Rendező
	Abony elágazás - Paládicpuszta elágazás
	Nyársapát elágazás - Abony elágazás
	Nyársapát elágazás - Kiskunfélegyháza
	Kiskunfélegyháza - Kiskunhalas
	Balotaszállás elágazás - Harkakötő 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, Miskolc rendező

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
Diversiónary 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)
Diversiónary lines	/
Connecting lines	Celje - Velenje
	Ljubljana - Novo mesto
Terminals	Port of Koper, Ljubljana Moste KT, Celje tovarna, Gorenje Velenje, Revoz Novo Mesto,
Marshalling / shunting yards	Ljubljana Zalog, Celje tovarna*, Koper tovarna*

POLAND

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
POLAND	Muszyna (G.P.) - Muszyna	Principal	Muszyna (G.P.) - Muszyna	7,536	1	3 kV DC	600	C3	60	10	14,99	-	G1	GA	-	99%
POLAND	Muszyna - Nowy Sącz	Principal	Muszyna - Nowy Sącz	50,648	1	3 kV DC	600	C3	60 - 70	10	14,99	-	G1	GA	-	40%
POLAND	Nowy Sącz - Tamów	Principal	Nowy Sącz - Stróże	30,780	2	3 kV DC	600	C3	60 - 70	20	24,99	-	G1	GA	-	36%
POLAND	Nowy Sącz - Tamów	Principal	Stróże - Tamów	57,400	1	3 kV DC	620	C3	60 - 70	20	24,99	-	G1	GA	-	36%
POLAND	Tamów - Podłężę	Principal	Tamów - Podłężę	58,954	2	3 kV DC	750	D3	120	5	9,99	-	G2	GB	-	26%
POLAND	Podłężę - Podłężę R 201	Principal	Podłężę - Podłężę R 201	2,468	2	3 kV DC	650	D3	50	5	9,99	-	G1	GA	-	91%
POLAND	Podłężę - Podłężę R 101	Principal	Podłężę - Podłężę R 101	2,927	2	3 kV DC	650	D3	120	5	9,99	-	G1	GA	-	22%
POLAND	Podłężę R 101 - Podłężę R 201	Principal	Podłężę R 101 - Podłężę R 201	1,564	2	3 kV DC	650	D3	60	5	9,99	-	G1	GA	-	90%
POLAND	Podłężę R 201 - Raciborowice	Principal	Podłężę R 201 - Dłubnia	18,230	2	3 kV DC	650	D3	-50 – 80	5	9,99	-			-	89%
POLAND	Podłężę R 201 - Raciborowice	Principal	Dłubnia - Raciborowice	1,090	1	3 kV DC	630	C3	60	5	9,99	-			-	92%
POLAND	Raciborowice - Tunel	Principal	Raciborowice - Tunel	42,504	2	3 kV DC	630	D3	80	10	14,99	-	G1	GA	-	3%
POLAND	Tunel - Radom	Principal	Tunel - Radom	165,583	2	3 kV DC	630	D3	80	10	14,99	-	G1	GA	-	30%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
POLAND	Radom - Dęblin	Principal	Radom - Dęblin	55,990	2	3 kV DC	630	D3	80	5	9,99	-	G1	GA	-	46%
POLAND	Dęblin - Łuków	Principal	Dęblin - Łuków	62,496	2	3 kV DC	660	D3	80	10	14,99	-			-	63%
POLAND	Łuków - Terespol	Principal	Łuków - Terespol	90,157	2	3 kV DC	800	D3	120	5	9,99	-	G1	GA	GSM-R	43%
POLAND	Podłęże R 101 - Kraków Prokocim Towarowy	Principal	Podłęże R 101 - Gaj	8,900	2	3 kV DC	650	D3	70	5	9,99	-			-	34%
POLAND	Podłęże R 101 - Kraków Prokocim Towarowy	Principal	Gaj - Kraków Prokocim Towarowy	4,000	1	3 kV DC	650	C3	60	5	9,99	-			-	54%
POLAND	Kraków Prokocim Towarowy - Oświęcim (OwC)	Principal	Kraków Prokocim Towarowy - Bonarka	7,400	2	3 kV DC	640	C3	60	15	19,99	-	G1	GA	-	93%
POLAND	Kraków Prokocim Towarowy - Oświęcim (OwC)	Principal	Kraków Bonarka - Oświęcim (OwC)	60,296	2	3 kV DC	630	C3	40 - 80	15	19,99	-	G1	GA	-	78%
POLAND	Oświęcim (OwC) - Oświęcim (OwC1)	Principal	Oświęcim (OwC) - Oświęcim (OwC1)	0,499	1	3 kV DC	630	C3	30	0	4,99	-	G1	GA	-	96%
POLAND	Oświęcim (OwC1) - Mysłowice Brzezinka	Principal	Oświęcim (OwC1) - Mysłowice Brzezinka	16,955	2	3 kV DC	630	C3	-40 - 80	5	9,99	-	G1	GA	-	80%
POLAND	Mysłowice Brzezinka - Sosnowiec Jęzor	Principal	Mysłowice Brzezinka - Sosnowiec Jęzor	7,206	1	3 kV DC	650	D4	80	5	9,99	-	G1	GA	-	99%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
POLAND	Sosnowiec Jęzor - Jaworzno Szczakowa	Principal	Sosnowiec Jęzor - Jaworzno Szczakowa	7,258	2	3 kV DC	630	D3	120	5	9,99	-	G1	GA	-	57%
POLAND	Jaworzno Szczakowa - Tunel	Principal	Jaworzno Szczakowa - Bukowno	11,700	2	3 kV DC	630	C3	80 - 90	10	14,99	-	G1	GA	-	93%
POLAND	Jaworzno Szczakowa - Tunel	Principal	Bukowno - Tunel	52,700	2	3 kV DC	650	D3	60 - 80	10	14,99	-	G1	GA	-	59%
POLAND	Radom - Warszawa Główna Tow.	Future principal	Radom - Warka	46,500	1	3 kV DC	620	D3	80	5	9,99	-	G1	GA	-	4%
POLAND	Radom - Warszawa Główna Tow.	Future principal	Warka - Warszawa al. Jerozolimskie	50,800	2	3 kV DC	620	D3	80 - 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%
POLAND	Warszawa Główna Tow. - Warszawa Praga	Future principal	Warszawa Główna Tow. - Warszawa Gdańska	11,500	2	3 kV DC	700	C3	40 - 60	10	14,99	-	G1	GA	-	59%
POLAND	Warszawa Główna Tow. - Warszawa Praga	Future principal	Warszawa Gdańska - Warszawa Praga	3,600	2	3 kV DC	750	C3	40 - 60	10	14,99				-	26%
POLAND	Zwardoń (G.P.) - Zwardoń	Diversenary	Zwardoń (G.P.) - Zwardoń	0,431	1	3 kV DC	360	C3	50	0	4,99	-	G1	GA	-	11%
POLAND	Zwardoń - Bielsko-Biała	Diversenary	Zwardoń - Wilkowice Bystra	49,000	1	3 kV DC	360	C3	50 - 60	20	24,99	-			-	3%
POLAND	Zwardoń - Bielsko-Biała	Diversenary	Wilkowice Bystra - Bielsko-Biała Lipnik	6,900	2	3 kV DC	430	D3	100	20	24,99	-			-	3%
POLAND	Zwardoń - Bielsko-Biała	Diversenary	Bielsko-Biała Lipnik - Bielsko-Biała	1,500	1	3 kV DC	430	D3	40	20	24,99	-			-	3%
POLAND	Bielsko-Biała - Czechowice-Dziedzice	Diversenary	Bielsko-Biała - Czechowice-Dziedzice	11,510	2	3 kV DC	590	D3	60 - 80	10	14,99	-	G1	GA	-	7%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
POLAND	Czechowice-Dziedzice - Oświęcim	Diversionary	Czechowice-Dziedzice - Oświęcim	20,806	2	3 kV DC	700	D3	-60 – 80	0	4,99	-	G1	GA	-	92%
POLAND	Oświęcim - Oświęcim (OwC1)	Diversionary	Oświęcim - Oświęcim (OwC1)	0,600	2	3 kV DC	600	C3	30	0	4,99	-	G1	GA	-	-
POLAND	Oświęcim - Oświęcim (OwC)	Diversionary	Oświęcim - Oświęcim (OwC)	1,996	2	3 kV DC	600	C3	40	0	4,99	-	G1	GA	-	-
POLAND	Dęblin - Tuszcz	future diversionary	Dęblin - Piława	49,200	2	3 kV DC	650	D3	120	5	9,99	-			-	25%
POLAND	Dęblin - Tuszcz	future diversionary	Piława - Krusze	56,600	1	3 kV DC	800	D3	60 - 80	5	9,99	-			-	79%
POLAND	Tuszcz - Warszawa Praga	future diversionary	Krusze - Legionowo Piaski	36,700	1	3 kV DC	650	C3	80	5	9,99	-			-	75%
POLAND	Tuszcz - Warszawa Praga	future diversionary	Legionowo Piaski - Praga	9,200	3 (2 lines)	3 kV DC	750	D3	120	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 length 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 2022 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge	Actual *=in implementation phase	
SLOVAKIA	Čadca - Zwardoň PL	Principal line	Čadca - Skalité	13,5	1	3 kV DC	650	D4	100	14	0	70/400	GB / 1-VM	G2	ETCS + GSM- R by 2030	0,00%
SLOVAKIA	Čadca - Zwardoň PL	Principal line	Skalité - Zwardoň PL	6,7	1	3 kV DC	- Up to 650	D4	70	28	0	70/400	GB / 1-VM	G2	ETCS + GSM-R by 2030	0,00%
SLOVAKIA	Žilina - Čadca	Principal line	Žilina- Krásno nad Kysucou	19,3	2	3 kV DC	700	D4	140	6	0	70/400	GB / 1-VM	G2	ETCS L2 GSM-R	38,9%
SLOVAKIA	Žilina - Čadca	Principal line	Krásno nad Kysucou - Čadca	10	2	3 kV DC	700	D4	100	16	0	70/400	GB / 1-VN	G2	ETCS L2 GSM-R	38,9%
SLOVAKIA	Kysak - Muszyna PL	Principal line	Muszyna PL - Plaveč	6,8	1	3 kV DC	600	D4	60	8	3	70/400	GB / 1-VM	G2	ZUGFUNK 95, ETCS by 2050	88,8%
SLOVAKIA	Kysak - Muszyna PL	Principal line	Plaveč - Prešov	54,7	1	3 kV DC	600	D4	100	14	19	70/400	GB / 1-VM	G2	ZUGFUNK 95, ETCS + GSM-R by 2050	25,2%
SLOVAKIA	Kysak - Muszyna PL	Principal line	Prešov - Kysak	16,8	1	3 kV DC	600	D4	80	15	15	70/400	GB / 1-VM	G2	ZUGFUNK 95, ETCS + GSM-R by 2050	21,6%
SLOVAKIA	Hidasné meti HU - Barca	Principal line	Hidasné meti HU - Barca	18,2	1	3 kV DC	600	D4	100	0	4	70/400	GB / 1-VM	G2	ETCS + GSM-R by 2050	55%
SLOVAKIA	Košice - Kysak	Principal line	Košice - Kysak	15,6	2	3 kV DC	650	D4	100	7	1	70/400	GB / 1-VM	G2	ETCS by 2030, GSM-R by 2024	31,8%
SLOVAKIA	Orlovská spojka	Principal line	Orlovská spojka	0,9	1	3 kV DC	630	D4	40	0	7	70/400	GB / 1-VM	G2	ZUGFUNK 95 ETCS + GSM-R by 2050	0,00%
SLOVAKIA	Kysacká spojka	Principal line	Kysacká spojka	0,96	1	3 kV DC	600	D4	30	0	14	70/400	GB / 1-VM	G	ETCS + GSM-R by 2050	16,8%
SLOVAKIA	Barca - Košice nákl. Stanica	Principal line	Barca - Košice nákl. stanica	4,6	2	3 kV DC	700	D4	60	0	4	70/400	GB / 1-VM	G2	ETCS + GSM-R by 2050	71,09%
SLOVAKIA	Bratislava - Žilina	Principal line	Púchov - Žilina	44,2	2	3 kV DC	750	D4	160	4	7	70/400	GB / 1-VM	G2	ETCS L1 GSM-R	35,5%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 2022 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge	Actual *=in implementation phase	
SLOVAKIA	Bratislava - Žilina	Principal line	Púchov - Trenianska Teplá	26,8	2	25 kV AC	740	D4	160	2	5	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	32%
SLOVAKIA	Bratislava - Žilina	Principal line	Trenianska Teplá - Trenín	7,5	2	25 kV AC	740	D4	140	0	5	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	28,5%
SLOVAKIA	Bratislava - Žilina	Principal line	Trenín - Nové Mesto nad Váhom	24,7	2	25 kV AC	740	D4	160	3	5	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	24,7%
SLOVAKIA	Bratislava - Žilina	Principal line	Nové Mesto nad Váhom - Leopoldov	35,5	2	25 kV AC	740	D4	160	0	3	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	35,8%
SLOVAKIA	Bratislava - Žilina	Principal line	Leopoldov - Trnava	17,5	2	25 kV AC	740	D4	160	1	5	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	24%
SLOVAKIA	Bratislava - Žilina	Principal line	Trnava - Bratislava Rača	38,9	2	25 kV AC	740	D4	160	6	7	70/400	GC / 2-VM	G2	ETCS L1 GSM-R	20,5%
SLOVAKIA	Leopoldov - Galanta	Principal line	Leopoldov - Galanta	29,7	2	25 kV AC	700	D4	100	2	2	80/400	GC / 1-VM	G2	GSM-R	31,9%
SLOVAKIA	Bratislava - Štúrovo	Principal line	Nové Zámky - Palárikovo	10	2	25 kV AC	700	D4	120	1	2	70/400	GB / 1-VM	G2	GSM-R	38,3%
SLOVAKIA	Bratislava - Štúrovo	Principal line	Palárikovo - Galanta	32,3	2	25 kV AC	700	D4	120	4	4	70/400	GB / 1-VM	G2	GSM-R	35,1%
SLOVAKIA	Komárom HU - Komárno	Principal line	Komárom HU - Komárno	8,7	1	25 kV AC	620	D4	80	4	8	70/400	GB / 1-VM	G2	-	100,00%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 2022 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge	Actual *=in implementation phase	
SLOVAKIA	Komárno - Nové Zámky	Principal line	Komárno - Nové Zámky	24,7	1	25 kV AC	620	D4	100	4	5	70/400	GB / 1-VM	G2	GSM-R	31,8%
SLOVAKIA	Komárno - Bratislava Nové Mesto	Connecting line	Komárno - Dunajská Streda	53,1	1	none	625	D4	80	3	4	70/400	GB / 0-VM	G2	Multikom ETCS + GSM-R by 2050	21,9%
SLOVAKIA	Komárno - Bratislava Nové Mesto	Connecting line	Dunajská Streda - Bratislava Nové Mesto	38,9	1	none	625	C4	80	5	5	70/400	GB / 0-VM	G2	Multikom ETCS + GSM-R by 2050	21,5%
SLOVAKIA	Bratislava Raia - Bratislava východ	Principal line	Bratislava Raia - Bratislava východ	1,9	1	25 kV AC	700	D4	40	0	0	70/400	GB / 1-VM	G2	GSM-R	98,5%
SLOVAKIA	Bratislava východ - Bratislava Predmestie	Principal line	Bratislava východ - Bratislava Predmestie	3,5	1	25 kV AC	700	D4	60	4	2	70/400	GB / 1-VM	G2	GSM-R	67,1%
SLOVAKIA	Bratislava Predmestie - Bratislava Petralka	Principal line	Bratislava Predmestie - Bratislava Petralka	14,2	2	25 kV AC	700	D4	80	8	8	70/400	GB / 1-VM	G2	GSM-R	68,2%
SLOVAKIA	Bratislava Petralka - Rajka HU	Principal line	Bratislava Petralka - Rajka HU	14,7	1	25 kV AC	700	D4	80	0	3	70/400	GB / 1-VM	G2	GSM-R	69,8%
SLOVAKIA	Košice - Michalovce	Diversions line	Košice - Michalovce	47,9	2	3 kV DC	670	D4	100	15	15	70/400	GB / 1-VM	G2	ETCS by 2030, GSM-R by 2024	44,9%
SLOVAKIA	Michalovce - Slovenské Nové Mesto	Diversions line	Michalovce - Slovenské Nové Mesto	13,8	2	3 kV DC	700	D4	120	7	11	70/400	GB / 1-VM	G2	ETCS by 2030, GSM-R by 2024	47,8%
SLOVAKIA	Slovenské Nové Mesto - Satoraljaújhely HU	Diversions line	Slovenské Nové Mesto - Satoraljaújhely HU	1,4	1	none	600	D4	40	0	2		GB / 1-VM	G2		100,00%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	International freight code (P/C)	International gauge	Multi national gauge		
HUNGARY (MÁV)	Border SLO - Óriszentpéter - Zalaszentiván	principal route	Border SLO - Óriszentpéter	6,100	1	25kV AC	650	D3	100	2,5	12	C21/340	GC	1-WM	GSM-R, ETCS L1	
HUNGARY (MÁV)	Border SLO - Óriszentpéter - Zalaszentiván	principal route	Óriszentpéter - Andrásida elágazás	33,400	1	25kV AC	650	D3	100	12	6	C21/340	GC	1-WM	GSM-R, ETCS L1, ETCS L2	
HUNGARY (MÁV)	Border SLO - Óriszentpéter - Zalaszentiván	principal route	Andrásida elágazás - Zalaszentiván elágazás	3,400	1	25kV AC	650	D3	100	6	5	C21/340	GC	1-WM	GSM-R, ETCS L2	
HUNGARY (MÁV)	Border SLO - Óriszentpéter - Zalaszentiván	principal route	Zalaszentiván elágazás - Zalaszentiván	4,700	1	25kV AC	650	D3	100	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	
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	
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	
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 length 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 (%)
	Start-End	Category	From -to							From to	Back	Intermodal freight code (P/C)	International gauge	Multi national gauge		
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 - Paládcspusztai elágazás	principal route	Újszászi elágazás - Paládcspusztai 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	-	

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	-	
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Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Intermodal freight code (P/C)	International gauge	Multinational gauge		
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	-	
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	-	
HUNGARY (MÁV)	Abony elágazás - Paládcspusztai elágazás	principal route	Abony elágazás - Paládcspusztai 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 - Városhíd	42,400	1	25kV AC	750	D3	120	2,5	2,5	C21/340	GC	1-WM	-	
HUNGARY (MÁV)	Nyársapát elágazás - Kiskunfélegyháza	principal route	Városhíd - 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 length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
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	42,18%
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.	28,59%
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.	12,14%
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.	49,26%
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Vasvár - Pácseny	10,100	1	25 kV AC	600	C2	80	13,6	13,3	C21/C340	G2	G2	n.a.	49,26%
HUNGARY GYSEV	Rajka s.b. - Zalaszentiván	Principal line	Pácseny - Egervár-Vasboldogasszony	8,700	1	25 kV AC	600	C2	100	0	5	C21/C340	G2	G2	n.a.	49,26%
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.	49,26%
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	5,51%
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	8,57%

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	Inter national gauge	Multi national gauge		
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.	12,14%
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.	12,14%
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.	12,14%
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.	14,90%

SLOVENIA

Country	Corridor line		Line Section	Length of section (km)	Number of tracks	Electric Traction (kV/Hz)	Maximum length 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 2022 (%)
	Start-End	Category	From -to							From to	Back	Inter modal freight code (P/C)	International gauge	Multi national gauge		
SLOVENIA	Koper - Hodoš	Principal line	Divča - 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*	90,01%
SLOVENIA	Koper - Hodoš	Principal line	Ljubljana - Divča	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*	70,06%
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*	41,9%
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*	42,6%
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*	45,2%
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*	47,8%
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*	10,1%
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*	2,8%

2.3 Connection with Other Corridors

RFC Amber is a corridor linking the Adriatic Sea with the Polish eastern border with a branch to the Serbian border in Hungary. It strengthens the network of RFCs in Central-Eastern Europe and provides a relatively flat North-South route east of the Alps. The new corridor aims to contribute to a more efficient transport and logistic chains 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 BA for the Baltic - Adriatic Rail Freight Corridor
- RFC MED for the Mediterranean Rail Freight Corridor
- RFC OEM for the Orient / East-Mediterranean Rail Freight Corridor
- RFC NSB for the North Sea - Baltic Rail Freight Corridor
- RFC RHD for the Rhine - Danube
- RFC AWB for the Alpine - Western Balkan Rail Freight Corridor

RFC AMB for the Amber Rail Freight Corridor RFC Amber is currently not “mirrored” by any TEN-T core network corridor, but a transformation to the ETCs is foreseen with the revision of the TEN-T and the RFC Regulations.

The European Transport Corridors (ETC) are the result of the merging of the current Core Network Corridors (aimed at connecting the cities included in the core network and ensuring coordinated development of infrastructure) and the Rail Freight Corridors (RFC) and cover both the core and the extended core network.

The Core Network Corridors were aimed at connecting the most important long-distance flows in the core network and are intended to improve cross-border links within the EU. They crossed at least two borders and involved, when possible, at least three transport modes. The Rail Freight Corridors (RFC) connect the major freight terminals in the EU, thus forming a network to ensure competitive freight transportation across the Union.

The proposal released by the European Commission in December 2021 established the replacement of the former instruments by a single corridor network: the European Transport Corridors (ETC). It is composed of nine corridors covering specific areas: Atlantic, North Sea – Alpine, North Sea – Baltic, Scandinavian – Mediterranean, Baltic Sea – Adriatic Sea, Rhine – Danube, Mediterranean, Western Balkans, Baltic – Black – Aegean Seas.

The alignment of the two instruments will strengthen coordination between freight and passengers’ transportation systems and will ensure efficiency in terms of infrastructure investment, avoiding overlapping and reducing red tape.

Apart from ensuring investment efficiency, the European Transport Corridors are also aimed at strengthening territorial cohesion. In the new proposal, accessibility to all regions, especially the outermost, insular, peripheral, and mountainous regions, as well as sparsely populated areas, has become an objective for the whole map. Until now, it was only a priority for the comprehensive network. Another of the key points of this new instrument is the improvement of cross-border connections and the reduction of the border-crossing time, mainly through bridging missing links and removing bottlenecks.

source: *cpmr.org*

POLAND

Overlapping section	RFC involved with	Section length
Łuków - Terespol	RFC NSB,	90,157
Oświęcim (OwC) - Oświęcim (OwC1)	RFC BA	0,499
Oświęcim (OwC1) - Mysłowice Brzezinka	RFC BA	16,955
Mysłowice Brzezinka - Sosnowiec Jęzor	RFC BA	7,206
Sosnowiec Jęzor - Jaworzno Szczakowa	RFC BA, RFC NSB	7,258
Warszawa Główna Tow. - Warszawa Gdańska	RFC NSB	11,5
Warszawa Gdańska - Warszawa Praga	RFC NSB	3,6
Zwardoń (G.P.) - Zwardoń	RFC BA	0,431
Zwardoń - Wilkowice Bystra	RFC BA	49
Wilkowice Bystra - Bielsko-Biała Lipnik	RFC BA	6,9
Bielsko-Biała Lipnik - Bielsko-Biała	RFC BA	1,5
Bielsko-Biała - Czechowice-Dziedzice	RFC BA	11,51
Czechowice-Dziedzice - Oświęcim	RFC BA	20,806
Oświęcim - Oświęcim (OwC1)	RFC BA	0,6
Oświęcim - Oświęcim (OwC)	RFC BA	1,996
Piława - Krusze	RFC NSB	56,6
Krusze - Legionowo Piaski	RFC NSB	36,7
Legionowo Piaski - Praga	RFC NSB	9,2

SLOVAKIA

Overlapping section	RFC involved with	Section length
Čadca – Skalité	RFC BA	13,5
Skalité – Border SK/PL	RFC BA	6,7
Žilina – Krásno nad Kysucou	RFC BA, RFC RHD	19,3
Krásno nad Kysucou – Čadca	RFC BA, RFC RHD	10
Košice – Kysak	RFC RHD	15,6
Púchov – Žilina	RFC BA, RFC RHD	44,2
Púchov – Leopoldov	RFC BA	94,5
Leopoldov – Trnava	RFC BA	17,5
Trnava – Bratislava Rača	RFC BA	38,9
Leopoldov – Sered	RFC BA	17,2
Sered - Galanta	RFC BA, RFC OEM	12,4
Nové Zámky – Palárikovo	RFC OEM	10
Palárikovo – Galanta	RFC OEM	32,3
Border HU/SK – Komárno	RFC OEM	3,6
Komárno – Nové Zámky	RFC OEM	24,7
Komárno – Dunajská Streda	RFC OEM	53,1
Dunajská Streda – Bratislava-Nové Mesto	RFC OEM	38,9
Bratislava-Rača – Bratislava východ	RFC BA, RFC OEM	1,9
Bratislava východ – Bratislava predmestie	RFC BA, RFC OEM	3,5
Bratislava predmestie – Bratislava-Petržalka	RFC BA, RFC OEM	14,2
Bratislava-Petržalka – Rusovce – Border SK/HU	RFC OEM	14,7

HUNGARY (MÁV)

Overlapping section	RFC involved with	Section length
Border SLO - Őriszentpéter - Zalaszentiván	RFC MED	52
Győr - Ferencváros	RFC MED, RFC OEM, RFC RHD	132,6
Ferencváros - Kőbánya felső	RFC MED, RFC OEM, RFC RHD	4,8
Kőbánya felső - Rákos	RFC MED, RFC OEM, RFC RHD	3,2
Rákos - Aszód	RFC MED	42,6
Aszód - Hatvan A elágazás	RFC MED, RFC OEM	11,7
Hatvan A elágazás - Mezőzombor	RFC MED	162
Hatvan A elágazás - Hatvan D elágazás	RFC OEM	3,8
Hatvan D elágazás - Újszász	RFC OEM	49,5
Újszász - Újszászi elágazás	RFC OEM	13,4
Abony elágazás - Paládicpuszta elágazás	RFC MED, RFC OEM	23,5
Ferencváros - Soroksár	RFC MED, RFC OEM, RFC RHD	8,9
Kőbánya felső – Rákos elágazás	RFC OEM	2,3
Rákos elágazás - Szob - Border SK	RFC OEM	65,7
Komárom - Border SK	RFC OEM	2,8

HUNGARY (GYSEV)

Overlapping section	RFC involved with	Section length
Sopron-Rendező - Pinnye*	RFC OEM, RFC RHD	17,2
Pinnye - Fertőszentmiklós*	RFC OEM, RFC RHD	6,9
Fertőszentmiklós - Petőháza*	RFC OEM, RFC RHD	2,2
Petőháza - Győr*	RFC OEM, RFC RHD	58,1

SLOVENIA

Overlapping section	RFC involved with	Section length
Divača - Koper	RFC BA, RFC MED	48
Ljubljana - Divača	RFC BA, RFC MED	103,7
Zidani Most - Ljubljana	RFC BA, RFC MED, RFC AWB	63,9
Zidani Most - Pragersko	RFC BA, RFC MED, RFC AWB	73,2
Pragersko-Ormož	RFC MED	40,3
Ormož-Hodoš-nat. border (HU)	RFC MED	69,2
Celje - Velenje	RFC BA, RFC MED, RFC AWB	38
Ljubljana-Novo mesto	RFC BA, RFC MED, RFC AWB	76

2.4 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. For more information regarding terminals and marshalling yards, please use IT tools CIP (Customer Information Platform - <https://cip.rne.eu/apex/f?p=212:65>) or RFP (Rail Facility Portal - <https://railfacilitiesportal.eu/>) .

2.5 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.

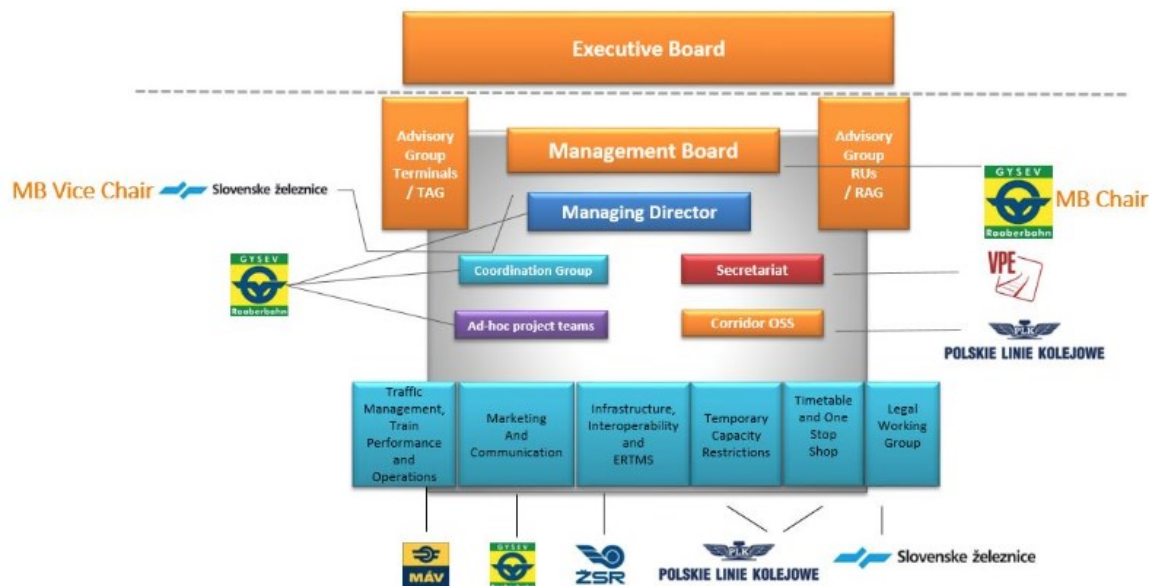
A comprehensive “*Study on bottlenecks along Rail Freight Corridor Amber (RFC Amber)*” was carried out between 2019 and 2021. The Bottleneck Study gives an in-depth understanding of the compliance of the corridor infrastructure with TEN-T minimum requirements (defined by Regulation 1315/2013 EU Art 39. (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.

The plans for elimination of the bottlenecks are listed in chapter 6.1.3 Plans for removal of Bottlenecks.

2.6 Governance of RFC Amber

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 two main bodies are:

- **The Executive Board**, which is the highest level body assigned to the corridor.
- **The Management Board**, which is the main operative body of the corridor. Organizational units of the RFC Amber are illustrated in the following schematic structure:



The Executive Board (EB)

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

MÁV

MÁV Hungarian State Railways Company Limited by Shares (MÁV Magyar Államvasutak 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 within the frame of the period 2018-2020, given that it was also undertaken within the frame of the Programme Support Action project, a co-financing tool for the RFCs under the Connecting Europe Facility. RFC Amber 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 the RFC Amber towards stakeholders in meetings or events (e.g. conferences) arranged by the European Commission, the RFC Amber Railway and Terminal Advisory Groups (RAG/TAG), other RFCs and other stakeholders (such as sector organisations like CER, UIC, ERFA, UIRR).

Railway and Terminals 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 corridor's draft route proposal, and their comments were taken into account and incorporated to the documents of RFC Amber.

The Terminal Managers and the Railway Undertakings Advisory Groups are the “voice of customers”. 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.

A Spokesperson for the Advisory Groups is nominated to coordinate the position of the group. 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.

Internal cooperation structure

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

The RFC Amber Project Management team designated by GYSEV covered the overall management of the CEF-T-2021-TAGENE (Promoting an effective implementation of the RFC Regulation by Rail Freight Corridor Amber). The project management included i.a. the following activities:

- elaboration and implementation of a Cooperation Agreement between the beneficiaries;
- implementation of the action CEF-T-2021-TAGENE in line with the Grant Agreement, including supervision and progress monitoring;
- financial management of the action, including receiving grant payments from CINEA and distributing them to the Beneficiaries
- act as the intermediary for all communication between the consortium and CINEA
- organization of workshops for the Members supporting the elaboration of deliverables
- collection of deliverables and related project documentation from the Lead Beneficiaries and their submission in the project portal by the deadlines set up in the Grant Agreement; submission of Progress Reports and all necessary documentation to CINEA.

The Project Management activity is undertaken by GYSEV, as the Coordinator mandated by the Management Board for the conclusion and management of the Grant Agreement. The consortium consists of six cooperating Parties (Beneficiaries), which are the Members of the corridor. The action runs from 1/10/2021 until 31/12/2024. In the Grant Agreement a list of deliverables with criteria is laid down, forming the basis for the EU-funding. The corridor has to prepare the following deliverables:

- D1.1 – Implementation plan [Art 9]; Lead Beneficiary: VPE
- D1.2 – Transport market study [Art 9(3)]; Lead Beneficiary: GYSEV
- D1.3-1.5 – Documents on infrastructure works [Art 12] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.6-1.8 – Documentation on capacity needs & capacity provided / requested [Art 13 and 14] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.9-1.11 – Register of capacity requests [Art 15] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.12-1.14 – Corridor information document [Art 18] – 2022, 2023 and 2024; Lead Beneficiary: VPE
- D1.15-1.17 – Document on performance monitoring & user satisfaction [Art 19(2) and 19(3)] – 2022, 2023 and 2024; Lead Beneficiary: VPE
- D1.18 – Further documentation; Lead Beneficiary: GYSEV

Some of the Deliverables have to be elaborated once during the duration of the action, while certain Deliverables have to be produced annually.

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:

- high-level general follow-up and coordination of the activities defined by the MB,
- searching for compromises on issues that need consensual support by the MB,
- providing support for the Management Board for any issue which is not in the scope of the working groups;
- preparing the issues to be discussed and decisions to be taken for the subsequent Management Board meeting
- together with the Secretariat advising and supervising the work of the Working Groups;
- efficient communication flow between the RFC members, acting as contact point between national and corridor level;
- supervising of the preparation of the Corridor Information Document (CID Book including the Implementation Plan as an Annex) according to the agreed timeline.

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

Secretariat

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

Secretariat is in charge of the following tasks:

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

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

Working Groups

The Working Groups were set up in October 2017 and their tasks are described in the Internal Rules and Procedures of RFC Amber. Working groups are composed of experts appointed by the Members of the RFC Amber and beside the MB they assist also the Secretariat and the Coordination Group in their work. Each WG is led by a WG Leader who has the responsibility for:

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

Each Working Group organizes at least one personal meeting yearly as well as videoconference meeting when needed. Currently five permanent and one ad-hoc Working Groups 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 the corridor;
- channel the data into CIP and update it regularly;
- carry out the follow-up of the activities related to the ERTMS deployment along the corridor.

A representative from ŽSR leads this Working Group.

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

This Working Group is in charge of the following tasks:

- harmonization of national approaches in order to set up a corridor model for traffic management;
- harmonization of national approaches in order to set up a corridor model for traffic performance management;
- cooperate in drafting the CID;
- define the Priority rules;
- draft the performance management report;
- propose the corridor objectives.
- investigating and analyzing of the raw data the KPIs stemming from

A representative from MÁV leads this Working Group.

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

This Working Group is in charge of the following tasks:

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

A representative from PKP PLK leads this Working Group.

Temporary Capacity Restrictions WG (TCR WG)

This Working Group is in charge of the following tasks:

- collect, publish and aim to harmonise the TCRs along the 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 mainnational lines);
- adaption of corridor traffic plans in cooperation with the WG TT & OSS (in accordance with agreedTCRs);
- 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 wouldincrease 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;
- elaboration of the annual report
- 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 WG is 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. Currently, regular workshops are organized in terms of the deliverables for the Technical Assistance.

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 be developed);
- receiving and answering capacity requests and taking decisions on allocation of dedicated capacity;
- providing information about the corridor to actual and potential customers and functioning as single contact point;
- contribution to the Performance Monitoring Report;
- Participation in relevant RNE Working Groups related to capacity and other relevant forums or organizations of the sector i.a. C-OSS community.

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

2.7 EU level cooperation

2.7.1 Cooperation with other Rail Freight Corridors

Rail Freight Corridors cooperate with each other in order to harmonize their approach, procedures and organizational structures as possible.

In this respect the RFC Amber is a Member of the RFC Network and in which it cooperates and coordinates with other corridors as well as in dedicated associations (e.g. the RailNetEurope (RNE) European Association of Infrastructure Managers and Allocation Bodies (IMs/Abs). In the RFC Network meetings RFC Amber is represented by the Managing Director.

2.7.2 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.

With three of four RFC Amber countries bordering to Ukraine, RFC AMBER is also one participating in the EU-Ukraine Solidarity Lanes.

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

The fulfillment of these goals are managed and monitored together with the RFCs, RNE and further Sector Associations such as CER or UIRR. For the sake of efficient management, each priority has a so-called rapporteur who reports and cares about the assigned duties in order to achieve the targets. RFC Amber follows the work of this platform and will adapt the necessary measures in case of conclusions. For information purposes, the 11 sector priorities are 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 Panteiato monitor the progress of the implementation of the Rotterdam Declaration and the progress of the first 10 sector priorities. Following the Rotterdam Declaration from 2016 the members of the European rail sector reconfirm their support and continue this development with Ministerial Berlin declaration signed at 21st September 2020.

3 Market analysis Study

3.1 Introductory remarks

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

Increasing requirements on quality and availability of rail freight services led to the intention to establish the new European rail freight corridor Amber. The corridor establishment brought the connection between the Adriatic seaport in Slovenia and inland ports on the Danube and terminals in Hungary, Slovakia 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.

An update of the Transport Market Study is currently in progress and will be finalized in 2024. The updated version will be based harmonized market data for all corridors and have a common structure, coordinated through a support activity by RailNetEurope. The update of the RFCs Transport Market Studies will also feed into a European Transport Market Study for the European Commission. The information in this chapter still refers to the initial Transport Market Study of RFC Amber and does not yet reflect the update in progress. Some further information on the update can be found at the end of this chapter.

3.2 Objective of the Transport Market Study

The main objective of the TMS 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 TransportMarket 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 Slovenia and the inland ports on the Danube in Hungary and Slovakia.
- 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 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 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 Advisory Group”)
- Manual Update of the Handbook on External Costs of Transport“ (final report for the European Commission – 2014),
- sector publications (articles, reports, press releases, etc. with relevance for RFC corridors),
- relevant railway specific literature.

3.3.2 Methods used in TMS elaboration

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

- method of investigating written sources – used for selecting appropriate literature for processing the theoretical and legislative part of TMS,
- method of scientific abstraction – in examining the basic theoretical and legislative basis for establishment of the European freight corridors,
- method of information gathering and processing – used for information collection and its subsequent processing,
- benchmarking – in comparison of some transport, technical and statistical data,
- method of analysis – in processing and searching required transport and technical statistical data,
- method of graphic representation – used for graphic and visual layout of acquired and processed statistical data and other results of the study,
- method of comparative analysis – comparison in analytical part,
- method of synthesis – for summarizing information and data obtained,
- method of 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-Belarusian border) as the principal route for the „Amber“ rail freight corridor.

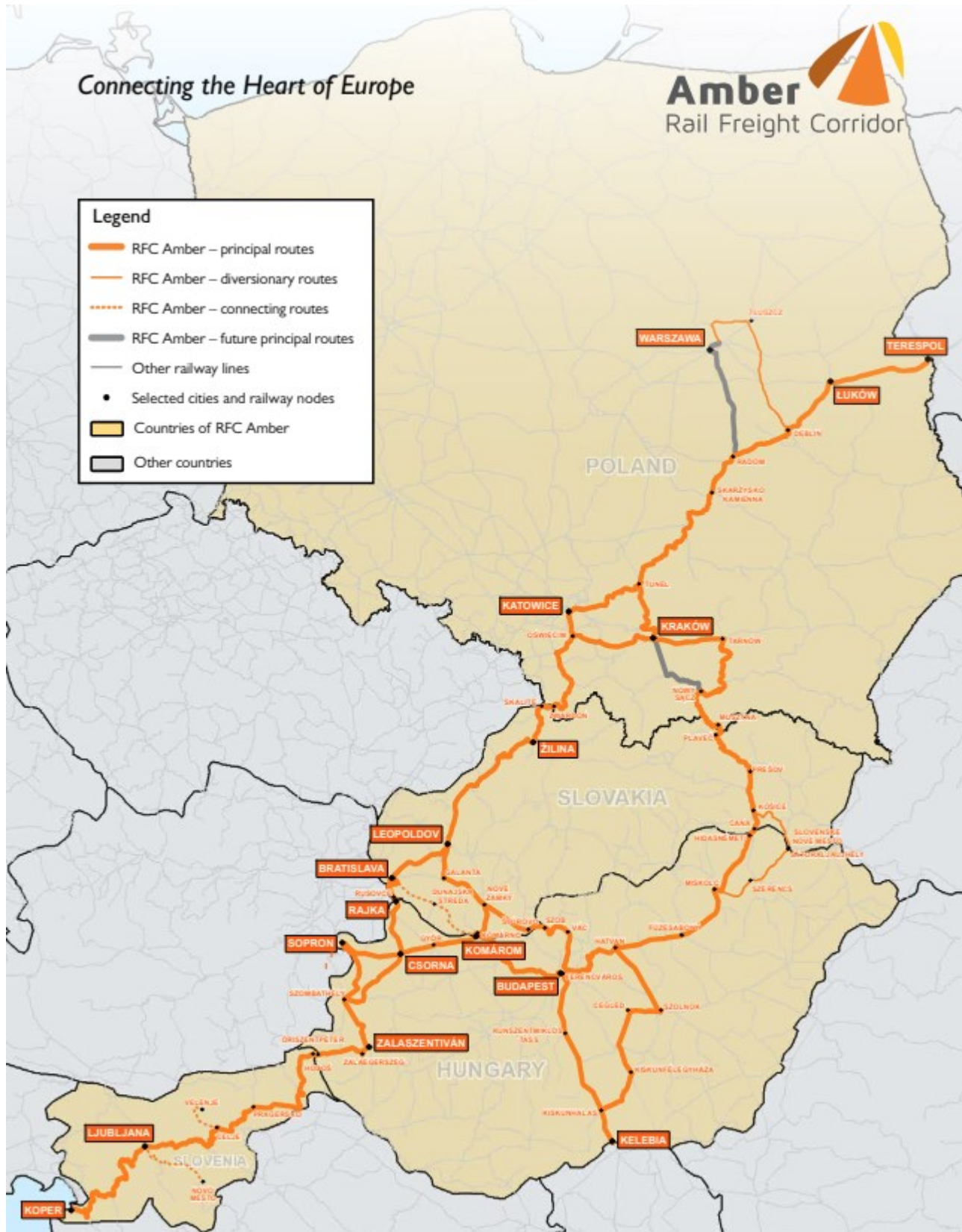
Member states: Slovenia, Hungary, Slovakia, Poland

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 Figure1.

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 transport sector.

Analysis of transport and traffic indicators

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

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

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

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

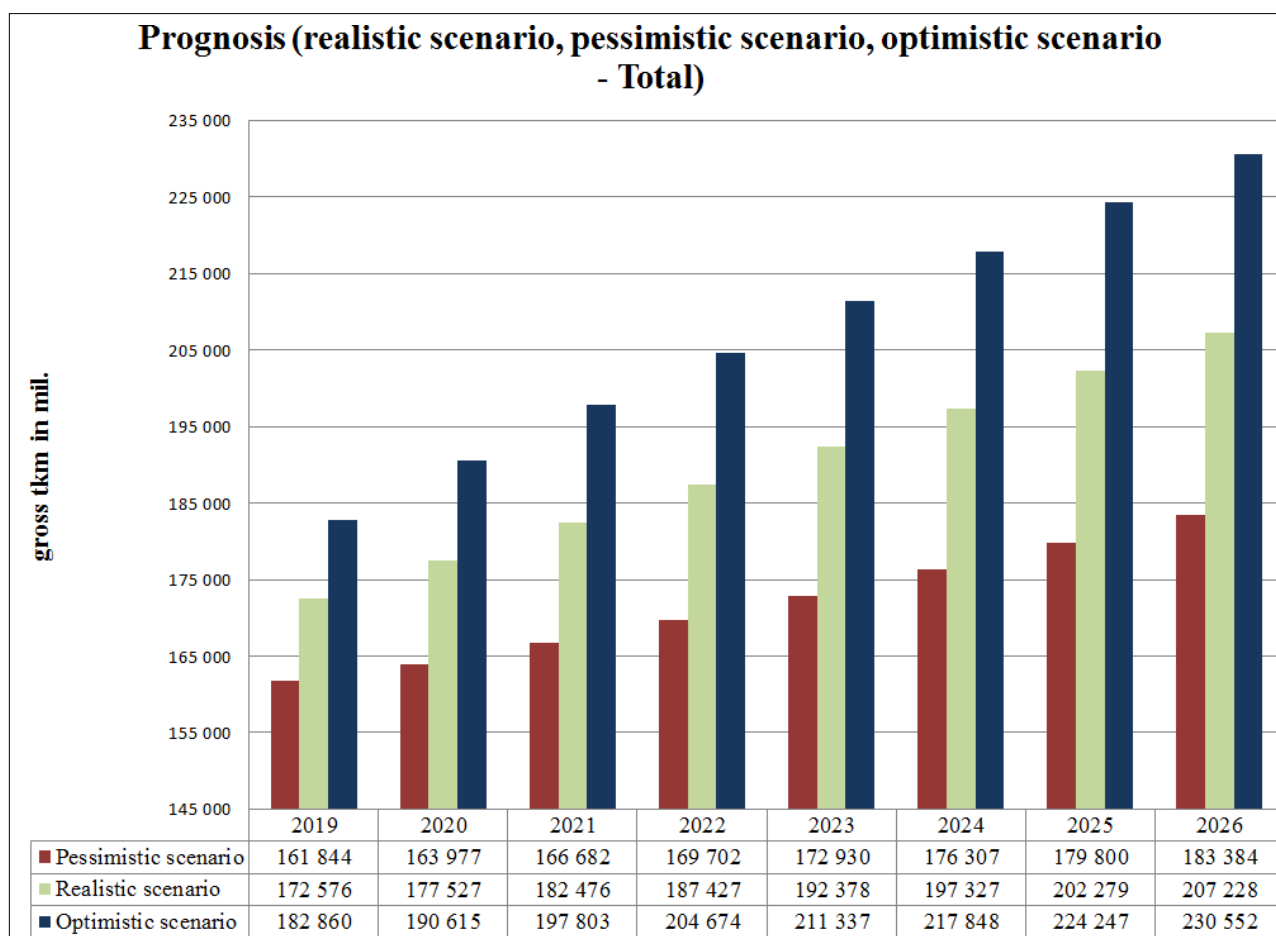
Target date Required. The data point for which you want to predict a value. Target date can be date/time or numeric – the period 2019-2026.

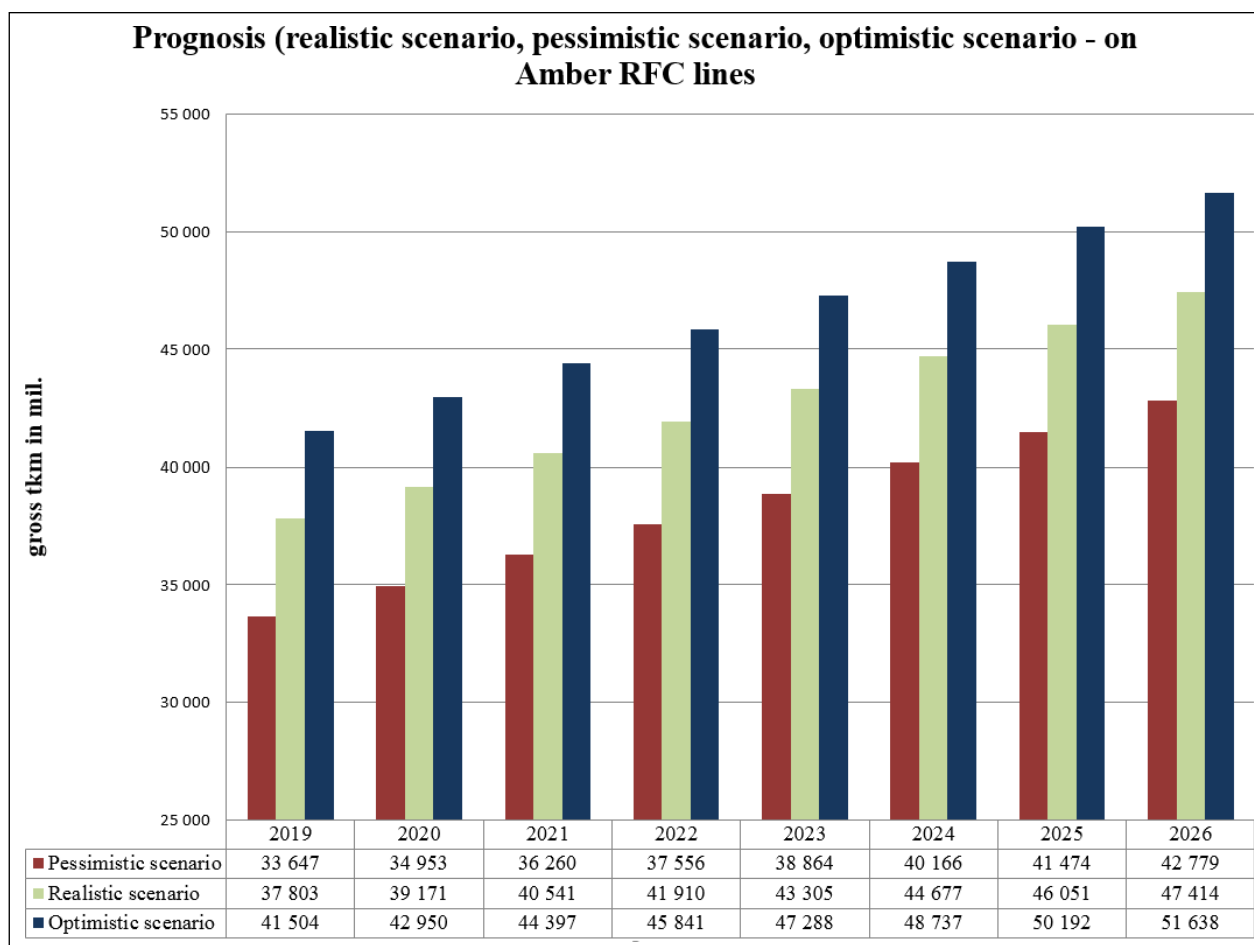
Values Required. Values are the historical values, for which you want to forecast the next points – transport performances of passenger and freight trains (gross tkm, train-km) on the railway infrastructure of the RFC Amber countries (2015-2017), forecast of GDP development in individual corridor member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





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

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

It is important to add that the above mentioned trends were forecasted before the outbreak of the COVID-19. 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 railtransport 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

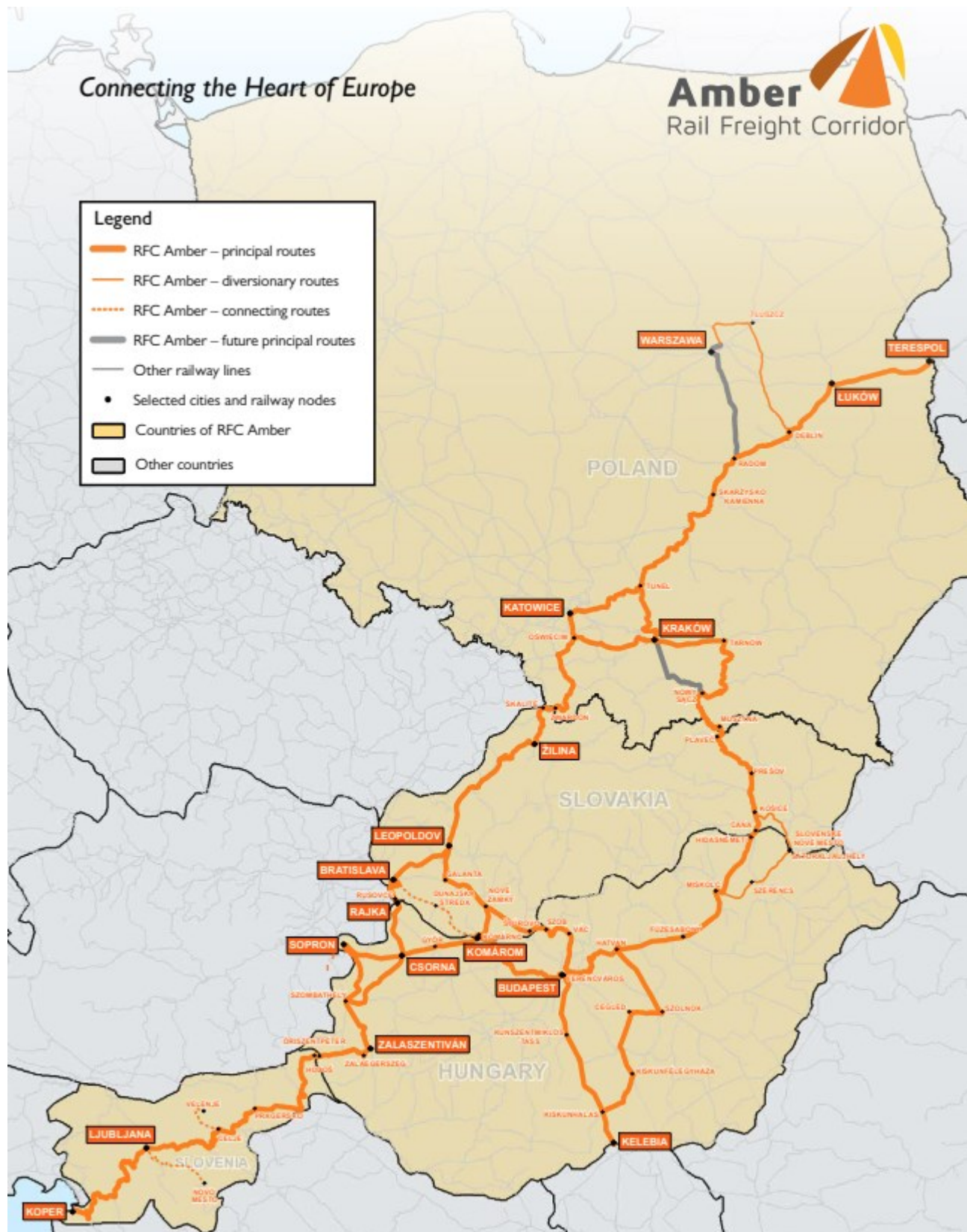
On the basis of the analysis of import/ export value from/to the EU in mill. EUR and the analysis of import/export quantity from/to EU in thous. t, it can be concluded:

- 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 – 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.



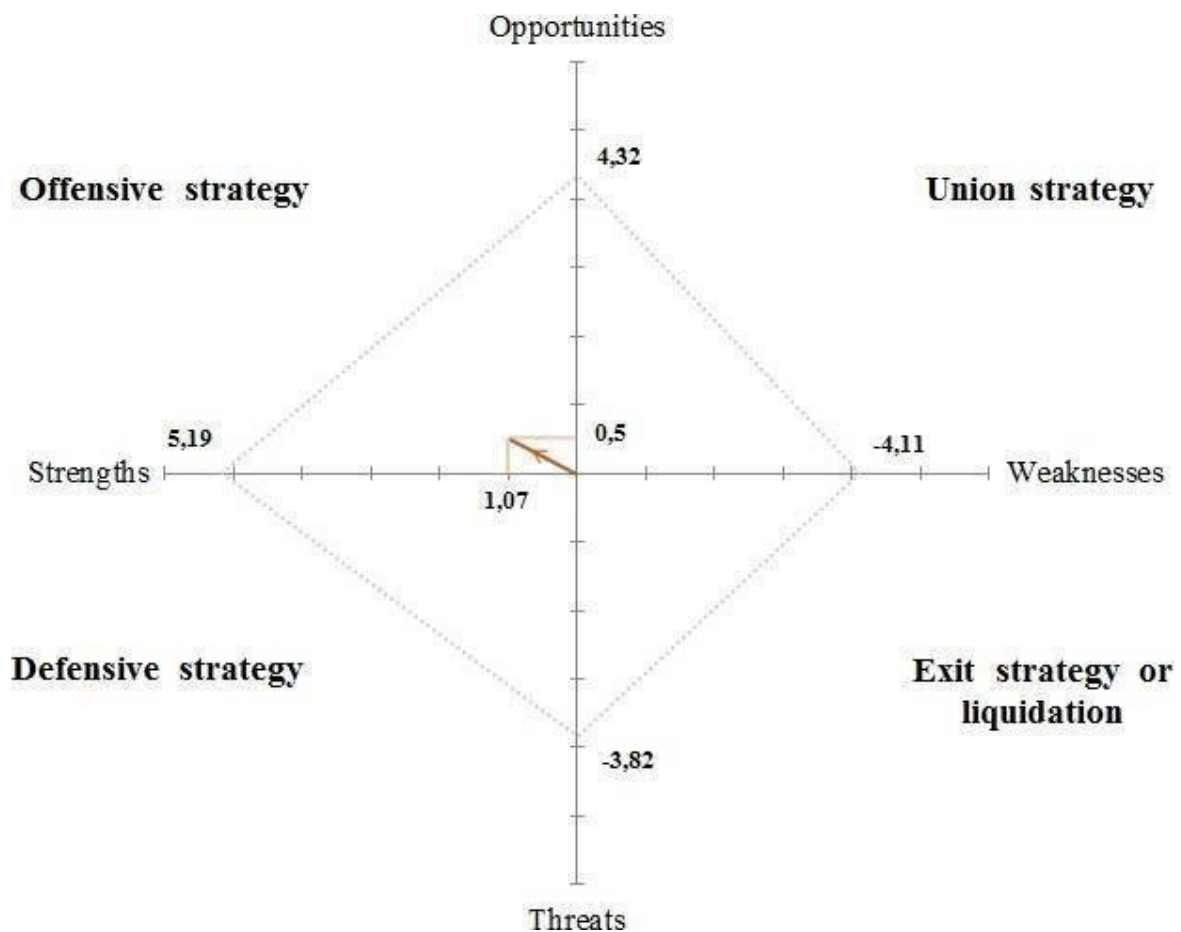
Based on the routing of the RFC Amber, we can state the following facts:

- 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 during transport,
- infrastructure included in the corridor has sufficient free capacity for increase in rail freight transport performances affected by the RFC Amber services except the line Divača and Koper. The utilization of this line is 98% because there are 82 trains/day on this single-trackline,
- 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,
- Slovakia 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 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 Slovenia and inlandwaterway ports on the Danube in Hungary and Slovakia,
- supports the development of rail transport with 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.

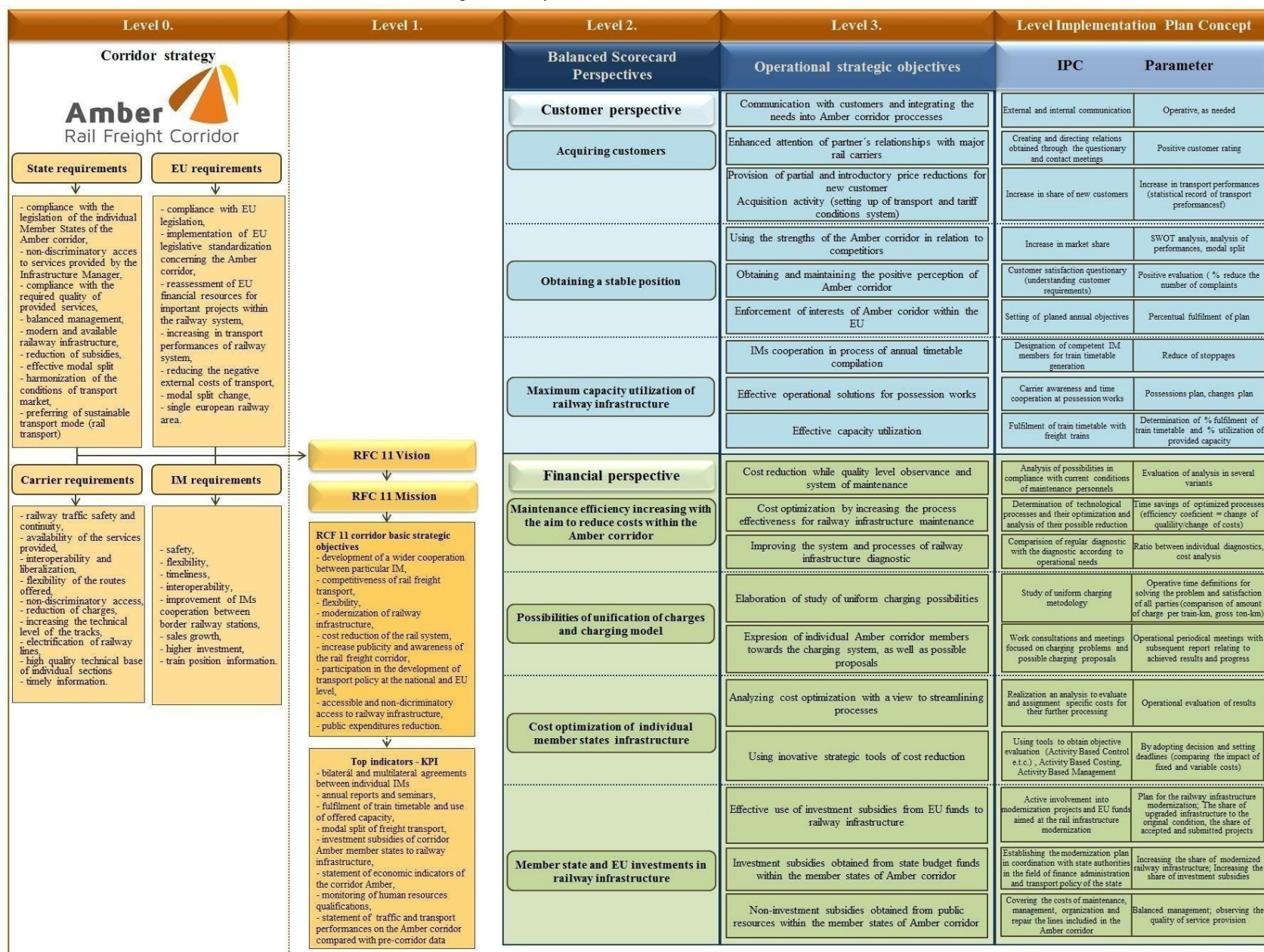
Based on the resultant strategy, it is necessary to take the following measures for the RFC Amber:

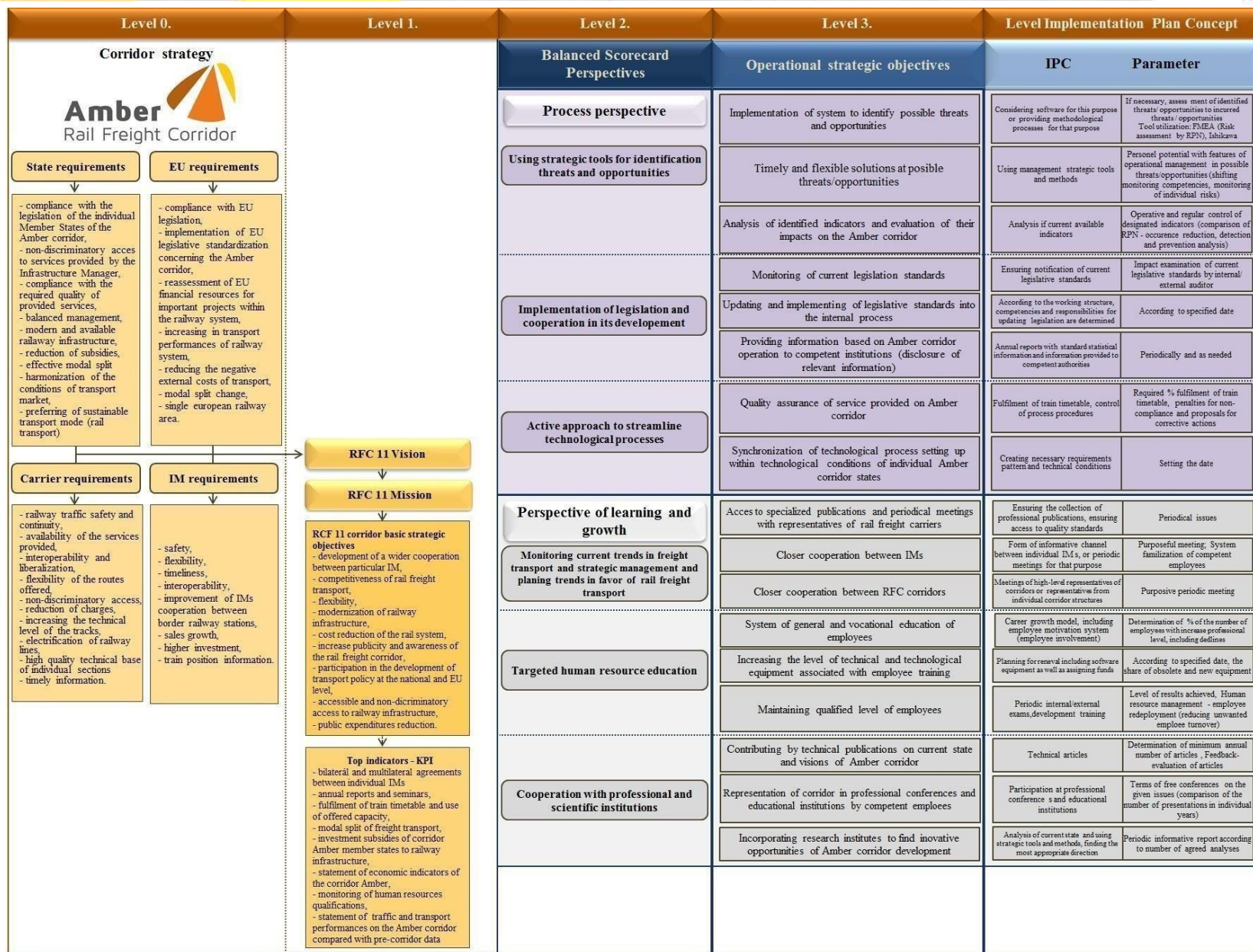
- increase the reliability of rail system services,
- developing the high-quality and available services of C-OSS,
- developing the cooperation with other RFC corridors,
- support for intermodal transport services,
- reducing the charges for local service trains,
- in operative transport management, 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 Amber lines,
- increased awareness of the corridor, its services and perspectives,
- exchange of information concerning operation, control and possessions,
- measures to reduce the technological times of operations for transport of goods from/to countries 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





RFC 11 Vision

RFC 11 Mission

RCF 11 corridor basic strategic objectives

- development of a wider cooperation between particular IMs,
- competitiveness of rail freight transport,
- flexibility,
- modernization of railway infrastructure,
- cost reduction of the rail system,
- increase publicity and awareness of the rail freight corridor,
- participation in the development of transport policy at the national and EU level,
- accessible and non-discriminatory access to railway infrastructure,
- public expenditures reduction.

Top indicators - KPI

- bilateral and multilateral agreements between individual IMs
- annual reports and seminars,
- fulfilment of train timetable and use of offered capacity,
- modal split of freight transport,
- investment subsidies of corridor
- Amber member states to railway infrastructure,
- statement of economic indicators of the corridor Amber,
- monitoring of human resources qualifications,
- statement of traffic and transport performances on the Amber corridor compared with pre-corridor data

3.11 RFC Amber marketing strategy

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

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. They may also be sued together with the slogan “RFC Amber – Connecting the heart of Europe”. 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 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, RFC Amber E-Newsletter, social networks, discussion forums, website, EC websites, websites of infrastructure managers
Guerrilla marketing	no	-
Product placement	no	-
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. 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 RFC Amber and to fulfil its strategic objectives resulting from the corridor vision and assigned mission, the following measures are proposed:

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

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

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

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

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 marshallingyards that can provide high quality and competitive intermodal transport services – individualmember 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 infrastructuremanagers, 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 externalcosts 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.

3.13 Update of the Transport Market Study

The Corridor is planning to update its TMS within the framework of a joint project of all RFCs coordinated by RailNetEurope (RNE). The main benefits of the common project are as follows: more efficient use of resources of all participating stakeholders and comparable TMSs over all RFCs

The baseline of the common basis to be used for the updates of the individual TMSs are

- a feasibility study approved by the RNE General Assembly (GA) in December 2022 and
- commonly agreed Guidelines approved by the RNE GA in May 2023.

The timeline of the common project is as follows:

Milestone	Deadline	Responsible body
Elaborating on common Guidelines for the updates of the TMSs of the RFCs	January 2023	RNE Joint Office and TMS experts of RFCs
Tendering	May 2023	RNE Joint Office
Conducting the common basis for the update	November 2023	Consultant and RNE Joint Office
Executing the updates to the individual TMSs of the RFCs	May 2024	RFC
Post-processing of the results of the updated TMS	November 2024	RFC
Publishing the results of the updated TMS	December 2024	RFC

4 List of Measures

4.1 Coordination of planned Temporary Capacity Restrictions

RFC Regulation, Article 12 “Coordination of works” deal with Temporary Capacity Restrictions (TCR) on the RFC. According to Article 12, “the Management Board shall coordinate and ensure the publication in one place, in an appropriate manner and timeline, of their schedule for carrying out all the works on the infrastructure and its equipment that would restrict available capacity on the freight corridor”. TCR are necessary to keep the infrastructure and its equipment in operational condition and to allow changes to the infrastructure necessary to satisfy market needs. Because of strong customer demand to know in advance which capacity restrictions they will be confronted with, corridor TCRs have to be coordinated, taking into account the interests of the IMs/AB and of the applicants.

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

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

More details are provided in 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 sub-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 RC Management
- RNE Process Calendar
- RNE PCS Process Guidelines
- RNE Guidelines for the Coordination / Publication of Planned Temporary Capacity Restrictions
- RNE Framework for setting up a Freight Corridor Traffic Management System
- RNE Guidelines for Punctuality Monitoring

4.2.2 Requirements resulting from 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 RFCAmber, 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 (TCC Com), 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. TCC Com) to inform the neighbouring IM's on the Corridor where the traffic will be affected. The initial message only gives information on the disturbance, its expected duration and possible traffic restrictions.

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

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

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 assess the 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) (PaPs)	At X-11 and at X-2	Y	C-OSS
2	Capacity mngmt	Volume of requested capacity (PCS) (PaPs)	At X-8	Y	C-OSS
3	Capacity mngmt	Number of requests ((PCS) PaPs)	At X-8	Y	C-OSS
4	Capacity mngmt	Volume of capacity (pre-booking phase) ((PCS) PaPs)	At X-7.5	Y	C-OSS
5	Capacity mngmt	Number of conflicts ((PCS) PaPs)	At X-8	Y	C-OSS
6	Capacity mngmt	Volume of offered capacity (RC)	X-2	Y	C-OSS
7	Capacity mngmt	Volume of requested RC - km*days (PCS)	X+12	Y	C-OSS
8	Capacity mngmt	Volume of requested RC - dossiers (PCS)	X+12	Y (To be aligned with other RFCs)	C-OSS
9	Capacity mngmt	Average planned speed of PaPs (PCS)	X-10.5	Y (Common calculation methodology is there)	C-OSS
10	Capacity mngmt	Ratio of pre-booked capacity	X-7.5	Y	C-OSS
11	Operations**	Punctuality at origin (TIS)	In January after the calendar year concerned	Y	WG TM,TP&O
12	Operations	Punctuality at destination (TIS)	In January after the calendar year concerned	Y	WG TM,TP&O
13	Operations	Train kilometers of trains crossing the border along the RFC	In January after the calendar year concerned	Y	WG TM,TP&O
14	Operations	Dwell times in border (planned and real)	In January after the calendar year concerned	Y	WG TM,TP&O
15	Operations	Number of trains crossing the border along the RFC (TIS)	In January after the timetable year concerned	Y	WG TM,TP&O
16	Marketdev***	Number of trains per border (IMs' national tools)	In January after the calendar year concerned	Y	WG TM,TP&O
17	Marketdev***	Train kilometers of trains per border	In January after the calendar year concerned	Y	WG TM,TP&O
18	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 required by 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 IIMs/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 (https://rne.eu/wp-content/uploads/2022/10/Guidelines_KPIs_of_RFCs_V4.0.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 research in 2022 as well, 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 yearly 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 and in CIP. CID Books published in the previous years are available under the CID Archive menu on RFC Amber website.

4.9 . List of TA Deliverables

RFC Amber is a beneficiary of the Technical Assistant (TA) of the Connecting Europe Facility (CEF) under the project name "Promoting an effective implementation of Regulation (EU) 913/2010 by Rail Freight Corridor Amber", project acronym CEF-TA-AMBER.

The Project Management activity is undertaken by GYSEV, as the Coordinator mandated by the Management Board for the conclusion and management of the Grant Agreement. The consortium consists of six cooperating Parties (Beneficiaries), which are the Members of the corridor. The action runs from 1 October 2021 until 31 December 2024. In the Grant Agreement a list of deliverables with criteria is laid down, forming the basis for the EU-funding. The corridor has to prepare the following deliverables:

- D1.1 – Implementation plan [Art 9]; Lead Beneficiary: VPE
- D1.2 – Transport market study [Art 9(3)]; Lead Beneficiary: GYSEV
- D1.3-1.5 – Documents on infrastructure works [Art 12] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.6-1.8 – Documentation on capacity needs & capacity provided / requested [Art 13 and 14] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.9-1.11 – Register of capacity requests [Art 15] – 2022, 2023 and 2024; Lead Beneficiary: PLK
- D1.12-1.14 – Corridor information document [Art 18] – 2022, 2023 and 2024; Lead Beneficiary: VPE
- D1.15-1.17 – Document on performance monitoring & user satisfaction [Art 19(2) and 19(3)] – 2022, 2023 and 2024; Lead Beneficiary: VPE
- D1.18 – Further documentation; Lead Beneficiary: GYSEV

Some of the Deliverables have to be elaborated once during the duration of the action, while certain Deliverables have to be produced annually.

5 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.

5.1 Capacity Management Plan

5.1.1 Methodology


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

The overall dedicated capacity on corridor paths is managed by the C-OSS. This is the capacity dedicated for international rail freight that the IMs/AB assign to be managed by the C-OSS. The corridor paths (PaPs and RC) are pre-defined and 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 study will help the Member States and the IMs to prioritize key infrastructural and capacity projects, which constitute bottleneck removal actions.

5.1.2 Plans for removal of bottlenecks

5.1.2.1. Bottlenecks on Polish section

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,50PLN)	Financial Sources
Poland	Muszyna (G.P.) - Muszyna	Muszyna (G.P.) - Muszyna	one track line, low axle load, low max train length, 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 after 2030	-	-
Poland	Muszyna - Nowy Sącz	Muszyna - Nowy Sącz	one track line, low axle load, low max train length, low speed				
Poland	Nowy Sącz - Tarnów	Nowy Sącz - Tarnów	section with one track, low axle load, low max train length, low speed				
Poland	Podłęże - Podłęże R 201	Podłęże - Podłęże R 201	low max train length	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 R 101	Podłęże - Podłęże R 101	low max train length				
Poland	Podłęże R 101 - Podłęże R 201	Podłęże R 101 - Podłęże R 201	low max train length				
Poland	Podłęże R 201 - Raciborowice	Podłęże R 201 - Raciborowice	low axle load, low max train length, low speed				
Poland	Raciborowice - Tunel	Raciborowice - Tunel	low max train length, 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 length, low speed	Projects: 2) 1) "Works on railway line no. 8 on section SkarżyskoKamienna – Kielce – Kozłów" Project will improve the technical parameters. 3) 2) "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) 706 2) -	1) Cohesion Fund 2021-2027 2) -
Poland	Radom - Dęblin	Radom - Dęblin	low max train length, 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 after 2030		-
Poland	Dęblin - Łuków	Dęblin - Łuków	low max train length, low speed				
Poland	Podłęża R 101 - Kraków Prokocim Towarowy	Podłęża R 101 - Gaj	low axle load, low max train length, 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 length, 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 2021-2027 2) Cohesion Fund 2021-2027
Poland	Oświęcim (OwC) - Oświęcim(OwC1)	Oświęcim (OwC) - Oświęcim (OwC1)	low axle load, low max train length, low speed	Project: "Work on the railway line 93 on the Trzebinia –Oświęcim – Czechowice Dziedzice section" Project improve technical condition and modernisation stationOświęcim.	2023	185,8	OPIE 2014-2020

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro (1€=4,50PLN May 2021)	Financial Sources
Poland	Oświęcim(OwC 1) - Mysłowice Brzezinka	Oświęcim (OwC1) - Mysłowice Brzezinka	low axle load, low max trainlength, 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	155,6	1) Cohesion Fund 2021-2027
Poland	Mysłowice Brzezinka - Sosnowiec Jęzor	Mysłowice Brzezinka - Sosnowiec Jęzor	low axle load, low max trainlength, low speed	Projects: 1) "Work on lines no. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom, Chorzów Stary – Mysłowice and Dorota – Mysłowice Brzezinka sections" 2) "Work on lines no. 132, 138, 147, 161, 180, 654, 655, 657, 658, 699 on the Gliwice – Bytom, Chorzów Stary – Mysłowice and Dorota – Mysłowice Brzezinka sections Stage II" Project improves technical condition..	1) 2023 2) 2027	1) 90 2) 67	1) OPIE 2014-2020 2) Cohesion Fund 2021-2027
Poland	Sosnowiec Jęzor - Jaworzno Szczakowa	Sosnowiec Jęzor - Jaworzno Szczakowa	low axle load, low max trainlength				
Poland	Jaworzno Szczakowa - Tunel	Jaworzno Szczakowa - Tunel	low axle load, low max trainlength, 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
Poland	Radom - Warszawa Główna Tow.	Radom - Warszawa Główna Tow.	section with one track, low max train length, low speed, low axle load	Projects: 1) Modernisation railway line no. 8, section Warszawa Okęcie – Radom (Lots: A, B, F) Phase II 2) Works on railway line no. 8, section Warka – Radom (Lots: C, D, E) 3) Works on railway line no. 8, section Warka – Radom (Lots: C, D, E) Phase II Projects aim to improve parameters to TEN-T requirements	1) 2023 2) 2023 3) 2026	1) 197 2) 171 3) 29	1) OPIE 2014-2020 2) OPIE 2014-2020 3) Cohesion Fund 2021-2027

Poland	Warszawa Główna Tow. - Warszawa Praga	Warszawa Główna Tow. - Warszawa Praga	low axle load, low max trainlength	Project: "Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątno/Świercze) section" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	1 556	Cohesion Fund 2021-2027
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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 length, low speed	Project: "Work on the railway line no. 139 on the Czechowice Dziedzice – Bielsko Biala – 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-Biala	Zwardoń - Bielsko-Biala	section with one track, low axle load, low max train length, low speed, high gradient				
Poland	Bielsko-Biala - Czechowice-Dziedzice	Bielsko-Biala - Czechowice-Dziedzice	low axle load, low max train length, low speed,				
Poland	Czechowice-Dziedzice - Oświęcim	Czechowice-Dziedzice - Oświęcim	low axle load, low max train length, 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	185,8	OPIE 2014-2020
Poland	Oświęcim - Oświęcim (OwC1)	Oświęcim - Oświęcim(OwC1)	low axle load, low max train length, low speed,				
Poland	Oświęcim - Oświęcim (OwC)	Oświęcim - Oświęcim(OwC)	low axle load, low max train length, low speed,				
Poland	Dęblin - Tuszcz	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 2014-2020
Poland	Tuszcz - Warszawa Praga	Krusze - Legionowo Piaski	low axle load, low max train length, low speed	Project: "Increasing the capacity of the Warszawa Wschodnia - Nasielsk (Kątno/Świercze) section" The implementation of the comprehensive investment project depends on the availability of funds.	potentially 2030	1556	Cohesion Fund 2021-2027

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

5.1.2.2. Bottlenecks on Slovak 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 - Michalany	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 - Skalitz	Čadca - Skalitz	High gradient, no ERTMS	Modernisation	after 2023		TBD
Slovakia	Node Bratislava	Low speed allowed among Bratislava's stations	Geographical conditions	Feasibility study NODE Bratislava	completed		EU funds/state budget
Slovakia	Node Bratislava	Low speed allowed among Bratislava's stations	Geographical conditions	NODE Bratislava construction works	after 2023		EU funds/state budget

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

5.1.2.3 Bottlenecks on MÁV section in Hungary

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euros	Financial Sources
Hungary MÁV	Border SLO - Óriszentpéter - Zalaszentiván	Border SLO - Óriszentpéter - Zalaszentiván	Max. train length < 740m	-	-	-	-
Hungary MÁV	Győr - Ferencváros	Budaörs - Kelenföld	Max. axle load < 22.5t	-	-	-	-
Hungary MÁV	Győr - Ferencváros	Kelenföld - Ferencváros	Max. speed < 100km/h Max. axle load < 22.5t	Capacity increase on the section Kelenföld–Ferencváros (3 tracks, partially 4)	2026		EU and Hungarian budget
Hungary MÁV	Győr - Ferencváros	Győr - Kelenföld	ETCS baseline is not interoperable	Upgrade of ETCS L1 to version 3.6.0 on the Kelenföld - Hegyeshalom - Border AT section	2024	19,4	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	2025	Not known	Hungarian budget
Hungary MÁV	Ferencváros - Kelebia - Border SRB	Soroksár - Kunszentmiklós - Tass	Max. axle load < 22.5t ERTMS is not deployed	Reconstruction works of the Hungarian part of Budapest - Belgrade railway line	2025	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	2025	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	-	-	-	-

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 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	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
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	-	-	-	-
Hungary MÁV	Kőbánya felső - Rákos	Kőbánya felső - Rákos	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Rákos - Felsőzsolca	Rákos - Hatvan	ETCS is not deployed	Reconstruction works of the Rákos - Hatvan railway line and the deployment of ETCS L2	2024	672.6	EU and Hungarian budget
Hungary MÁV	Rákos - Felsőzsolca	Rákos - Hatvan	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2024	3.4	EU and Hungarian budget
Hungary MÁV	Rákos - Felsőzsolca	Hatvan - Füzesabony	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Rákos - Felsőzsolca	Füzesabony - Felsőzsolca	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Felsőzsolca - Hidasnémeti - Border SK	Felsőzsolca - Border SK	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - Border SK	Felsőzsolca - Border SK	Max. axle load < 22.5t ERTMS 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	Felsőzsolca - Sátoraljaújhely - Border SK	Mezőzombor - Border SK	Max. train length < 740m	-	-	-	-
Hungary MÁV	Felsőzsolca - Sátoraljaújhely - Border SK	Sátoraljaújhely - Border SK	Max. speed < 100km/h Track is not electrified	-	-	-	-
Hungary MÁV	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Hatvan A elágazás - Hatvan D elágazás	Hatvan A elágazás - Hatvan D elágazás	GSM-R is not deployed	Deployment of GSM-R system, 2. stage	2024	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	2024	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	2024	0.8	EU and Hungarian budget
Hungary MÁV	Újszászi elágazás - Paládicpuszta elágazás	Újszászi elágazás - Paládicpuszta 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	-	-	-	-

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 B elágazás - Szolnok-Rendező	Szolnok B elágazás - Szolnok-Rendező	Max. speed < 100km/h Max. axle load < 22.5t ETCS is not deployed	-	-	-	-
Hungary MÁV	Szolnok 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 - Paládicpuszta elágazás	Abony elágazás - Paládicpuszta elágazás	Max. axle load < 22.5t	-	-	-	-
Hungary MÁV	Abony elágazás - Paládicpuszta elágazás	Abony elágazás - Paládicpuszta elágazás	ETCS is not deployed	Deployment of ETCS L2 on the Monor - Szajol railway line	2023	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	ERTMS is not deployed	-	-	-	-
Hungary MÁV	Nyársapát elágazás - Kiskunfélegyháza	Városföld - Kiskunfélegyháza	Max. axle load < 22.5t ERTMS is not deployed	-	-	-	-
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, RFC Rhine-Danube and RFC Orient/East-Med
- section Ferencváros – Rákos is an overlapping section with RFC Mediterranean, RFC Rhine-Danube and RFC Orient/East-Med
- section Rákos – Aszód is an overlapping section with RFC Mediterranean
- section Aszód – Hatvan A junction is an overlapping section with RFC Mediterranean and RFC Orient/East-Med
- section Hatvan A junction – Felsőzsolca is an overlapping section with RFC Mediterranean
- section Ferencváros - Soroksár is an overlapping section with RFC Orient/East-Med
- section Komárom - Border Sk is an overlapping section with RFC Orient/East-Med, RFC Rhine-Danube

5.1.2.4 Bottlenecks on GYSEV section in Hungary

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Estimated Costs in mil. of Euro	Financial Sources
Hungary / GYSEV	Rajka s.b. - Hegyeshalom	Rajka s.b. - Hegyeshalom	single track; Max. axle load < 22.5t; track conditions deteriorating;	Modernisation, upgrade of railway infrastructure	2028	110	CEF, Cohesion Found
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	n/a	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; capacity problems for freight; no ETCS	Modernisation, upgrade of railway and signalling infrastructure	n/a	n/a	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	n/a	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 Phase 0: Sopron - Harka 2nd track 2025 -2027	n/a	n/a	n/a
Hungary / GYSEV	Harka -Pinnye	Harka -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. Phase 2B: Sopron - Harka - Fertőboz new double track alignment	Beyond 2030	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. Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	Beyond 2030	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. Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	Beyond 2030	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, upgrade of railway infrastructure. Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	Beyond 2030	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 Phase 1: new second track	Beyond 2030	229	n/a

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

6.1.2.5 Bottlenecks on Slovenian section

Member State	Line Section	Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
				Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovenia	section Zidani Most - Pragersko	section Zidani Most – Pragersko	Higher category (C3 to D4)	Modernisation, upgrade of railway infrastructure	2022	n/a	EU and Slovenian budget
Slovenia	Station Ljubljana (node)	Station Ljubljana (node)	Lack of capacity, longer station tracks, signaling	Modernisation, upgrade of railway infrastructure	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 Ljubljana –Divača	section Ljubljana –Divača	More energy for traction, signaling, longer station tracks	Modernisation, upgrade of railway infrastructure	2027	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

5.2 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 indicated in the list which are under realisation in order to show their importance for rail freight operations.

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

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	Diversionsary	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)	Diversionsary											
	PL	PKP PLK S.A.	Oświęcim - Oświęcim (OwC)	Oświęcim	Oświęcim (OwC)	Diversionsary											
	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 diversionsary	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 diversionsary	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 diversionsary	Increasing the capacity of the section Warszawa Wschodnia - Nasielsk (Katne/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		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						
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 Length [m]	Traction power	ETCS Level	Inter m. Code
				From	To			Month	Year	Month	Year						
partly completed	Slovakia	ŽSR	Púchov – Považská Teplá	Púchov	Považská Teplá	principal	Reconstruction, upgrade of the line	9	2016	12	2022	160	22,5/D4	According TEN-T	25 kV AC	ETCS L1	
ongoing	Slovakia	ŽSR	Bratislava Nové Mesto – Komárno	Bratislava Nové Mesto	Dunajská Streda	connecting	Local measures to increase the capacity										
ongoing	Slovakia	ŽSR	Bratislava Nové Mesto – Komárno	Bratislava 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	Bratislava Nové Mesto – Komárno	Dunajská Streda	Komárno	connecting	Local measures to increase the capacity										
ongoing	Slovakia	ŽSR	Node Žilina	Žilina zr.st	Varín	principal	Modernisation of node Žilina		2020	12	2024	According TEN-T	According TEN-T	According TEN-T	25 kV AC	ETCS L1/ETCS L2	
planned	Slovakia	ŽSR	Node Bratislava	Bratislava	Bratislava	principal	Study finished. Start of modernisation - TBD					According TEN-T	According TEN-T	According TEN-T			
planned	Slovakia	ŽSR	Bratislava – Nové Zámky	Trnovec nad Váhom	Tvrdošovce	principal	Tracks reconstructions	04	2023	12	2023						
planned	Slovakia	ŽSR	Košice – Čierna nad Tisou	Košice	Čierna nad Tisou	diversionary	GSM-R Implementation	04	2023		2024						

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 Length [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
finished	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 and ERTMS deployment		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 and ERTMS deployment		2022		2025	100/120	22,5	750	25 kV AC	ETCS L2	
planned	Hungary	MÁV	Budapest – Hegyeshalom	Kelenföld	Budaörs	principal	3 rd and 4 th tracks building		N.A.		N.A.	120	22,5	750	25 kV AC	ETCS L2	
planned	Hungary	MÁV	Budapest – Hegyeshalom	Almásfüzitő	Komárom	principal	Elimination of bottlenecks		N.A.		N.A.	160	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	Inter m. 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

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 Length [m]	Traction power	ETCS Level	Inter m. 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	Pácseny							80					
				Pácseny	Egervár-Vasboldogasszony							100					
				Egervár-Vasboldogasszony	Zalaszentivan							80					
done	Hungary	GYSEV	Sopron - Szentgotthárd	Sopron-Rendező	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. - Hegyeshalom	Rajka	Hegyeshalom	principal	Upgrade of railway infrastructure	2026	n/a	n/a	2028	100/120	n/a	750	25 kV AC	L1	C21/340
planned	Hungary	GYSEV	Hegyeshalom - Szombathely	Hegyeshalom	Csorna	principal	Upgrade of railway infrastructure	n/a	n/a	n/a	Beyond 2030	100/120	n/a	750	25 kV AC	L2	C21/340
				Csorna	Porpác												
planned	Hungary	GYSEV	Szombathely station	Szombathely	Szombathely	principal	Upgrade of railway and signalling infrastructure	n/a	n/a	n/a	Beyond 2030	n/a	n/a	750	25 kV AC	L2	C21/340
planned	Hungary	GYSEV	Szombathely – Zalaszentivan (- Zalaegerszeg)	Egervár-Vasboldogasszony	Zalaegerszeg	n/a	New triangle track (Zala W3T)	n/a	n/a	n/a	2027	n/a	n/a	n/a	25 kV AC	n/a	n/a

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	Beyond 2030	100/120	n/a	750	25 kV AC	L2	C21/340
				Vasvár	Pácsony							80					
				Pácsony	Egervár-Vasboldogasszony							100/120					
				Egervár-Vasboldogasszony	Zalaszentivan							80					
planned	Hungary	GYSEV	Hegyeshalom - Zalaszentivan	Hegyeshalom	Zalaszentiván	principal	GSM-R implementation	n/a	n/a	n/a	Beyond 2030	n/a	n/a	n/a	n/a	n/a	n/a
planned	Hungary	GYSEV	Sopron - Győr	Sopron	Győr	principal	GSM-R implementation	n/a	n/a	n/a	Beyond 2030	n/a	n/a	n/a	n/a	n/a	n/a
planned	Hungary	GYSEV	Sopron -Győr	Sopron Rendező	Harka	principal	Upgrade of railway infrastructure, construction of the second track	n/a	n/a	n/a	Beyond 2030	160	n/a	750	25 kV AC	L2	C21/340
planned	Hungary	GYSEV	Sopron - Győr			principal	Upgrade of railway infrastructure, construction of the second track	n/a	n/a	n/a	Beyond 2030			750	25 kV AC	L2	C21/340
				Harka	Pinnye							160	n/a				
				Pinnye	Fertőszentmiklós												
				Fertőszentmiklós	Petőháza												
				Petőháza	Csorna												
			Csorna	Győr													

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 Length [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 - Emonika		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	
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Divaa	Koper	principal	Construction of the second track Divaa - 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 Length [m]	Traction power	ETCS Level	Interm. Code
				From	To			Month	Year	Month	Year						
ongoing	Slovenia	SŽ-I	Koper - Ljubljana	Ljubljana	Divaa	principal	Modernisation, upgrade of railway infrastructure (more energy for traction, signaling, longer station tracks, required speed,...). to meet the required TEN-T standards regarding interoperability. Creation of Automatic Block Signaling		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	
ongoing	Slovenia	SŽ-I	Pragersko - Hodoš	Ormož	Hodoš	principal	Creation of new structure (Automatic Block Signaling)		2022		2025	100 km/h	22,5 t / D4	740 m	3kV DC	ETCS_L1	

5.3 Deployment Plan

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

a/ Fixed installations TSIs INF TSI – infrastructure ENE TSI – energy

b/ Common TSIs

CCS TSI – control command and signaling SRT TSI – Safety in railway tunnels PRM TSI – Persons with reduced mobility

c/ Functional TSIs

OPE TSI – Operation and Traffic Management

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

d/ Rolling Stock TSIs WAG TSI – Wagons NOI TSI – Noise LOC & PAS TSI – Locomotives and Passenger Rolling Stock

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

By 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 the ETCS level no. 2. Most sections are currently under modernization, only some projects are planned to start at a later phase.

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

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

A number of infrastructure, signaling, telecommunication reconstructions projects are running on various sections to fulfil the requirements.

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.

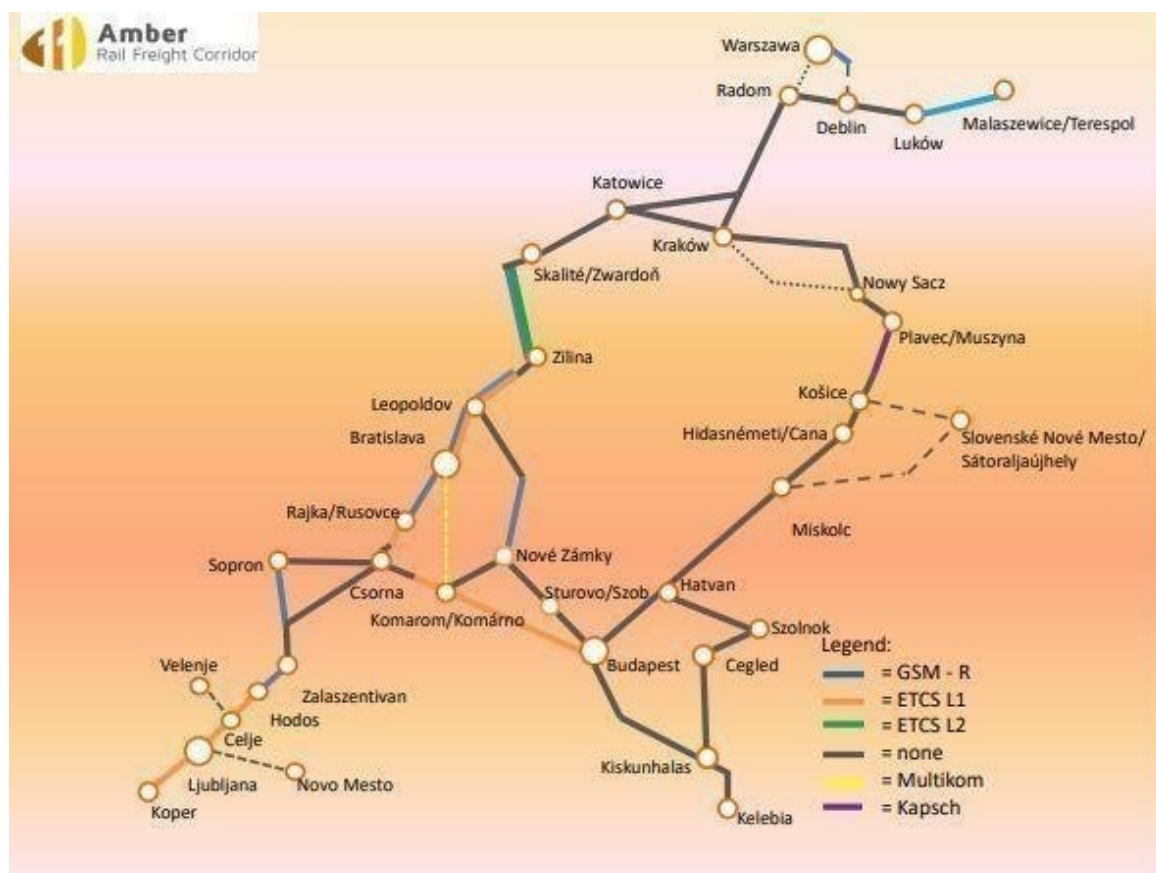
Further update and modernization of the railway infrastructure is only at a planning phase.

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

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

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

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



5.4 Reference to Union Contribution

The activities of the corridor are co-funded by the European Union through a Technical Assistance under the Connecting Europe Facility (CEF), granted by the European Climate, Infrastructure and Environment Executive Agency (CINEA). The duration of the Technical Assistance covers the period 1/10/2021 until 31/12/2024.

6 Annexes*

6.1 Memorandum of Understanding of establishing of ExBo for RFC Amber

6.2 Memorandum of Understanding of establishing of MaBo for RFC Amber

6.3 Framework for Capacity Allocation

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

6.5 Advisory Group Rules of Consultation for RFC Amber

6.6 Transport Market Study for RFC Amber

6.7 The description of the KPIs for RFC Amber

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

*Annexes to be found in a separate document.