RAIL FREIGHT CORRIDOR Rhine-Danube

Rail Freight Corridor Rhine-Danube

Corridor Information Document

Book 5 – Implementation Plan

2020

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VERSION CONTROL

VERSION	AUTHOR	DATE	CHANGES
0.1	PMO, WGs	09-01-2020	Creation of the first draft
0.2	PMO	03-03-2020	Incorporation of MB comments and essential elements of the TMS
1.0	MB	07-04-2020	Official MB-approval of version 1.0.
1.0.0	ExBo	16-04-2020	ExBo meeting
1.0.1.	ExBo	29-05-2020	ExBo comments
1.0.2.	PMO	24-09-2020	Addition of ExBo and MB comments

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1 Introduction

In 2010 the European Parliament and the Council adopted Regulation (EU) No 913/2010 concerning a European rail network for competitive freight, which entered into force on 9th November 2010 (hereinafter referred to as Regulation), providing for establishment of international rail corridors for a European rail network for competitive freight. The purpose of creating Rail Freight Corridors is to increase international rail freight transport by making them more attractive and efficient. The Regulation lays down rules for the establishment and organisation of international rail corridors. It sets out rules for the selection, organisation, management and the indicative investment planning of freight corridors. In the Annex to the Regulation, there were 9 initial Rail Freight Corridors, providing respectively their implementation date in 2013 and in 2015.

The Annex II of Regulation (EU) No 1316/2013 of the European Parliament and of the Council concerning the establishment of the Connecting Europe Facility replaced the Annex of Regulation (EU) No 913/2010. According to the amended list of initial Rail Freight Corridors the Rhine-Danube RFC shall be established by 10th November 2020.

According to the Regulation, the corridor will connect the following nodes:

- Strasbourg-Mannheim-Frankfurt-Nürnberg-Wels
- Strasbourg-Stuttgart-München-Salzburg-Wels-Wien-Bratislava-Budapest-Arad-Brașov/Craiova-București-Constanța
- Čierna and Tisou (Slovak/ Ukrainian border)-Košice-Žilina-Horní Lideč-Praha-München/Nürnberg

The Rail Freight Corridors (hereinafter referred to as Corridors) can be considered as the most suitable instrument to fulfil the specific requirements of the rail freight market. The aim is to provide a high-quality service including a seamless crossing of national borders. Cooperation among Infrastructure Managers/Allocation Bodies will be realised by harmonising capacity allocation and restrictions, traffic management and investment planning.

The principal guidelines specified by the Regulation focus on:

- establishing a single contact point for designated capacity allocation on each Corridor;
- closer cooperation and harmonisation between Infrastructure Managers/Allocation Bodies and Member States both for the operational management of the infrastructures and for investments, in particular by putting in place a governance structure for each Corridor;
- increased coordination between the network and terminals (maritime and inland ports and marshalling yards);
- the stable and reliable provision of the necessary infrastructure capacities allocated to international rail freight on these Corridors.

The purpose of this document is:

- to create an inventory of the tasks that result from the establishment of the Rhine-Danube Corridor,
- to present main characteristics of the Corridor and
- to list measures taken so far for implementation of the procedures to make the Corridor fully operational.

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Based on a relative big geographical overlap in Hungary and Romania the Management Board of RFC RHD decided to establish a close operational co-operation with RFC OEM. The following steps have been decided by the MB:

- The corridor aligned several Working Groups of both RFCs in a way where cost-efficient but also work-efficient cooperation is possible. By next year we might intensify this as after the implementation of RFC Rhine-Danube the common work will be much more than at this stage.
- The MB has agreed few months ago together with the set up of the RFC RHD C-OSS on a concept on how to deal with the overlapping sections, as well as on the process between RFC RHD and RFC OEM. The information on PaPs on overlapping sections can be found in CID Book 4.

In future we would like to intensify this cooperation with RFC OEM but also with other attaching RFCs and would for sure also include the ExBo members into this work. We would also very welcome a common workshop on this as we deem it useful to examine different cooperation models in view of their costs and benefits.

2 Corridor Description

2.1 Key Parameters of Corridor Lines

The Rhine-Danube Corridor is the transport backbone linking West, Central and Eastern Europe by connecting France and Germany, Austria, Czech Republic, Slovakia, Hungary and Romania. The corridor runs from the Strasbourg area and South-West Germany to the Romanian port of the Black Sea and the Slovak-Ukrainian border (in two distinct branches).

According to the results of the Transport Market Study (hereinafter referred to as TMS) elaborated for the operation of the Corridor, the Management Board (hereinafter referred to as MB) agreed on the following routing consisting of principal lines, possible diversionary lines and connecting lines according to the traffic flows. RFC RHD has 5 111.06 km principal lines, 1 832.11 km of diversionary lines.

Country	Principal lines	Diversionary lines	Connecting lines
France	Strasbourg-Kehl		
Germany	Kehl-Appenweier-Rastatt Süd (via 4000)	Appenweier-Rastatt Süd (via 4280)	
	Rastatt Süd-Rastatt-Durmersheim (via 4020)-Karlsruhe	Rastatt-Ettlingen West (via 4000)-Karlsruhe-Bruchsal-Heidelberg-Mannheim	
	Karlsruhe-Hockenheim-Mannheim-Darmstadt-Aschaffenburg	Darmstadt-Frankfurt am Main, Mannheim-Groß Gerau-Frankfurt am Main-Hanau-Aschaffenburg	
	Aschaffenburg-Gemünden-	Gemünden-Würzburg-Nürnberg	

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	Waigolshausen-Bamberg-Nürnberg		
	Nürnberg-Regensburg-München		
	Regensburg-Passau		
	Karlsruhe-Pforzheim-Mühlacker	Bruchsal-Mühlacker	
	Mühlacker-Ludwigsburg-Stuttgart-Ulm-Augsburg-München	München-Mühldorf am Inn-Freilassing	
	München-Rosenheim-Freilassing-Salzburg		
	Nürnberg-Marktredwitz-Schirnding-Cheb		
	Regensburg-Schwandorf-Furth im Wald-Domažlice		
Czech Republic	Cheb-Plzeň		
	Domažlice-Plzeň		
	Plzeň-Beroun-Praha-Poříčany	Poříčany-Nymburk	
	Poříčany-Kolín-Pardubice	Praha-Lysá nad Labem-Nymburk-Velký Osek, Kolín-Velký Osek-Hradec Králové-Choceň	
	Pardubice-Choceň-Česká Třebová		
	Česká Třebová-Olomouc-Prosenice-Hranice na Moravě-Horní Lideč-Lúky pod Makytou		
	Hranice na Moravě-Ostrava-Dětmarovice-Český Těšín-Mosty u Jablunkova-Čadca		
	Ostrava-Český Těšín		
Slovakia	Čadca-Žilina		
	Lúky pod Makytou-Púchov-Žilina		
	Žilina-Vrútky-Liptovský Mikuláš-Poprad-Spišská Nová Ves-Kysak-Košice		
	Barca-Výh. Slivník		
	Výh. Slivník-Čierna nad Tisou	Výh. Slivník-Maťovce	Čierna nad Tisou-UA border (Chop)
	Barca-Košice (via Košice predmestie)		
	Barca-Haniska pri Košiciach		
	Kittsee-Bratislava Petržalka-Rusovce-Rajka		

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Austria	Salzburg-Steindorf bei Straßwalchen-Vöcklabruck-Wels		
	Passau-Grieskirchen-Wels		
	Wels-Linz-Enns-Amstetten-St. Pölten-Wien-Bruck a. d. Leitha-Parndorf-Kittsee	Wels-Traun-Linz	
	Parndorf-Nickelsdorf-Hegyeshalom		
	Wien-Ebenfurth-Sopron		
Hungary	Sopron-Győr		
	Rajka-Hegyeshalom		
	Hegyeshalom-Győr-Tata-Budapest-Újszász-Szolnok	Budapest-Cegléd-Szolnok	
	Szolnok-Szajol-Békéscsaba-Lőkösháza-Curtici	Szajol-Püspökladány-Biharkeresztes-Episcopia Bihor	
Romania	Curtici-Arad-Deva-Simeria-Coșlariu-Sighișoara-Brașov-Ploiești vest-București	Episcopia Bihor-Cluj-Napoca-Coșlariu	
	Arad-Timisoara-Caransebeș-Filiași-Craiova-Videle-București	Simeria-Târgu Jiu-Filiași	
	București-Lehliu-Fetești-Constanța	Ploiești triaj-Buzău-Făurei-Fetești	

***** **A line which connects our corridor to a node in a third country.**

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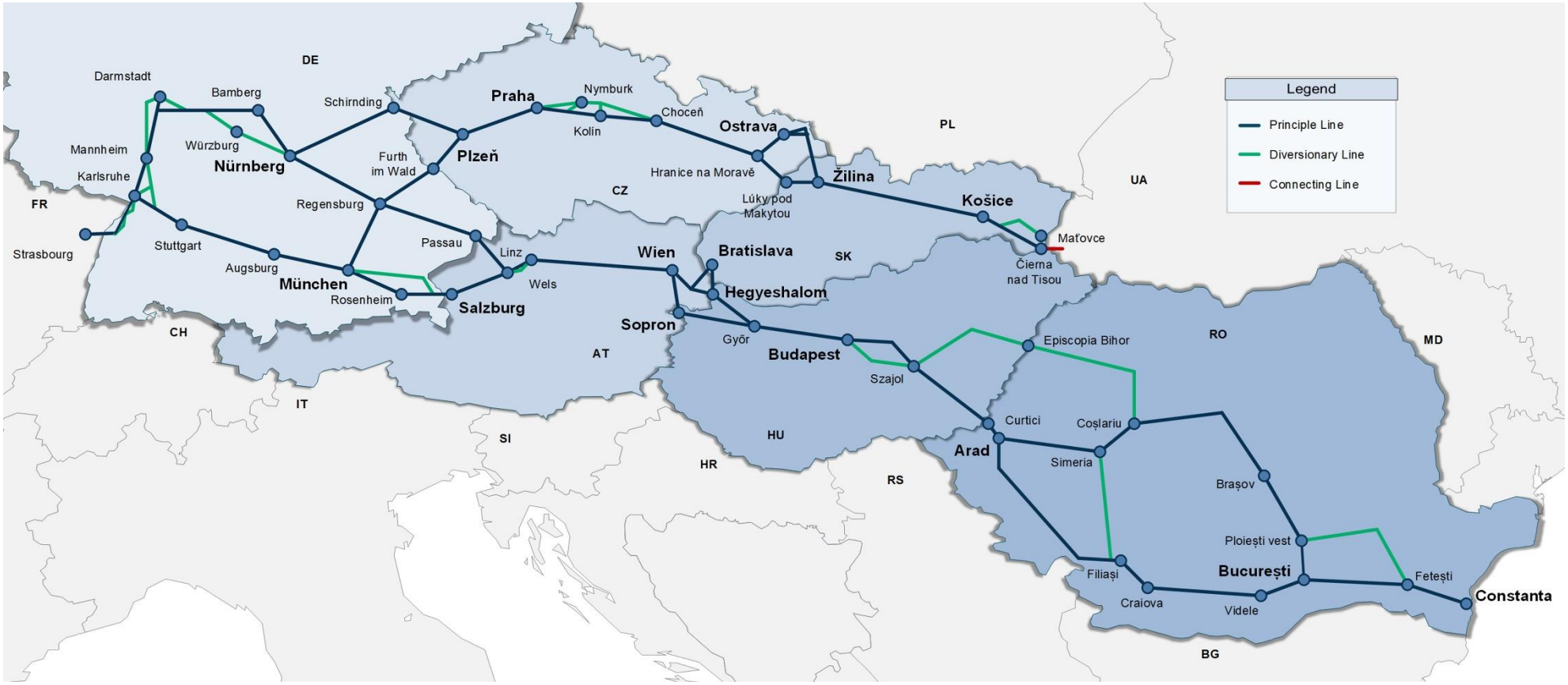
Routing of Rail Freight Corridor Rhine-Danube



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2.2 Corridor Terminals

The following service facilities (terminals, yards and container depots) were identified along the corridor by the relevant studies, such as the TMS and Capacity Improvement and Operational Bottleneck Study. The list includes all facilities which are within the catchment area of the Corridor lines.

Detailed information about Terminals can be found in Chapter 2 of CID Book 3.

Country	City	Terminal
France	Strasbourg	Port Autonome de Strasbourg
France	Strasbourg	Hausbergen marshalling yard
Germany	Karlsruhe	Contargo Karlsruhe Rheinhafen
Germany	Kehl	Klumpp + Müller GmbH & Co. KG
Germany	Kehl	ETK Euro Terminal Kehl GmbH
Germany	Karlsruhe	DUSS-Terminal Karlsruhe by DB
Germany	Karlsruhe	Fruchtcargo Container-Depot Wörth
Germany	Karlsruhe	Container Yard Speyer Contargo
Germany	Karlsruhe	Contargo Wörth
Germany	Mannheim	DP World Germersheim
Germany	Mannheim	DUSS-Terminal Mannheim-Handelshafen
Germany	Mannheim	RoRo-Terminal Mannheim
Germany	Mannheim	Kobler Container Depot
Germany	Mannheim	Contargo Rhein-Neckar Mannheim
Germany	Ludwigshafen	Kombi-Terminal Ludwigshafen KTL
Germany	Mannheim	Mannheimer Tankwagenreinigung Container Depot
Germany	Mannheim	Cotac Depot Mannheim
Germany	Mannheim	Terminal Worms, Rhenania Worms AG
Germany	Mannheim	Hempt Container-Depot Worms
Germany	Gernsheim	GUT Gernsheimer Umschlags-und Terminalbetriebsgesellschaft GmbH & Co. KG
Germany	Frankfurt am Main	DUSS-Terminal Frankfurt/Main-Ost
Germany	Frankfurt am Main	Trimodal Container terminal Aschaffenburg -TCA

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Germany	Frankfurt am Main	Contargo Rhein-Main GmbH, Contargo Frankfurt-Ost
Germany	Frankfurt am Main	Contargo Industriepark Frankfurt - Höchst GmbH
Germany	Mainz	Frankenbach Container Terminals GmbH
Germany	Nürnberg	TriCon Container Terminal Nürnberg
Germany	Nürnberg	DB Cargo AG
Germany	Nürnberg	CDN Container Depot Nürnberg GmbH
Germany	Stuttgart	DUSS-Terminal Stuttgart Hafen
Germany	Stuttgart	SCT Stuttgarter Container Terminal GmbH
Germany	Kornwestweim (Stuttgart region)	DUSS-Terminal Kornwestheim
Germany	Augsburg	DUSS-Terminal Augsburg-Oberhausen
Germany	Regensburg	Container Terminal Regensburg (CTR)
Germany	Regensburg	DUSS-Terminal Regensburg-Ost
Germany	Wiesau	Cargo Center Bayern – Wiesau
Germany	Bamberg	baymodal Bamberg GmbH
Germany	Augsburg	Kloiber Container Depot Augsburg
Germany	Ulm	DUSS-Terminal Ulm
Germany	München	CDM Container Depot München GmbH & Co. Service KG
Germany	München	DUSS-Terminal München-Riem
Germany	Schweinfurt	TRANSLOG Transport + Logistik GmbH
Germany	Landshut	DUSS-Terminal Landshut
Germany	München	Parsdorfer Tankwagenreinigung Container Depot
Austria	Wels	Wels Vbf CCT/ROLA, ÖBB Infrastruktur AG
Austria	Linz	LINZ AG für Energie, Telekommunikation, Verkehr und Kommunale Dienste
Austria	Mauthausen	Container Terminal Enns GmbH
Austria	Ybbs der Donau	Ybbs by Schaufler GmbH
Austria	St. Pölten	St. Pölten Alpenbahnhof CCT by Johann Dorner GmbH
Austria	Krems an der Donau	METRANS Terminal Krems an der Donau

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Austria	Salzburg	CTS Container Terminal Salzburg GmbH
Austria	Salzburg	Salzburg Hbf RoLa, ÖBB-Infrastruktur AG
Austria	Vienna	Wiencont Container Terminal GmbH
Austria	Vienna	Terminal Wien Inzersdorf - Süd, ÖBB Infrastruktur AG
Austria	Vienna	Terminal Wiener Neudorf by CONTAINEX Container Handelsgesellschaft m.b.H.
Czech Republic	Vratimov	Terminal Ostrava-Paskov
Czech Republic	Havířov	Metrans-Terminal Ostrava - Šenov
Czech Republic	Ostrava	Terminal Ostrava-Mošnov (planned)
Czech Republic	Plzeň	Contargo-Terminal Plzeň
Czech Republic	Plzeň-Nýřany	Metrans-Terminal Plzeň – Nýřany
Czech Republic	Praha-Uhříněves	Metrans-Terminal Praha-Uhříněves
Czech Republic	Pardubice	Terminal Pardubice
Czech Republic	Česká Třebová	Metrans-Rail Hub Terminal Česká Třebová
Czech Republic	Přerov	RCO-CSKD Terminal Přerov
Czech Republic	Lípa nad Dřevnicí	Metrans-Terminal Zlín - Želechovice/Lípa nad Dřevnicí
Czech Republic	Kopřivnice	Terminal Agro Bohemia Kopřivnice
Czech Republic	Mělník	Kontejnerové překladiště. MĚLNÍK
Czech Republic	Lovosice	ČD-DUSS Terminál, a.s.
Slovakia	Zilina	Intermodal Transport Terminal Žilina -ITT ZA
Slovakia	Zilina	Rail Cargo Operator - CSKD s.r.o. (2 Terminals)
Slovakia	Košice	CSKD Terminal Košice, CSKD Intrans s.r.o.
Slovakia	Košice	Metrans-Terminal Kosice
Slovakia	Dobra	TransContainer Slovakia, a.s., TKD Dobra
Slovakia	Bratislava	Bratislava Palenisko by Slovenská plavba a prístavy (SPaP) a.s.
Slovakia	Bratislava	UKV Terminal Bratislava ÚNS

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Slovakia	Bratislava	Dunajská Streda by Metrans (Danubia) a.s.
Slovakia	Dunajská Streda	Metrans-Rail Hub Terminal Dunajská Streda
Slovakia	Maťovce	MLC Maťovce (Premako)
Slovakia	Ružomberok	RCO-CSKD Terminal Ružomberok - Lisková
Slovakia	Komarno	Komárno by SPaP a.s. (Slovak Shipping and Ports JSC)
Hungary	Győr	Terminal ÁTI Györ by ÁTI DEPO Zrt.
Hungary	Győr	Port of Győr-Gönyű Logistics Center
Hungary	Sopron	Sopron container terminal by GYSEV CARGO Zrt.
Hungary	Budapest	Metrans Terminal Budapest by METRANS, a.s.
Hungary	Budapest	Mahart Container Center
Hungary	Budapest	Törökbálint Container Terminal by IntegRail Ltd.
Hungary	Budapest	Rail Cargo Terminal BILK Budapest by BILK Kombiterminal Co. Ltd.
Hungary	Budapest	Port of Budapest Logistics Center
Hungary	Baja	Ro-Ro Terminal Baja
Hungary	Szeged	MÁV Kombiterminál Szeged
Hungary	Szolnok	MÁV Kombiterminál Szolnok
Hungary	Szolnok	Szolnok Industrial Park and Logistics Service Centre
Romania	Timişoara	Semenic, CFR Marfa S.A.
Romania	Curtici	Railport Arad Terminal by Railport Arad S.r.l.
Romania	Oradea	Terminal Oradea Intermodal Vest
Romania	Turda	Turda by Rofersped S.A.
Romania	Turda	Rofersped-Terminal Turda
Romania	București, Ilfov	Bucharest International Rail Freight Terminal (BIRFT)
Romania	București, Ilfov	Bucharest Intermodal Terminal by Yusen Logistics Co., Ltd.
Romania	București, Ilfov	Bucuresti Sud by Rocombi SA
Romania	Constanța	Container Terminal SOCEP
Romania	Constanța	DP World-Terminal Constanta
Romania	Constanța	APM Terminal Constanta
Romania	Constanța	UMEX Terminal Constanta

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2.3 Bottlenecks

The bottlenecks, which hinder the smooth and competitive rail transportation, can be grouped into the following categories:

- infrastructural bottlenecks
  - Sections which do not meet the TEN-T requirements specified in Article 39 (2a) of the Regulation (EU) No 1315/2013 of the European Parliament and of the Council.
- operational bottlenecks
  - Capacity and traffic management issues during the train run
- administrative bottlenecks
  - Effects of non-harmonised rules and procedures
- capacity bottlenecks
  - Issues in relation with capacity planning and path allocation. This includes the lack of multi-annual planning works due to missing multi-annual financing environment.
- other bottlenecks

Detailed list of already identified bottlenecks together with the suggested measures towards their removal can be found in Annex 6.1.

A Capacity Improvement and Bottleneck Study is going to be elaborated until the end of 2020, which will identify the bottlenecks together with the necessary measures to remove these. The result of the study will be incorporated into the next update of the CID after 2020.

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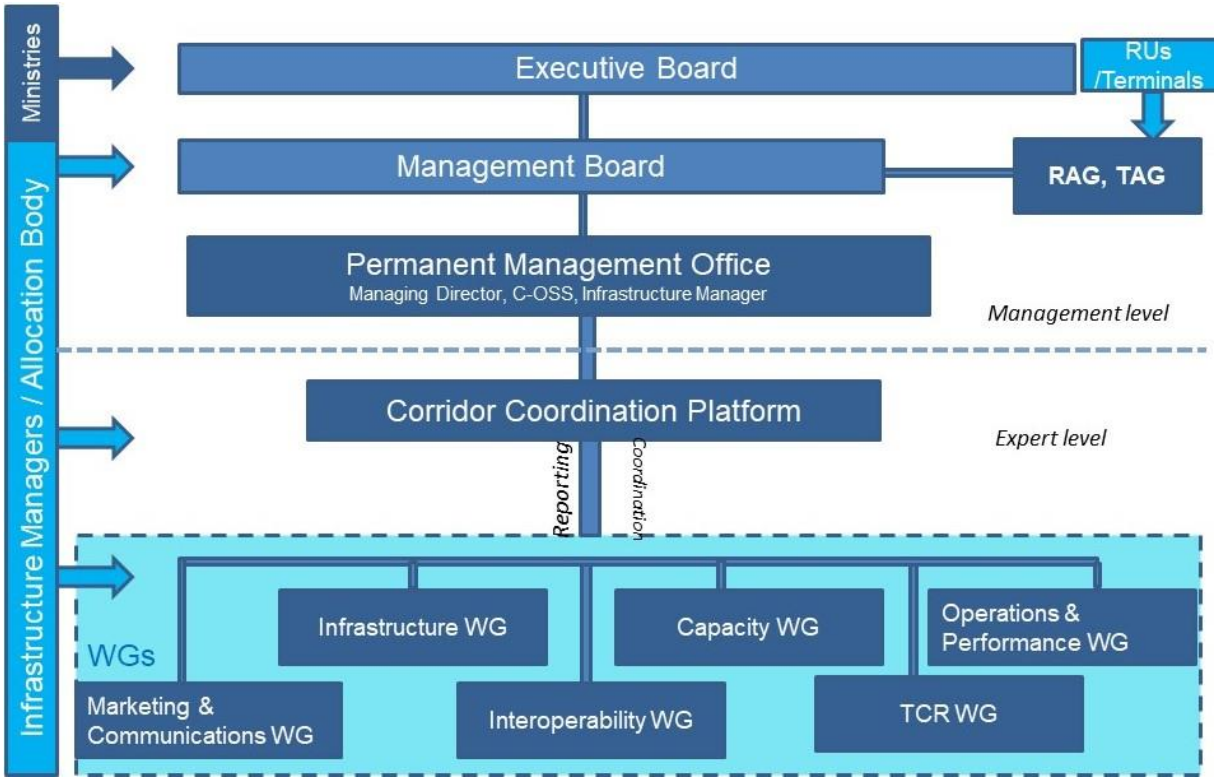
2.4 RFC Governance

According to the Regulation, the following Bodies and structures of the Corridor have been established.



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3 Market Analysis Study

3.1 Background

The Regulation Regulation (EU) No 913/2010 has set up Czech – Slovak Rail Freight Corridor No. 9 (CS corridor or RFC9) as one of the initial freight corridors. In line with the provisions of the Regulation, it became operational on 10 November 2013.

The list of initial freight corridors in the Regulation has been amended by Annex II of Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility. The stipulations of this Annex imply an extension of the principal route of RFC 9 to France, Germany, Austria, Hungary and Romania. Furthermore, the corridor has been renamed from “Rail Freight Corridor No. 9” to “Rhine-Danube Rail Freight Corridor”.

As an essential part of the implementation plan for the freight corridor a Transport Market Study has to be carried out according to Article 9.3 of the Regulation - “Measures for implementing the freight corridor plan”.

The main objective of the TMS is to recommend a routing alignment for the Rail Freight Corridor 9 according to expected future traffic. Therefore, the TMS provides a detailed overview of the corridor’s current operational status and a fact-driven outlook regarding the freight market development and potential future customer demand along the corridor.

RFC 9 RHD has a highly important strategic role, being one of the main East-West links across Continental Europe.

3.2 Scope of Analysis

The study focuses on the following major areas:

- Analysis of the geographical characteristics of the catchment area and Member States in terms of relevance to transport;
- A detailed PEST-Analysis for the relevant Member States
- Analysis and evaluation of the current transport market situation covering all traffic modes;
- Multimodal traffic flow evaluation;
- Brief analysis of possible modal shift;
- Analysis of commodities;
- SWOT-Analysis of the rail freight traffic in the corridor;
- Forecast of the transport market development and traffic growth;
- Deduction of requirements to railway infrastructure and operational or organizational improvements in railway freight traffic to improve the railway sector’s competitiveness and to adequately meet market demand;
- Identification of logistic service opportunities;

Investigations and analyses have been carried out for major corridor sections, transport nodes, IWW networks, ports and multimodal terminals identifying gaps and proposing solutions to improve RFC 9 RHD[1].

[1] The list of sources can be found on pages 7-11 of the TMS (available at the our website)

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3.3 Current situation

Economic development

Overall, the economic indicators[2] suggest a fairly positive outlook regarding freight transport overall (all modes) with economic development expected to remain positive in the entire corridor region. Particularly relevant for rail freight transport is the development of the industrial production sector, as it generates goods that typically have a relatively high propensity of being transported via rail. With few exceptions, investments in industries have grown along the corridor over the past years. Given the positive macro-economic forecast, we can also expect further industrial growth[3]. Investments in the industrial sector have grown particularly strongly in Germany, which at the same time also has the highest GDP/capita and therefore a dominant position in terms of trade (both imports and exports) with Asia among the countries located along the corridor. Even if only a minor share of this trade can be directed via RFC 9 RHD, it will be substantial.

Social and demographic development

Substantial demographic shifts have been happening along the corridor region over the past decade. While the population has grown strongly in Austria and Germany, substantial population decline could be observed especially in Hungary and Romania. These shifts have been driven by differentials in income levels and employment. Especially young, high-skilled workers have left the regions located in the Eastern part of the corridor. The population decline is expected to continue, however, to a lesser extent than it has been happening over past years. The same is true for population growth: especially Austria's population is expected to continue growing.

The population decline in the Eastern parts of the corridor region may lead to a lower local demand for goods in these regions. Local productivity is also likely to be negatively affected. However, due to the composition of the migrating population high-skilled professions are probably affected more; these in turn tend to produce goods with low rail-affinity (or services that do not require transport at all). Sectors that typically require low-skilled labour (e.g. mining) as input, and at the same time, produce goods with high rail-affinity, are likely to be less affected by the population decline. This seems to be in particular true for the car manufacturing sector: major car manufacturers, including German brands, have moved their production to lower-wage countries in Eastern Europe, in particular to Hungary and Slovakia (e.g. Audi in Győr, Volkswagen Slovakia in Bratislava).

The fact that within the corridor region migration is directed towards more productive areas with a substantial share of industry (e.g. Southern Germany), in turn is likely to increase imports and exports in those areas (e.g. trade between Germany and China), overall benefitting potential trade flow prospects on RFC 9 RHD.

With improved infrastructure that is in line with the standards, travel times are expected to decrease, and reliability and punctuality are expected to improve. Also, possibilities for multimodal transport are expected to improve, leading to shorter door-to-door travel times. This will lead to decreases in the inconvenience that rail has compared to road in terms of travel times and reliability.

[2] Economic indicators as used in TMS according to the Terms of Reference. Source of indicators: Eurostat

[3] Investigation period before Corona virus implications

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Political development

However, besides the infrastructural factors, improvements are also necessary regarding operational procedures, for instance aiming at yielding reductions in waiting times at borders (which are often highly uncertain in duration) and offering more integrated and flexible logistics solutions (providing flexible door-to-door solutions).

In 2016 Mathieu Grosch, the coordinator commissioned by the European Commission for the TEN-T core network corridor "Orient / East-Med", invited the Ministers of the Members States of this Corridor to sign a "Ministerial Declaration" and to collaborate, among the Executive Board of the OEM RFC, to an "Action Plan" to – among others - reduce the border waiting times of (freight) trains along the corridor. Cross-border Task forces were created to analyse the problems and propose adequate measures to significantly reduce average border waiting times, with a target of a maximum of 2 hours (average) waiting time (excluding waiting times resulting from border procedures at Schengen external borders). On the basis of the comprehensive work and on the achieved results made by RFC OEM, RFC RHD might be also in the position to adapt and use some good example, and implement some practical, operative measures in close cooperation with the fellow RFC.

Another important political aspect is to achieve a level playing field regarding the internalisation of external cost. The European Commission's "Green Deal" is very likely to launch relevant political measures to achieve this goal.

In 2019 the European Commission launched an evaluation to assess the implementation and impacts of Regulation (EU) 913/2010 on the transport of goods by rail. The evaluation will cover all provisions of the Regulation, including the purpose and scope of the RFCs, and will cover all countries involved in the RFCs. Furthermore, the European Commission decided to synchronise the review processes of Regulations (EU) No. 913/2010 and 1315/2013 ("TEN-T Guidelines") where appropriate. The results of both evaluations and consequently the eventual revision of those important European legislations will greatly influence further development of transport policies in the area and all Europe.

Geopolitically, trade relations with most Asian economies are stable, and for the main Asian trading partner, China, mostly governed by the WTO framework. New tariffs or other forms of trade barriers are rather unlikely to be established soon. On the contrary, negotiations for an investment Agreement between the European Union and China have been ongoing since 2013, as part of the EU-China 2020 Strategic Agenda for Cooperation. Nevertheless, there are specific policies that may affect trade between Europe and Asia, such as China regulating the sale of fossil-fuel vehicles by imposing quota for electric vehicles. Another one is the current subsidies provided by the Chinese government for Eurasian rail services (approximately 2000-5000 USD/TEU), which at some point might be phased out, leading to a yet higher price differential between rail and sea freight rates (ITF, 2019). There is potential for future traffic flows from Ukraine entering the corridor at Čierna nad Tisou (depending on the political and economic situation).

Technical development

Overall, in line with past developments, we expect freight transport demand to increase further due to more globalized supply chains and realignment towards emerging markets. This is in spite of some developments that may flatten freight transport volumes to some extent such as automatized couplings, digitization and 3D-printing. The extent to which the freight volume increase can be captured by the rail sector depends, among other factors, on technological developments.

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Further important technical developments:

ERTMS/Interoperability

The issue of ERTMS and Interoperability is elaborated in chapter 6.3. Deployment Plan.

Once the IT tool CIP RFC 9 RHD is accomplished, also graphical visualization of deployment plan will be available.

TAF/TAP TSI

The TAF/TAP TSI (Technical Specification for Interoperability relating to Telematics Applications for Freight/Passenger Services) aim to define the data exchange between individual Infrastructure Managers and also between IMs and Railway Undertakings.

In addition to data exchange, the TAF TSI describes business processes involving IMs and RUs. For this reason the TAF TSI deeply impacts existing international rail infrastructure business processes. The TAF, or at least the IT interfaces with other partners, must be implemented in a similar way by all TAF TSI partners, including the IMs.

The TAF TSI functions define data processing regarding the following variables:

- When (at which point in time)
- What (which kind of information and content) has to be sent to
- Whom (partner or partners) and
- How (in which format) the data must be exchanged.

Electronic Exchange of Estimated Time of Arrival information "ELETA"

The ELETA Action gave implementation to the agreement on sharing of data related to Tracing & Tracking (T&T) and Estimated Time of Arrival (ETA), which was reached by the sector and authorities at the occasion of the Rotterdam TEN-T Days in June 2016 (Sector Statement and Ministerial Declaration). The initiative for the Action was taken in December 2016. The approach chosen was to make a practical start with the sharing of T&T and ETA information on a sample of intermodal trains, which are operated on a regular weekly schedule. The approach implied that for the Action a small number of intermodal Operators (Combined Transport Operators-CTOs) being customers of the Railway Undertakings (RUs) were to be in the lead. The Action uses the Train Information System (TIS) as principal source of T&T data. The TIS system is operated by RailNetEurope (RNE) as not-for-profit association of the European Infrastructure Managers (IMs) and has been developed with EU funding support.

The ELETA project successfully developed a new smart ETA algorithm. It was demonstrated on 22 intermodal services (200 trains/week) that the new ETA algorithm, which was based on artificial intelligence, was generally more accurate than the ETAs based on linear time shifting, which are currently shared by most of IMs with stakeholders through TIS. This new approach to ETA calculation makes it potentially more interesting for the new stakeholders such as terminals and CTOs, to connect to TIS.

As a result of the ELETA Action changes were made to the TAF-TSI to facilitate data-sharing between stakeholders in rail freight transports.

Currently, rail freight transport suffers from limited competitiveness compared to road transport: long travel times, unreliability, inflexibility. These are to a substantial extent caused by technological and infrastructure-related factors such as bottlenecks, border waiting times, limited technical and organizational compatibility & coordination, too national perspective of IMs and Ministries/Authorities, no awareness of the international character of rail freight, lack of quality capacity dedicated to freight trains. If in the process of unification of the transport market substantial improvements and compliance with EU standards can be seen, a substantial increase in demand can be expected.

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While the rail sector exhibits comparatively limited technological developments, the road sector may face several disruptive technologies in future years, among which are large-capacity vehicles (through mega-trucks and/or platooning), (at least partially) self-driving trucks and electrification. Especially the larger size vehicles and self-driving capabilities are expected to improve cost efficiency of road transport even further. Even if stricter environmental regulations, for instance in the form of marginal cost pricing, are implemented, the cost advantage of road transport would therefore likely prevail, rendering the outlook for rail traffic rather challenging from a cost perspective. However, it is currently uncertain when these technologies will be introduced on the market and to which extent, they are accommodated by adaptations in the legal framework as well as in the infrastructure.

Conclusion

The positive economic developments and more globalized supply chains result in a traffic increase in all modes. BUT: The modal share of road transport is still increasing both in the passenger as well as the freight sector in the Corridor area; however, there are differences in the modal split developments, with rail modal share increasing in some and decreasing in other countries. It is lowest in France (just above 10% in 2017), followed by Germany (17.8% in 2017), while it is highest in Slovakia (32.9% in 2017). Between 2010 and 2017, we observe a decline in rail modal share in Austria, Czech Republic, Slovakia. In the remaining countries, the rail modal share is fairly stable.

This is partly caused by different priorities in national governments infrastructure investments, as the Corridor countries typically perform highest per-capita infrastructure investment in road transport (except for Austria); Germany and Romania also show significant investments in inland waterways.

Partly, the higher attractiveness of road transport is the result of

- hurdles of competitiveness of rail transport (long travel times, lack of reliability, inflexibility), partially caused by operational and administrative bottlenecks, border waiting times, limited technical and organizational compatibility & coordination and missing reliable multi-channel planning of works, partly due to lack of financing.
- comparatively limited technological developments, whereas road transport may undergo some disruptive developments within the next 1-2 decades (e.g. self-driving trucks leading to substantially lower operating costs; electric trucks leading to competitive road transport even under-pricing of (environmental) externalities; platooning, mega-trucks improving cost efficiency.

With improved infrastructure that is in line with the standards, travel times are expected to decrease, and reliability and punctuality are expected to improve. Also, possibilities for multimodal transport are expected to improve, leading to shorter door-to-door travel times. This will lead to decreases in the inconvenience that the rail has compared to road in terms of travel times and reliability.

In addition, the so-called “soft-measures” (i.e. requiring almost no investment) need to be executed to bolster the competitiveness of the corridor regarding speeding up the border-handling processes, the harmonization of rules and TSI among others.

Potentials to increase the modal share of rail transport also lie in digital cargo management/tracking and the increasing importance of environmental aspects, resulting in a higher relevance of the internalization of external cost in the political discussion (e.g. Handbook on external costs of transport). In addition, a highly flexible capacity allocation for ad-hoc transport needs is essential for the attractiveness of rail freight. Rail Net Europe has therefore introduced the TTR (Timetable Redesign) Project.

Regarding the external costs of freight transport, rail freight transport is currently not competitive with road transport along various dimensions, which is one of the reasons for the

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low modal split of freight rail in most EU countries. Even with improvements in infrastructure, rail freight transport will still be subject to longer travel times and less flexibility than road transport along most routes, although the relative disadvantages are expected to become substantially smaller, as in many countries substantial investments in rail infrastructure are planned (e.g. in Germany and Austria).

External cost, such as local air pollution, greenhouse gases, noise, congestion, accidents, well-to-tank emission, habitat damage, are not reflected in the costs of transport yet. The external costs associated with heavy goods vehicles are higher in all countries than for rail, often by a factor exceeding 3. The difference would have been even more pronounced if congestion costs (which is mostly absent on the rail due to fixed timetables that already consider capacity constraints) had been included. The societal awareness about this issue is increasing in all countries along the corridor. The willingness to translate this higher awareness into concrete political measures (incentives, taxes etc.) still varies a lot among the different countries.

BUT: If the technological developments in the road sector are successfully introduced in the market (and allowed for by EU and national regulations and infrastructure provisions), the growth potential of the freight rail sector may still be limited due to a persistent lack of competitiveness, in terms of flexibility, speed and reliability (see also results from survey p. 137).

Although cost, time, and quality have been the relevant decision points in the past, the requirements for sustainable transport are growing with a significant impact on related business models. According to the results from the Consultant's survey, environmental issues will play a more significant role in the choice of mode of transport in the future; e.g. already today some customers from automotive require 100% green electricity in the logistics chain (as a result from national regulations in Germany).

In the face of environmental and climate concerns being increasingly present in the public discourse, and citizens increasingly expecting policy makers to act upon their concerns, policy makers at the EU level, but also at the national, regional and local level are expected to increasingly support regulations and policies that benefit the environment.

3.4 Recommended routing

Based on a two-step-approach, the principal lines, possible diversionary lines and, if suitable, connecting lines have been discussed with the relevant stakeholders and a recommendation for the final routing has been elaborated by the consultant. Final approval will be done by the relevant bodies. The routing contains:

Principal lines (blue),
Diversionary lines (red), and
Connecting lines (yellow) to Ukraine only.

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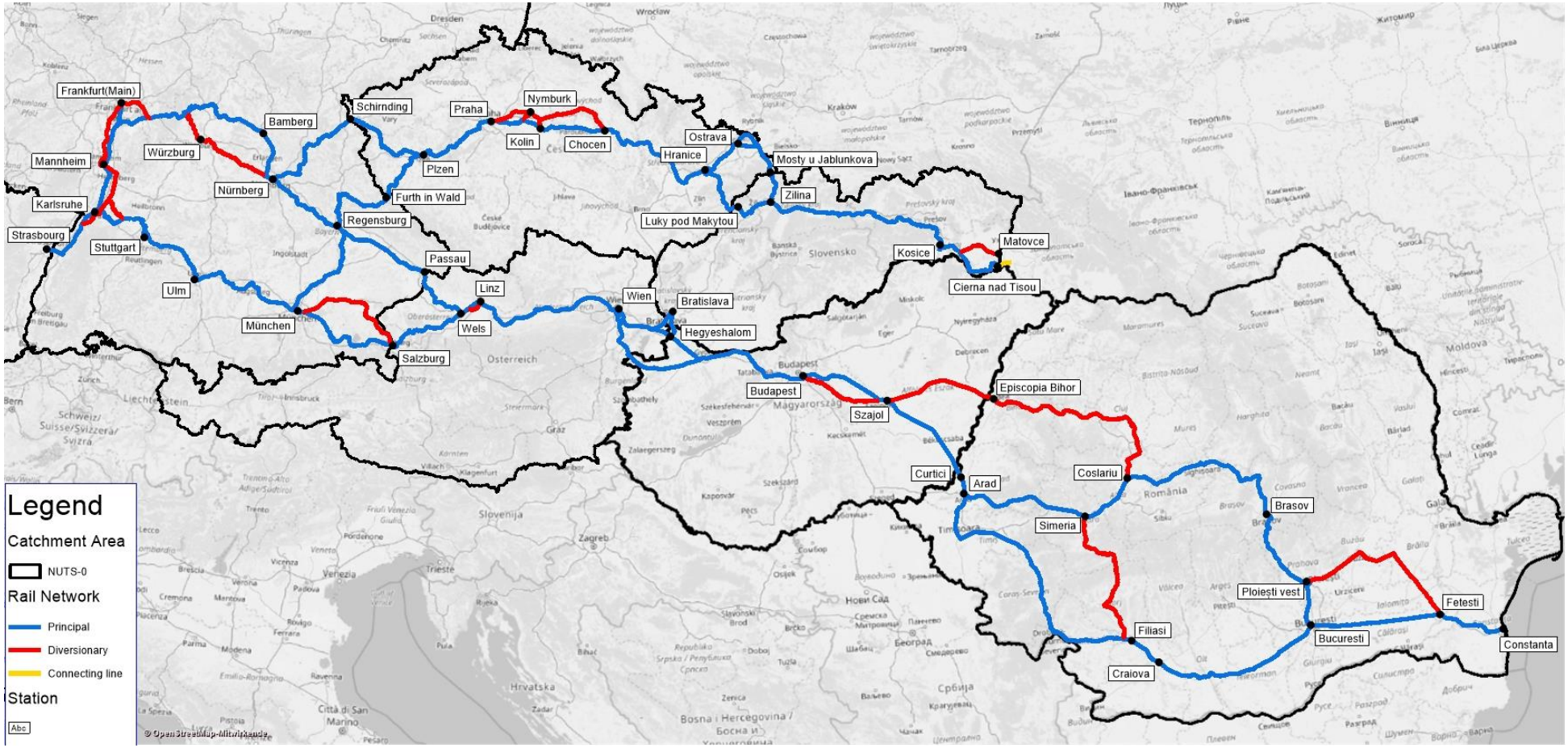

Figure 1: Recommended Routing RFC 9 RHD including principal, diversionary and connecting lines

Current traffic

In the following section the focus is put on corridor trains, defined as international trains passing at least one of the border crossing points defined along the RFC 9 RHD. This filter allows to concentrate on the relevant train numbers within the TMS, as e.g. transports within one and the same country will not be considered. Furthermore, just those trains will be counted as corridor trains, which cross at least one border via the dedicated corridor lines. Thus, transports not directly crossing such a border are automatically filtered and not shown in the overall results.

The following table gives an overview with regard to the O-D Matrix of corridor trains along RFC 9 RHD in 2017 based on the existing data.

from / to	Austria	Czech Republic	France	Germany	Hungary	Romania	Slovakia	Ukraine
Austria				16.500	7.100	100	3.800	
Czech Republic				2.200			6.600	
France				200				
Germany	14.600	2.000	200		600	200	10	
Hungary	7.800			800		5.100		
Romania	100			200	5.100			
Slovakia	4.000	7.100		10				300
Ukraine							300	

Table 1: O-D-Matrix for corridor trains on the RFC 9 RHD in 2017

from / to	Austria	Czech Republic	France	Germany	Hungary	Romania	Slovakia	Ukraine
Austria				45.700	8.000	350	6.000	
Czech Republic				33.400			34.700	
France				2.300				
Germany	44.900	23.800	2.400					
Hungary	8.400					1800		
Romania	350				1800			
Slovakia	6.000	31.600						23.500
Ukraine							23.500	

Table 2: O-D-Matrix for passenger trains on the RFC 9 RHD in 2017

Economic Areas

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The following figure shows a graphical match of the recommended routing, all train data with 200 and more corridor trains per year – nearly one train per day – with the economic areas close to the corridor, mining, industrial, and service industry and the so-called 'blue banana' with more than 110 million inhabitants. In the Eastern part the Port of Constanta is both the gate to the Black Sea for import-export for the corridor, but even more important also the entry point to the world market for Eastern Countries. Finally, the terminals as hubs within this network are shown including a 50km (red circles) and 100 km (dotted circles) catchment area.

It can be clearly seen, that the RFC 9 RHD is connecting all relevant economic areas; the terminals are giving access to these areas within a suitable catchment area per terminal. Thus again showing that the proposed routing of the corridor aligns with the major economic hubs of the regions in a sensible way.

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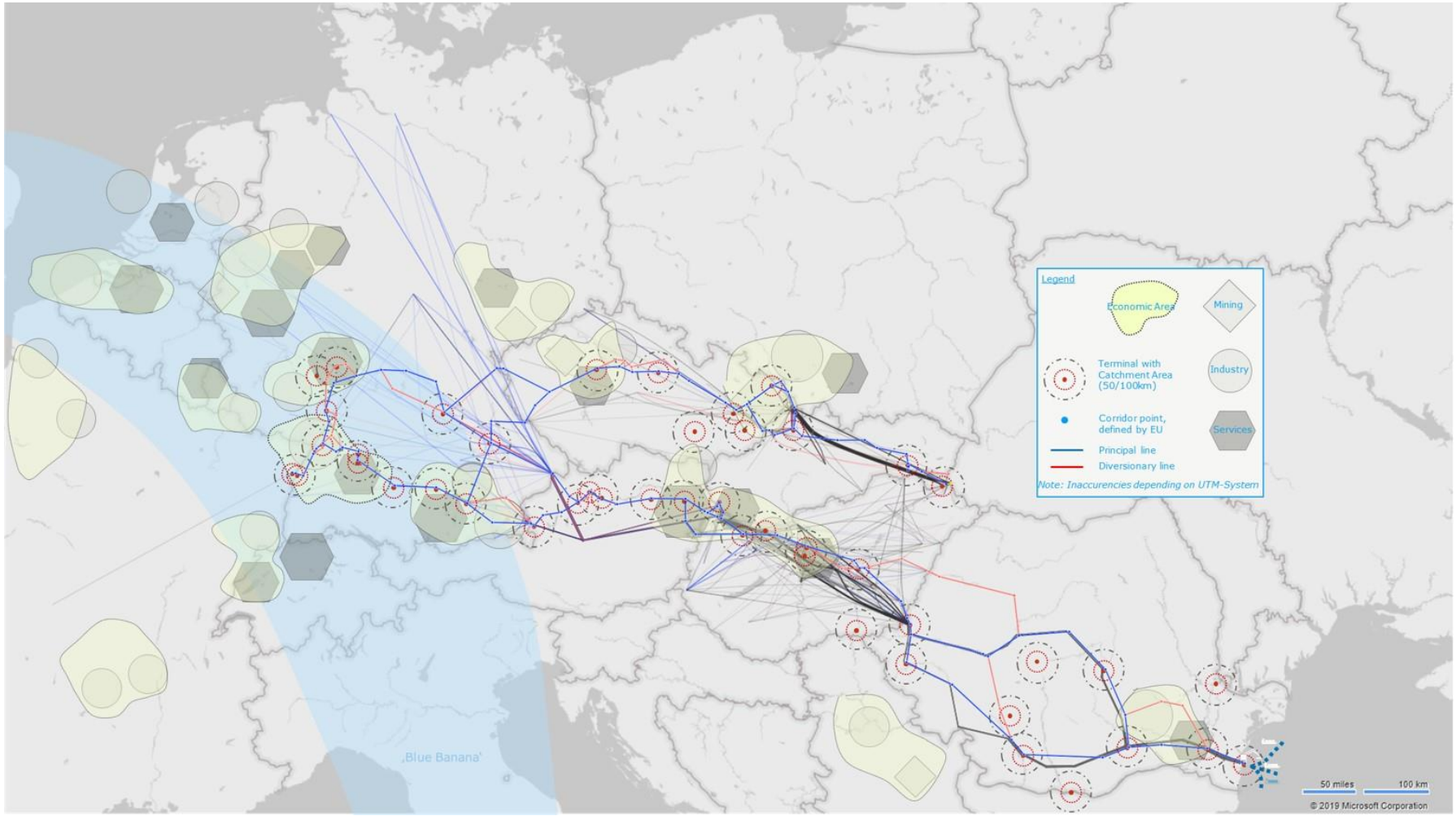

Figure 2: Main routing RFC 9 RHD and economical areas

3.5 Projections

Methodology

The traffic forecast is based on findings of the analysis of current situation and the PEST analysis. The results of the comprehensive PEST analysis are described in detail in chapter 3 of the TMS. The major socio-economic factor, having a special influence on the transport development in the corridor for the short-term forecast is the overall GDP development.

The forecast[4] is based on the amount of trains running from country to country, crossing an international border. Here, the share of trains is split into three categories:

BT – Block Trains
CT – Combined Transport Trains
SW – Single Wagon Load Trains

In a next step the average gross and net tons, as well as wagons per train are combined with the amount of trains. The individual multiplication of trains and average tons transforms the basic data from trains into tonnage transported in 2017 per rail. This approach was chosen as forecasts using a Compound Annual Growth Rates (CAGR) for the time span between 2017 and 2022 can only be made on tons and later be transformed back into number of trains.

The utilization of trains has to be considered here as well. Additional tons gained (through growth) will first be covered by increasing the utilization of existing trains before establishing additional services.

The following figure gives an overview on the approach used.

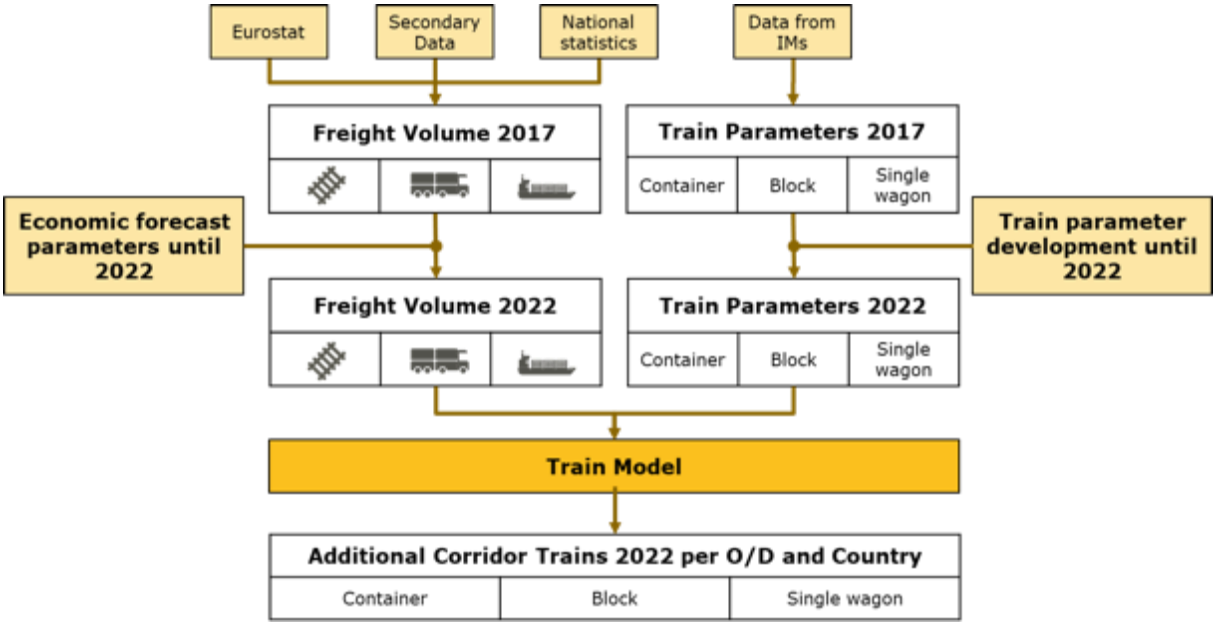

Figure 3: Forecasting process used

[4] Forecast generated by consultant based on IM data and economic outlook – as defined in ToR of TMS

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Forecast results 2017 - 2022

The following tables are showing the comparison of additional tons and trains for the forecast period. The growth with 7,5 million additional tons will result in 4,500 extra corridor trains along the corridor. Relatively speaking, an overall growth of about 9% in freight per ton will result in a 5 % growth on corridor trains overall, reflecting the increase of efficiency (better load ratio for existing trains) as well.

Category	2017	2022	Absolute growth	Relative growth
BT	48,100,600	52.748.600	4.648.000	8,81%
CT	17,084,100	18.875.100	1.791.000	9,49%
SW	10,168,000	11.192.300	1.024.300	9,15%
Total Tons	**75,352,700**	**82,816,000**	**7,463,300**	**9,01%**

Table 3: Comparison tons regarding BT, CT, and SW – 2017 and 2022

Category	2017	2022	Absolute growth	Relative growth
BT	50,700	53,500	2,800	5.23%
CT	17,500	18,420	920	4.99%
SW	14,900	15,700	800	5.10%
Total Trains	**83,100**	**87,620**	**4,520**	**5.16%**

Table 4: Comparison trains regarding BT, CT, and SW – 2017 and 2022

The following figure shows the destinations on a country level for 2022 and the changes from 2017. The thickness of the connecting line indicates the amount of corridor trains between the countries.

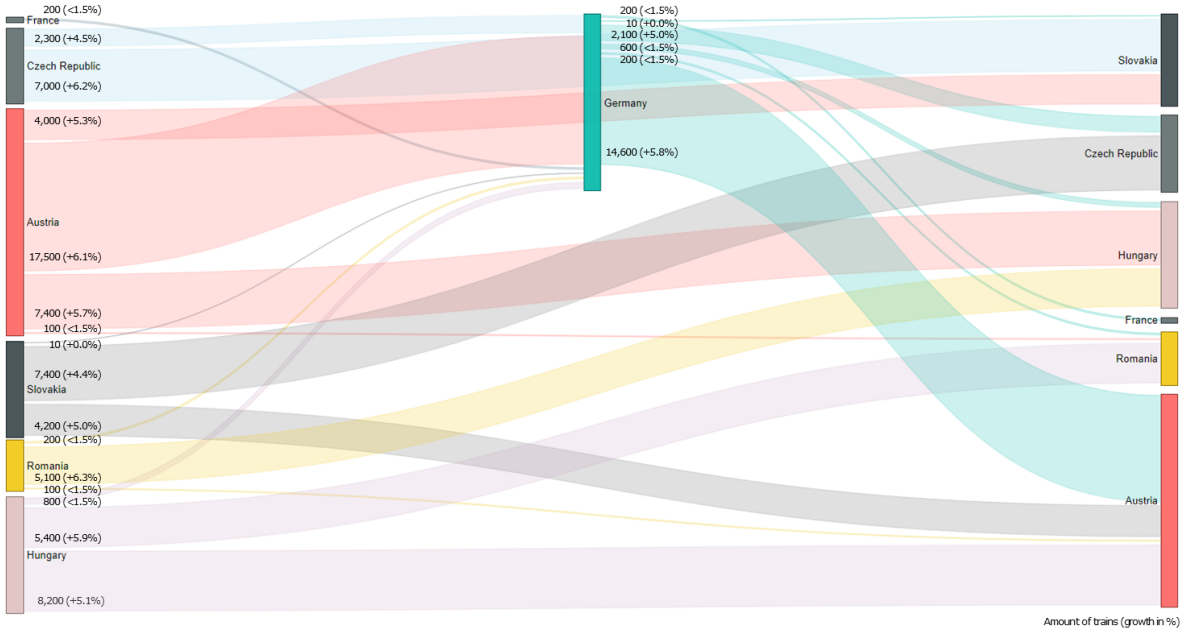


Figure 4: O-D-Graph for corridor trains on RFC 9 RHD in 2022 incl. growth rates from 2017

3.6 Results

Based on the results and the overall finding the following conclusions regarding the growth of corridor trains can be drawn from the consultant's point of view:

- The share of combined transport (CT) and single wagon load train (SW) is decreasing from the Western part to the Eastern part of the corridor. Single wagon trains can only survive with substantial governmental support through subsidies (e.g. in Austria). In many countries this willingness decreased substantially in recent years (e.g. in France).
- The increase of block trains (BT) to the east is also partly due to the fact that single wagon load trains cannot be clearly separated from this block trains within part of the data sets received. In addition, block trains are cheaper to run, so they are more competitive from a cost perspective.
- Taking into account the estimations of potential declining demands on BT and lower growth on SW plus its complex production system, the main focus in corridor train development should be put on CT along the corridor (especially regarding the development of access points, i.e. terminals) – but not necessarily the only one.
- The potential for higher growth regarding CT is based on the following facts:
    1. The production system itself is a viable solution for future transport requirements and development due to its flexibility.
    2. Shuttle-Systems with standardized transport equipment can be introduced.
    3. There is potential for increasing the utilization of trains with non-cranable semi-trailer (for instance using the Nikrasa technology).
    4. If the CT terminals are upgraded / promoted, then they are very likely to attract cargo from road and thus increase the modal split in favour of rail.

Conclusions and recommendations

Based on the results of a SWOT-Analysis the following conclusions have been developed on how to take advantage of the strengths and opportunities, by minimizing the threats and weaknesses (risks) from an IM point of view (taking into account where the IMs will be able to change or influence the parameters identified within the SWOT-Analysis).

Institutional

A coordinated implementation process concerning the institutional reform steps across all RFC 9 RHD countries in order to maximise the strengths, which the liberalisation brings to freight traffic growth, should be the goal of all stakeholders involved. A harmonised approach will help to overcome the different levels of implementation and harmonisation on the corridor concerning the EU-wide implementation of homogenous technical and safety regulations and rules in all member states of the RFC 9 RHD.

Economic

The future economic developments and the effects on RFC 9 RHD should be closely monitored. In regard to the continuous development of infrastructure it is essential, that a multi-annual financing is secured - including safeguarded budget elements – by the responsible Ministries (MoT, MoF). The IMs can only do the planning of works with this essential pre-condition, and thereby reduce the number of uncoordinated Temporary Capacity Restrictions (TCRs).

Organisational

This study provides the number of corridor trains on the major O/D relations and for specific line sections of the preliminary route for the current situation as well as a forecast for 2022. These numbers are based in data provided by the IMs and may be used as one input for the development of the Pre-arranged paths (PaP) offer. Nonetheless, it has to be noted, that the current information available on corridor trains is hampered by the different data interfaces and information available in the IMs databases on corridor trains.

The current distribution of corridor trains clearly shows that the majority of corridor trains are not crossing more than 2 corridor borders. And this information is also not fully consistent due to a lack of additional information attached to the trains itself in the database.

This is contrary to the overall distribution of transport volumes along the corridor. This is likely to have its origins in the existing production system, where SW traffic at the border stations/yards is being consolidated into international trains, but also in the change of national to international train numbers (and vice versa) at these stations as well as with trains delayed more than 24hrs receiving new train numbers. This can be easily remedied within the current organisation of RFC Rhine-Danube, and should help improve operations, and monitors the effect on the corridor trains in the future.

Cross-border harmonisation of path information management supporting the complete path management process chain including feasibility study, path request, capacity allocation, train operation monitoring and train performance management, billing and statistical reporting is clearly necessary. Following the standards set by RailNetEurope the related interfaces for information exchange with RU's and IM's should be further implemented and adapted to specific needs of the RFC 9 RHD.

A continuous conduction of regular stakeholder interviews or stakeholder conferences along the corridor, using the information to enhance the services of the C-OSS and to ensure the attractiveness and utilisation of the offered PaPs will clearly benefit the RFC 9 RHD and its commercial success. The general aim of the regulation is to ensure more and better quality capacity to the Applicants. As road freight is mainly characterized by ad-hoc requests rail freight has to adopt to this in order to remain a serious market player. Therefore organisational measures are needed, such as lowering the request time for ad-hoc transport needs , as well as to implement RNE´s Time Table Redesign (TTR) Project until 2025, which on the long run will ensure that more capacity is available in form of capacity bands instead of PaPs.

Infrastructural, technical and logistical

To allow a higher train utilisation and hence support lowering of operational costs as well as higher transport volumes without additional train path capacity the (gradual) standardisation of technical parameters of network / terminals (depending on traffic demand), following the TEN-T standards for new and upgraded lines (train length 740m train, 22,5 t axle load) should be given priority.

To support further growth of intermodal transport, terminals should be developed according to customer requirements.

The harmonisation of signalling and train control systems with the establishment of ERTMS is also essential for the future success of the corridor.

Within the terminals the extension of storage capacity in coordination/cooperation with the terminal operators (shippers, CT operators) should be focused on together with the enhancement of terminal capacities including 7 days/24 hours-operation, where necessary.

Recommendations

Overall the RFC 9 RHD has a potential to attract continental freight load and to connect large Western European Markets with a maritime gate to the East – the Port of Constanta. Aim should be to foster the understanding of the RFC 9 RHD as a backbone, integrating different stakeholders (e.g. ministries, authorities) and forming a robust and attractive transport chain – for pre-, main- and on-carriage. To strengthen the overall competitiveness of rail freight, a focus should be put on the following issues:

- Increasing the availability of suitable (intermodal) transport loading units and (bulk) goods with access points (terminals) including enough storage and transhipment capabilities.
- Harmonized infrastructure approach regarding signalling (ERTMS) and train parameters (train length) and removal of bottleneck (infrastructural, administrative and operational).
- Short-term efficiency to be realized by so-called “soft-measures”, e.g. harmonized administrative processes and handling at borders, coordination of ongoing and planned works resulting in unexpected re-routings in connection with longer running times (see also Rail Technical and Operational Issues affecting Interoperability - Logbook).
- Harmonized processes at borders and enforcing interoperability.
- A harmonization of train data along RFC 9 RHD to allow for an automated data integration, an efficient traffic management (including performance supervision) and a precise definition of ETA in the future is also strongly recommended.
- Support to TTR project along RFC 9 RHD: Therefore organisational (and in some cases legal) measures are needed, such as lowering the request time for ad-hoc transport needs ,as well as to implement RNE´s Time Table Redesign (TTR) Project until 2025, which on the long run will ensure that more capacity is available in form of capacity bands instead of PaPs
- Implementation of language knowledge in Train Control Centre (English).
- Use the almost “historical” window of opportunity for environmental issues to increase political pressure to create a level-playing field among transport modes.

4 List of Measures

The scheduling of the measures in connection with the implementation of the corridor is the following:

I. Transport Market Study

Milestone	Completion date	Responsible body
Terms of reference for TMS approved	19.10.2018.	Management Board, Marketing & Communications WG
Launching of tender for the TMS	25.01.2019.	Management Board, Marketing & Communications WG
Contract for the Transport Market Study signed	13.05.2019.	ÖBB-I
Draft TMS approved by the MB	10.12.2019.	Marketing & Communications WG
Final TMS approved by the MB	09.04.2020.	Marketing & Communications WG

II. Establishment of the corridor's governance bodies

Milestone	Completion date	Responsible body
Establishment of the Executive Board	28.03.2019.	Ministries of Transport
Establishment of the Management Board	04.08.2017.	Infrastructure Managers, Allocation Body
Establishment of the Permanent Management Office	01.03.2019.	Management Board
Establishment of the RAG/TAG	09.10.2019.	Management Board
Establishment of the C-OSS	01.07.2020.	Management Board
Establishment of the Working Groups	30.03.2021.	Management Board

III. Elaboration of the Corridor Information Document (hereinafter referred to as CID)

a. Books 1-4

Milestone	Completion date	Responsible body
Elaboration of the CID Books 1-4	30.07.2020.	PMO, Working Groups
First draft delivered to the Management Board	15.08.2020.	PMO
Finalisation of the CID Books 1-4	15.09.2020.	PMO, Working Groups
Approval of the CID-Books 1-4	30.09.2020.	Management Board

b. Book 5 – Implementation Plan

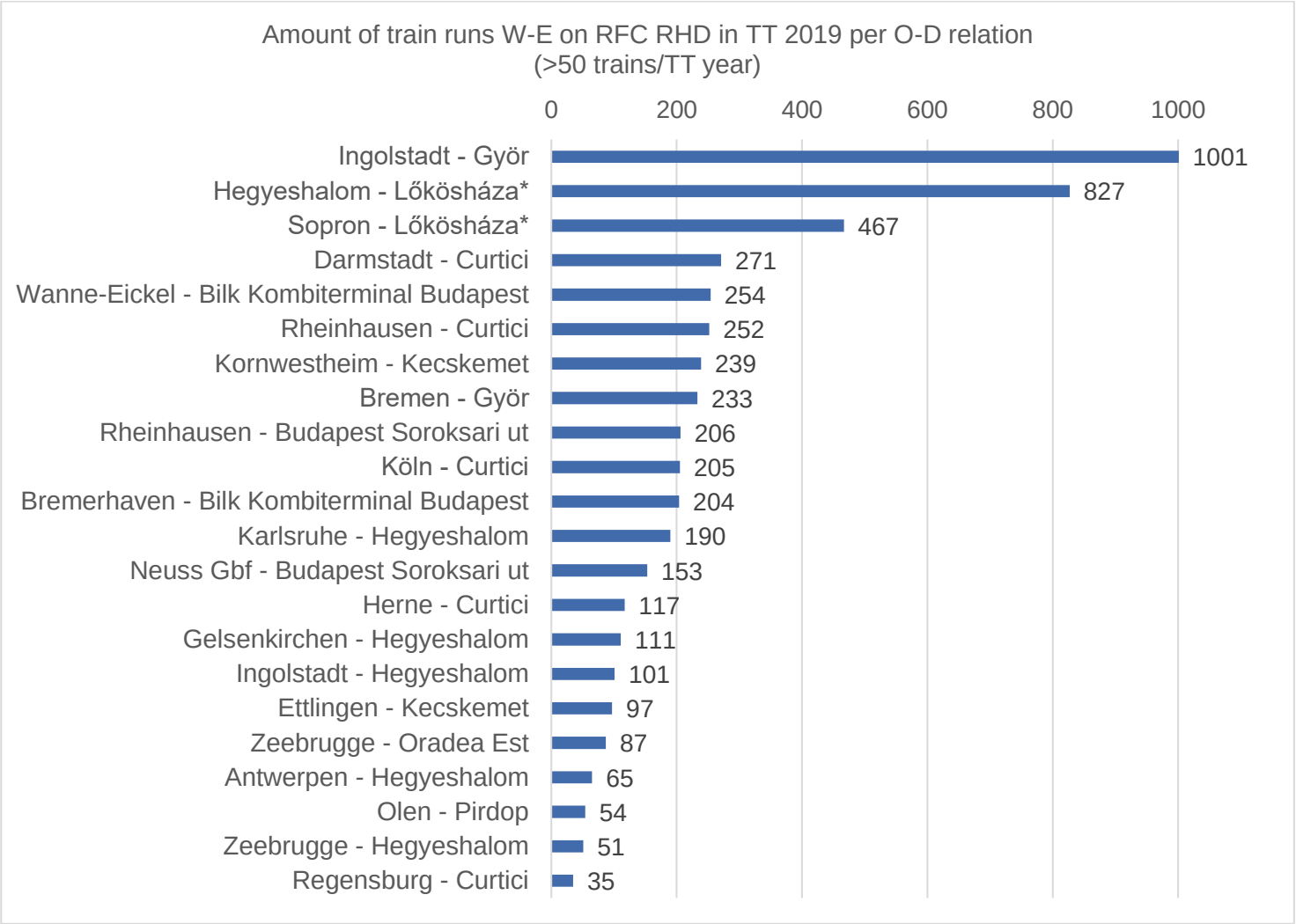
Milestone	Completion date	Responsible body
Elaboration of the first draft of CID Book 5	08.01.2020.	PMO, Working Groups
First draft delivered to the Management Board	09.01.2020.	PMO
MB revision	31.01.2020.	Management Board
External consultation (RAG/TAG)	26.03.2020.	RAG/TAG
Finalisation of the draft	31.03.2020.	PMO
Approval of the Management Board	08.04.2020.	Management Board
Submission to the Executive Board	09.04.2020.	Management Board
ExBo revision	29.05.2020.	Executive Board
Elaboration of the next draft	10.09.2020.	MB, WGs, PMO

Submission of the modified IP to the ExBo	18.09.2020.	Management Board
Approval of the Executive Board	12.10.2020.	Executive Board

IV. Publication of the corridor capacity offer

Milestone	Completion date	Responsible body
Consultation with customers	07.08.2020.	C-OSS
Construction of reserve capacity offer	29.09.2020.	C-OSS & Capacity WG
Delivery of the draft of reserve capacity to MB for approval	30.09.2020.	C-OSS & Capacity WG
Approval of the draft of reserve capacity	07.10.2020.	Management Board
Publication of reserve capacity	12.10.2020.	C-OSS

A preliminary analysis of traffic flows on the overlapping sections based on data from the timetable year 2019 has been prepared by the PMO. Those trains are included into the below analysis which run on the RFC RHD lines in Austria and/or Germany, and also run on the overlapping sections with RFC OEM in Hungary and/or Romania.



*Traffic starting in Hegyeshalom / Sopron and ending in Lőkösháza may originate from locations west of the Austrian/Hungarian borders and arrive in locations east of the Hungarian/Romanian border.
Due to missing identification of international train runs the exact locations of origin/destination could not be derived.

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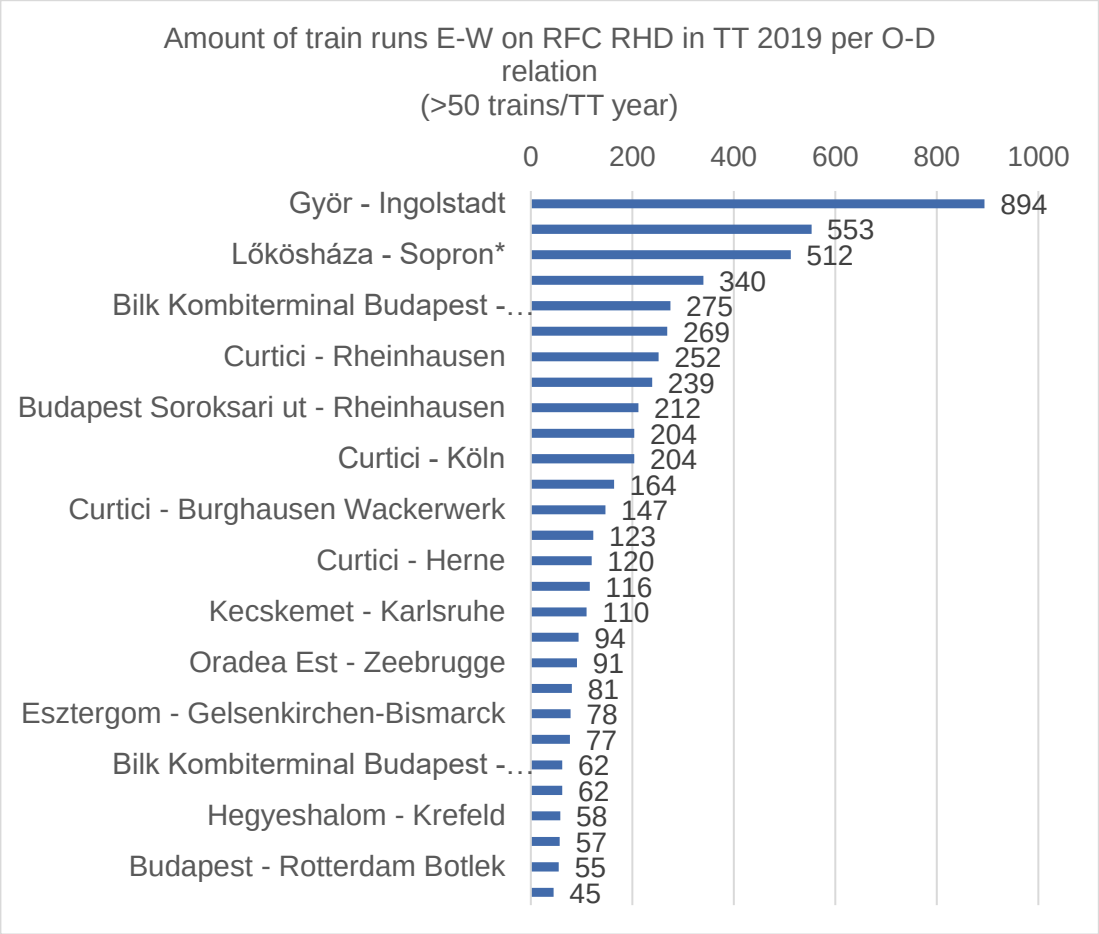
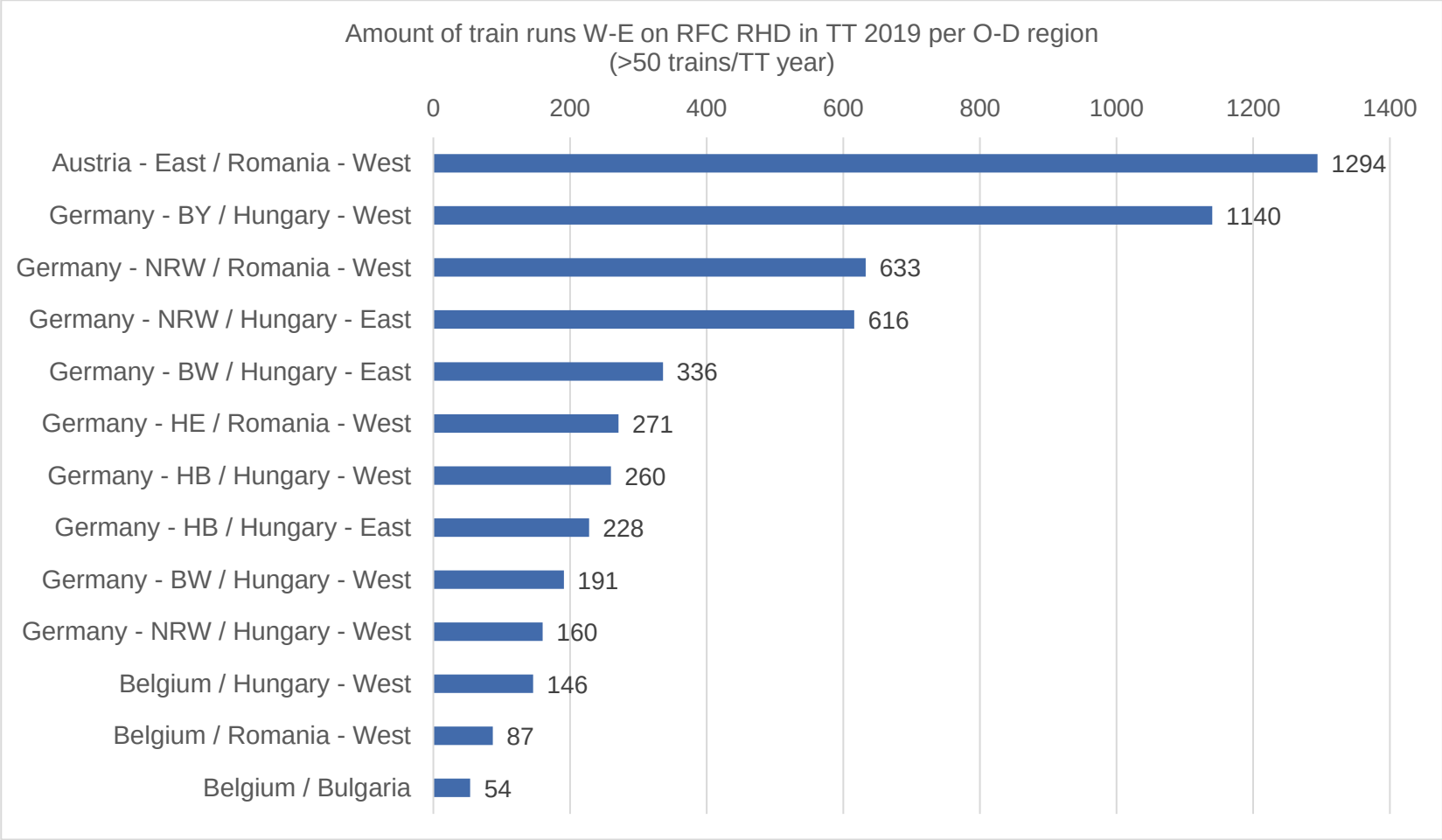


*Traffic starting in Lőkösháza and ending in Hegyeshalom / Sopron may originate from locations east of the Hungarian/Romanian border and arrive in locations west of the Austrian/Hungarian borders.
Due to missing identification of international train runs the exact locations of origin/destination could not be derived.



*Traffic starting in Hegyeshalom / Sopron and ending in Lőkösháza may originate from locations west of the Austrian/Hungarian borders and arrive in locations east of the Hungarian/Romanian border.
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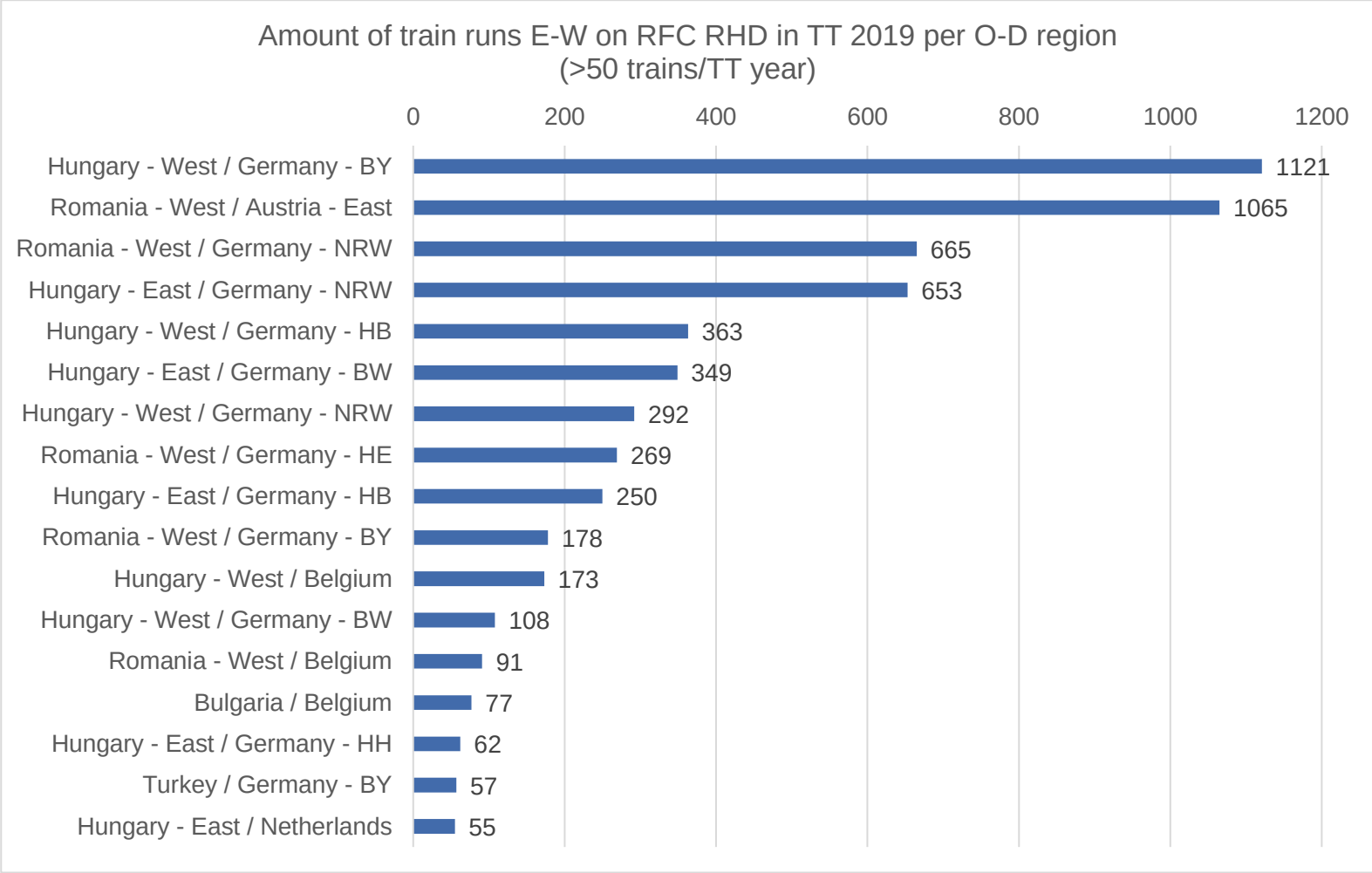

*Traffic starting in Lőkösháza and ending in Hegyeshalom / Sopron may originate from locations east of the Hungarian/Romanian border and arrive in locations west of the Austrian/Hungarian borders.
Due to missing identification of international train runs the exact locations of origin/destination could not be derived.

W-E

TOP 20 TRAINS ON OVERLAPPING SECTIONS RFC RHD and RFC OEM								
From / To	HEGYESHALOM - BUDAPEST	BUDAPEST -LÖKÖSHÁZA	CURTICI* - ARAD	ARAD - CRAIOVA	CRAIOVA BUCURESTI	ARAD -BRASOV	BRASOV-BUCURESTI	BUCURESTI - CONSTANTA
Zeebrugge								
Antwerpen								
Olen								
Bremerhaven								
Bremen								
Rheinhausen								
Gelsenkirchen								
Wanne-Eickel								
Herne								
Köln								
Neuss Gbf								
Darmstadt								
Karlsruhe								
Ettlingen								
Kornwestheim								
Ingolstadt								
Regensburg								
Hegyeshalom*								
Sopron*								

Legend	
	1 O-D relation
	2 O-D relations

"*Traffic starting in Hegyeshalom / Sopron and ending in Lőkösháza may originate from locations west of the Austrian/Hungarian borders and arrive in locations east of the Hungarian/Romanian border.
Due to missing identification of international train runs the exact locations of origin/destination could not be derived. "
** Traffic ending in Curtici may continue east of the Hungarian/Romanian border or terminate in Arad Rail Port.

4.1 Coordination of planned temporary capacity restrictions

Article 12 “Coordination of works” of Regulation (EU) No 913/2010 deals with Planned Temporary Capacity Restrictions (hereinafter referred to as TCRs) on the Corridor:

“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”.

TCRs are necessary to keep the infrastructure and its equipment in operational condition to secure demanded capacity to satisfy market needs. To minimise their impact TCRs on the Corridor have to be coordinated within and between IMs, consulted with applicants, and published as mentioned above, thus also following the framework laid down in Annex VII to Directive 2012/34/EU (Commission Delegated Decision (EU) 2017/2075).

The RFC RHD is aware of the severe impact of TCRs communicated on short notice, and therefore, will carry out all possible measures which could lead to a lowering of the number of such TCRs, while in parallel the advanced communication will be improved.

Coordination of TCRs on the Corridor takes the relevant RailNetEurope (hereinafter referred to as RNE) guidelines into account. The Corridor publishes the information about TCRs in a coordinated manner on the website using an appropriate IT tool.

More details are provided in chapter 4 of CID Book 4, – Coordination and publication of planned temporary capacity restrictions.

4.2 Corridor OSS

The tasks of the C-OSS, legal background and related documentation are described in Chapter 2 of CID Book 4 (and in the possible future C-OSS Operational Rules).

4.3 Capacity Allocation Principles

The current measures, including specific rules related to the overlapping sections between RHD and OEM RFCs, are described in detail in Chapter 3 of CID Book 4.

These specific rules foresee that in case of overlapping sections, corridors may develop a common offer, visible via all corridors concerned. These involved corridors will decide which C-OSS is responsible for the final allocation decision on the published capacity. In case of conflict, the responsible C-OSS will deal with the process of deciding which request should have priority together with the other C-OSSs. In any case, the applicant will be consulted by the responsible C-OSS.

4.4 Applicants

The current measures are described in point 3.2 of CID Book 4.

4.5 Traffic Management

In line with Article 16 of Regulation, the Management Board has put in place procedures for coordinating traffic management along the Corridor.

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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 planning.

In case of disturbances, IMs work together with the RUs concerned and neighbouring IMs in order to limit the impact as far as possible and to reduce the overall recovery time of the network.

National IMs coordinate international traffic with neighbouring countries on a bilateral level. In this manner, they ensure that all traffic on the network is managed in the most optimal way. Detailed rules and procedures are described in Chapter 5 of CID Book 4.

4.6 Traffic Management in Event of Disturbance

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

In order to reach the above-mentioned goals, traffic management in case of disturbance needs an efficient communication flow between all involved parties and a good degree of predictability, obtained by applying predefined operational scenarios at the border.

The communication procedure and the available tools are described in Chapter 5 of CID Book 4.

4.6.1 International contingency Management Planning (ICM)

As the consequence of the Rastatt incident, DB Netz AG and RFC Rhine-Alpine early 2018 made an initiative to set up a Handbook for proper handling of international disturbances in duration of longer than 72 hours. After concluding the key elements and conclusions of the Rastatt incident a working document was elaborated which initiative was also supported by the sector and by the European Commission (DG Move).

In the ICM Handbook there is a detailed description about solutions to support the concerned dispatchers in case of big incidents. RNE will continuously update this document, which is the basic document for RFCs in Europe.

The members of the Operations & Performance Working Group (OP WG) provide the data to set up the rerouting overview and operational scenario. The MB approves the document in due time and it will be uploaded to the Corridor website. The Excel file consists of all the parameters of the available alternative routes if there is a disruption with a forecasted impact on the affected section of more than three calendar days or a disruption with high impact on international traffic.

The available re-routing overview is considered as the first step, and it could be developed in the future. If the costumers need more information for such cases, OP WG is the responsible body on the Corridor to discuss the proposals and work out a solution. The efficiency of the re-routing overview would be higher if the existing plans of RUs could be involved into the document. Furthermore, it is important to duly take into account the results of the conducted ICM simulations of other RFCs.

In order to fine-tune the ICM procedures and re-routing scenarios on RFC RHD, a simulation is planned to be executed together with the interested RAG-members after the corridor become operational.

4.7 Quality Evaluation

The provisions of Article 19 of the Regulation set requirements regarding the quality evaluation of rail freight services on the Corridor.

The performance of the Corridor is measured through indicators and targeted customer satisfaction surveys.

4.7.1 Performance Monitoring Report

According to Article 19 (2) of the Regulation the Management Board monitors the performance of rail freight services on the Corridor and publishes the results once a year. In order to fulfil this obligation and in parallel to have a harmonised RFC Network approach, the Corridors together with RNE elaborated the Guidelines of Key Performance Indicators of Rail Freight Corridors in 2015.

Based on the gained experiences and market feedback the common indicators have been fine-tuned (in line with the requests of RUs), and the RNE General Assembly approved the version 3.0 of the Guidelines in 2019.
On RFC Rhine-Danube the following common key performance indicators (KPIs) are measured:

Capacity Management					
Name of KPI	**Calculation formula**	**Source of data**	**Responsible entity**	**Timing of calculation**	**Other**
Volume of offered capacity (PaPs)	Km*days offered where km means PaP km between operation points without feeder and outflow sections	PAMT report in PCS	C-OSS	At X-11	There is a correction phase of the offer between X-11 – X-10.5 which has to be taken into consideration in the final KPI figure.
Volume of requested capacity (PaPs)	Km*days requested	PAMT report in PCS	C-OSS	At X-8	Feeder and outflow sections are not included.
Volume of requests (PaPs)	Number of PCS dossiers submitted	PAMT report in PCS	C-OSS	At X-8	
Number of conflicts (PaPs)	Number of PCS dossiers submitted which are in conflict with at least one other PCS dossier for PaPs on the same RFC	PAMT report in PCS	C-OSS	At X-8	Requests on PaPs are counted, not requested PaPs.

Name of KPI	Calculation formula	Source of data	Responsible entity	Timing of calculation	Other
Volume of pre-booked capacity (PaPs)	Km*days (pre-booking phase)	PAMT report in PCS	C-OSS	At X-7.5	Feeder and outflow sections are not included.
Volume of offered capacity (RC)	Km*days offered	PAMT report in PCS	C-OSS	At X-2	
Volume of requested capacity (RC)	Km*days requested	PAMT report in PCS	C-OSS	At X+12	
Volume of requests (RC)	Number of PCS dossiers requested	PAMT report in PCS	C-OSS	At X+12	
Average planned speed of PaPs	Average of the planned commercial speed of the PaPs on the O/D pair concerned per direction	PAMT report in PCS	C-OSS	At X-11	On pre-defined O/Ds per RFC (or on adjacent RFCs), the running time of all PaPs covering the entire O/D is taken, and the speed is calculated taking into account the length of the O/D axis. Calculated and published per O/D pair. The RFC may calculate an average figure in addition.

Operations					
Name of KPI	**Calculation formula**	**Source of data**	**Responsible entity**	**Timing of calculation**	**Other**
Punctuality at origin	The share of all RFC-related trains at RFC entry with a delay less than, or equal to, the threshold compared to all RFC-related trains at RFC entry.	TIS	OP WG	At the end of January after the timetable year concerned	International freight trains crossing a border of an RFC are considered as RFC trains in the calculation. 'Origin' is considered as RFC entry. The calculation is done both with 30-minute and 15-minute punctuality thresholds.
Punctuality at destination	The share of all RFC-related trains at RFC exit with a delay less than, or equal to, the threshold compared to all RFC-related trains at RFC exit.	TIS	OP WG	At the end of January after the timetable year concerned	International freight trains crossing a border of an RFC are considered as RFC trains in the calculation. 'Destination' is considered as RFC exit. The calculation is done both with 30-minute and 15-minute punctuality thresholds.
Overall number of trains on the RFC	Total number of train runs having a RA on selected pairs of border points	TIS	OP WG	At the end of January after the timetable year concerned	International freight trains crossing a border of an RFC are considered as RFC trains in the calculation. Pairs of border points are TIS points defined by the RFCs.

Market Development					
Name of KPI	**Calculation formula**	**Source of data**	**Responsible entity**	**Timing of calculation**	**Other**
Overall number of trains per border	Number of commercial freight trains crossing selected border points	IMs' national tools	OP WG	At the end of January after the timetable year concerned	No locos and service trains should be considered. Calculated per border. One IM per border point should provide the data to the RFC.
Ratio of the capacity allocated by the C-OSS and the total allocated capacity	Number of trains allocated in the yearly timetable by the C-OSS per RFC border/the total number of allocated international freight trains in the yearly timetable per RFC border	PCS for RFC capacity IMs' national tools for total allocated capacity	C-OSS & Capacity WG	In December before the start of the timetable year	Calculated per border

The above mentioned KPIs will be published in the yearly performance report of the Corridor to fulfil the requirements of Article 19 (2) of the Regulation.

The Management Board reserves the right to implement further corridor specific indicator(s) in case of necessity. The further KPIs will be indicated in a new annex to the Implementation Plan.

The Executive Board also reserves the right to ask for defining, monitoring and reviewing further KPIs if seems necessary.

4.7.2 User Satisfaction Survey

According to Article 19 of the Regulation the quality of service on the Corridor will be measured through user satisfaction surveys conducted on a yearly basis. Inputs for this survey are delivered by the RAG/TAG members. The first full timetable year when RFC RHD will be operational is 2021, therefore, the first User Satisfaction Survey (hereinafter referred to as USS) will be conducted in 2022. The results will be published on the website of the corridor.

4.8 Corridor Information Document

According to Article 18 of Regulation the MB is obliged to publish Corridor Information Documents providing information on the rail infrastructure of each Rail Freight Corridor (RFC),

in particular as regards commercial and legal access conditions, thus facilitating the Applicants' international business on RFCs. The Corridor Information Documents are published at least three months prior to the deadline for requests for infrastructure capacity.

The planned dates of the first publication of the Corridor Information Document Books are the following:

No	Title	Date of first publication
1	Generalities	12th October 2020
2	Network Statement Excerpts	12th October 2020
3	Terminal Description	12th October 2020
4	Procedures for Capacity and Traffic Management	12th October 2020
5	Implementation Plan	12th October 2020

The Corridor Information Document Books shall be published – in case an update is needed – by the 2nd Monday of January of the concerned year together with the PaP catalogue.

5 Objectives and performance of the corridor

The performance of the Corridor is mainly monitored via the KPIs set in Chapter 4.7.1. Objectives and possible targets can be defined by the Management Board.

According to the Regulation the Executive Board is responsible for defining the general objectives of the corridor. The objectives set by the Executive Board can be found in Annex 5.

5.1 Punctuality

Improving the punctuality of freight trains running on the Corridor is essential in order to increase the share of rail in the model split. Therefore, one of the Corridor's focus points is to undertake effective measures to further enhance Train Performance Management (hereinafter TPM) Including setting of quality targets and thereby shifting the focus of TPM activities from monitoring to management of punctuality.

Generally, the punctuality of a train will be measured on the basis of comparisons between the time planned in the timetable of a train identified by its train number and the actual running time at certain measuring points. A measuring point is a specific location on the route, where the trains running data is recorded. The comparison should always be done with an internationally agreed timetable for the whole train run.

Punctuality is calculated as the percentage of punctual trains out of the total number of trains. The calculation is done for two thresholds: 30 minutes and 15 minutes.

Punctuality objectives (30 min threshold): at least 60 % at origin and 60 % at destination.

The codified reasons for delay, in accordance with UIC leaflet 450-2, will be used for continuous and systematic monitoring. The monthly punctuality reports will be uploaded to the website of the corridor.

5.2 Capacity

The C-OSS handles exclusively the capacity products on the Corridor (Pre-arranged Paths (hereinafter referred to as PaPs), Reserve Capacity etc.). PaPs for the annual timetable are provided by the IMs/AB to the C-OSS. The PaPs are based on standard parameters for rail freight and previously coordinated between the IMs/AB at the borders so to enable for attractive running times. The path catalogue of PaPs will be published by the C-OSS by the 2nd Monday of January of each year for the next timetable period. Reserve Capacity on the Corridor is available from October of each year on, to allow for ad-hoc path applications. The offer of the C-OSS will be displayed in the IT-application PCS (Path Coordination System) provided by RNE. According to the Regulation the aim is to offer capacity via the C-OSS is to have "one face to the customer" for international path requests along the Corridor and at the end harmonized path offers across at least one border. Furthermore, the decision on the PaP pre-allocation will be done by the C-OSS by the end of April for the entire international PaP segment on basis of one harmonized allocation rule. As a result, the RUs will get an earlier information about the PaP pre-allocation.

Regardless of the above-mentioned procedures, there is a strong need from the market for more and better flexible and ad-hoc capacity products in order to ensure the competitiveness of rail compared to road transport. Meeting this requirement makes it necessary to develop an appropriate strategy on offering such kind of capacity products. Initiatives like the Timetable Redesign project of RNE could lead to a satisfactory solution of this issue.

5.3 Publication of performance information

In order to fulfil the requirements of Article 19 (2) of the Regulation yearly performance reports will be elaborated. The reports will be uploaded to the Corridor's website and to the Customer Information Platform (hereinafter referred to as CIP). These yearly reports will always contain the actual figures of KPIs listed in Chapter 4.7.1.

Reporting elements to be published	**Location**
Key performance indicators	Corridor's and RNE's website
Monthly train performance reports	Corridor's website and CIP
Results of the yearly User Satisfaction Survey	Corridor's website and CIP

Detailed information about train performance management can be found in Chapter 6 of CID Book 4.

6 Investment Plan

6.1 Capacity Management Plan

The Corridor's Capacity Management Plan can be found in Annex 6.1.

6.2. List of Projects

Members of Working Group Infrastructure has elaborated a List of Projects, which is composed of all projects foreseen for development for modernisation, upgrade and renewal of the railway infrastructure along the whole RFC RHD. The List of Projects will be updated every two years with periodical yearly check.

The list of planned infrastructure development projects along the corridor can be found in Annex 6.2.

6.3 Deployment Plan

The ERTMS Deployment Plan of the Corridor can be found in Annex 6.3.

6.4 Reference to Union Contribution

The Infrastructure Managers and Allocation Body of the Corridor are beneficiaries of the Connecting Europe Facility (hereinafter referred to as CEF) - Programme Support Action (hereinafter referred to as PSA) on the basis of the Multi-annual Work Programme 2014-2020, entitled "Establishment of the Rail Freight Corridor Rhine-Danube (RFC 9)", action number 2016-PSA-RFC09.

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

The Project Management activity itself is undertaken by the mandated Coordinator for the conclusion and management of the Grant Agreement (action number 2016-PSA-RFC11), which is ÖBB-Infrastruktur AG. There are 9 cooperating Parties in the PSA 8 IMs and 1 AB.

Besides the activities in connection with necessary activities for the implementation, a study examining all types of bottlenecks (e.g. infrastructural, operational, administrative, capacity) is going to be carried out.

The Grant Agreement entered into force on 27/06/2018.

The PSA Action concerns studies, managerial structures and activities for the establishment and the development of the Corridor in line with the provisions of Regulation (EU) No 913/2010 of 22 September 2010 (RFC Regulation). The general objective of the Action is to establish and have the Corridor operational by 10 November 2020, as defined in the Regulation.

Furthermore, the Hungarian Ministry for Innovation and Technology responsible for transport is beneficiary of 2016-PSA-HU CEF grant, which provides support for taking part in ExBo activities.

Annexes

No	Title
5.	The objectives set by the Executive Board
6.1	Capacity Management Plan
6.2	List of projects
6.3	Deployment plan

Germany

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks				
			From	To			Project Name	Project Description	End Date	Costs in mil. of Euro	Financial Sources
Germany	DB Netz	Kehl - Appenweier	Kehl	Appenweier	travel time	Agreement between DE/FR to reduce travel time	ABS Kehl - Appenweier		2028	79	state budget
Germany	DB Netz	Stuttgart - München	Wendlingen	Ulm	capacity	More capacity for passenger- and freight trains is needed in this relation	NBS Wendlingen - Ulm		2025	11 903	state budget
Germany	DB Netz	Stuttgart - München	Ulm	Augsburg	capacity	More capacity for passenger- and freight trains is needed in this relation	ABS/NBS Ulm - Augsburg		Beyond 2030	1 907	state budget
Germany	DB Netz	Nürnberg - Schirnding (DE/CZ)	Nürnberg	Schirnding	no electrification	Not electrified	ABS Nürnberg - Marktredwitz - Border DE/CZ (- Cheb)		Beyond 2030	1 195	state budget
Germany	DB Netz	München - Mühldorf - Freilassing	Markt Schwaben	Freilassing	capacity	Not electrified and more capacity for freight trains is needed between Munich and AT	ABS Müchen - Mühldorf - Freilassing		Beyond 2030	2 323	state budget

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Austria

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks				
			From	To			Project Name	Project Description	End Date	Costs in mil. of Euro	Financial Sources
Austria	ÖBB Infrastruktur	Freilassing - Wels	Freilassing	Salzburg	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Freilassing - Wels	Salzburg	Steindorf bei Strasswalchen	2 track section on a predominant 4 track route	timetable based capacity overload	4 track upgrade		n/a	36 (planning only)	State (Rahmenplan 2018 - 2023)
Austria	ÖBB Infrastruktur	Freilassing - Wels	Steindorf bei	Vöcklabruck	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Freilassing - Wels	Vöcklabruck	Wels	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Passau - Wels	Passau	Grieskirchen	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Passau - Wels	Grieskirchen	Wels	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Wels - Linz	Wels	Linz	2 track section on a predominant 4 track route	timetable based capacity overload	4 track upgrade		2026	1 252	State (Rahmenplan 2018 - 2023)
Austria	ÖBB Infrastruktur	Linz - Wien	Linz	Enns	only a short 2 track section between Linz Hbf and Linz Kleinmünchen on a predominant 4 track route	timetable based capacity overload	4 track upgrade		2030	451	State (Rahmenplan 2018 - 2023)
Austria	ÖBB Infrastruktur	Linz - Wien	Enns	Amstetten	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Linz - Wien	Amstetten	St. Pölten	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Linz - Wien	St. Pölten	Wien	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Wien - Parndorf	Wien	Bruck a. d. Leitha	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Wien - Parndorf	Bruck a. d. Leitha	Parndorf	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Parndorf - Bratislava Petrzalka	Parndorf	Kittsee	single track line but no bottleneck currently	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Parndorf - Bratislava Petrzalka	Kittsee	Bratislava-Petržalka	single track line but no bottleneck currently	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Parndorf - Nickelsdorf	Parndorf	Nickelsdorf	n/a	n/a	n/a		n/a	n/a	n/a
Austria	ÖBB Infrastruktur	Wien - Ebenfurth	Wien	Ebenfurth	section wise single track line	timetable based capacity overload	Pottendorfer Line; double track upgrade		2026	680	State (Rahmenplan 2018 - 2023)
Austria	ÖBB Infrastruktur				train movements in Ebenfurth necessary to reach GYSEV line	missing connection link between Vienna and Sopron	junction Ebenfurth		2026	205	State (Rahmenplan 2018 - 2023)

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Czech Republic

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Czechia	SZCZ	Praha – Česká Třebová	Praha	Česká Třebová	Line capacity consumption	5:00-20:00 capacity over 100 %	n/a	n/a	n/a	n/a
Czechia	SZCZ	Česká Třebová – Ústí nad Orlicí	Česká Třebová	Parník	Max. speed 75 - 90 km/h	n/a	n/a	n/a	n/a	n/a
Czechia	SZCZ	Ústí nad Orlicí – Brandýs nad Orlicí	Ústí nad Orlicí	Brandýs nad Orlicí	Max. speed 80 - 85 km/h	n/a	n/a	n/a	n/a	n/a
Czechia	SZCZ	Brandýs nad Orlicí – Choceň	Brandýs nad Orlicí	Choceň	Max. speed 80 - 85 km/h	n/a	n/a	n/a	n/a	n/a
Czechia	SZCZ	Praha node	Praha-Hostivař	Praha hl. n.	Speed drops, capacity	n/a	Optimization of the line Praha Hostivar - Praha hl.n. , 1st part (Praha Freight Bypass)	2021	n/a	n/a
Czechia	SZCZ	Přerov railway junction	Přerov	Přerov	Speed drops, capacity	n/a	Upgrade of Přerov railway junction, 2. phase	2021	n/a	n/a
Czechia	SZCZ	Praha node	Praha-Hostivař	Praha hl. n.	Line capacity consumption	n/a	Optimization of the line Praha-Hostivař – Praha hl.n., 2nd part - Praha-Hostivař – Praha hl.n.	2021	n/a	n/a
Czechia	SZCZ	Praha node	Praha hl. n.	Praha-Smíchov	Line capacity consumption	n/a	Upgrade of the Praha hl. n. – Praha-Smíchov railway line	2025	n/a	n/a
Czechia	SZCZ	Velim (including) – Poříčany (including)	Velim	Poříčany	unsatisfactory current state of the infrastructure	unsatisfactory current state of the infrastructure	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	2024	n/a	n/a
Czechia	SZCZ	Choceň (excluding) – Uhersko (including)	Choceň	Uhersko	unsatisfactory current state of the infrastructure	unsatisfactory current state of the infrastructure	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	2024	n/a	n/a
Czechia	SZCZ	Ústí nad Orlicí (excluding) – Brandýs nad Orlicí (including)	Ústí nad Orlicí	Brandys nad Orlicí	unsatisfactory current state of the infrastructure	unsatisfactory current state of the infrastructure	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	2024	n/a	n/a
Czechia	SZCZ	Lipník nad Bečvou (including) – Drahotuše	Lipník nad Bečvou	Drahotuše	unsatisfactory current state of the infrastructure	unsatisfactory current state of the infrastructure	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	2024	n/a	n/a
Czechia	SZCZ	Polom (including) – Suchdol nad Odrou (including) railway line RHD	Polom	Suchdol nad Odrou	unsatisfactory current state of the infrastructure	unsatisfactory current state of the infrastructure	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	2024	n/a	n/a

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Slovakia

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Slovakia	ŽSR	Púchov - Žilina	Púchov	Považská Teplá	Reduced Capacity	Construction works	Púchov - Považská Teplá: railway modernisation to 160 km/h	2021	378	EU funds
Slovakia	ŽSR	Púchov - Žilina	Žilina zr.st	Žilina	Reduced speed	Tracks	Modernisation of railway node Žilina (documentation + construction)	2023	284	EU funds
Slovakia	ŽSR	Žilina - Spišská Nová Ves	Liptovský Mikuláš	Štrba	Reduced weight of the train, additional loco is required	Geological character of the landscape	Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Paludza – Lipt. Hrádok and Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Poprad-Tatry – Lučivná	2024	500	EU funds
Slovakia	ŽSR	Žilina - Spišská Nová Ves	Spišská Nová Ves	Štrba	Reduced weight of the train, additional loco is required	Geological character of the landscape	Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Paludza – Lipt. Hrádok and Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Poprad-Tatry – Lučivná	2024	500	EU funds
Slovakia	ŽSR	Spišská Nová Ves - Košice	Košice	Košice nákl.st.	Reduced length of the trains	Character of the Košice nákl.st. station	n/a	n/a	n/a	n/a
Slovakia	ŽSR	Košice - Čierna nad Tisou	Nižná Myšľa	Ruskov	Reduced weight of the train, additional loco is required	Geological character of the landscape	n/a	n/a	n/a	n/a
Slovakia	ŽSR	Košice - Čierna nad Tisou	Ruskov	Kuzmice	Reduced weight of the train, additional loco is required	Geological character of the landscape	n/a	n/a	n/a	n/a
Slovakia	ŽSR	Čierna nad Tisou - Čop (UA)	Čierna nad Tisou	Čop	Reduced Capacity	customs inspections on the wide track	Out of competence	n/a	n/a	n/a

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Hungary – GYSEV

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Hungary	GYSEV	Hegyeshalom - Rajka s.b.	Rajka	Hegyeshalom	Rajka - Hegyeshalom	single track; max. 100 km/h track speed; max. 21 t axle load; track conditions deteriorating	Reconstruction, modernization of the track Preparation finished in Q4 2019, to be tendered	2023	62	EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Sopron-Rendező - Harka	single track line; max. 100 km/h track speed; max. 21 t axle load; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 0: Sopron - Harka 2nd track 2023 -2025, Phase 2B: Sopron - Harka 3rd track 2028 -2033	2025	28	EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Harka - Pinnye	single track line; max. 100 km/h track speed; max. 21 t axle load; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 2B: Sopron - Harka - Fertőboz new double track alignment	Beyond 2030	458	EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Pinnye - Fertőszentmiklós	single track line; max. 120 km/h track speed; max. 21 t axle load; at least hourly regular interval commuter trains; every two hours nterCity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	Beyond 2030		EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Fertőszentmiklós - Petőháza	single track line; max. 100 km/h track speed; max. 21 t axle load; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	Beyond 2030		EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Petőháza - Csorna	single track line; max. 100 km/h track speed; max. 21 t axle load; at least hourly regular interval commuter trains; every two hours Intercity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 2A: (Fertőboz) - Pinnye - Csorna partially double track	2030		EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Csorna - Győr	single track line; max. 120 km/h track speed; max. 21 t axle load; high density of passenger trains at least hourly regular interval commuter trains; every hours Intercity trains; no ETCS/ERTMS	Reconstruction, modernization of the track Phase 1 of Győr - Sopron upgrade: prioirity project: single track, capacity problems, new 2nd track	2025	171	EU (CEF, Coh. Found)
Hungary	GYSEV	Győr - Sopron	Sopron	Győr	Sopron - Győr	GSM-R implementation	Phase II of Hungarian GSM-R network	2022	n/a	n/a

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Hungary – MÁV

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Hungary	MÁV	No. 1	Almásfűzítő	Komárom	Lack of capacity	Reconstruction, modernization of the track	Preparing for elimination of bottlenecks on the MÁV network. Almásfüzitő - Komárom railway line section.	2022	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 1	Kelenföld	Budaörs	Lack of capacity	Reconstruction, modernization of the track	Preparing for congestion on the MÁV network. Kelenföld - Budaörs railway line section.	2022	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 1	Kelenföld	Ferencváros	Lack of capacity	Reconstruction, modernization of the track	Southern circle railway. In order to develop a railway connection between Kelenföld and Ferencváros stations, construction of three-trakcs connection and new suburban stops.	2020	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 1	Kelenföld	Ferencváros	Lack of capacity	Bridge renewal	Modernization of the southern Danube bridge connecting.	2022	137,5	CEF
Hungary	MÁV	No. 100	Szajol	Debrecen	Lack of ETCS	ETCS Implementation	ETCS 2 installation between Szajol and Debrecen	2022	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 101	Püspöladány	Biharkeresztes border	Lack of capacity	Other	Elimination of bottlenecks and electrification	2022	185,4	Cohesion fund/IKOP
Hungary	MÁV	No. 120	Nagykáta	Újszász	Lack of capacity	Reconstruction, modernization of the track	Nagykáta - Újszász railway track section.	2022	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 120	Rákos	Szolnok	Lack of capacity	Modernization of the rail traffic management system	Installation of central trafic control system on the line section Rákos - Újszász - Szolnok	2020	N.A.	Cohesion fund/IKOP
Hungary	MÁV	No. 120	Gyoma	Békéscsaba	Lack of capacity	Other	Modernisation of signaling system between Gyoma and Békéscsaba; Békéscsaba railway station, installation of Ferencváros - Lőkösháza ETCS 2 train control system (III/I. Phase B.) - phased project	2022	51,4	Cohesion fund/IKOP
Hungary	MÁV	No. 120	Békéscsaba	Lőkösháza	Lack of capacity	Reconstruction, modernization of the track	Preparation of the construction of 2nd track between Békéscsaba and Lőkösháza	2019	5,23	CEF

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Romania (I)

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.	- Trains are not handed over on trust (ATTI); - The Curtici station is not fully equipped with electronic interlocking system; - The Curtici station is not equipped with an electronic gauge control gate; - The border crossing operational rules between CFR and MAV are not harmonized (e.g. the buffer wagons); - The Intergovernmental Railway Agreement Romania-Hungary is not updated (harmonization of the control performed by the state authorities); - Commissioning of ERTMS/GSM-R is under preparation.	Trusted handover of freight trains in Curtici station (ATTI) Pilot Project	2020	n/a	n/a
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.		Fully equipping the Curtici station with electronic interlocking system	Proposals	Proposals	Proposals
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.		Equipping of Curtici station with an electronic gauge control gate	Proposals	Proposals	Proposals
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.		Harmonization of the border crossing operational rules between CFR and MAV	Proposals	Proposals	Proposals
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.		Updating of the Intergovernmental Railway Agreement between Romania and Hungary	Proposals	Proposals	Proposals
Romania	CFR	Curtici - Simeria	Border HU/RO	Curtici	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation; - Long waiting time in Curtici station. - The double track open line does not continue in Hungary.		Commissioning the ERTMS-ETCS Level 2/GSM-R within the rehabilitation project	2020	n/a	Cohesion funds + State Budget

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Romania (II)

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Romania	CFR	Curtici - Simeria	Curtici	Km 614 (Radna)	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 2/GSM-R, which is not in operation.	- Commissioning of ERTMS-ETCS Level 2/GSM-R is under preparation.	Commissioning the ERTMS-ETCS Level 2/GSM-R within the rehabilitation project	2020	n/a	Cohesion funds + State Budget
Romania	CFR	Curtici - Simeria	Km 614 (Radna)	Simeria	- Corridor section under rehabilitation, with ERTMS-ETCS Level 2/GSM-R under construction.	- The rehabilitation works are under execution; - Maximum train length (632 m - Deva station).	Rehabilitation of Km 614 (Radna) - Simeria line section at corridor level	2022	1 707,190	Cohesion funds + State Budget
Romania	CFR	Simeria - Coșlariu	Simeria	Coșlariu	- Corridor section under rehabilitation, with ERTMS-ETCS Level 2/GSM-R under construction.	- The rehabilitation works are under execution; - Maximum train length (600 m).	Rehabilitation of Simeria - Coșlariu line section at corridor level	2021	464,246	Cohesion funds + State Budget
Romania	CFR	Coșlariu - Ploiești	Coșlariu	Sighișoara	- Corridor section under rehabilitation, with ERTMS-ETCS Level 2/GSM-R under construction.	- The rehabilitation works are under execution; - Maximum train length (600 m); - Speed restrictions.	Rehabilitation of Coșlariu - Sighișoara line section at corridor level	2021	517,426	Cohesion funds + State Budget
Romania	CFR	Coșlariu - Ploiești	Sighișoara	Brașov	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The rehabilitation works are in the tendering/awarding stage; - Maximum train length (600 m); - Speed restrictions.	Rehabilitation of Sighișoara - Brașov line section at corridor level	2024	1 335,640	CEF + State Budget
Romania	CFR	Coșlariu - Ploiești	Brașov	Predeal	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The elaboration of Feasibility Study for rehabilitation is in the tenders evaluation stage; - Maximum train length (640 m); - Maximum tonnage permitted on the line section; - Traffic restrictions for oversized transports due to existing tunnels.	Rehabilitation of Brașov - Predeal line section at corridor level	2027	418,000	Cohesion funds + State Budget

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Romania (III)

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Romania	CFR	Predeal - Constanța	Predeal	Constanța	- Rehabilitated corridor section equipped with ERTMS-ETCS Level 1/GSM-R, which is not in operation.	- The Feasibility Study for solution of commissioning ERTMS/GSM-R on Predeal-București-Constanța line section is under preparation for tendering; - Scarce capacity on Ploiești Triaj - Brazi line section; - Tonnage restrictions on Fetești - Saligny (2.200 t).	Commissioning the ERTMS/GSM-R (ETCS Level 1 or possible migration to ETCS Level 2) on Predeal - București - Constanța line section	2025	200,000	LIOP + State Budget
Romania	CFR	Arad - Filiași	Arad	Timișoara	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The Feasibility Study for rehabilitation is under elaboration; - Single track line; - Speed restrictions.	Rehabilitation of Arad - Timișoara line section at corridor level	2023	421,800	LIOP + State Budget
Romania	CFR	Arad - Filiași	Timișoara	Caransebeș	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The Feasibility Study for rehabilitation is under elaboration; - Single-track line; - Speed restrictions.	Rehabilitation of Timișoara - Caransebeș line section at corridor level	2023	725,200	LIOP + State Budget
Romania	CFR	Caransebeș - București	Caransebeș	Craiova	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The Feasibility Study for rehabilitation is under elaboration; - Single track line (Caransebeș - Strehaia); - Speed restrictions; - Tonnage restrictions (Balota 1.000 t).	Rehabilitation of Caransebeș - Craiova line section at corridor level	2026	1 520,000	CEF + State Budget
Romania	CFR	Caransebeș - București	Craiova	București (Pajura Hm) (Pajura Hm)	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The project for removing the speed restrictions (quick-wins) is under preparation for promotion; - Speed restrictions; - Track I closed on Malu Mare - Banu Mărăcine line section for rehabilitation works.	Removal of the speed restrictions on Craiova - București (Pajura Hm) line section	2022	41,800	LIOP + State Budget
Romania	CFR	Caransebeș - București	Craiova	București (Pajura Hm) (Pajura Hm)	- Corridor section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The project for rehabilitation has not been promoted yet; - Speed restrictions.	Rehabilitation of Craiova - București (Hm Pajura) line section at corridor level	2025	836,000	Cohesion Funds + State Budget

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Romania (IV)

Member state	IM	Line	Section		Bottleneck	Reasons	Suggestions How to Remove Bottlenecks			
			From	To			Project Name and Description	End Date	Costs in mil. of Euro	Financial Sources
Romania	CFR	Ploiești Triaj - Fetești	Ploiești Triaj	Buzău	- Line section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The Feasibility Study for rehabilitation is under tenders evaluation stage; - Restrictions, speed restrictions; - Maximum train length permitted on the line section (Valea Călugărească - Buzău 650 m).	Rehabilitation of Ploiești Triaj - Buzău line section	2025	345,600	Cohesion funds + State Budget
Romania	CFR	Ploiești Triaj - Fetești	Buzău	Fetești	- Line section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The project for rehabilitation has not been promoted yet; - Speed limitations and restrictions; - Maximum train length permitted on the line section (540 m).	Rehabilitation of Buzău - Fetești line section	2029	516,000	ERDF + State Budget
Romania	CFR	Simeria - Filiași	Simeria	Filiași	- Line section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The project for rehabilitation has not been promoted yet; - Single track line (Livezeni - Tg. Jiu); - Maximum train length permitted on the line section (600 m); - Tonnage restrictions (Tg, Cărbunești 2.000 t).	Rehabilitation of Simeria - Petroșani - Filiași line section	2026	853,300	Structural funds + State Budget
Romania	CFR	Coșlariu/Pod Mureș - Episcopia Bihor	Coșlariu/Pod Mureș	Cluj	- Line section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The project for rehabilitation has not been promoted yet.	Rehabilitation of Coșlariu/Pod Mureș - Teiuș - Cluj line section	2029	562,000	Cohesion funds + State Budget
Romania	CFR	Coșlariu/Pod Mureș - Episcopia Bihor	Cluj	Border RO/HU	- Line section not rehabilitated and without ERTMS-ETCS Level 2/GSM-R.	- The Feasibility Study for rehabilitation is under elaboration; - Single track line (Poieni - Aleșd); - Diesel traction (non-electrified line); - Stations equipped with SBW systems; - Lack of Automatic Block System in the open line.	Rehabilitation of Cluj - Episcopia Bihor - Border RO/HU line section	2023	1 250,000	Cohesion funds + State Budget

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Germany

6.2 RFC Rhine - Danube List of projects																							
Status	lember stat	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters									
				From	To					Month	Year	Month	Year	Estimated Financial	Financial Sources	Maximum speed	Axle load [t] / Line	Maximum Train	Traction power	ETCS Level	Track clearance	Interm. Code	
Planned	Germany	DB Netz	Kehl - Appenweier	Kehl	Appenweier	Principal line	ABS Kehl - Appenweier	ETCS	Speed increase	n/a	n/a	n/a	2028	79	state	160	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Under Construction	Germany	DB Netz	Karlsruhe - Basel	Karlsruhe	Offenburg	Principal line	Line upgrade / new line Karlsruhe – Basel (StA 1)	Other	Construction of a new tunnel near Rastatt incl. ETCS	n/a	n/a	n/a	2025	1 332	state	200	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	Mannheim - Karlsruhe	Mannheim	Karlsruhe	Principal line	New line / Line upgrade Mannheim – Karlsruhe	Other	New construction of 2 new tracks	n/a	n/a	n/a	Beyond 2030	open	state	200	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	Frankfurt - Mannheim	Frankfurt	Mannheim	Diversionary line	New line Frankfurt - Mannheim	Other	New line	n/a	n/a	n/a	Beyond 2030	2 183	state	250	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Under Construction	Germany	DB Netz	Stuttgart - München	Wendlingen	Ulm	Principal line	NBS Wendlingen - Ulm	Other	New construction of this line increases capacity on the	n/a	n/a	n/a	2025	11 903	state	250	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	Stuttgart - München	Ulm	Augsburg	Principal line	ABS/NBS Ulm - Augsburg	Other	Partly new construction	n/a	n/a	n/a	Beyond 2030	1 907	state	250	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	Nürnberg - Schirnding (DE/CZ)	Nürnberg	Schirnding	Principal line	ABS Nürnberg - Marktredwitz - Border DE/CZ (- Cheb)	Electrification	n/a	n/a	n/a	n/a	Beyond 2030	1 195	state	160	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	München - Mühldorf - Freilassing	Markt Schwaben	Freilassing	Diversionary line	ABS Müchen - Mühldorf - Freilassing	Electrification	double tracks	n/a	n/a	n/a	Beyond 2030	2 323	state	160	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Planned	Germany	DB Netz	München - Rosenheim	München - Trudering	Rosenheim	Principal line	München - Rosenheim (- Kiefersfelden - Border	Other	Partly 2 new tracks	n/a	n/a	n/a	Beyond 2030	open	state	250	22,5	740	Electrified	Level 2	1435 mm	P/C 410/80	
Under Construction	Germany	DB Netz	Hole RFC-Corridor	dto.	dto.	Principal line	740 m-program	Other	20 single projects to increase capacity on RFC-RHD	n/a	n/a	n/a	2029	up to 618	state	n/a	n/a	740	n/a	n/a	n/a	n/a	

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Austria

6.2 RFC Rhine - Danube List of projects																							
Status	lember stat	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters									
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of	Financial Sources	Maximum speed	Axle load [t] / Line	Maximum Train	Traction power	ETCS Level	Track clearance	Interm. Code	
n/a	Austria	ÖBB Infrastruktur	Westbound	Freilassing	Salzburg	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
planned	Austria	ÖBB Infrastruktur	Westbound	Salzburg	Steindorf bei	Principal line	Neumarkt K. - Salzburg; 4 track upgrade; planning	Reconstruction, mode	speed raise, capacity raise	n/a	n/a	n/a	n/a	36 (planning only)	State (Rahmenplan 2018 - 2023)	250	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	
n/a	Austria	ÖBB Infrastruktur	Westbound	Steindorf bei Strassw	Vöcklabruck	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Westbound	Vöcklabruck	Wels	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur		Passau	Grieskirchen	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur		Grieskirchen	Wels	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
planned	Austria	ÖBB Infrastruktur	Westbound	Wels	Linz	Principal line	Linz - Wels; 4 track upgrade	Reconstruction, mode	speed raise, capacity raise	n/a	2021	n/a	2026	1 252	State (Rahmenplan 2018 - 2023)	230	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	
planned	Austria	ÖBB Infrastruktur	Westbound	Linz	Enns	Principal line	Linz Kleinmünchen - Linz Hbf; 4 track upgrade	Reconstruction, mode	capacity raise	n/a	2022	n/a	2030	451	State (Rahmenplan 2018 - 2023)	120	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	
n/a	Austria	ÖBB Infrastruktur	Westbound	Enns	Amstetten	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Westbound	Amstetten	St. Pölten	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Westbound	St. Pölten	Wien	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
planned	Austria	ÖBB Infrastruktur	Eastbound	Wien	Bruck a. d. Le	Principal line	Himberg, station upgrade	Reconstruction, mode	speed raise	n/a	2021	n/a	2023	20	State (Rahmenplan 2018 - 2023)	160	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	
n/a	Austria	ÖBB Infrastruktur	Eastbound	Bruck a. d. Leitha	Parndorf	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Eastbound	Parndorf	Kittsee	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Eastbound	Kittsee	Bratislava-Pe	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	Austria	ÖBB Infrastruktur	Eastbound	Parndorf	Nickelsdorf	Principal line	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
under construction	Austria	ÖBB Infrastruktur	Pottendorfer Line	Wien	Ebenfurth	Principal line	Pottendorfer Line, double track upgrade	double track upgrade	speed raise, capacity raise	n/a	n/a	n/a	2026	680	State (Rahmenplan 2018 - 2023)	200	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	
planned	Austria	ÖBB Infrastruktur	Pottendorfer Line	Wien	Ebenfurth	Principal line	junction Ebenfurth	bypass	connection optimization	n/a	n/a	n/a	2026	205	State (Rahmenplan 2018 - 2023)	100	25t / E5	740	15 kV 16,7 Hz	Level 2	GC	P/C 80/410	

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Czech Republic (I)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Czechia	SZCZ	Praha – Cheb – SRN border	Cheb	SRN border	Principal line	Optimization of the line Cheb (outside) – state border of SRN /Germany/, 2nd phase	Electrification	Optimization of the line Cheb (outside) - state border of SRN /Germany, 2nd phase: works to complete the electrification of the line.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Praha – Beroun – Plzeň	Beroun	Plzeň	Principal line	ETCS on railway line Beroun – Plzeň	ETCS Implementation	The projects concerns the implementation of the ETCS level 2.	2	2019	2	2021	n/a	n/a	n/a	n/a	n/a	n/a	Level 2	n/a	n/a
Under Construction	Czechia	SZCZ	D/CZ – Česká Kubice – Domažlice – Plzeň	Česká Kubice state border	Plzeň	Principal line	GSM-R on railway line Plzeň – Domažlice – Česká Kubice state border	GSM-R implementation	The project concerns the implementation of the GSM-R.	1	2019	12	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Horní Lideč – Střelná	Hranice na Moravě	Střelná	Principal line	GSM-R on railway line Hranice na Moravě – Horní Lideč – Střelná	GSM-R implementation	The project concerns the implementation of the GSM-R.	6	2021	5	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Přerov	Hranice na Moravě	Přerov	Principal line	Track speed increasing at Prosenice railway station	Switches renewal	The priority objective of the construction is to verify the reliability of the J60-1: 33.5-8000 / 4000-PHS shape switches so that they can be approved as part of the railway infrastructure. Furthermore, the aim is to increase the quality and safety of rail transport while increasing the line speed in the junction.	1	2020	3	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Mosty u Jablunkova – Dětmarovice	Mosty u Jablunkova	Dětmarovice	Principal line	ETCS on railway line Mosty u Jablunkova – Dětmarovice	ETCS Implementation	The projects concerns the implementation of the ETCS level 2. Study in progress	6	2019	12	2022	n/a	n/a	n/a	n/a	n/a	n/a	Level 2	n/a	n/a
Under Construction	Czechia	SZCZ	Cheb – Beroun	Rokycany	Cheb	Principal line	Remote control Rokycany (excluding) – Cheb (excluding)	Modernization of the rail traffic management system	The project objective is the development a system for the remote control of the track section Rokycany - Cheb from the Prague central dispatching, and the preparation for consecutive ETCS systems.	9	2019	4	2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Plzeň	Plzeň	Plzeň	Principal line	Plzen, 4. construction - Doubravka marshalling station	Reconstruction, modernization of the track	The objective of the project is the reconstruction of the marshaling yard in Doubravka in order to solve the conflict points between railway and road in this area.	5	2024	6	2026	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Česká Třebová – Přerov	Přerov	Česká Třebová	Principal line	ETCS on railway line Česká Třebová - Přerov	ETCS Implementation	The main scope of the project is the ETCS implementation on railway line Ceska Trebova - Prerov and the interoperability implementation. The goal is an increased efficiency of rail transport management and in particular a significant increase in safety.	3	2018	1	2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	(State border D / Dolní Žleb –) Praha-Libeň – Kolín	Dolní Žleb	Kolín	Principal line	ETCS on 1st rail transit corridor: State Border (DE) – Dolní Žleb – Praha-Libeň – Kolín	ETCS Implementation	The scope of the project is the implementation of the ECTS level 2.	3	2017	8	2023	n/a	n/a	n/a	n/a	n/a	n/a	Level 2	n/a	n/a
Planned	Czechia	SZCZ	Praha-Smíchov – Beroun	Praha-Vršovice	Beroun	Principal line	ETCS Praha-Smichov – Beroun	ETCS Implementation	The objective of the project is the implementation of ETCS on the Smíchov - Beroun track.	n/a	n/a	7	2027	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Czech Republic (II)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirements [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Czechia	SZCZ	Přerov	Přerov	Přerov	Principal line	Modernisation of the railway junction Přerov, 3rd phase	Reconstruction, modernization of the track	The project aims at removing the grade-separated crossing of trains in direction Olomouc - Hranice with trains in direction Prerov - Olomouc. The grade-separated crossing of trains in the direction Hranice - Prerov with trains in the direction Olomouc - Hranice will be maintained, after the switching of the driving to the right track Bohumín - Břeclav.	1	2021	3	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Plzeň – Cheb	Cheb	Plzeň	Principal line	ETCS Plzeň (excluding) – Cheb	ETCS Implementation	The projects concerns the implementation of the ETCS level 2.	5	2019	5	2021	n/a	n/a	n/a	n/a	n/a	n/a	Level 2	n/a	n/a
Planned	Czechia	SZCZ	Plzeň, 5. construction - Lobzy - Koterov	Plzeň	Plzeň	Principal line	Plzen, 5. construction - Lobzy - Koterov	Track and platform renewal, substructure improvement	The objective of the project is the construction of the railway station Plzen-Koterov, where the existing platforms will be replaced. The location of arrival and departure of the passengers will be transferred to the new railway station Plzeň-Slovany.	3	2020	7	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Plzeň junction	Plzeň	Plzeň	Principal line	Junction Plzen, 3rd construction - transposition of the Domazlice line	Reconstruction, modernization of the track	Main objectives: - Modernise the line section to increase its speed, capacity, safety and interoperability; - The Action is expected to generate positive socio-economic benefits through improved safety and reliability, higher capacity and increased travel speeds. Measures included: - Studies covering the elaboration of project documentation; - Construction works addressing reconstruction of superstructure,	11	2017	3	2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha-Radotín – Praha-Vršovice seř. n.	Praha-Radotín	Praha-Vršovice seř.	Principal line	Modernization of the section Praha-Radotín - Praha-Vršovice seř.n.	Reconstruction, modernization of	Modernization of the section Praha-Radotín - Praha-Vršovice seř.n.	1	2021	1	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha node	Praha-Hostivař	Praha hl. n.	Diversionary line	Optimization of the line Praha Hostivar - Praha hl.n. , 1st part (Praha Freight Bypass)	Reconstruction, modernization of the track	The project concerns the optimization of the line Praha Hostivar - Praha hl.n. , 1st part (Praha Freight Bypass). The main objectives are: to upgrade the railway tracks; to remove the bottlenecks that create speed drops; to increase the line capacity and connect the line to the core network RRT of Praha-Uhrineves.	5	2020	6	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha – Kolín	Praha	Kolín	Principal line	Reconstruction of the Pečky railway station	Reconstruction, modernization of	The goal of the project is the reconstruction of a Pecky station including platforms, telecommunication and signalling equipments.	6	2023	6	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha-Libeň – Praha-Malešice – Praha-Hostivař / Praha-Vršovice (Praha Freight Bypass)	Praha	Praha	Principal line	Increasing capacity of the Freight line Praha-Libeň – Praha-Malešice – Praha-Hostivař / Praha-Vršovice (Praha Freight Bypass)	Reconstruction, modernization of the track	The objective of the project is an increase of the capacity of the track section Praha-Libeň - Praha-Malešice and the reconstruction of the flyover crossing on the eastern railway station in Praha-Liben.	3	2024	9	2026	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Ostrava – Český Těšín	Ostrava	Český Těšín	Principal line	Reconstruction of the Havířov railway station	Reconstruction, modernization of the track	The main objective of the project is to modernise the railway station, to ensure barrier-free access to persons with reduced mobility and orientation, to proceed with the electrification, to improve the safety of railway traffic and passengers, to improve the technical conditions and parameters of the railway station, and to ensure compliance with the requirements of the TSI.	4	2021	4	2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Czech Republic (III)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirements [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Czechia	SZCZ	Hranice na Moravě – Přerov	Hranice na Moravě	Přerov	Principal line	Reconstruction of the Hranice na Morave railway station	Reconstruction, modernization of the track	The main objectives of the reconstruction of the Hranice na Moravě railway station are to increase the safety of the public, to ensure barrier-free access, to increase the speed of passing trains, to increase railway safety, to ensure reliable rail traffic conditions and interoperability, to provide adequate working conditions to the railway operators, and to meet the requirements of the applicable legislation.	9	2021	11	2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Český Těšín – Albrechtice u Českého Těšína	Český Těšín	Mosty u Jablunkova	Principal line	Optimization of the Česky Těšín (excluding) - Albrechtice u Ceskeho Tešína (including) railway section	Reconstruction, modernization of the track	In the Albrechtice railway station near Český Těšín, the line speed will be increased for track No. 1 and 2, the electronic signalling equipment will be newly built, a remote control system will be implemented and the overhead power supply will be completely reconstructed. Furthermore, a new traffic control communication device, as well as radio equipment for passenger information, clocks and CCTVs will be also implemented. Further implementations/upgrades regards: traction line disconnectors; new 22kV local distribution system; new cable wirings; electric heating assembly; and new lighting of individual stations. Security and power protection devices will be installed along the line.	3	2022	3	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Český Těšín – Albrechtice u Českého Těšína	Ostrava	Český Těšín	Principal line	Optimization of the Česky Těšín (excluding) - Albrechtice u Ceskeho Tešína (including) railway section	Reconstruction, modernization of the track	In the Albrechtice railway station near Český Těšín, the line speed will be increased for track No. 1 and 2, the electronic signalling equipment will be newly built, a remote control system will be implemented and the overhead power supply will be completely reconstructed. Furthermore, a new traffic control communication device, as well as radio equipment for passenger information, clocks and CCTVs will be also implemented. Further implementations/upgrades regards: traction line disconnectors; new 22kV local distribution system; new cable wirings; electric heating assembly; and new lighting of individual stations. Security and power protection devices will be installed along the line.	3	2022	3	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Valašské Meziříčí – Hustopeče nad Bečvou	Hranice na Moravě	Horní Lideč / Lúky pod Makytou	Principal line	Increasing line speed on Valašské Meziříčí – Hustopeče nad Bečvou line section	Reconstruction, modernization of the track	Increase the speed on the double track railway on the rail line Hranice na Moravě – state border CZ/SK.	5	2019	12	2020	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Ostrava	Hranice na Moravě	Ostrava	Principal line	Optimization of the Ostrava-Kunčice (excluding) – Ostrava Svinov/Polanka nad Odrou	Reconstruction, modernization of the track	The main goal of the project is to optimise the track, including the reconstruction of the Ostrava-Vítkovice railway station, the increase of the line speed to 120 km/h, the preparation for electrification (25 kV AC and 50 Hz) and to ensure compliance with the requirements of the TSI.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Valašské Meziříčí station	Valašské Meziříčí	Valašské Meziříčí	Principal line	Reconstruction of the Valasske Mezirici railway station	Reconstruction, modernization of the track	The main objectives of the reconstruction of the Valašské Meziříčí railway station are to increase the safety of the public, to ensure barrier-free access, to increase the speed of passing trains, to increase railway safety, to ensure reliable rail traffic conditions and interoperability, and to meet the requirements of the applicable legislation.	8	2023	12	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Horní Lideč / Lúky pod Makytou	Vsetín station	Vsetín station	Principal line	Reconstruction of the Vsetin railway station	Reconstruction, modernization of the track	The projects includes the reduction of the track, a new layout arrangement, and a platform with an edge of 550 mm above the surface of the railway with an over-level access for passengers. Furthermore, two new underpasses and new building will be built.	6	2020	5	2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Czech Republic (IV)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirements [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Under Construction	Czechia	SZCZ	Přerov railway junction	Přerov	Přerov	Principal line	Upgrade of the Přerov railway junction, phase 2	Reconstruction, modernization of the track	The proposed Action is the second part of a global project in the Prerov railway junction. The first part was focused on the reconstruction of the passenger railway station in Prerov. The third part involves the construction of the fly-over junction between Brodek, near Prerov, and Dluhonice. The Action is part of the predefined projects on the Rhine-Danube and Baltic-Adriatic Corridor and its implementation will contribute to improve the parameters of selected sections on these major rail routes. The content of the Action is the reconstruction of three track sections within the Prerov railway junction and the reconstruction of the Dluhonice overtaking station. The sections are between Prerov - Prosenice, Prerov - Dluhonice and Dluhonice - Prosenice, and all of them are double-tracked and electrified. The reconstruction of the railway superstructure and substructure is planned, as well as railway bridges and culverts, overhead power lines and communication and safety equipment. The railyard of Dluhonice overtaking station would be extended by through track No. 8. Two level crossings will be canceled and replaced with grade-separated footbridges for pedestrians and an overpass for road traffic. There will be over 13 km of TEN-T tracks reconstructed in total. On the sections concerned, the speed will increase up to 160 km/h, which allows for the shortening of the travel times of passengers. The implementation of a modern signaling system and a remote control system will increase security and reliability of the operations. Parameters of the reconstructed infrastructure will meet all the current conditions for interoperability. The aim of the Action is to remove unwanted conditions and bottlenecks on the rail network through the reconstruction of the sections, which are the last sections that do not undergo a total refurbishment from the perspective of related corridor network.	3	2019	12	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Nymburk hl. n.	Nymburk hl. n.	Nymburk hl. n.	Diversionary line	Modernization of railway st. Nymburk hl. n.	Reconstruction, modernization of the track	Modernization of important railway node for freight transport, reconstruction of the railway station building, expansion of the customer services and possible linking of the passenger train station to the bus terminal. The construction does not affect the marshalling yard.	12	2021	1	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha node	Praha	Praha	Diversionary line	Railway tracks reconstruction in Vinohrady tunnels	Reconstruction, modernization of the track	The objective of the project is the reconstruction of the tracks in the Vinohrady tunnels and on the southern head station in Praha hl. n.	4	2022	4	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Praha node	Praha-Hostivař	Praha hl.n.	Diversionary line	Optimization of the line Praha Hostivar - Praha hl.n., 2nd part - Praha Hostivar - Praha hl.n.	Reconstruction, modernization of the track	The scope of the project is the reconstruction of: the substructure, the superstructure, the bridges, the platforms and the catenary, as well as the relocation of infrastructure networks. The Action will generate positive effects in terms of increased capacity and improved safety and reliability of the line. It will also contribute to increase the capacity of the current major bottleneck on the rail Core Network.	7	2017	10	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Praha-Vršovice – Beroun	Praha-Vršovice	Beroun	Principal line	Optimization of Praha-Smíchov (excluding) - Černošice (excluding) track	Reconstruction, modernization of the track	Track optimization in the existing track, while ensuring interoperability. The project also includes a proposal for an over-level crossing in V. Chuchle. The Radotin Railway Station will be fully reconstructed, including flood protection measures.	4	2019	9	2021	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha hl. n. – Praha-Smíchov	Praha hl. n.	Praha-Smíchov	Diversionary line	Upgrade of the Praha hl. n. – Praha-Smíchov railway line	Reconstruction, modernization of the track	The railway junction in Praha is an important railway node located on the Rhine - Danube and Orient/East-Med Corridors. It represents a major bottleneck in the regional and international rail transport. The proposed Action addresses the preparatory studies for the modernisation of the Praha hl. n. – Praha-Smíchov section. It is part of a global project covering the reconstruction of the railway junction Praha in order to increase its capacity and improve its safety and interoperability. The studies cover the elaboration of documentation for the acquisition of zoning decisions and building permits that are necessary for the commencement of the construction works. The Action will thus contribute to the implementation of the global project and elimination of an important bottleneck on the core rail network.	7	2021	8	2025	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Pardubice	Pardubice	Pardubice	Principal line	Modernization of the Pardubice railway junction	Reconstruction, modernization of the track	The project's scope is a complete reconstruction of platforms, underpasses, information system security equipment and overhead lines and the increase of the speed in the railway junction of Pardubice. The action consists of five activities: (i) land acquisition, (ii) site preparation and construction of technological buildings, (iii) railway substructure and superstructure, (iv) technological assemblies including interlocking and overhead lines/catenary, and (v) engineering supervision. The feasibility study, on the basis of which the technical solution of the modernization was determined, has already been developed and will be further followed. The modernization will remove all the major deficiencies of the Pardubice junction, such as the unsatisfactory state and the obsoleteness of the infrastructure, and the non-conformity with technical standards, norms, speed and capacity limitations. The Action purpose is to improve the technical condition and parameters of the line to ensure the required interoperability; to achieve higher track speed and reduce travel times; to achieve conformity of the line capacity with the prospective scope of passenger and freight traffic; to ensure accessibility of railway transport for persons with reduced mobility; to enhance safety of passengers and railway personnel.	1	2020	2	2023	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Czech Republic (V)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Czechia	SZCZ	Plzeň – Česká Kubice	Česká Kubice	Plzeň	Principal line	Modernization of the line Plzeň – Česká Kubice, section Stod (excl.) – State border D	Reconstruction, modernization of the track	Modernization of the line Plzeň - Česká Kubice, section Stod (excl.) - state border D.	4	2021	10	2029	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha-Vršovice – Beroun	Černošice	Beroun	Principal line	Optimization of the line Černošice (incl.) - Beroun (excluding)	Reconstruction, modernization of the track	Construction includes: reconstruction of the railway superstructure and substructure including bridges, culverts, construction of platforms 550 mm high, reconstruction of telecommunication and signalling equipment, catenary and all other rechnologies.	1	2022	2	2028	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Ostrava	Ostrava	Ostrava	Principal line	Ostrava node modernisation	Reconstruction, modernization of the track	Modernization of railway node to achieve the parameters of TEN-T primary node, feasibility study is to be elaborated to define the extent of the works.	7	2024	12	2027	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Česká Třebová	Česká Třebová	Česká Třebová	Principal line	Modernization of the Česka Třebová railway junction	Reconstruction, modernization of the track	Main objective of the project is: the modernization of the junction Česka Třebová; the increase of the speed; the reconstruction of the passenger platform; the improvement of the technical parameters for freight transport; the decrease of the impact of rail transport on the environment; and the increase of the passengers' safety. The Action consists of five activities including land acquisition, site preparation, construction works and engineering supervision. Preliminary and detailed design are part of the project No: 2015-CZ-TM-0099-M co-financed from the II.CEF call. For the construction, the feasibility study has already been processed. The modernization will remove all the major deficiencies of the Ceska Trebova junction, such as the unsatisfactory state and obsoleteness of the infrastructure, and the non-conformity with technical standards and norms, speed and capacity limitations. The Action objectives are to improve the technical condition and parameters of the line to ensure the required interoperability; to achieve higher track speed and reduce travel times; to achieve conformity of the line capacity with the prospective scope of passenger and freight traffic; to ensure accessibility of railway transport for persons with reduced mobility; to enhance safety of passengers and railway personnel.	11	2021	11	2027	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Plzeň – Česká Kubice	Stod	Plzeň	Principal line	Modernization of the line Plzeň - Česká Kubice, section Plzeň (excl.)-Stod (incl.)	Reconstruction, modernization of the track	Modernization of the line Plzeň - Česká Kubice, section Plzeň (excl.)-Stod (incl.).	10	2022	4	2026	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Praha-Vysočany – Lysá nad Labem	Praha-Vysočany	Lysá nad Labem	Diversionary line	Optimization of the line Praha Vysocany- Lysa nad Labem, 2nd construction phase (Praha Freight Bypass)	Reconstruction, modernization of the track	The scope of the project is the reconstruction of the line in order to meet the standard requirements, to ensure reliable operations with the necessary capacity and to remove obsolete equipments.	2	2017	6	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Choceň – Pardubice	Ústí nad Orlicí	Choceň	Principal line	Modernization of the line Ústí nad Orlicí – Choceň	Reconstruction, modernization of the track	Construction of new line at the railway section Ústí nad Orlicí – Choceň, with the aim to increase the line speed, increase safety, ensure reliable operation, mitigate irregularities in traffic, increase capacity and enhance the quality of overall railway infrastructure.	1	2025	1	2030	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Velim (including) – Poříčany (including)	Velim	Poříčany	Principal line	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	Reconstruction, modernization of the track	The proposed Action and Project (seeking funding) have the same scope. They aim at removing eight selected individual bottlenecks, situated on pre-identified sections of Orient/East-Med (OEM), Rhine-Danube (RHD) and Baltic-Adriatic (BAC) Core Network Corridors.	8	2019	9	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Choceň (excluding) – Uhersko (including)	Choceň	Uhersko	Principal line	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	Reconstruction, modernization of the track	The proposed Action and Project (seeking funding) have the same scope. They aim at removing eight selected individual bottlenecks, situated on pre-identified sections of Orient/East-Med (OEM), Rhine-Danube (RHD) and Baltic-Adriatic (BAC) Core Network Corridors.	8	2019	9	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Ústí nad Orlicí (excluding) – Brandýs nad Orlicí (including)	Ústí nad Orlicí	Brandys nad Orlicí	Principal line	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	Reconstruction, modernization of the track	The proposed Action and Project (seeking funding) have the same scope. They aim at removing eight selected individual bottlenecks, situated on pre-identified sections of Orient/East-Med (OEM), Rhine-Danube (RHD) and Baltic-Adriatic (BAC) Core Network Corridors.	8	2019	9	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Czech Republic (VI)

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Under Construction	Czechia	SZCZ	Lipník nad Bečvou (including) – Drahotuše	Lipník nad Bečvou	Drahotuše	Principal line	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	Reconstruction, modernization of the track	The proposed Action and Project (seeking funding) have the same scope. They aim at removing eight selected individual bottlenecks, situated on pre-identified sections of Orient/East-Med (OEM), Rhine-Danube (RHD) and Baltic-Adriatic (BAC) Core Network Corridors.	8	2019	9	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Under Construction	Czechia	SZCZ	Polom (including) – Suchdol nad Odrou (including) railway line RHD	Polom	Suchdol nad Odrou	Principal line	Removing selected bottlenecks on pre-identified sections on the Core Network Corridors	Reconstruction, modernization of the track	The proposed Action and Project (seeking funding) have the same scope. They aim at removing eight selected individual bottlenecks, situated on pre-identified sections of Orient/East-Med (OEM), Rhine-Danube (RHD) and Baltic-Adriatic (BAC) Core Network Corridors.	8	2019	9	2024	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	(Dečín – Všetaty –) Lysá	Lysá nad Labem	Kolín	Diversionary li	Optimization of the line Dečín – Všetaty – Lysá nad Labem – Kolín	Other	The project concerns an optimization of the line Dečín – Všetaty – Lysá nad Labem – Kolín in order to achieve an increase of safety, capacity and speed.	4	2022	12	2030	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Praha	Praha	Praha	Principal line	ETCS at Prague node	ETCS Implementation	The project regards the implementation of the ETCS level 2 in the node of Prague.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Level 2	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Hor	Hranice na Moravě	Střelná	Principal line	GSM-R Hranice na Moravě – Horní Lideč – Střelná	GSM-R implementation	The project aims to implement the GSM-R on the track Hranice na Morave - Horni Lidec - Strelna.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Pře	Hranice na Moravě	Přerov	Principal line	Reconstruction of the Lipník nad Bečvou railway station	Reconstruction, modernization of the track	Reconstruction of the Lipník nad Bečvou railway station	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Pře	Hranice na Moravě	Přerov	Principal line	Reconstruction of the Drahotuše railway station	Reconstruction, modernization of the track	Reconstruction of the Drahotuse railway station	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Lysá nad Labem – Kolín	Lysá nad Labem	Kolín	Diversionary li	ETCS + remote control of section Kolín – Nymburk – Mělník – Děčín východ	ETCS Implementation	The objective of the project is the implementation of the ETCS and the remote control system on the Kolín – Nymburk – Mělník – Děčín východ track.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Czechia	SZCZ	Hranice na Moravě – Hor	Hranice na Moravě	Horní Lideč	Principal line	State border Slovakia (Střelná) – Hranice na Moravě (excluding) - conversion	Reconstruction, modernization of the track	State border Slovakia (Střelná) – Hranice na Moravě (excluding) - conversion	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Slovakia

6.2 RFC Rhine - Danube List of projects

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Slovakia	ŽSR	Čadca št.hr. - Žilina	Čadca	Krásno nad K	Principal line	Modernisation of railway corridor State border CZ/SK – Čadca – Krásno nad Kysucou, section Čadca - Krásno nad Kysucou (outside)	Reconstruction, modernization of the track	n/a	1	2022	3	2025	220,00	Co-financed EU	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 2	n/a	TEN-T poroject ID - 1088
Planned	Slovakia	ŽSR	Čadca št.hr. - Žilina	state border CZ/SK	Čadca (outsi	Principal line	Modernisation of railway corridor State border CZ/SK – Čadca – Krásno nad Kysucou, section state border CZ/SK - Čadca (outside)	Reconstruction, modernization of the track	n/a	9	2020	8	2022	78,00	Co-financed EU	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 2	n/a	TEN-T poroject ID - 9028
Planned	Slovakia	ŽSR	Node Žilina	Žilina	Žilina	Principal line	Modernisation of railway node Žilina (documentation + construction)	Reconstruction, modernization of the track	Complex solution for rail node Žilina	7	2020	12	2023	284,00	Co-financed EU	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	n/a	n/a	TEN-T poroject ID - 1089
Under Construction	Slovakia	ŽSR	Púchov - Považská Teplá	Púchov	Považská Te	Principal line	Púchov - Považská Teplá: railway modernisation to 160 km/h	Reconstruction, modernization of the track	n/a	9	2016	12	2021	378,00	Co-financed EU	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 1	n/a	TEN-T poroject ID - 1087
Planned	Slovakia	ŽSR	Node Bratislava	Bratislava	Bratislava	Principal line	Rail Node Bratislava - Project Documentation	Reconstruction, modernization of the track	Complex solution for rail node Bratislava	1	2020	12	2025	25,00	n/a	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	n/a	n/a	TEN-T poroject ID - 9039
Planned	Slovakia	ŽSR	Node Bratislava	Bratislava	Bratislava	Principal line	Rail Node Bratislava - Works	Reconstruction, modernization of the track	Complex solution for rail node Bratislava	1	2026	12	eyond 203	n/a	n/a	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	n/a	n/a	TEN-T poroject ID - 9452
Planned	Slovakia	ŽSR	Žilina - Košice	Palúdza	Liptovský Hrá	Principal line	Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Paludza – Lipt. Hrádok	Reconstruction, modernization of the track	n/a	8	2021	8	2024	n/a	Project will be financed from the OP Integrated Infrastructure 2014 - 2020	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 2	n/a	TEN-T poroject ID - 9032
Planned	Slovakia	ŽSR	Žilina - Košice	Poprad -Tatry	Lučivná	Principal line	Modernisation of railway line Žilina – Košice, section Lipt. Mikuláš – Poprad-Tatry (beyond), implementation phase Poprad-Tatry – Lučivná	Reconstruction, modernization of the track	n/a	12	2019	12	2021	n/a	Financing of the project is approved by the 2nd CEF Call	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 2	n/a	TEN-T poroject ID - 9033
Planned	Slovakia	ŽSR	Žilina - Košice	Spišská Nová Ves	Poprad -Tatr	Principal line	Modernisation of railway line Žilina – Košice, section Poprad-Tatry (beyond) – Krompachy, implement. phase Spišská N. Ves – Poprad-Tatry	Reconstruction, modernization of the track	n/a	1	2022	3	2025	n/a	Funding source is unkow for the moment	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	according minimut TEN-T requirements	Level 2	n/a	TEN-T poroject ID - 9034
Planned	Slovakia	ŽSR	Žilina - Košice	Poprad -Tatry	Krompachy	Principal line	Modernisation of Poprad-Tatry - Spišská Nová Ves - Krompachy section (up to 160 km/h)	Reconstruction, modernization of the track	Decisiosn regarding financing and time fram were not taken yet	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	TEN-T poroject ID - 9443
Under Construction	Slovakia	ŽSR	Varín - Košice - Čierna nad Tisou	Varín	Čierna nad T	Principal line	Implementation of GSM-R into ZSR infrastucture, section of Varin - Kosice - Cierna nad Tisou state border	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Planned	Slovakia	ŽSR	Košice – Kysak	Košice	Kysak	Principal line	Modernisation of Košice – Kysak section (up to 160 km/h)	Reconstruction, modernisation of the track	n/a	n/a	2027	n/a	2030	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Hungary – MÁV

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Planned	Hungary	MÁV	No. 1	Almásfüzitő	Komárom	Principal line	Preparing for elimination of bottlenecks on the MÁV network. Almásfüzitő - Komárom railway line section.	Reconstruction, modernization of the track	preparation is in progress	12	2019	6	2022	N.A.	Cohesion fund/IKOP	160	22,5	750	25 kV, 50 Hz	Level 1	GC	P/C 80/410
Planned	Hungary	MÁV	No. 1	Kelenföld	Budaörs	Principal line	Preparing for congestion on the MÁV network. Kelenföld - Budaörs railway line section.	Reconstruction, modernization of the track	preparation is in progress	12	2019	9	2022	N.A.	Cohesion fund/IKOP	120/140	22,5	750	25 kV, 50 Hz	Level 1	GC	P/C 80/410
Planned	Hungary	MÁV	No. 1	Kelenföld	Ferencváros	Principal line	Southern circle railway. In order to develop a railway connection between Kelenföld and Ferencváros stations, construction of three-trakcs connection and new suburban stops.	Reconstruction, modernization of the track	preparation is in progress	12	2016	5	2020	N.A.	Cohesion fund/IKOP	80	22,5	750	25 kV, 50 Hz		GC	P/C 80/410
Planned	Hungary	MÁV	No. 1	Kelenföld	Ferencváros	Principal line	Modernization of the southern Danube bridge connecting.	Bridge renewal	preparation is in progress	7	2017	9	2022	137,50	CEF	80	22,5	750	25 kV, 50 Hz		GC	P/C 80/410
Planned	Hungary	MÁV	No. 100	Szajol	Debrecen	Principal line	ETCS 2 installation between Szajol and Debrecen	ETCS Implementation	preparation is in progress	2	2019	12	2022	N.A.	Cohesion fund/IKOP	160	22,5	750	25 kV, 50 Hz	Level 2	GC	P/C 80/410
Planned	Hungary	MÁV	No. 101	Püspöladány	Biharkeresztes border	Diversionary line	Elimination of bottlenecks and electrification	Other	preparation is in progress	8	2017	12	2022	185,40	Cohesion fund/IKOP	1	22,5	750	25 kV, 50 Hz		GC	P/C 80/410
Planned	Hungary	MÁV	No. 120	Nagykáta	Újszász	Principal line	Nagykáta - Újszász railway track section.	Reconstruction, modernization of the track	preparation is in progress	12	2019	6	2022	N.A.	Cohesion fund/IKOP	120	22,5	750	25 kV, 50 Hz		GC	P/C 80/410
Under Construction	Hungary	MÁV	No. 120	Rákos	Szolnok	Principal line	Installation of central trafic control system on the line section Rákos - Újszász - Szolnok	Modernization of the rail traffic management system	implementation is in progress	12	2017	9	2020	N.A.	Cohesion fund/IKOP	120	22,5	750	25 kV, 50 Hz		GC	P/C 80/410
Under Construction	Hungary	MÁV	No. 120	Gyoma	Békéscsaba	Principal line	Modernisation of signaling system between Gyoma and Békéscsaba; Békéscsaba railway station, installation of Ferencváros - Lökösháza ETCS 2 train control system (III/I. Phase B.) - phased project	Other	preparation is in progress/under construction	10	2016	3	2022	51,40	Cohesion fund/IKOP	120	22,5	750	25 kV, 50 Hz	Level 2	GC	P/C 80/410
Planned	Hungary	MÁV	No. 120	Békéscsaba	Lökösháza	Principal line	Contruction of 2nd track between Békéscsaba and Lőkösháza	Reconstruction, modernization of the track	preparation is in progress	9	2016	6	2019	5,23	CEF	160	22,5	750	25 kV, 50 Hz	Level 2	GC	P/C 80/410

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Hungary – GYSEV

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirments [mil. Of EUR]	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
planned	Hungary	GYSEV	Rajka s.b. - Hegyeshalom	Rajka s.b.	Hegyeshalom	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	preparation finished in Q4 2019, to be tendered	n/a	2021	n/a	2023	62,00	EU (CEF, Coh. Found)	100/120 km/h	22,5	750	25 kV / 50 Hz	Level 1	n/a	C21/340
planned	Hungary	GYSEV	Sopron - Győr	Sopron-Rendező	Harka	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 0: Sopron - Harka 2nd track 2023 - 2025, Phase 2B: Sopron - Harka 3rd track 2028 -2033	n/a	2023	n/a	2025	28,00	EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/341
planned	Hungary	GYSEV	Sopron - Győr	Harka	Pinnye	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 2B: Sopron - Harka - Fertőboz new double track alignment	n/a	2028	n/a	2033	458,00	EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/341
planned	Hungary	GYSEV	Sopron - Győr	Pinnye	Fertőszentmiklós	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 2A: (Fertőboz) - Pinnye - Csorna partiallydouble track	n/a	2028	n/a	2033		EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/342
planned	Hungary	GYSEV	Sopron - Győr	Fertőszentmiklós	Petőháza	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 2A: (Fertőboz) - Pinnye - Csorna partiallydouble track	n/a	2028	n/a	2033		EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/343
planned	Hungary	GYSEV	Sopron - Győr	Petőháza	Csorna	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 2A: (Fertőboz) - Pinnye - Csorna partiallydouble track	n/a	2025	n/a	2030		EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/344
planned	Hungary	GYSEV	Sopron - Győr	Csorna	Győr	Principal line	Modernization, upgrade of railway infrastructure	Reconstruction, modernization of the track	Phase 1 of Győr - Sopron upgrade: prioirity project: single track, capacity problems, new 2nd track	n/a	2022	n/a	2025	171,00	EU (CEF, Coh. Found)	160 km/h	22,5	750	25 kV / 50 Hz	Level 2	n/a	C21/344
Ongoing	Hungary	GYSEV	Sopron - Győr	Sopron	Győr	Principal line	Modernization, upgrade of railway infrastructure	GSM-R implementation	Phase II of Hungarian GSM-R network	n/a	2019	n/a	2022	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Romania (I)

6.2 RFC Rhine - Danube List of projects

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train	Traction power	ETCS Level	Track clear	Interm. Code
Ongoing	Romania	CFR	HU/RO Border – Curtici - Simeria	Border HU/RO	Km 614 (Rad	Principal line	Rehabilitation of the railway line section Border HU/RO - Curtici - Arad - Km 614 (Radna)	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	tacking over for works was in Nov. 2019. For two years the works are under defect notification period	n/a	2012	n/a	2019	248,502	SOPT 2007-2013 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	HU/RO Border – Curtici - Simeria	Km 614 (Radna)	Bârzava	Principal line	Rehabilitation of the railway line section Km 614 - Bârzava	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2017	n/a	2022	367,359	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	HU/RO Border – Curtici - Simeria	Bârzava	Ilteu	Principal line	Rehabilitation of the railway line section Bârzava - Ilteu	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2017	n/a	2022	383,321	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	HU/RO Border – Curtici - Simeria	Ilteu	Gurasada	Principal line	Rehabilitation of the railway line section Ilteu - Gurasada	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2017	n/a	2022	325,843	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	HU/RO Border – Curtici - Simeria	Gurasada	Simeria	Principal line	Rehabilitation of the railway line section Gurasada - Simeria	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2017	n/a	2022	573,120	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Simeria	Vințu de Jos	Principal line	Rehabilitation of the railway line section Simeria - Vințu de Jos	Modernization of the existing conventional electrified double track for increased speed	n/a	n/a	2013	n/a	2019	310,608	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Vințu de Jos	Coșlariu	Principal line	Rehabilitation of the railway line section Vințu de Jos - Coșlariu	Modernization of the existing conventional electrified double track for increased speed	n/a	n/a	2011	n/a	2020	176,386	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Coșlariu	Micăsasa	Principal line	Rehabilitation of the railway line section Coșlariu - Micăsasa	Modernization of the existing conventional electrified double track for increased speed	Works for infrastructure and suprastructure were finalised. In progress for tacking over process	n/a	2012	n/a	2019	162,634	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Micăsasa	Ațel	Principal line	Rehabilitation of the railway line section Micăsasa - Ațel	Modernization of the existing conventional electrified double track for increased speed	n/a	n/a	2012	n/a	2019	168,412	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Ațel	Sighișoara	Principal line	Rehabilitation of the railway line section Ațel - Sighișoara	Modernization of the existing conventional electrified double track for increased speed	n/a	n/a	2012	n/a	2019	195,289	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Simeria - Sighișoara	Simeria	Sighișoara	Principal line	Implementation of electronic interlocking, ETCS-Level 2 and GSM-R on the railway line section Simeria - Sighișoara	Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2014	n/a	2021	113,370	SOPT 2007-2013/LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Tenders underevalua	Romania	CFR	Sighișoara - Brașov	Sighisoara	Cața	Principal line	Rehabilitation of the railway line section Sighișoara - Cața	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	Works for Lot ERTMS are on going	n/a	2020	n/a	2024	371,743	CEF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Tenders underevalua	Romania	CFR	Sighișoara - Brașov	Cața	Apața	Principal line	Rehabilitation of the railway line section Cața - Apața	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2020	n/a	2024	608,905	CEF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Tenders underevalua	Romania	CFR	Sighișoara - Brașov	Apața	Brașov	Principal line	Rehabilitation of the railway line section Apața - Brașov	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	Works are in incipient phase. Contract was signed on March, 2020.	n/a	2020	n/a	2024	305,656	CEF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Tenders underevalua	Romania	CFR	Brașov - Predeal	Brasov	Predeal	Principal line	Feasibility study for the rehabilitation of the railway line section Brașov - Predeal	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	The duration of the services contract is 22 months	n/a	2020	n/a	2022	4,140	CEF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GB + GC	45/375
Ongoing	Romania	CFR	Predeal - Constanța	Brazi	Buftea	Principal line	Operational pilot project for the implementation of ERTMS/ETCS level 2	Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	Contract finalised in 2019.	n/a	2011	n/a	2019	37,882	SOPT 2007-2013 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375

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Romania (II)

6.2 RFC Rhine - Danube List of projects

Status	Member state	IM	Line	Section		Category	Project name	Specification	Note	Start		End		Reached parameters								
				From	To					Month	Year	Month	Year	Estimated Financial Requirment	Financial Sources	Maximum speed [km*h^{-1}]	Axle load [t] / Line category	Maximum Train Lenght [m]	Traction power	ETCS Level	Track clearance	Interm. Code
Under preparationfo	Romania	CFR	Predeal - Constanța	Predeal	Constanța	Principal line	Feasibility study for putting into operation the ERTMS/GSM-R system on the railway line section Predeal - București - Constanța	Putting into operation ERTMS and GSM-R	The procurement for the feasibility study project was relaunched on 30 June, 2020.	n/a	2020	n/a	2022	2,100	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L1/ L2	GC	45/375
Ongoing	Romania	CFR	Predeal - Constanța	Constanța	Constanța Pc	Principal line	Feasibility study for the modernization of the railway infrastructure in Constanța Port	Modernization of the existing conventional track layout for increased speed	n/a	n/a	2019	n/a	2021	1,953	CEF + State Budget	100	22,5t/ C3	750	25 kV/ 50 Hz	n/a	GC	45/375
Ongoing	Romania	CFR	Arad - Craiova	Arad	Caransebeș	Principal line	Feasibility study for the rehabilitation of the railway line section Arad - Caransebeș	Modernization of the existing conventional electrified single/double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	FS finalised is under approval of Interministerial Technical-Economic Committee	n/a	2016	n/a	2020	1,670	State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Arad - Craiova	Caransebeș	Craiova	Principal line	Feasibility study for the rehabilitation of the railway line section Caransebeș - Craiova	Modernization of the existing conventional electrified single/double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2018	n/a	2020	5,000	CEF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GB + GC	45/375
Under preparationfo	Romania	CFR	Craiova - București	Craiova	București	Principal line	Speed restrictions removal (quick wins) on Craiova - București line section	Removal of speed restrictions	n/a	n/a	2021	n/a	2023	19,980	CEF + State Budget	80	22,5t/ C3	750	25 kV/ 50 Hz	n/a	GC	45/375
To be promoted	Romania	CFR	Craiova - București	Craiova	București	Principal line	Rehabilitation of the railway line section Craiova - București	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	The feasibility study project is under evaluation for financing at European Commission	n/a	2021	n/a	2023		Cohesion Funds + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
To be promoted	Romania	CFR	Coșlariu/Pod Mureș - Cluj	Coșlariu/Pod Mureș	Cluj	Diversionary line line	Rehabilitation of the railway line section Coșlariu/Pod Mureș - Teiuș - Cluj	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	The feasibility study project is under evaluation for financing at European Commission	n/a	2021	n/a	2023	10,750	Cohesion Funds + State Budget	80	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Ongoing	Romania	CFR	Cluj - Border RO/HU	Cluj	Border RO/H	Diversionary line line	Feasibility study for the electrification and rehabilitation of the railway line section Cluj - Oradea - Episcopia Bihor - Border RO/HU	Modernization of the existing conventional electrified single/double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2017	n/a	2020	0,968	LIOP 2014-2020 + State Budget	80	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
To be promoted	Romania	CFR	Simeria - Filiași	Simeria	Filiași	Diversionary line line	Rehabilitation of the railway line section Simeria - Petroșani - Filiași	Modernization of the existing conventional electrified single/double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2023	n/a	2026	853,000	ERDF + State Budget	60	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
Under tendering	Romania	CFR	Ploiești Triaj - Focșani	Ploiești Triaj	Buzău	Diversionary line line	Feasibility study for the rehabilitation of the railway line section Ploiești Triaj - Focșani	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2020	n/a	2022	4,210	LIOP 2014-2020 + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
To be promoted	Romania	CFR	Buzău - Fetești	Buzău	Făurei	Diversionary line line	Rehabilitation of the railway line section Buzău - Făurei	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2023	n/a	2025	160,000	ERDF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375
To be promoted	Romania	CFR	Buzău - Fetești	Făurei	Fetești	Diversionary line line	Rehabilitation of the railway line section Făurei - Fetești	Modernization of the existing conventional electrified double track for increased speed; Implementation of electronic interlocking, ETCS-Level 2 and GSM-R	n/a	n/a	2027	n/a	2029	356,000	ERDF + State Budget	120 km/h for freight trains and 160 km/h for passenger trains	22,5t/ C3	750	25 kV/ 50 Hz	L2	GC	45/375

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France

Plan for implementation of interoperable system on RFC 9 RHD																			
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1.	Strasbourg	Kehl (DE border)	Principal	5	2	NS + GSM-R	x		In operation										

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Germany

Plan for implementation of interoperable system on RFC 9 RHD															
Line (current situation)								GSM-R	ETCS			Status of ETCS			
												Under realization			Planned	
No.	**From**	**To**	**Type**	**Length of line** (km)	**Number of tracks**	**VZG**	**Current train control system**	**Yes**	**L1**	**L2**	**L3**	**Start**	**Finalization**	**note**	**Start**	**Finalization**
1	Kehl Grenze DE/FR	Appenweier	Principal	14,2	2	**4260**	PZB	x	x				2026			
2	Appenweier	Rastatt-Süd (via 4000)	Principal	36	2	**4000**	PZB	x		x			2025			
3	Appenweier	Rastatt-Süd (via 4280)	Diversionary	**36**	2	**4280**	PZB;LZB	x		x			2025			
4	Rastatt-Süd	Rastatt	Principal	**5**	2	**4000**	PZB	x		x			2025			
5	Rastatt	Durmersheim (via 4020)	Principal	14	2	4020	PZB	x		x			2025			
6	Durmersheim	Karlsruhe	Principal	13	2	4020	PZB;LZB	x		x		2015	2025		n.a.	n.a.
7	Rastatt	Ettlingen West (via 4000)	Diversionary	17	2	4000	PZB	x		x			2025			
8	Ettlingen West	Karlsruhe	Diversionary	6	2	4000	PZB	x		x			2025			
9	Karlsruhe	Bruchsal	Diversionary	22	2	4000	PZB	x								after 2030
10	Bruchsal	Heidelberg	Diversionary	33	2	4000	PZB	x								after 2030
11	Heidelberg	Mannheim	Diversionary	18	2	4000	PZB	x		x		2015			tbd	after 2030
12	Karlsruhe	Hockenheim	Principal	39	2	4020	PZB	x	in some areas	x		2015	2025	Corridor Rhine-Alpine		
13	Hockenheim	Mannheim	Principal	22	2	4020	PZB	x	in some areas	x		2015	2025	Corridor Rhine-Alpine		
14	Mannheim	Darmstadt	Principal	58	2	3601	PZB	x	in some areas	x			2025	Corridor Rhine-Alpine		
15	Darmstadt	Aschaffenburg	Principal	44		3540	PZB	x								after 2030
16	Darmstadt	Frankfurt am Main	Diversionary	28	2	3601	PZB	x							tbd	after 2030
17	Mannheim	Groß Gerau	Diversionary	54	2	4010	PZB;LZB	x	in some areas	x		2026		ETCS-Ausrüstung im Rahmen ESTW Riedbahn	2020	2026
18	Groß Gerau	Frankfurt am Main	Diversionary	25	2	4010	PZB	x		x					tbd	after 2030
19	Frankfurt am Main	Hanau	Diversionary	23	2	3660	PZB	x								
20	Hanau	Aschaffenburg	Diversionary	38	2	3660	PZB;LZB	x								
21	Aschaffenburg	Gemünden	Principal	51	2	5200	PZB	x								
22	Gemünden	Waigolshausen	Principal	40	2	5230	PZB	x								
23	Waigolshausen	Bamberg	Principal	68	2	5102	PZB	x								
24	Bamberg	Nürnberg	Principal	62	2	5900	PZB	x		x			2030			
25	Gemünden	Würzburg	Diversionary	38	2	1733	LZB;PZB	x								after 2030
26	Würzburg	Nürnberg	Diversionary	102	2	5910/5900	PZB;LZB	x		x					tbd	after 2030
27	Nürnberg	Regensburg	Principal	101	2	5850	PZB	x		x			2030	ETCS-Ausrüstung Passau - Feucht	2019	
28	Regensburg	München	Principal	138	2	5500	PZB	x							tbd	after 2030
29	Regensburg	Passau	Principal	118	2/2	5500/5830	PZB	x	in some areas	x			2030	ETCS-Ausrüstung Passau - Feucht	2019	2030
30	Karlsruhe	Pforzheim	Principal	31	2	4200	PZB	x							tbd	after 2030
31	Pforzheim	Mühlacker	Principal	13	2	4200	PZB	x							tbd	after 2030
32	Bruchsal	Mühlacker	Diversionary	33	2/2	4130/4800	PZB	x							tbd	after 2030
33	Mühlacker	Ludwigsburg	Principal	33	2	4800	PZB	x							tbd	after 2030
34	Ludwigsburg	Stuttgart	Principal	14	2	4800	PZB	x							tbd	after 2030
35	Stuttgart	Ulm	Principal	86	2	4813 (SFS)	PZB	x		x			2025	NBS Wendlingen - Ulm bis 2022		
36	Ulm	Augsburg	Principal	86	2	5302	PZB;LZB	x						Neuoffing - Augsburg DSD Starterpaket Scan-Med	tbd	after 2030
37	Augsburg	München	Principal	62	2	5503	PZB;LZB	x		x			2030	DSD Starterpaket Scan-Med	~ 2020	
38	München	Mühldorf am Inn	Diversionary	85	2/2(1 on 43km)	5510/5600	PZB	x		x			2030	some parts of DSD Starterpaket Scan-Med/ABS 38 München - Mühldorf - Freilassing	~2020	
39	Mühldorf am Inn	Freilassing	Diversionary	73	1	5723	PZB	x							tbd	after 2030
40	München	Rosenheim	Principal	65	2	5510	PZB	x					2030			
41	Rosenheim	Freilassing	Principal	82	2	5703	PZB	x					2030			
42	Freilassing	Salzburg	Principal	3	2	5703	PZB	x					2030	Freilassing - Grenze AT bis 2030	tbd	
43	Nürnberg	Marktredwitz	Principal	124	2	5903	PZB	x								after 2030
44	Marktredwitz	Schirnding	Principal	14	2	5903	PZB	x					2030			
45	Schirnding	Cheb	Principal	10	1	5903	PZB	x		x		2019	2025	Schirnding (Arzberg) - Grenze Cz bis 2025		
46	Regensburg	Schwandorf	Principal	43	2	5860	PZB	x		x					tbd	after 2030
47	Schwandorf	Furth im Wald	Principal	68	1	5800	PZB	x							tbd	after 2030
48	Furth im Wald Germany	Domažlice	Principal	39	1	5801	PZB	x							tbd	after 2030

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Czech Republic

Plan for implementation of interoperable system on RFC 9 RHD																			
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1	Česká Kubice st.hr.	Domažlice	Principal	16	1	-		x				after 2023							after 2023
2	Domažlice	Plzeň hl.n.	Principal	60	1	LS Plzeň - Stod		x				after 2023							after 2023
1	Cheb st.hr	Cheb	Principal	12,1	1	INDUSI/PZB	x											05/2020	11/2021
2	Cheb	Plzeň hl.n.	Principal	105,9	1/2	LS	x											05/2020	11/2021
3	Plzeň hl.n.	Beroun os.n.	Principal	64	2	LS	x											05/2020	11/2021
4	Beroun os.n.	Praha - Radotín	Principal	29,2	2	-	x												after 2023
5	Praha - Radotín	Praha Krč	Principal	9,2	1	-	x												after 2023
6	Praha Krč	Praha Zahr.město	Principal	5,3	1	-	x												after 2023
7	Praha Zahr.město	Praha Malešice	Principal	4	1	LS	x												after 2023
8	Praha Malešice	Praha-Libeň	Principal	3,9	1	-	x												after 2023
9	Praha Malešice	Praha - Běchovice	Principal	4,3	2	LS	x											08/2019	12/2020
10	Praha-Libeň	Poříčany	Principal	35	3	LS	x											08/2019	12/2023
11	Poříčany	Nymburk hl.n.	Diversionary	15,7	1	-	x												after 2023
12	Poříčany	Kolín	Principal	22	2	LS	x											08/2019	12/2023
13	Kolín	Česká Třebová	Principal	102	2	LS	x							x					
14	Praha-Libeň	Praha Vysočany	Diversionary	1,229	1	LS	x												after 2023
15	Praha Vysočany	Lysá nad Labem	Diversionary	29,102	2	-	x												after 2023
16	Lysá nad Labem	Nymburk hl.n.	Diversionary	15,3	2	LS	x												after 2023
17	Nymburk hl.n.	Velký Osek	Diversionary	15	2	LS	x												after 2023
18	Velký Osek	Kolín	Diversionary	9	2	LS	x												after 2023
19	Velký Osek	Hradec Králové	Diversionary	51	1	-		x				after 2023							after 2023
20	Hradec Králové	Choceň	Diversionary	45	1	-		x				after 2023							after 2023
21	Česká Třebová	Olomouc	Principal	110	2	LS	x									08/2018	12/2020		
22	Olomouc	Dluhonice	Principal	19	2	LS	x									08/2018	12/2020		
23	Dluhonice	Prosenice	Principal	8,8	2	LS	x									08/2018	12/2020		
24	Prosenice	Hranice na Moravě	Principal	20,4	2	LS	x									06/2017	12/2019		
25	Dluhonice	Přerov os.n.	Principal	3,4	2	LS	x									08/2018	12/2020		
26	Přerov os.n.	Přerov přednádraží	Principal	1,7	2	LS	x									06/2017	12/2019		
27	Přerov os.n.	Prosenice	Principal	7,9	2	LS	x									06/2017	12/2019		
28	Hranice na Moravě	Horní Lideč	Principal	63	2	LS*		x				after 2023							after 2023
29	Horní Lideč	Střelná st.hr.	Principal	7	2	LS		x				after 2023							after 2023
30	Hranice na Moravě	Ostrava hl.n.	Principal	55,4	2	LS	x									06/2017	12/2019		
31	Ostrava hl.n.	Dětmarovice	Principal	17,2	2	LS	x									06/2017	12/2019		
32	Dětmarovice	Český Těšín	Principal	21,1	2	LS	x											2020	2022
33	Český Těšín	Mosty u Jablunkova z	Principal	30,8	2	LS	x											2020	2022
34	Mosty u Jablunkova z	Mosty u Jabl. st. hr.	Principal	3	2	LS	x											2020	2022
35	Výhybna Polanka n/O	Odbočka Odra	Diversionary	2,1	1	LS	x												after 2023
36	Odbočka Odra	Český Těšín	Diversionary	36,5	2	LS	x												after 2023

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Slovakia

Plan for implementation of interoperable system on RFC 9 RHD																		
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1	Čadca št.hr.	Žilina	Principal	37	2	ETCS L2 + GSM-R	x		In operation					x	-	In operation			
2	Lúky pod Makytou	Púchov	Principal	21	2	NS		x	-	-	TBD	2030		x	-	-	-	TBD	2030
3	Púchov	Považská Teplá	Principal	17		NS + GSM-R	x		In operation				x		-	-	2023		
3	Považská Teplá	Žilina	Principal	29	2	ETCS L1 + GSM-R	x		In operation				x		-	In operation			
4	Žilina	Vrútky	Principal	21	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
5	Vrútky	Liptovský Mikuláš	Principal	62	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
6	Liptovský Mikuláš	Poprad	Principal	58	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
7	Poprad	Spišská Nová Ves	Principal	26	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
8	Spišská Nová Ves	Kysak	Principal	59	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2050
9	Kysak	Košice	Principal	16	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
10	Košice	Čierna nad Tisou	Principal	95	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
11	Čierna nad Tisou	Chop	Feeder		1	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
12	Barca	Košice	Feeder		2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
13	Barca	Haniska pri Košiciach	Connecting	10,6	2	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
14	Košice	Maťovce	Diversionary	55,9	1	NS		x	-	-	TBD	2023		x	-	-	-	TBD	2030
15	Bratislava	Rajka	Principal		1	NS + GSM-R	x		In operation					x	-	-	-		2030

Austria

Plan for implementation of interoperable system on RFC 9 RHD																			
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1	Salzburg	Steindorf bei Straßwalchen	Principal				X		In operation				X	X				2035	2038
2	Steindorf bei Straßwalchen	Vöcklabruck	Principal				X		In operation				X	X				2033	2036
3	Vöcklabruck	Wels	Principal				X		In operation					X				2020	2022
4	Passau Germany	Pyret	Principal				X		In operation					X				2023	2026
5	Pyret	Grieskirchen	Principal				X		In operation					X				2023	2026
6	Grieskirchen	Wels	Principal				X		In operation					X				2023	2026
7	Wels	Linz	Principal				X		In operation					X				2020	2022
8	Linz	Enns	Principal				X		In operation					X				2026	2029
9	Enns	Amstetten	Principal				X		In operation					X				2027	2030
10	Amstetten	St. Pölten	Principal				X		In operation					X				2021	2024
11	St. Pölten	Wien	Principal				X		In operation					X				2021	2024
12	Wien	Bruck a. d. Leitha	Principal				X		In operation					X				2020	2023
13	Bruck a. d. Leitha	Parndorf	Principal				X		In operation					X				2020	2023
14	Parndorf	Kittsee	Principal				X		In operation					X				2029	2032
15	Kittsee	Bratislava Slovakia	Principal				X		In operation					X				2029	2032
16	Parndorf	Nickelsdorf	Principal				X		In operation					X				2020	2023
17	Wien	Ebenfurth	Principal				X		In operation					X				2021	2024
18	Ebenfurth	Baumgarten	Principal					X											

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Hungary - GYSEV

Plan for implementation of interoperable system on RFC 9 RHD																			
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1	Hegyeshalom	Rajka	Principal	13	1	ETCS L1	x				n/a	n/a	x						
2	Baumgarten	Sopron	Principal	8	1	INDUSI/PZB		x			n/a	n/a						n/a	n/a
3	Sopron	Győr	Principal	85	1	EVM		x	2019	2022	n/a	n/a						n/a	n/a

Hungary – MÁV

Plan for implementation of interoperable system on RFC 9 RHD																			
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS			
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned	
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization
1	Hegyeshalom border AT/HU	Hegyeshalom	Principal	4,7	2	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		2020	2022
2	Hegyeshalom	Győr	Principal	46,5	2	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		2020	2022
3	Győr	Komárom	Principal	37,4	2	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		2020	2022
4	Komárom	Tata	Principal	20,1	2	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		2020	2022
5	Tata	Kelenföld	Principal	68,5	2	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		2020	2022
6	Kelenföld	Ferencváros	Principal	5,7	2	NS	-	x	2015	2020	-	-	-	-	-	2014	2020	-	-
7	Ferencváros	Kőbánya felső	Principal	4,7	2	NS	-	x	2015	2020	-	-	-	-	-	-	-	-	2030
8	Kőbánya felső	Rákos	Principal	3,3	2	NS	-	x	2015	2020	-	-	-	-	-	-	-	-	2030
9	Rákos	Újszász	Principal	76,1	2	NS	-	x	2018	2023	-	-	-	-	-	-	-	-	2050
10	Újszász	Szolnok	Principal	17,3	2	NS	-	x	2018	2023	-	-	-	-	-	-	-	-	2050
11	Szolnok	Szajol	Principal	10,3	2	NS	-	x	2015	2020	-	-	-	-	-	2014	2022	-	-
12	Szajol	Békéscsaba	Principal	85,3	2	NS	-	x	2015	2020	-	-	-	-	-	2014	2022	-	-
13	Békéscsaba	Lőkösháza	Principal	29	1	NS, ETCS L1	-	x	2015	2020	-	-	x	-	-	In operation		-	-
14	Lőkösháza	Lőkösháza border HU/RO	Principal	2,7	1	without	-	x	2015	2020	-	-	-	-	-	2014	2022	-	-
15	Szajol	Püspökladány	diversionary	67	2	NS	-	x	2015	2020	-	-	-	-	-	2020	2022	-	-
16	Püspökladány	Biharkeresztes	diversionary	50,1	1	without	-	x	2018	2023	-	-	-	-	-	-	-	-	2050
17	Biharkeresztes	Biharkeresztes border HU/RO	diversionary	6,7	1	without	-	x	2018	2023	-	-	-	-	-	-	-	-	2050
18	Ferencváros	Soroksári út	diversionary	1,8	2	NS	-	x	2015	2020	-	-	-	-	-	2020	2022	-	-
19	Soroksári út	Soroksár	diversionary	7,1	1	NS	-	x	2015	2020	-	-	-	-	-	2020	2022	-	-
20	Soroksár	Soroksár-Terminál	diversionary	3,5	1	NS	-	x	2015	2020	-	-	-	-	-	2020	2022	-	-
21	Ferencváros	Kőbánya-Kispest	diversionary	5,1	2	NS	-	x	2015	2020	-	-	-	-	-	2014	2022	-	-
22	Kőbánya-Kispest	Szolnok	diversionary	89,6	2	NS	-	x	2015	2020	-	-	-	-	-	2014	2022	-	-

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Romania

Plan for implementation of interoperable system on RFC 9 RHD																				
Line (current situation)							GSM-R		Status of GSM-R				ETCS			Status of ETCS				
No.	From	To	Type	Length of line (km)	Number of tracks	Current train control system	Yes	No	Under realization		Planned		L1	L2	L3	Under realization		Planned		
									Start	Finalization	Start	Finalization				Start	Finalization	Start	Finalization	
1	Border RO/HU	Km.614	Principal	41,185	2	NS, ETCS L2 + GSM-R not in operation	x		2012	2019				x		2012	2019			
2	Km.614	Ilteu	Principal	78,499	2	NS		x	2018	2022				x		2018	2022			
3	Ilteu	Gurasada	Principal	24,531	2	NS		x	2018	2022				x		2018	2022			
4	Gurasada	Simeria	Principal	38,546	2	NS		x	2014	2022				x		2014	2022			
5	Simeria	Sighișoara	Principal	173,948	2	NS		x	2014	2021				x		2014	2021			
6	Sighișoara	Cața	Principal	45,061	2	NS		x			2020	2024		x				2020	2024	
7	Cața	Apața	Principal	45,721	2	NS		x			2020	2024		x				2020	2024	
8	Apața	Brașov	Principal	37,83	2	NS		x			2020	2024		x				2020	2024	
9	Brașov	Predeal	Principal	26,236	2	NS		x			2023	2027		x				2023	2027	
10	Predeal	Câmpina	Principal	50,273	2	NS		x			2022	2025		x				2022	2025	
11	Câmpina	Brazi	Principal	41,898	2	NS, ETCS L1 2.2.2 not in operation		x			2022	2025		x				2022	2025	
12	Brazi	Buftea	Principal	34,565	2	NS, ETCS L2 + GSM-R not in operation	x		2011	2019				x		2011	2019			
13	Buftea	Chitila	Principal	7,436	2	NS, ETCS L1 2.2.2 not in operation		x			2022	2025		x				2022	2025	
14	Chitila	București Nord	Principal	9,456	2	NS, ETCS L1 2.2.2 not in operation		x			2022	2025		x				2022	2025	
15	București Nord	București Băneasa	Principal	6,608	1	NS, ETCS L1 2.3.0d not in operation		x			2022	2025		x				2022	2025	
16	București Băneasa	Feteşti	Principal	139,952	2	NS, ETCS L1 2.3.0d not in operation		x			2022	2025		x				2022	2025	
17	Feteşti	Constanța	Principal	78,273	2	NS, ETCS L1 2.3.0d not in operation		x			2022	2025		x				2022	2025	
18	Arad	Caransebeș	Principal	153,553	1	NS		x			2020	2023		x				2020	2023	
19	Caransebeș	Strehaia	Principal	166,257	1	NS		x			2022	2026		x				2022	2026	
20	Strehaia	Craiova	Principal	59,916	2	NS		x			no planned da	no planned date		x				no planned da	no planned date	
21	Craiova	Chitila	Principal	202,862	2	NS		x			no planned da	no planned date		x				no planned da	no planned date	
22	Ploiești	Buzău	diversionary	71,47	2	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
23	Buzău	Făurei	diversionary	40,459	2	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
24	Făurei	Feteşti	diversionary	89,07	2	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
25	Simeria	Livezeni	diversionary	84,306	2	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
26	Livezeni	Târgu Jiu	diversionary	48,058	1	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
27	Târgu Jiu	Filiasi	diversionary	70,287	1	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
28	Coșlariu	Cluj	diversionary	106,327	2	NS		x			no planned date	no planned date	x	x				no planned date	no planned date	
29	Cluj	Episcopia Bihor	diversionary	157,67	1	NS		x			2021	2023		x				2021	2023	
30	Episcopia Bihor	Border RO/HU	diversionary	6,629	1	NS		x			2021	2023		x				2021	2023	

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