



## Danube Transnational Programme DIONYSUS

### **Integrating Danube Region into Smart & Sustainable Multi-modal & Intermodal Transport Chains**

Report on on-going and  
planned projects on the  
transport corridors in the DR

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## Executive summary

This report delivers an analysis of the on-going and planned projects of the transport corridors (Core Network Corridors as per EU Regulation 1316/2013 Annex I) in the Danube region. Basis for this report was the inventory of transport infrastructure projects given in the Core Network Corridor studies, as well as internal databases of port authorities, ministries and other project partners who took part in the elaboration of this report or those who were contacted by participating project partners.

Project partners from all Danube countries (except for Germany) collected the data on projects that were divided into three categories: capacity improvement, connectivity and integration, and traffic management and digitalization. The first category involves projects aiming at capacity improvement of ports, inland waterways, roads and rails. These projects do not necessarily involve projects for compliance with the TEN-T Guidelines, but involve either physical addition of newly built capacities or capital modernization (rehabilitation, improvement) of the existing infrastructure with the goal of increasing capacity and efficiency such as extension of berths in ports, extension of port railway tracks, new port terminals, waterway dredging, axle load on railways, new tracks, electrification, new rail-road intermodal terminals outside ports, additional highway lanes, increase of the toll station capacity, etc. The second category covers all projects resulting in improved connectivity of different elements of transport network, such as road and railway connections of inland ports with the rest of the network, especially with the sections of the TEN-T Core Network Corridors, improving the overall efficiency and attractiveness of ports as nodes of multimodal and intermodal transport chains. The last category involves the so called “soft” projects, such as Vessel Traffic Monitoring & Information Systems (VTMIS), Automated Identification Systems (AIS), River Information Services (RIS), Port Community Systems (PCS), port management software projects, traffic flow management projects, safety management projects, European Railway Traffic Management System (ERTMS) and similar.

The total of 135 projects were identified, 78 on-going and 57 planned projects. Out of these, the road sector has the largest number of on-going projects (25), whereas the sector of inland ports shows growing interest and investments in ports, having the largest number of planned projects (17). The total value of all identified projects reaches 21 billion EUR, whereas the largest share (almost 48%) belongs to projects in the road sector. The costs of projects in rail sector closely follows those in road sector and reach almost 42%. Project costs in the so called “wet” infrastructure (projects in inland waterways, inland ports and seaports) are significantly lower and all of them amount to barely 10%.

In addition to the inventory of on-going and officially planned projects categorized in the afore explained categories, project partners identified gaps in transport infrastructure which are relevant for integration of ports and IWT into multimodal supply chains. The total of 40 transport infrastructure gaps has been identified. These gaps are considered to be the embryos of future projects beyond the current planning horizon.

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### 3 Abbreviations

Abbreviation	Explanation
<b>IWW</b>	Inland waterways
<b>CNC</b>	Core Network Corridors
<b>IWT</b>	Inland waterways transport

## 4 Introduction

### 4.1 Scope of the report

This report delivers an analysis of the on-going and planned projects of the [transport corridors](#) (Core Network Corridors as per EU Regulation 1316/2013<sup>1</sup> Annex I) in the DR with an assessment of their impact on the transport supply in this region and in particular with their impact on the Danube waterway system. Each transport corridor study includes a list of projects which have been identified on the basis of the experts' analysis and their cooperation with the Member States and infrastructure managers. The lists include a number of projects for which no time and financial planning exists yet. A further in-depth analysis will have to look into both: the need to capture all the projects which are needed to comply with the European law – i.e. fully complete the TEN-T core network by 2030 – and to ensure these projects reach technical and financial maturity in time. An important area of further analysis will also be the identification of project categories that have received less attention so far but are of key importance for the functioning of efficient and sustainable transport corridors especially those having an impact on the functioning and integration of the Danube waterway system. The analysis includes projects in the field of traffic management – notably intelligent transport systems, in the field of other technological innovation and multimodal projects relating to the integration of IWT in the transport network corridors. For the elaboration of this report, existing data from corridor development studies as well as data from national statistics but also from related other EU funded and/or national transport infrastructure projects were used.

Core Network Corridors running through the Danube region are the following:

- Baltic - Adriatic
- Mediterranean
- Orient – East Med
- Rhine – Danube.

Their geographical alignment is given in Figure 1.

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013R1316>



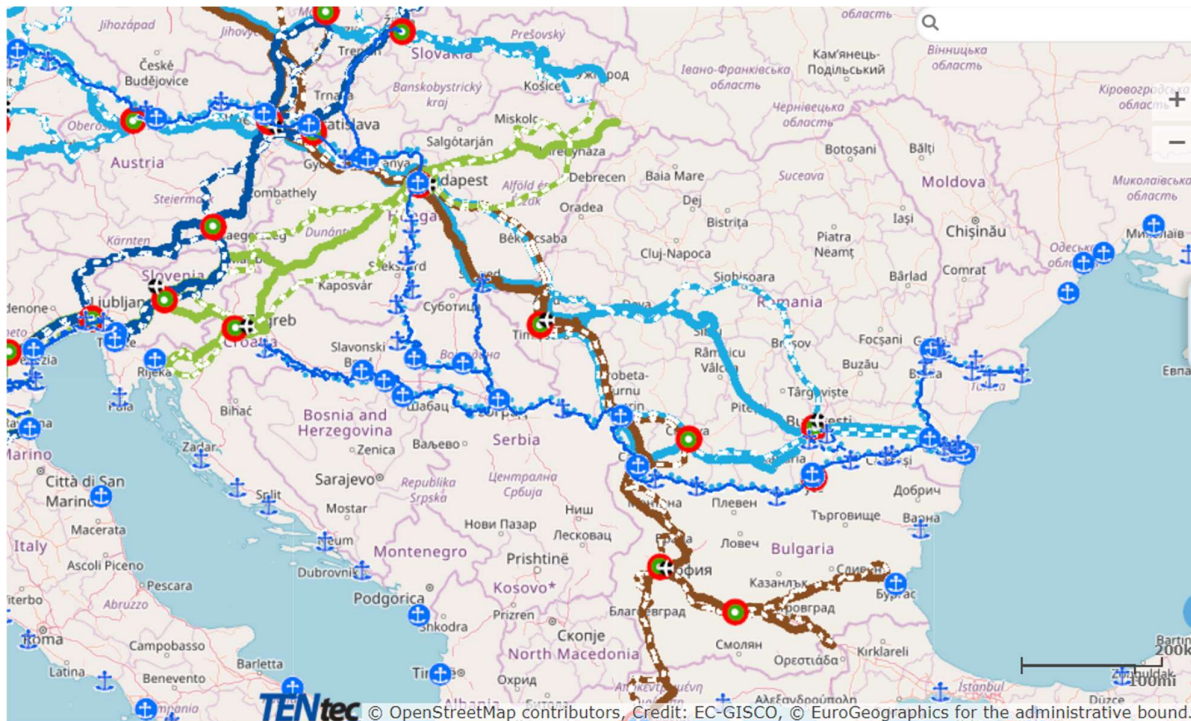


Figure 1: Core Network Corridors in the Danube Region

## 4.2 Types of projects under analysis

All projects commenced until 2021. Due to a large number of different projects in all transport modes, the focus will be on the projects aiming at compliance with the [TEN-T Guidelines](#)<sup>2</sup>, projects having an impacts on the functioning and integration of the Danube waterway system and those related to the traffic management, intelligent transport system and digitalization.

On-going projects include selected projects commenced until the end of 2021, whereas the planned projects involve selected projects to be commenced and completed anywhere between 2022 and 2030. Projects planned to end beyond 2030 are not to be considered

### 4.2.1 Project categories

#### 4.2.1.1 Capacity improvement

Projects aiming at capacity improvement of ports, inland waterways, roads and rails belong to this category. They are not necessarily involving compliance with the TEN-T Guidelines, but they must involve either physical addition of newly built capacities or capital modernization (rehabilitation, improvement) of the existing infrastructure with

<sup>2</sup> EU Regulation 1315/2013 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1315&from=EN>



the goal of increasing capacity and efficiency. Examples of projects of this category are, inter alia, extension of berths in ports, extension of port railway tracks, new port terminals, waterway dredging in order to provide minimum depth of 2,5 meters throughout the year, elimination of critical sectors on waterways, axle load on railways, new tracks, electrification, new rail-road intermodal terminals outside ports, additional highway lanes, increase of the toll station capacity, etc.

#### **4.2.1.2 Connectivity and integration projects**

This category covers all projects resulting in improved connectivity of different elements of transport network: road and railway connections of inland ports with the rest of the network, especially with the sections<sup>3</sup> of the TEN-T Core Network Corridors. Projects in this category may include those rail or road projects connecting different terminals in the port with the main road/rail network, projects connecting the ports' gates with the national road and rail networks, as well as those road and rail projects not physically leaned on the port area, but improving the overall efficiency and attractiveness of ports as nodes of multimodal and intermodal transport chains.

#### **4.2.1.3 Traffic management and digitalization projects**

Projects of this category involve the so called “soft” projects, that is, those projects not strictly involving capital infrastructure works. Such projects include, but are not limited to: Vessel Traffic Monitoring & Information Systems (VTMIS), Automated Identification Systems (AIS), River Information Services (RIS), Port Community Systems (PCS), port management software projects, traffic flow management projects, safety management projects (improving the situational awareness on ships and shore, tools that automate work and provide decision support to prevent risk situations and accidents, etc.), European Railway Traffic Management System (ERTMS) and similar.

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<sup>3</sup> EU Regulation establishing the Connecting Europe Facility (CEF Regulation) 1316/2013, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1316>

## 5 Transport projects in Austria

### 5.1 On-going projects

Ongoing projects in Austria regarding the two ports *Ennshafen* and *Port of Vienna*, including their surroundings, mostly deal with capacity improvement within ports, as well as determined optimization works in the railway, road and waterway sections around these two cities. In general, the infrastructure is well developed, so actually only a few port projects are listed in this section.

#### 5.1.1 Ports – including intermodal terminals within ports

Port: Ennshafen

**Project: Modernisation of transshipment facilities (9535)**

Project category: Capacity improvement

Duration: 01/2020 – 07/2024

Description:

Danubia Speicherei GmbH, one of the port operators, is well aware of the necessity for an existing and well working inland waterway system along the river Danube in extension of the Rhine-Main-Danube canal. To make inland waterways a working system, inland ports development is a must. Within those inland ports we strongly need independent handling and transshipment facilities. Since 1995 we are absolutely believing in this idea and have so far created a spot along the river Danube where anybody can load/unload their goods on vessels, trucks and/or train wagons, absolutely independent and neutral. On average we handle about 850,000 tons a year between the three main ways of transport with a main focus on Danube vessels. To extend our range and to become an even more flexible and faster handling spot along the river Danube we need to take further investments, mainly in the areas of a faster, more efficient crane and two new transshipment facilities. All of those investments will make it easier for existing and future clients to use different ways of transport in a mix, suitable for their goods and products. We strongly believe that this is what it takes for a cleaner and environmentally more friendly future. Handling centers in inland ports will have a big eligibility in future logistics and can be part of a solution to relieve traffic on roads through Europe. Transport on river Danube has been fighting and still fights with the bottleneck in Straubing/Vilshofen. As a consequence, the port of Enns and especially our company can and will be a major player when it comes to lighterage of vessels. Therefore, investments into the infrastructure are needed.



**Figure 2: Sennebogen 895E Hybrid – worlds largest hydraulic material handler<sup>4</sup>**

### **SENNEBOGEN 895E Hybrid – world's largest hydraulic material handler**

- Start of operations: August 2020
- Operating weight of about 420 tons, rail-bound, 40 m reach
- 50 tons load capacity
- Clamshell grab (1 x 12 m<sup>3</sup>, 1 x 8 m<sup>3</sup>)
- Handling volume of about 950,000 tons per year
- 500 kW electric motor, full-electric, 10 kV power supply
- 3000 litres hydraulic oil, 4 hydraulic cylinders, each with 570 litres per minute
- Save up to 55 % Energy with the Green Hybrid System

Port: Vienna

#### **Project: Construction of a port gate at Port of Vienna (9534)**

Project category: Capacity improvement

Duration: 01/2020 – 10/2023

Description:

The Hafen Wien GmbH is the operator of the three Vienna Danube ports Freudenu, Albern and Lobau. The port of Vienna-Albern has no comparable flood protection

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<sup>4</sup> Source: Danubia Specherei GmbH

facilities and therefore had to be taken out of service during the last two flood events in August 2002 and in June 2013 because the port site was under water by 1.20 m. After the last flood event in June 2013, the Hafen Wien GmbH, the region of Vienna and the responsible national Ministry for Transport decided to implement an effective flood protection due to the flood damage and the shutdown that had occurred at the port of Albern. In the event of non-implementation, the logistics companies at port of Albern had indicated long-term emigration from the insufficiently protected port of Albern.

The project activities consist of:

- project management
- local construction supervision
- the construction of the flood protection port gate
- a pumping station
- and the connection to the existing flood protection systems.

The construction measures for the flood protection port gate are based on the results of a planning process that had already been completed. The previous phases of the feasibility study, basic determination, preliminary planning up to preliminary design planning were completed. The technical designs for the individual structures are available.



**Figure 3: Port Gate at Port of Vienna<sup>5</sup>**

<sup>5</sup> Source: <https://www.wienerzeitung.at/nachrichten/chronik/wien-chronik/2074516-So-schwer-wie-zwei-Blauwale.html>



**Figure 4: Construction of Port Gate (Port of Vienna)<sup>6</sup>**

## 5.1.2 Railways

### **Project: Upgrade Asten-Linz (9047)**

Railway section: Linz Ebelsberg - Amstetten; Linz - Linz Ebelsberg

Section length (km): 58

Project category: Connectivity and integration

Duration: 01/2014 – 12/2030

Description

Main objectives:

- Build a part of the 4-track railway line Wien - Salzburg "Westbahn" to extend capacity for passenger and freight trains on this 300 km stretch of the TEN-T Rhine-Danube corridor.
- Measures included:
  - Design, planning and works of the high-speed line between Asten and Linz
  - Extension to 4 tracks
  - Incl. retrofitting Linz Vbf marshalling yard

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<sup>6</sup> Ibid.



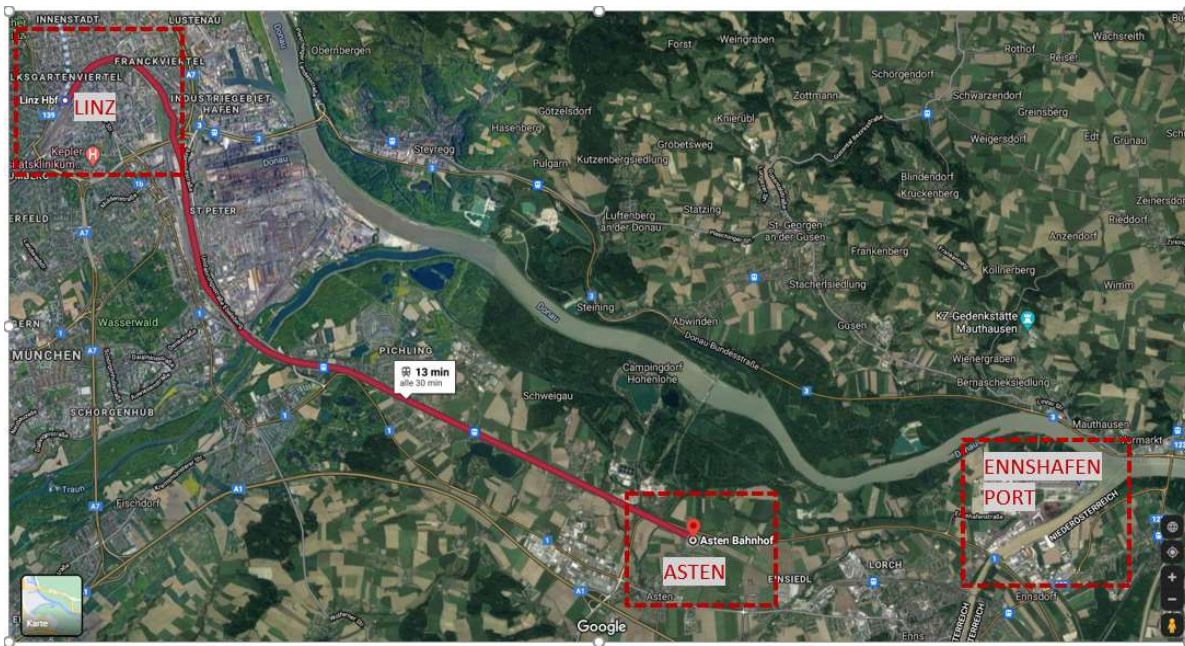


Figure 5: High speed line between Asten und Linz (Ennshafen Port)<sup>7</sup>

**Project: Upgrade Parndorf – Kittsee (border AT/SK) (9095)**

Railway section: Parndorf - Kittsee

Section length (km): 16,9

Project category: Connectivity and integration

Duration: 01/2019 – 12/2024

Description (below)

Two track upgrade between Parndorf and Kittsee (border AT/SK) incl. electrification (Total costs: € 207 mln) and therefore an improvement of the rail connection from Vienna to Slovakia.

**Project: Link between Vienna Airport-Bruck/Leitha (9448)**

Railway section: Airport Vienna - Bruck/Leitha

Section length (km): 20

Project category: Connectivity and integration

Duration: 01/2021 – 01/2034

Description (below)

<sup>7</sup> [www.google.at/maps](http://www.google.at/maps)

New construction of the railway line between Vienna Airport and Bruck a.d. Leitha (Airport link) for a better connection towards the east of Austria and the rail connection with Hungary and Slovakia.

### **5.1.3 Roads**

#### **Project: S1 Vienna Outer Ring Expressway part 1 (1187)**

Road section: Großenzersdorf - Süßenbrunn

Section length (km): 10km

Project category: Connectivity and Integration

Duration: 01/2003 – 12/2024

Description (below)

The project refers to the 1<sup>st</sup> part of the new construction of the Vienna outer ring (motorway between Süßenbrunn and Schwechat) for the section Süßenbrunn – Großenzersdorf. The aim of the project is to route traffic around the city instead of through the middle of it (bypass function).

#### **Project: S1 Vienna Outer Ring Expressway part 2 (1188)**

Road section: Schwechat - Großenzersdorf

Section length (km): 8,2km

Project category: Connectivity and Integration

Duration: 01/2003 – 12/2027

Description (below)

The project refers to the 2<sup>nd</sup> part of the new construction of the Vienna outer ring (motorway between Süßenbrunn and Schwechat) for the section Großenzersdorf – Schwechat incl. a road tunnel. The aim of the project is to route traffic around the city instead of through the middle of it (bypass function).

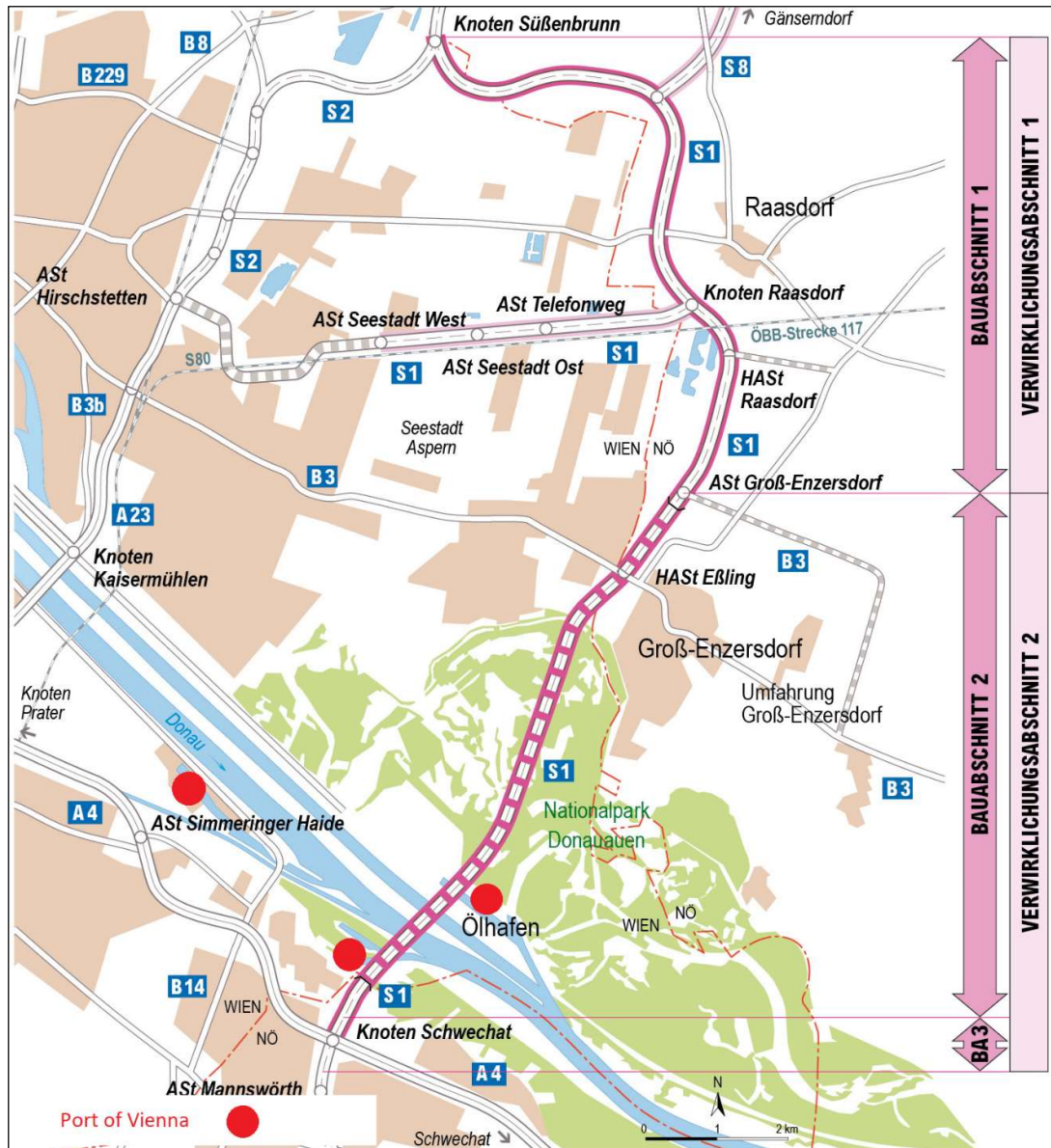


Figure 6: S1 Vienna Outer Ring Expressway<sup>8</sup>

#### 5.1.4 Inland waterways

##### Project: Integrated River Engineering Project Danube East of Vienna, Implementation 2016-2030 (9260)

IWW section: Danube: East of Wien, rkm 1,921 - rkm 1,872.70

<sup>8</sup> Source: <https://www.asfinag.at/verkehrssicherheit/bauen/bauprojekte/s-1-wiener-aussenring-schnellstrasse-neubau-schwechat-bis-suessenbrunn>, accessed May 2021.



Section length (km): 48,3km

Project category: Connectivity and Integration

Duration: 01/2017 – 12/2030

Description (below)

Stabilization of the river bed / sediment management, new and re-construction of groynes, side arm reconnection, river bank restoration; Implementation of improvement measures with highest priority until 2022, further steps 2023 – 2030. [Project Link: <https://www.viadonau.org/en/company/project-database/top-aktuell/integrated-river-engineering-project-catalogue-of-measures>]

### **Project: FAIRway works in the RD-corridor (9536)**

IWW section: Danube (sections in Austria and Serbia)

Section length (km): -

Project category: Connectivity and Integration

Duration: 01/2020 – 10/2023

Description (below)

Regulation (EU) No 1315/2013 sets minimum requirements for rivers and canals to be reached by 2030 and requires Member States to maintain a Good Navigation Status thereafter. In line with these requirements, the proposed action clusters mature works on the critical waterway infrastructure bottlenecks in the Rhine Danube Corridor (global project) in Serbia and Austria:

- Serbia: upgrade of the Iron Gate 2 locks will increase the reliability of lock operation and reduce waiting times of vessels for the entire corridor. Austria, Slovakia, Hungary, Croatia, Romania and Bulgaria also stressed the importance of inclusion of measures in Serbia during the CEF-Transport Committee on 27/9/2019.
- Austria: upgrade of 3 mooring places in Austria leads to increased traffic safety, improved planning of travel and rest times, improved work safety and job satisfaction through provision of secure access bridges for crew changes and shore leaves, as well as increased air quality through provision of shore-side electricity.
- The procurement of equipment for ensuring year-round navigability (1 multifunctional marking vessel in Serbia and Austria respectively, 1 surveying vessel and Aids to Navigation in Serbia) will enhance the Good Navigation Status and the capacity of the waterway. Improved data on the riverbed, combined with the reduced reaction time for marking, enables more efficient measures especially after extreme weather events.

### **Project: Preparing FAIRway2 works in the RD-corridor (9537)**

IWW section: Danube (sections in Austria and Serbia)

Section length (km): -

Project category: Connectivity and Integration

Duration: 01/2020 – 07/2025

Description:

Regulation (EU) No 1315/2013 sets minimum requirements for rivers and canals to be reached by 2030 and requires Member States to maintain a Good Navigation Status thereafter. In line with these requirements, the proposed action will prepare the foundation for "FAIRway Danube 2", the planned multi-beneficiary action under CEF2 as of 2021, which builds on the CEF-funded flagship action "FAIRway Danube". "FAIRway Danube" has already been delivering tangible results in 6 Danube countries since 2015. The proposed action will give a significant impetus to the further acceleration of inland waterway works in the Rhine-Danube Corridor (global project).

The proposed action consists of following activities:

- Monitoring, modelling, multi-criteria analysis and a stakeholder forum will prepare the ground for future works on the Serbian/Croatian common stretch of the Danube. Austria, Slovakia, Hungary, Croatia, Romania and Bulgaria stressed the importance of inclusion of measures in Serbia during the CEF-Transport Committee on 27/9/2019.
- Specification of new functionalities of the transnational Waterway Monitoring System WAMOS in order to enhance services for administrations and waterway users.
- Definition of the future involvement of relevant stakeholders, in particular the shipping sector, ports and terminals as well as the shipping industry, in order to enhance the interaction between waterway administrations and users.
- Testing of aquatic drones and definition of their applicability for the waterway administrations in order to enhance the efficiency of waterway monitoring, especially in inaccessible critical stretches.
- Analysis of requirements and development of good-practice concepts on mooring places on the Danube and its navigable tributaries in order to stimulate future works.

## **5.2 Planned projects**

The infrastructure and their surroundings of the two investigated ports in Austria are well developed now. Nevertheless, an interesting list of planned projects are in the pipeline to further improve the status-quo. Most of these projects deal with investments regarding future demands regarding alternative fuelling of cargo business, fulfilment of Green Deal approaches by modernisation of infrastructure and optimization of existing status both for railway and waterway transport. This project list is not finished, some projects are in detailed investigation now and will be

developed or changed to upcoming new demands of decarbonizing and market developments.

### 5.2.1 Ports – including intermodal terminals within ports

Port: Ennshafen

**Project: CEE / Cargo City Enns (9164)**

Project category: Capacity improvement

Duration: 01/2015 – 12/2030

Description

Construction of the new logistics center by Kaindl and connection to the trimodal node of combined transport traffic



**Figure 7: Map of Ennshafen and Cargo City Enns location**

### **Project: Rail connections improvement (9165)**

Project category: Connectivity and integration

Duration: 01/2014 – 12/2030

Description:

The trimodal port Ennshafen has got very good infrastructure and enough space for growing; the port is dedicated as industrial place; in order to manage the needs in the future decades it is necessary to start strategic planning for the next level in railway connection to the port, which could be needed if modular shift will go the actual way and temporary problems of the IWW will occur due to weather conditions; in this case an backup-line for water transport is necessary and will foster additional in/outbound capacity of the lines.

### **Project: further development of hinterland connection (9167)**

Project category: Capacity improvement

Duration: 01/2015 – 12/2030

Description:

Study for planning of additional connecting and handling facilities within the port which need the business park and the local business surroundings to increase freight handling at the trimodal port, followed by the investment and construction phase.

### **Project: Alternative fuel project (9721)**

Project category: Capacity improvement

Duration: 08/2016 – 12/2030

Description

Masterplan and stepwise investments for LNG-infrastructure (and combined with other future energy items) in the port and in Austria and especially the regional catchment area of the port.

### **Project: Feasibility study for free space zones in the port (9722)**

Project category: Capacity improvement

Duration: 01/2017 – 12/2030

Description:

"Truck-Train-Ship handling-stations", especially regarding the actual decarbonizing strategy for Europe and for connection of Adria to Danube region (one of the nearest distances is Port of Enns) and special transshipment station in case of problems with navigability of the Danube - especially upstream of Enns) - very urgent, because

Straubing-Vilshofen has "no 100 % solution" until 2030 > so the rest of Danube (downstream of Enns) can run well. Studies followed by the implementation phase.

### **Project: Quay infrastructure optimization (9755)**

Project category: Capacity improvement

Duration: 03/2020 – 12/2030

Description:

feasibility studies in accordance with the ongoing development of the business park areas of the port regarding debottlenecking/enlargements or other optimization projects within the quay sections, followed by corresponding investments

### **Port of Vienna**

Project: Expansion of the existing infrastructure

Project category: Capacity improvement

Duration: 2022 - 2024

Description:

As part of the land reclamation project, an area of approx. 45.000 m<sup>2</sup> is to be added to the front end of the port basin to create additional space for operational use (handling of General Cargo, Containers, Cars).

The measures relate to the creation of a paved outdoor area, which will be bordered by a vertical shoring (sheet piling) at the front end towards the port.

Trimodal access is provided by the existing water side infrastructure. Roads and Railways must also be built in this project.

### **5.2.2 Railways**

No further projects – see chapter „on-going projects“

### **5.2.3 Roads**

No further projects – see chapter „on-going projects“

### **5.2.4 Inland waterways**

#### **Project: Provision of *Good Navigation Status* on the Danube in Austria (9769)**

IWW section: Danube in Austria, rkm 2,223.15 - rkm 1,872.70

Section length (km): 350km

Project category: Connectivity and Integration

Duration: unknown

Description:

Provision of Good Navigation Status on the Austrian Danube, e.g. mooring places and associated equipment, shore-side electricity, provision of alternative fuel etc.

### **Project: FAIRway Danube – Follow-up activities (9768)**

IWW section: Danube: rkm 2.223.15 - rkm 1,295.5 and rkm 1.075.00 - rkm 0, Danube-Black Sea Canal, Váh until rkm 113.4

Section length (km): ~2200km

Project category: Connectivity and Integration

Duration: unknown

Description:

Follow-up of previous FAIRway Danube related activities.

Accelerate the removal of bottlenecks by studies, investigations and pilot actions to collect the necessary information allowing the detailed analysis of physical bottlenecks to be removed at a later stage.

Cross-border harmonisation of activities towards Good Navigation Status

## **5.3 Gaps in transport projects**

### **5.3.1 Ports and intermodal terminals in ports**

For both ports *Enns-shafen* and *Port of Vienna* so far are no real gaps known, which are not covered by the above listed on-going and planned projects.

### **5.3.2 Railways**

No additional gaps.

### **5.3.3 Roads**

No gaps identified.

### **5.3.4 Inland waterways**

The most important “gap” or project of great relevance on the inland waterway Danube in Austria, which should be considered here, is the section Straubing-Vilshofen in Germany. Even if measures and projects are ongoing or planned within the TEN-T-lists, this problem will remain further for the whole inland waterway, especially in Austria as traffic from or to the west will be hindered by the shallow water problems leading to lightening, stop of traffic, etc. As experienced from the last

5 years it can be expected that – even if the planned projects will be realized – this problem will stay alive for the future and makes ongoing problems for Austria even for the time after 2025.

### 5.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
<b>Inland waterway</b>	Navigational bottleneck at Straubing Vilshofen section on the Danube in Germany	Ongoing cooperation with Germany to realize to planned projects in due time and further evaluations of predicted improvements (after realisation of started constructions) international discussion.

**Table 1: Summary of transport infrastructure gaps in Austria**



## 6 Transport projects in the Slovak Republic

### 6.1 On-going projects

For the purpose of this report 12 ongoing projects have been identified, in total amount of 190.322.237 Eur. Ports are represented by 4 052 000 Eur mostly in form of feasibility studies, Rail is represented by 25 mil. EUR with one very important project of railway node in Bratislava with direct impact on port of Bratislava as future hub for multimodal logistics. Road is represented by one private project aimed on greening of heavy road transportation via CNG where related supply chain could lead through the port of Bratislava. Inland waterway is represented by 4 projects in total budget of 161 270 237 which are focused on digitalization, bottleneck removal and the biggest project (144,5 mil Eur) is aimed at upgrade of locks at Gabčíkovo with crucial impact not only on Slovak port but on the whole navigation on the Danube.

#### 6.1.1 Ports – including intermodal terminals within ports

##### **Project: Feasibility study for the Modernization of public port of Bratislava<sup>9</sup>**

Port: Bratislava

Project category: Capacity improvement

Duration: 08/2021-12/2023

Estimated budget: 1.570.000 Eur

Description:

The main goal of the project is to prepare a feasibility study that will assess the possibilities of modernization and construction of the public port of Bratislava with the design of such a functional use that corresponds to the needs and objectives defined in the document Masterplan II. The study also includes the identification of infrastructure technologies that are the most suitable for the public port of Bratislava in terms of current security and cost-effectiveness requirements. The subject of the study is also the design and assessment of the modernization of paved areas depending on their proposed use.

The main elements for which they will be assessed are in particular: port walls and nautical equipment, earth slopes with equipment, constructions of mooring elements and a port pool. The mentioned assessments and proposals will be in accordance with the requirements of the international corridor network TEN-T as well as with the valid directives and legislation in the Slovak Republic and the EU.

The feasibility study is internally divided into 3 parts:

- Technical study
- CBA - Cost-benefit analysis

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<sup>9</sup> <https://www.portslovakia.com/sr-modernizacia-vystavba-pristav-ba>



- Environmental impact assessment

Project is currently in the stage of public procurement for the Feasibility study that should be finalized at the beginning of 2022.



**Figure 8: Public port of Bratislava**

### **Project: Construction of LNG terminal in public port of Bratislava – feasibility study<sup>10</sup>**

Port: Bratislava

Project category: Capacity improvement

Duration: 6/2019 – 2/2022

Budget: 574.000 Eur

Description:

The main goal of the project is not only to contribute to the modernization of services in the public port of Bratislava, but also to reduce the negative impact on the environment by supporting the introduction of infrastructure for alternative fuels. The implementation of the project will contribute to the greening of the public port of Bratislava in accordance with the requirements for the introduction of alternative fuels in public ports within the EU countries.

The main activity of the project is the elaboration of a feasibility study for the construction of an LNG terminal in the public port of Bratislava. The feasibility study identifies the most suitable technology for the production and distribution of LNG for the public port of Bratislava with regard to its specifics, based on a comparison of available technologies for liquefaction, storage and pumping of LNG on the market. The implementation of the project will ensure the elaboration of the Feasibility Study for the Construction of the LNG Terminal in the public port of Bratislava. The study

<sup>10</sup> <https://www.portslovakia.com/vybudovanie-terminalu-lng-v-ba>

identifies and compare LNG production and distribution technologies from an environmental, economic and safety point of view.

Feasibility study is currently in the phase of EIA procedure. After successful finalization, the project will proceed to next phase – elaboration of the project documentation and physical construction itself that is estimated (including all administrative procedure) to approx. 4 years.

### **Project: Port Protection – feasibility study**

Port: Bratislava and Komárno

Project category: Traffic management and digitalization

Duration: 9/2019 – 2/2023

Budget: 440 000 eur

Description:

The main goal of the project is to develop a Technical and Economic Study to ensure port security, through which it will be possible to better identify environmental risks, their threats and also to mitigate negative environmental impacts.

The main activity of the project is divided into two thematic units:

- elaboration of Technical-economic study for emergency measures
- elaboration of Technical-economic study for port monitoring system.

The subject of the technical and economic study for emergency measures is to define emergency measures from an environmental, technical and economic point of view. Emergency measures aim to eliminate the negative effects of the most frequently occurring emergency scenarios with regard to the composition of goods and transshipment volumes in TEN-T ports in the Slovak Republic, i.e. in the public port of Bratislava and in the public port of Komárno. The aim of the technical and economic study for the port monitoring system is to design an optimal monitoring system for the port of Bratislava and Komárno using already existing information systems (eg River Information System - RIS and others.).

Study is currently in the phase of EIA procedure. After successful finalization, the project will proceed to next phase – elaboration of the project documentation and physical construction itself.

### **Project: Construction of the background for vessels in public port Bratislava – feasibility study<sup>11</sup>**

Port: Bratislava

Project category: Capacity improvement

Duration: 10/2019 – 12/2024

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<sup>11</sup> <https://www.portslovakia.com/vybudovanie-zazemia-pre-plavidla-ba>

Estimated cost: 400 000 Eur

The main goal of the project is to build Facilities for vessels in the public port of Bratislava suitable for refuelling, providing drinking water to vessels, waste collection (pumping of sewage water, drainage water, collection of used oil, collection of municipal waste, collection and disposal of hazardous waste and others), treatment (cleaning / processing) of waste, its removal or discharge of treated wastewater.

The elaborated design includes a proposal for the construction and capacity of the station, the most suitable location of the station in the locality of the cargo port of Bratislava in accordance with applicable legislation. The proposed background for vessels will respect the applicable legislation, laws and decrees concerning waste management in the Slovak Republic. After defining suitable co-financing source project will proceed to next phase – elaboration of the project documentation and physical construction itself.

### **Project: Masterplan and Feasibility study for public port Komárno<sup>12</sup>**

Port: Komarno

Project category: Capacity improvement

Duration: 2016 – 2024

Budget: 930.000 Eur

Description:

The port of Komárno, located between river km 1,770.00 and 1,762.00 of the Danube, in the proximity of both Bratislava and Budapest, is a crossroad for flows and transshipment of freight between inland waterway, rail and road transport.

Its development will contribute to enhance the connections between different modes of transport allowing an increase of freight handled along the Slovak–Hungarian sections of the Danube and the overall Rhine-Danube core network corridor.

The project's main objectives are:

- To draft a Master Plan, which defines the broader relations under which the efficient Public Port of Komárno (hereinafter referred to as the 'VP Komárno') is expected to operate, whilst respecting national and European legislation.
- To draft a Feasibility Study for the development of the port in Komárno, which shall follow up on the Master Plan and assess the different alternatives of modernization possibilities of the public port of Komárno.

In the framework of the project, documentation necessary to define the scope and mode of modernisation of the port of Komárno shall be drafted, which will help to restore its status within the national economy, and within the TEN-T international corridor network as an equal ecological and efficient part of combined transport with an active link to road and railway transport.

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<sup>12</sup> <https://www.portslovakia.com/master-plan-a-studia-realizovatelno>



Figure 9: Public port of Komárno <sup>13</sup>

## 6.1.2 Railways

### Project: Rail Node Bratislava - Project Documentation

Railway section: Transport Node Bratislava

Section length (km): n/a

Project category: Capacity increase

Duration: 12/2021 – 12/2022

Budget: 25 mil. Eur

Description:

The extensive project addresses the further development of the Bratislava railway junction. The project also solves the sequence of individual steps of further development of the Bratislava Railway Junction. The feasibility study is one of the starting points for the CORCAP project. Feasibility study will be followed by works with estimated timeline between 01/2026 and 12/2040.

The feasibility study brought following results:

<sup>13</sup> Source: CINEA

- most sections in the Bratislava node have enough capacity (throughput) for the current volume of regular transport
- railway segments between Bratislava Main Railway Station (hlavná stanica) - Bratislava-Lamač and (Bratislava-) Podunajské Biskupice - Bratislava-Nové Mesto show values close to the recommended maximum for the current volume of regular services
- from the heaviest sections, we can already consider the overloaded section (section with insufficient capacity) the section Bratislava-Nové Mesto - Main Railway Station (hlavná stanica)
- Bratislava Main Railway Station (hlavná stanica) has insufficient capacity of the rails not only during peak hours, but also during the workday for the current volume of regular transport
- the regional railway line Bratislava - Dunajská Streda - Komárno in the section Bratislava Main Railway Station (hlavná stanica) - Kvetoslav is overloaded (in terms of parameters from UIC 406)
- the railway line in the section Pezinok - Bratislava-Rača has exhausted free capacity due to a significant increase in the extent of suburban passenger transport
- the most loaded freight lines are Bratislava - Kúty and Bratislava - Dunajská Streda
- railway lines with the highest combined traffic volumes are Bratislava - Kúty and Bratislava - Komárno

### 6.1.3 Roads

#### **Project: FuelCNG<sup>14</sup>**

Road section: Slovakia

Section length (km): n/a

Project category: Capacity improvement

Duration: 07/2017 – 12/2021

Budget: n/a (private project)

Description:

The aim of the project is to offer the motoring public a wider use of ecological fuel natural gas through the creation of new LNG fuel for heavy transport segments and the construction of a new modern and innovative CNG filling station infrastructure on the main transport corridors of the Slovak Republic (highways D1 and D2).

Directive 2014/94 / EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure defines a common

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<sup>14</sup> <https://www.fuelcng.sk/>



framework of measures for the deployment of alternative fuels infrastructure in the European Union to minimize oil dependence and mitigate the environmental impact of transport. It sets out minimum requirements for the construction of alternative fuels infrastructure, including LNG (liquefied natural gas) and CNG (compressed natural gas).

The overall goal of this event is to build market confidence and attract new customers to the use of natural gas and biomethane in transport. The critical mass of LNG and CNG infrastructure, together with the growing number of gas-powered vehicles, will attract new suppliers and infrastructure investors to multiply the pilot deployment, thus supporting the achievement of national and European alternative fuel and decarbonisation targets.

The activity consists of a study with a pilot deployment of LNG and CNG technology in Slovakia, which is to contribute to the decarbonisation of road and river transport through the transition to innovative, environmental and sustainable technologies. The event will be deployed on three main networks of TEN-T corridors (CNC), which pass through Slovakia (Rhine-Danube, Baltic-Adriatic and Orient / East Mediterranean). The total length of the core network is 590 km of roads and the event is provided by LNG in the port of Bratislava on the Rhine - Danube corridor (inland waterway).

The first specific objective is to remove major barriers to the supply of LNG to Member States in Central and Eastern Europe and CNG in places with no or limited access to the pipeline in order to create the conditions for the gradual use of biomethane and further reduce greenhouse gas emissions in transport. The first specific objective will be met by setting up a suitable LNG liquefaction plant in line with growing demand, creating a first network of LNG infrastructure and CNG stations supplied via LNG (hereinafter "L2CNG").

The second specific objective is to test and study a new innovative distribution chain for natural gas supply, to define recommendations for the subsequent implementation of LNG and L2CNG infrastructure and to examine the feasibility and obstacles to the authorization of LNG and L2CNG infrastructure in Slovakia. The second specific objective will be met by a study that will present a business plan with objectives for ensuring commercial sustainability for future large-scale implementation on other sections of the corridors in Slovakia and neighbouring countries.

The results of the action will be disseminated through dissemination and awareness-raising activities and materials. As part of the Action, there is a project management activity, which ensures the overall coordination and implementation of the action on time and within budget.

#### **6.1.4 Inland waterways**

##### **Project: Upgrade of Gabčíkovo locks**

IWW section: (Danube, 1820 rkm)

Section length (km): n/a

Project category: Capacity improvement

Duration: 02/2016 – 12/2022

Budget: 144,5 mil. Eur

Description:

The Danube is not just the main artery of the Rhine-Danube multimodal TEN-T corridor. As a waterway of international importance, the E80 must meet the binding navigation parameters required for year-round use of water transport in accordance with the European Convention on Main Inland Waterways of International Importance (AGN) as well as the Belgrade Convention and the recommendations of the Danube Commission. Waterway The Danube, as a waterway of international importance, must meet the requirements of the classification of inland waterways, which cannot be ensured in the current circumstances due to insufficient required fairway parameters during the navigation season.

The strategic goal of the project is to increase the efficiency, reliability and thus the competitiveness of the Danube waterway, which is part of the Trans-European Transport Network (TEN-T). Among other goals, the aim is to strengthen the sustainability of water transport between Slovakia and other countries on the Danube waterway and, in line with European Union policy, to support this economically efficient and environmentally friendly mode of transport with sufficient spare capacity. Increase of safety and intensity of the water transport through the Gabčíkovo Water Structure by the upgrade of Gabčíkovo locks, will definitely contribute to improvement the navigability capacity, enhance a degree of operational reliability of Gabčíkovo locks and will remove the serious nautical bottleneck on the Danube river.<sup>15</sup>

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<sup>15</sup> <https://gabcikovolocks.eu/>



Figure 10: Upgrade of Gabčíkovo locks<sup>16</sup>

**Project: Technical measures to provide required fairway parameters between rkm 1880,260 and 1708,200 of the Danube**

IWW section: name (rkm 1880,260 - 1708,200 )

Section length (km): 172,06

Project category: Capacity improvement

Duration: 09/2018 – 10/2022

Budget: 5,051 mil. Eur

Description:

The project will strengthen the sustainability of water transport between the Slovak Republic and other states on the Danube waterway. At the same time, the feasibility study will undertake a first step towards fulfilling the requirement to complete the construction of the TEN-T core network by 2030 stemming from Regulation (EU) No. 1315/2013 of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010 / EU.

<sup>16</sup> Source: <https://gabcikovolocks.eu>



Sufficient traffic safety and waterway transport capacity depend directly on the degree of security of fairway (depth and width of the fairway and underpass under the line structures) as defined by relevant international regulations (Danube River Shipping Convention, AGN Agreement, Danube Commission Recommendations). In the section of the Danube between rkm 1880.26 – 1708.20 there are several locations and partial sections in which the parameters of the fairway are insufficient.

The main objective of the project is to develop a feasibility study, which will be the first phase of all activities aiming at a fundamental improvement of navigability conditions for international navigation operations on the Danube waterway in section rkm 1880.26 – 1708.20 (entire SK waterway stretch). The feasibility study is the recommendation of a technical solution that is feasible both technically and economically and will not have a negative impact on the environment. The chosen implementation variant of technical measures must respect the interests of environmental protection and complement other transport, economic and land-use planning interests in the area concerned.

### **Project: RIS COMEX<sup>17</sup>**

IWW section: Slovak section of Danube (1880 rkm to 1708 rkm)

Section length (km): 172

Project category: Traffic management and digitalization

Duration: 02/2016-12/2021

Budget: 1.970.237 Eur

Description:

RIS COMEX is a multi-beneficiary project funded by the Connecting Facility Europe (CEF) program, which aims to define, specify, implement and sustainably operate the services of the River Information Services Corridor (RIS) based on the results of the CoRISM study. RIS COMEX started during 2016 and will last until the end of 2021.

The project area covers a total of 13 different European countries, in which 14 partners were involved in the coordination of the Austrian Viadonau waterway administration with the common goal of implementing the services of the RIS corridor. In the course of 2018, Poland joined the project as a cooperating partner.

The aim of the RIS COMEX project is the implementation and operation of cross-border river information services based on the operational exchange of RIS data. These corridor (information) services based on RIS enable traffic management by authorities and traffic management by the logistics industry. They use the available national infrastructure and services. ...

The main goals of the RIS COMEX project are:

- Development of an overall RIS corridor management concept (starting with the results of the CoRISMa project) in a dialogue between RIS providers and

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<sup>17</sup> <https://www.riscomex.eu/>

logistics users (eg shippers, ship captains, vessel and fleet operators, terminal operators) to ensure the relevance of the services implemented.

- Implementation and continuous operation of selected parts of the overall concept ensuring increased quality and availability of information services on navigation and traffic information, which results in particular in significant efficiency gains within inland navigation services and also directly contributes to the general benefits of RIS, ie increased safety, efficiency and environmental friendliness of inland navigation as a mode of transport.
- Define and agree operational measures (legal, organizational, financial, technical) to ensure the sustainable further development, implementation and operation of infrastructure and services for harmonized RIS.
- Harmonization of data exchange concepts for RIS data through joint development and RIS specification.
- Progress in the harmonization of traffic information services at European and / or corridor level based on existing solutions and concepts (eg IVS90, imagine, ERI agent, R2D2).
- RIS COMEX, as a platform bringing together public and private actors in the management of RIS-enabled corridors, will facilitate dialogue between river information service providers and logistics users (eg shippers, vessel and fleet operators, terminal operators).
- RIS COMEX will develop harmonized river information services to be integrated into the DINA initiative and take RIS one step further towards integration with other modes of transport.

Based on these objectives, the project focuses specifically on:

- Better planning of inland waterway transport (increased reliability of transport times),
- Reduce waiting time and travel
- Increasing efficiency in inland navigation,
- Optimal use of infrastructure (increased capacity utilization),
- Reduction of administrative barriers.

### **Project: DaRem - Danube Rehabilitation Measures<sup>18</sup>**

IWW section: Hrušov (rkm 1845- rkm 1868,00)

Section length (km): 23

Project category: Capacity improvement

Duration: 02/2017 – 12/2022

Budget: 9 750 000 Eur

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<sup>18</sup> <https://darem-slovakia.eu/about-the-project/>

#### Description:

The strategic goal of the project is to increase performance, reliability and thus competitiveness of Danube waterway. The aim of the project is to rehabilitate the fairway of an international waterway that has been clogged with sediments as a result of extraordinary flood events. The cost is estimated at EUR 9 750 000. As many as 85% of them will be covered by non-repayable funds from European Union funds (the maximum amount of the grant from the Connecting Europe Facility - CEF - Transport is EUR 8,287,500) and co-financing is at the level of 15%.

Within the project, critical places of sediment deposition will be selected, the method of their removal, storage and further use will be recommended. The project also includes the acquisition or modification of the necessary equipment. Later, the reclamation dredging works themselves will come into play. To confirm the results of the study, a pilot operation will be carried out, which will last until the end of 2020. After its completion, the removal of sediments will continue in the following years.

#### Main goals of the project:

- ensuring sustainable conditions of the fairway on the international waterway Danube and mitigation of the negative effects of sedimentation in the Hrušov reservoir in the range of rkm 1845 to rkm1868
- increasing the quality and safety of navigation
- removal of bottlenecks on the Slovak part of the Danube waterway
- creation of conditions for processing and recovery of sediments with regard to the needs of the environment and the market



**Figure 11: DaReM**<sup>19</sup>

<sup>19</sup> Source: [www.darem-slovakia.eu](http://www.darem-slovakia.eu)

## 6.2 Planned projects

For the purpose of this report, seven planned projects have been identified, in total costs of 89 mil. Eur. However, not all projects have their future costs estimated due to their current status.

Current stage of modernisation of public ports in Slovakia is focused on defining future strategy. Following projects are in the phase of feasibility studies and will be followed by works afterwards:

- Modernization of public port of Bratislava
- Construction of LNG terminal in public port of Bratislava
- Port Protection
- Construction of the background for vessels in public port Bratislava
- Modernization public port Komárno

Another planned projects are Onshore power supply in public ports in portfolio of VPAS and Feasibility study: Proposal of measures to ensure the full navigability of the Danube waterway in km 1880.26 - r. km 1850.00 under the responsibility of the Ministry of Transport and Construction of the Slovak Republic.

### 6.2.1 Ports – including intermodal terminals within ports

#### **Project: Construction of LNG terminal in public port of Bratislava**

After the completion of the Feasibility study and defining suitable co-financing, LNG terminal will be constructed. Costs are estimated up to 48 mil. Eur and terminal should be operational in 4 years from the start of works.

#### **Project: Port Protection**

After completion of EIA procedure defining suitable co-financing Public ports, JSC will proceed to implementation of emergency measures and construction of port monitoring system. Costs and time-schedule will depend on the status of overall and complex modernisation of the public port of Bratislava. Estimated cost of full implementation as designed is 35,5 mil Eur.

#### **Project: Construction of the background for vessels in public port Bratislava**

After defining suitable co-financing, green facility will be constructed and placed in public port of Bratislava.

According to feasibility study, costs were estimated to 5,5 mil Eur.

#### **Project: Modernization of public port Komárno**

When feasibility studies are finalized, they will be followed by works based on the results of the study.

### **Project: Onshore power supply in public ports**

In accordance with article 4 of DIRECTIVE 2014/94/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the deployment of alternative fuels infrastructure Member States shall ensure that the need for shore-side electricity supply for inland waterway vessels and seagoing ships in maritime and inland ports is assessed in their national policy frameworks. Such shore-side electricity supply shall be installed as a priority in ports of the TEN-T Core Network, and in other ports, by 31 December 2025, unless there is no demand and the costs are disproportionate to the benefits, including environmental benefits.

In current stage of the project, work focus on gathering all available information related to the (mostly) technical aspects of the topic and on defining correct methodology and approach towards achieving the goal of construction and operation of onshore power supply infrastructure in public ports on the Slovak section of Danube.

#### **6.2.2 Railways**

For the purpose of this report no planned projects in proximity of, and/or direct impact on, inland ports were identified.

#### **6.2.3 Roads**

For the purpose of this report no planned projects in proximity of, and/or direct impact on inland ports were identified.

#### **6.2.4 Inland waterways**

##### **Project: Feasibility study for the Proposal of measures to ensure the full navigability of the Danube waterway in km 1880.26 - r. km 1850.00**

The main goal of the project is to find a solution that minimizes the negative impacts of the project on individual components of the environment and also fulfills the purpose of the project, which is to propose such measures to ensure navigability on the Danube waterway of international importance to the level of conditions required by the agreement. AGN (European Agreement on Main Inland Waterways of International Importance) and the recommendations of the Danube Commission (EMPFEHLUNGEN über die Mindestanforderungen regelnmaßen für die Fahrinne sowie den den seserbaulichen und sonstigen Ausbau der Donau) min. 300 days a year with parameters of reaching the navigation depth from 2.8 m and the draft of the vessel up to 2.5 m. Achieving the required technical parameters will increase the reliability of the waterway, which is currently the biggest problem in water transport. Improving the navigability of the Danube would also have a significant impact on greater and more efficient use of existing ports on the Danube in the Slovak Republic. The Danube, with an average usability of 19 dm, currently has a navigability rate of approximately 60% of year-round navigation. Appropriate analyzes, measurements, models and predictions shall be used as tools to achieve the definition of the required



parameters, on the basis of which all possible alternatives for ensuring the required fairway parameters on individual sections of the Danube waterway shall be defined with risk assessment in terms of technical, transport, energy and land use planning.

Estimated termination date: 2023.

## **6.3 Gaps in transport projects**

### **6.3.1 Ports and intermodal terminals in ports**

Gap: Outdated transshipment infrastructure caused by underfunding in the ports of Bratislava and Komarno.

Transshipment infrastructure was constructed decades ago and only necessary maintenance has been provided by private owner. This consists of quays, cranes, warehouses, roads and railway, utilities (water, gas, electricity, sewage). Ports must update transshipment infrastructure to reflect current trends in logistics and (mostly) international inland waterway transportation. This topic is subject of the strategic documents that are being / are going to be elaborated.

Gap: Ability to accommodate full block trains in ports of Bratislava and Komarno

Intermodal terminal must be able to serve 1 full train (700 m) at once. This is currently not possible, and trains must be divided for loading and unloading. Such situation results in higher cost and longer loading / unloading time. This topic is subject of the strategic documents that are being / are going to be elaborated.

### **6.3.2 Railways**

Gap: Modernization of the rail track foundation in ports of Bratislava and Komarno

The foundations of the track will have to be maintained and modernized due to the fact that port area is in inundation area. Railway will have to be extended and relocated to support intermodality. This topic is subject of the strategic documents that are being / are going to be elaborated for both ports.

### **6.3.3 Roads**

n/a

### **6.3.4 Inland waterways**

Gap: removal of bottlenecks at the Slovak section of the Danube

Inland waterways must be safe for navigation and permeable for cargo and passenger flow. Bottleneck removal must be coordinated, and since it requires high costs with no direct return for subject responsible for works, also funded from public / state / EU financial resources. Main bottleneck is currently scope of the project

DaRem - Danube Rehabilitation Measures mentioned in above text as on-going project.

Slovak section of Danube as international waterway has been clogged with sediments as a result of extraordinary flood events. Critical places of sediment deposition should be selected, the method of their removal, storage and further use are to be recommended in order to elaborate necessary information for efficient dredging.

### 6.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
<b>Ports</b>	Outdated transshipment infrastructure in the ports of Bratislava and Komarno	Modernisation reflecting current trends in logistics and (mostly) international inland waterway transportation
<b>Railways</b>	Inability of accommodating complete block trains in the ports of Bratislava and Komarno	Designing planned terminals with this regard
<b>Inland waterways</b>	Bottleneck removal on the Slovak section of the Danube	Coordination (neighbouring countries) and accessible public funding in the name of the common good

**Table 2: Summary of transport infrastructure gaps in Slovakia**



## 7 Transport projects in Hungary

### 7.1 On-going projects

#### 7.1.1 Ports – including intermodal terminals within ports

##### **Project: PAN-LNG-4-DANUBE**

Port: Budapest, Csepel

Project category: Traffic management and digitalization, Connectivity and integration

Duration: 06/2016 – 12/2021

The Action will be implemented in Hungary at Csepel-Freeport in the southern part of Budapest, which is part of the inland waterway (IWW) Core Network Corridor Rhine - Danube. The objective of the Action is to accelerate LNG availability for Danube IWW transport at this tri-modal core port by deploying a fixed LNG refuelling station. This station would serve not only LNG propelled vessels but also LNG trucks and possibly trains as well. In addition, the Action foresees to retrofit an existing vessel with LNG propulsion. The Action will study the design of the innovative LNG related infrastructure, implement it and will disseminate appropriate related results.

##### **Project: Works to upgrade the railway link between the Freeport of Budapest and the Core Network Corridors**

Port: Budapest, Csepel

Project category: Capacity improvement

Duration: 11/2017 – 12/2021

Reconstruction of the railway bridge Gubacs assuring the rail link between Budapest Csepel Free Port and the national rail system via the marshalling yard at Soroksár. Due to the present technical state of the bridge, train circulation speed is restricted to 5-10 km/h. Related rail network is also to be rehabilitated. (Bridge length: 150 m, track length: 2.1 km).

#### 7.1.2 Railways

No projects of relevance for integration of Danube IWT and ports into multimodal chains.

#### 7.1.3 Roads

No projects of relevance for integration of Danube IWT and ports into multimodal chains.

#### **7.1.4 Inland waterways**

##### **Project: Extended preparation of the development of TEN-T IWWs in Hungary**

IWW section: Danube in Hungary (from rkm 1.433 – to 1.850 rkm)

Section length (km): 417

Project category: Capacity improvement

Duration: 2018/04 - unknown

Extended preparation of the development of TEN-T IWWs in Hungary. This will cover the preparation of waterway development and improvement on the whole Danube section in Hungary by eliminating restrictions on the depth and the width of the waterway.

##### **Project: Integrated Port Information System in Hungary**

IWW section: Danube in Hungary (from rkm 1.433 – to 1.850 rkm)

Section length (km): 417

Project category: Traffic management and digitalization

Duration: 09/2017 – 12/2022

Deployment of integrated port information system (RSOE4).

##### **Project: Improving fairway marking system on the Hungarian Danube section of the Rhine - Danube corridor**

IWW section: Danube in Hungary (from rkm 1.433 – to 1.850 rkm)

Section length (km): 417

Project category: Traffic management and digitalization

Duration: 09/2015 - 05/2022

Improving navigation conditions along the Hungarian section of the Danube by deploying enhanced marks (1,080 buoys, bank marks and river kilometre marks). Modernisation of the Hungarian fairway marking fleet with 3 new vessels and 3 new patrol boats.

##### **Project: Rehabilitation and Maintenance Equipment for Hungary**

IWW section: Danube in Hungary (from rkm 1.433 – to 1.850 rkm)

Section length (km): 417

Project category: Traffic management and digitalization

Duration: 07/2015 - unknown

Acquisition of equipment to monitor the fairway, to plan and execute rehabilitation and maintenance works and to provide information to users. Trainings to become acquainted with the use of the new equipment.

## **7.2 Planned projects**

### **7.2.1 Ports – including intermodal terminals within ports**

#### **Project: New bridge over the Danube at Budapest through the Csepel Island (preparation)**

Port: Budapest, Csepel

Project category: Capacity improvement

Duration: unknown - unknown

New bridge over the Danube at Budapest through the Csepel Island (preparation). The bridge will cross the main Danube branch and another one the Soroksár branch of the river. Total length of bridges and roads in-between the bridges reaches 7.5 km, bridge sections to be designed for 2x3 and roads for 2x2 lanes.

### **7.2.2 Railways**

No projects of relevance for integration of Danube IWT and ports into multimodal chains.

### **7.2.3 Inland waterways**

No planned projects.

## **7.3 Gaps in transport projects**

### **7.3.1 Ports and intermodal terminals in ports**

#### **Establishment of a new trimodal logistics centre in or close to the capital**

To meet the continuously growing demand for freight transport and its transfer to rail, the modal shift must be as close as possible to the city. By doing so, given Budapest's central location, to be a centre where rail-road, rail-rail and possibly air-rail and ship-rail transfers can be made.

### **7.3.2 Railways**

#### **Inner circular railway long-term developments – Southern connecting railway Danube bridge (DVÖH)**

This railway section could be the diversion route for the external circular railway, but this would require the modernization of the Városliget - Kőbánya-Kispest line section.

### **External circular railway developments**

The circular railway is one of the most important freight traffic routes passing through Budapest, but the speed of the line section is low due to the state of the rails. Due to the increasing proportion of passenger transport, the expansion of capacities has become necessary.

The development plan is already prepared and feasible until 2030. By the development, an already existing railway axis can be involved into the intra-city rail transport, providing new connections.

#### **Construction of Soroksári út - Soroksár 2. track**

The logistics centre, located in the southern part of Budapest, is currently only partially accessible by a single-track railway line. The expected increase of combined transport requires the (re-)construction of the second track in Soroksár station in order to serve the Freeport of Budapest Logistics.

#### **Development of Ferencváros station**

Ferencváros station is the largest station in Hungary and due to the intense utilization of track capacity, the improvement of the conditions of freight tracks has become indispensable. Increasing the tracks would help to overcome the problems of low transit speed and throughput.

#### **Increasing the capacity of Kelenföld station for freight trains**

It is necessary for the planned plant of the tunnel axis to have an adequate capacity around Kelenföld station to turn the passenger trains. This could serve two goals: first, to operate as a deposit endpoint; second, with this improvement in case of malfunctions, on suburban lines at least reduced number of trains can be provided. This measure is essential to be implemented from the view of rail freight transport.

### **7.3.3 Roads**

#### **Conversion of the Corvin-node**

The Corvin-node, which is crossed by a railway line to the Csepel Freeport is a significant car traffic junction. During rail traffic, the road is closed, and this leads to significant congestion. Many projects aim to reinforce the rail traffic at the freeport, which can cause even greater congestion and making life impossible for a populous district of Budapest. In order to reduce road congestion, car and rail traffic in the area must be spatially separated. The construction of a road overpass eliminates congestion and allows rail traffic to operate undisturbed.

### **7.3.4 Inland waterways**

#### **Improving the navigability of the Danube between Szob and the southern border**

As a result of the water level of the Danube and the immersion of vessels, the number of navigable days decreased to less than 250. Therefore, the idea contains the improvement of navigability at 31 locations over 52 km but also aims to improve the

number of navigable days on the Danube for more than 250 days (with 25 decimetre draught).

### 7.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
Ports and intermodal terminals	Lack of trimodal capacity	Establishment of a new trimodal logistics centre in or close to the capital
Railways	Insufficient capacity and degraded state of a bridge near Budapest port	Southern connecting railway Danube bridge (DVÖH)
Railways	Insufficient capacity of the circular railway in Budapest	External circular railway developments
Railways	Insufficient capacity of a single railway track to logistic centre south of Budapest	Construction of Soroksári út - Soroksár 2. track
Railways	Insufficient capacity at Ferencváros station	Development of Ferencváros station
Railways	Insufficient capacity at Kelenföld station	Increasing the capacity of Kelenföld station for freight trains
Roads	Road-rail traffic conflict at the Corvin-node	Conversion of the Corvin-node in Csepel Freeport
Inland Waterways	Poor navigability between Szob and Mohacs	Improving the navigability of the Danube between Szob and the southern border (Mohacs)

**Table 3: Summary of transport infrastructure gaps in Hungary**

## 8 Transport projects in Croatia

### 8.1 On-going projects

On the following list we selected ongoing project of relevance for inland navigation in eastern part of Croatia that is of importance for Vukovar Port.

The list contains projects which are relevant for port, waterway maintenance and for port connectivity – roads and rails. Most of the projects are related to inland navigation. Only rail project has direct impact on Vukovar Port – the railway is going through port itself.

#### 8.1.1 Ports – including intermodal terminals within ports

##### **Project: Designing the vertical quay in the Port of Vukovar**

Port: Vukovar

Project category: Capacity improvement

Duration: 08/2020-03/2024

The Action is part of the global project, which aims at developing Croatia's core inland port Vukovar, located on the Rhine-Danube Corridor. The waterside infrastructure of the port, and its connections with the rail and road TEN-T core networks will be upgraded. The main objective of this Action is to prepare technical documentations, including location and building permits, the full EIA and final design for construction of the 300 m long vertical quay in the Vukovar port and its connection to existing railway infrastructure.

Project implementation will prevent harmful high-water action in the port area and engage the currently unused shoreline in the performance of port functions, raising the capacity and competitiveness of the Port of Vukovar.

##### **Project: International ship winter shelter on the Danube in Opatovac**

Port: Opatovac Winter shelter

Project category: Capacity improvement

Duration: 10/2020 – 12/2021

The project envisages the construction of a winter shelter to accommodate vessels in fast ice / pack ice conditions, in the Danube distributary between Opatovac islet and the settlement of Opatovac, on the VIc class international waterway, at approximately 1,314 rkm.

The project comprises the following investment measures.

Winter shelter:

- initial site clean-up: excavation of approx. 175.000 m<sup>3</sup> of material (sand, granulation 0-4 mm).

- construction of revetment and anchor blocks: sloping shore type, slope ratio 1:2, made up of blocks and quarried stone coating. Contiguous with the revetment structure, development of an earthwork shore plateau at an elevation of 84,00 m above sea level.
- mooring elements: bollards and spacer slots (30 blocks)
- guardhouse: guardhouse structure (single-storey, “L” shaped floor plan) total net surface area 67 m<sup>2</sup>
- supporting winter shelter infrastructure: internal access road, water supply and sewerage network, power supply.

Project implementation would result in the formation of a wintering area with a min. depth of 2.5 m, 40m wide waterway (outside the mooring area) and a 150 m turning basin, as well as the winter shelter with space for 23 vessels of standard dimensions 76.5×11.4 m, and a revetment in the length of 700 m.

The completion of the project will achieve coverage of the Danube on the extended Budapest-Belgrade section by a port or winter storage at intervals of approx. 50 rkm, which is the daily reach of the typical cargo vessel navigating inland waterways.

## 8.1.2 Railways

### **Project: Reconstruction and upgrade of the Vinkovci-Vukovar railway**

Railway section name: Vinkovci-Vukovar

Section length (km): 18,71 km

Project category: Capacity improvement

Duration: 05/2018 - 07/2022

Reconstruction and upgrade of the Vinkovci-Vukovar railway, total length 18,71 km. This section is of importance for international traffic, and it will enable increase of the railway traffic and transshipment of goods in Vukovar Port. In general, this project shall enable better connectivity of railway passenger traffic in the Vukovar-Srijem County.

Reconstruction and upgrade of the Vinkovci-Vukovar railway includes overall reconstruction and renewing of existing single-railed railway; reconstruction of Vukovar-Borovo naselje railway station and Nuštar and Bršadin-Lipovača stops; all necessary works on construction, traffic-management, signal-security and power system substation.





**Figure 12: Vukovar – Vinkovci railway section**

### 8.1.3 Roads

#### **Project: Road section: Nuštar - Vukovar**

Section length (km): 9,8

Project category: connectivity and integration

Duration: 12/2017– MM/YYYY

Concept design had been prepared and the location permit has been issued (21.12.2017.). Main design project with its related verifications, together with subdivision of the land was conducted. Procedure of legal interest verification is finished partially, and other part is still in progress. Section is divided in stages and phases.

I Stage consist of two phases and implies existing installations displacement and second phase implies building of the one lane of the fast road.

For II stage – I phase (south lane of the fast road) legal interest proofs are being prepared in order to provide a building permit.

#### **Project: Vukovar Ring Road**

Section length: 5,6 km

Project category: connectivity and integration

Duration: 2020-n/a

Update of the location permit together with geodetic and geotechnical works and, after that, update of the main design project is ongoing.

Construction works – one lane is planned to be done in 30 months after receiving the building permit (Bršadin north – to node Lužac).

### 8.1.4 Inland waterways

#### **Project: Development of the waterway marking system of the Republic of Croatia**

IWW section: Danube, Sotin

Section length: multiple sections, listed below.

- Danube River from km 1295.5 to km 1433.0
- River Drava from km 0.00 to km 198.6
- River Sava from km 210.8 to km 594.0
- River Kupa from km 0.00 to km 5.0
- River Una from km 0.00 to km 15.00

Project category: Traffic management and digitalization

Duration: 03/2020 – 12/2023

Project “Development of the Waterway Marking System of the Republic of Croatia” includes investment in the improvement of the waterway marking and monitoring system by taking into consideration its current state and available modern solutions.

The waterway marking activities (according to Article 33 of the Ordinance) include: installation of watermarks (marking, signalling) to regulate navigation and its safety; replacement, renovation and maintenance of the existing safety equipment; monitoring of waterways and controlling of marking systems (e.g. control of functionality of watermarks, locating watermarks in case of movement, placing additional watermarks, etc.); removing watermarks before the appearance of ice and high water.

As a part of this investment, the existing software will be upgraded with the ability to monitor AtoN and purchase new navigable markers (buoys) with built-in navigation system and solar lamps (so-called AIS AtoN – Aids to Navigation), some of which are also equipped with depth sensors. The existing two marking ships older than 30 and 50 years, respectively, need to be replaced not only because of the fact that they have almost reached their expiration date, but also because their capacities and operational performance do not meet the growing needs for waterway tours and safe navigation.

### **Project: Regulation of the Danube River Waterway at Sotin**

IWW section: Danube, Sotin

Section length: rkm 1321-1325

Project category: Connectivity and integration

Duration: 10/2020 – 12/2023

This project proposes a solution for coast protection in the form of control facilities that promise the best results and are well suited to the surroundings. The construction of the facilities proposed within this project will narrow the flow profile, leading to faster currents and reduced sedimentation, thereby preventing the formation of sandbars and providing favourable depths for navigation.

This project will construct the following control facilities:

- transverse groyne 21-D/1,
- transverse groyne 22-D/1,

- longitudinal structure 22-23-D/1.

The longitudinal structure and the transverse groynes will fix the projected regulatory line and will work to narrow the flow profile downstream by forming a new coastline. In this way, positive effects will be achieved in the water course, and by reducing the width, more favourable depths required for navigation will be obtained. Likewise, moving the coastline will protect the high bank threatened by erosion.

Regulation of the Danube River Waterway at Sotin from 1321 rkm to 1325 rkm yields the following results:

- Establishing a greater degree of year-round navigation safety, especially during the summer months when the danger of stranding is more pronounced due to low navigable water levels, and the increased traffic of cargo and passenger vessels. This will improve the navigability conditions on the core network (Danube River) of the Rhine-Danube TEN-T Corridor.
- Establishing preconditions for further development of inland waterway transport in the Republic of Croatia.

### **Project: Marking equipment to improve fairway conditions**

Section length: 137,5 rkm

Project category: Connectivity and integration

Duration: 07/2015 – 12/2023

Acquisition of marking equipment to improve fairway conditions, by providing proper navigation guidance to users (buoys, AtNos and vessel's cranes).

Training of staff to become acquainted with the use of the new equipment.

Part of the equipment purchased through CEF project FAIRway Danube (marking vessel for the Danube River, 1 mil€) was purchased through CEF project FAIRway Danube.

### **Project: FAIRway Danube Project /2**

Section length: 137,5 rkm

Project category: Connectivity and integration

Duration: 11/2015 – 12/2021

The first phase of the coordinated implementation of the national action plan “Fairway Rehabilitation and Maintenance Master Plan of the Danube and its navigable tributaries”, which is a part of the part of the Rhine-Danube TEN-T Corridor Work Plan, is planned in this project.

The aforementioned document, which describes the coordinated efforts to eliminate bottlenecks along the Rhine-Danube Core Network Corridor, was created by the joint cooperation of all the Danube riparian countries. The project includes the following activities: regular updates of the national action plans, procurement of the equipment

for hydrological services (water flow metering stations, surveying vessels), procurement of the waterway management systems, establishment of the harmonized water level forecast, implementation of the pilot activities. It also entails the evaluation and preparation of the documentation for the implementation of the future measures which shall contribute to the execution of the master plan.

### **Project: RIS – COMEX /2**

Section length: 137,5 rkm

Project category: Traffic management and digitalization

Duration: 11/2016 – 12/2021

The project envisages the development, the implementation as well as the ensuring of the functionality and sustainability of the cross-border River Information Services (RIS). It is based on the operational exchange of the RIS data.

These RIS-based Corridor services shall result in better planning of inland waterway transport, reducing waiting times and accelerating traveling, increasing the efficiency of inland waterway transport, optimizing the use of the infrastructure and reducing the administrative barriers.

### **Project: Preparing FAIRway 2 works in the Rhine-Danube Corridor**

IWW section: Danube River in Croatia

Section length: 137,5 rkm

Project category: Traffic management and digitalization

Duration: 07/2020 – 04/2024

The Global Project includes two twinned Actions. Both Actions will be carried out following-up the results of the CEF funded Actions FAIRway Danube and will aim at accelerating the future works along the Danube and the Sava. 3 partners from 3 countries (Austria, Croatia and Serbia) participate in the implementation of the project.

Overall, the Actions will aim to deliver the following results:

- An inventory of navigational and environmental characteristics of the Croatian/Serbian common section of the Danube. The data collected through these surveys will be used for navigation purposes and as well as to support the environmental authorities in the definition of the conservation objectives for the River Basin Management Plans in Croatia.
- Delivery of a study including the results of the 1D hydraulic modelling for the entire Croatian and Serbian Danube common section.
- Delivery of the terms of references for the functional upgrades of the transnational waterway monitoring system (WAMOS 2.0).
- Definition of a concept for the stakeholders' cooperation and coordination along the Austrian, Croatian and Serbian sections of the Danube.

- Delivery of a study for Austria, Croatia and Serbia to assess the needs to upgrade/construct mooring places along the sections of the Danube and the Sava.

## 8.2 Planned projects

At this moment it is hard to define planned projects, especially for inland navigation and ports. All strategic documents on national level (Strategy for inland navigation, Master Plans for inland ports and Mid-term plan for next 10 years) are still in preparation phase. They are expected to be prepared by the end of this year.

Transport Strategy is the only valid and updated document, but it does not contain projects listed in detail, just strategic determination.

### 8.2.1 Ports – including intermodal terminals within ports

Having in mind afore mentioned fact that all strategic documents are under preparation, all planned projects are still in the rough phase – that is we still do not know exact start/duration and other details.

#### **Project: Vertical quay in Vukovar Port – construction works**

Port: Vukovar

Project category: Capacity improvement

Duration: n/a

As a follow up of the ongoing project “Designing the vertical quay in the Port of Vukovar” construction works are planned. Since project for design documents is in progress, we cannot know exact date of its completion and necessary permits issuing. We also do not know the source of financing nor start, or duration of the construction works.

#### **Project: Ship Waste terminal in Vukovar port – design documents and construction works**

Port: Vukovar

Project category: Capacity improvement

Duration: n/a Design documents and construction of the waste management terminal in Vukovar port is planned.

#### **Project: Infrastructure for transshipment and supply with liquid gas**

Port: Vukovar

Project category: Capacity improvement

Duration: n/a

One of the future infrastructure projects is infrastructure for transshipment and supply with liquid gas in the Vukovar Port. Location is not yet defined, and the activities had not started. Development Plans are under preparation.

### **Project: Infrastructure for electrical charging station**

Port: Vukovar

Project category: Capacity improvement

Duration: n/a

Infrastructure for electrical charging station is planned to be built in Vukovar Port, location and timeframe not defined yet. Development Plans are under preparation.

## **8.2.2 Railways**

No information available.

## **8.2.3 Roads**

No information available.

## **8.2.4 Inland waterways**

### **Project: River Danube waterway regulation**

Section: 1333+000 do rkm 1433+000)

Project category: Connectivity and integration

Duration: 2025 - n/a

After the implementation of project for monitoring of hydrological, hydraulic and morphologic characteristics of Danube River that is inventarization of integral biodiversity elements for the common Croatian and Serbian part of Danube River it is necessary, based on monitoring results, to prepare documentation for River Danube waterway regulation.

### **Project: Danube – Sava Multipurpose Canal**

Section: n/a

Project category: Connectivity and integration

Duration: 2025 - n/a

Building of Multipurpose Danube – Sava Canal shall enable formation of the quality transport corridor Podunavlje – Adriatic which should be, beside Rhine-Danube Corridor the most optimal combined route from Adriatic to Middle Europe. Upon the



project implementation, Canal should have four function: irrigation of the agricultural land; surface and underground drainage; breeding for the small waters and inland navigation.

Feasibility Study is under preparation.

### **Project: Mooring places on Danube and Sava River**

Section: n/a

Project category: Capacity improvement

Duration: n/a

Building of the future mooring places is foreseen for Danube and Sava River in Croatia. Preparation of the Assessment Study for the future mooring places is planned to be done within Preparing FAIRWAY Works project. Assessment should give as-is situation together with necessity for mooring places for ships (exceptional circumstances, change of crew,..) and potential locations. That should be a preparation for the future building of mooring places.

## **8.3 Gaps in transport projects**

The most important gaps considering transport projects are lack of the continuity of strategic documents or complete absence of afore mentioned for the certain period. For example, strategic documents for inland navigation and ports are not valid since 2016. Currently, they are under preparation and we expect them to be ready by the beginning of the 2022. So, it is a gap of seven years which means a lot in the strategic planning, project preparation, financing and implementation.

Strategic documents from different transport modes are not being interconnected so it happens that completely different projects and development course are planned in the same area (Vukovar Port where railway for passenger traffic is being built).

### **8.3.1 Ports and intermodal terminals in ports**

Port area for expansion in Vukovar is not planned, leaving the port with no physical land capacities for future development. Land plots for extension of port area are physically available further upstream, west of the existing berth line.

### **8.3.2 Railways**

The port area is cut in half by passenger railway line passing through, cutting away 5,5 ha of land from the port area and affecting the connectivity of various parts of the port of Vukovar. This railway line should be converted into industrial railway and made available for use in port operations.

### 8.3.3 Roads

Entrance and exit to/from the Port of Vukovar are not separated, frequently causing disturbances and congestions of inbound and outbound land traffic flows. In this view, the entrance and exit roads and gates should be separated in order to alleviate the in/out traffic flows.

Another serious gap for the road traffic is the lack of a ring road (bypass) around Vukovar, making all trucks passing through the city centre. This causes a large number of negative effects, in terms of congestion of both cargo and urban traffic, decreased safety and throughput and increased pollution.

### 8.3.4 Inland waterways

No notable gaps in the domain of inland waterways.

### 8.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
<b>Rail</b>	Passenger rail goes through Vukovar Port (port area decreased for 5,5 ha)	Future conversion into industrial railway and used for port operations
<b>Port Vukovar</b>	Port land area is not sufficient for all needs and future development	Increase of the port area on the west (upstream, ex Borovo factory area)
<b>Road</b>	Entrance into Vukovar Port is at the same time an exit	Improve road in the port to have one entrance and one exit
<b>Road</b>	No ring road (bypass) in Vukovar, all trucks must go through city centre, slow traffic	Construction of the ring road (bypass) in Vukovar

**Table 4: Summary of transport infrastructure gaps in Croatia**

## 9 Transport projects in Serbia

### 9.1 On-going projects

A total of 7 on-going projects related to inland waterways and ports on the territory of Serbia were analysed. The total costs for these projects based on available data are 163,77 million euros. There are projects for which cost data as well as project start and end dates are not available.

The projects that have been singled out are significant because their implementation affects the Capacity improvement, Connectivity and integration and Traffic management and digitalization of the inland waterway sector.

#### 9.1.1 Ports – including intermodal terminals within ports

Two projects are analyzed in this section. Port of Prahovo and Port of Bogojevo are scheduled for capacity improvement from 2020 to 2025.

##### **Project: Expanding the capacity of the port of Prahovo**

Port: Prahovo

Project category: Capacity improvement

Duration: 04/2020 – 12/2024

The aim of the project is to expand the port's storage capacities in order to enable economic entities located in the wider hinterland of the port to make greater use of port services.

In the hinterland of the Port of Prahovo, there are industries associated with the production of large quantities of products, mainly copper and artificial fertilizers. The expansion of the Port of Prahovo includes the construction of additional storage capacities, as well as the expansion of the operational port and the procurement of additional portal cranes.

The realization of this project will increase the share of water transport in the total volume of transport services in the Republic of Serbia and thus fulfill one of the goals of the transport policy of the European Union, which recognizes water transport as the most economical, efficient and environmentally friendly mode of transport.

##### **Project: Capacity expansion of the port of Bogojevo**

Port: Bogojevo

Project category: Capacity improvement

Duration: 04/2020 – 12/2025

The aim of the project is to build new silos for grain and oilseeds, as well as additional storage space and supporting port infrastructure (railway industrial track to connect the port with the national railway network in the length of 2.5 km, as well as another vertical quay, including smaller container terminal). It will enable greater utilization of the favourable geo-traffic position of the Port of Bogojevo in relation to the regions of Bačka, but also eastern Croatia. It is a port that is predominantly related to the

transshipment of agricultural products, namely cereals and artificial fertilizers, and in the past five years, the turnover of goods transhipped in the Danube Port of Bogojevo is between 200,000 tons and 300,000 tons of various goods annually.

### **9.1.2 Railways**

No info on relevant projects available.

### **9.1.3 Roads**

No info on relevant projects available.

### **9.1.4 Inland waterways**

#### **Project: FAIRway works! in the Rhine-Danube Corridor**

IWW section: Danube (sections in Austria and Serbia)

Section length (km):-

Project category: Capacity improvement

Duration: 03/2020 – 10/2023

The proposed projects action results in improved and more reliable waterway infrastructure, which is the basis for higher market shares of the environmentally friendly transportation mode. The foreseen measures will provide stability and sustainability, where users of inland waterways will face improved framework conditions. The improved reliability and safety of waterway infrastructure of the Rhine-Danube Corridor will increase commitment of various stakeholders attracting new transport flows. This will also have an added value on ports and hinterland transportation, as well as increased leisure activities and tourism.

The general objectives of the trans-European network are to contribute to:

- Cohesion: through accessibility and connectivity, reduction of infrastructure quality gaps, etc
- Efficiency: through the removal of bottlenecks, interconnection, etc.
- Sustainability: through clean transport, reduction of external costs, etc
- Increased benefits for its users: through meeting transport needs, increased safety, etc.

Specific inland waterways transport infrastructure requirements include (among others) the following targets:

- Comply with the minimum requirements for class IV waterways (ECMT)
- Preserve a good navigation status

The proposed action “FAIRway works!” contributes to all of these objectives by reducing infrastructure quality gaps and improves efficiency (e.g. Iron Gate lock, improved fairway marking, high-quality mooring places), increasing sustainability (through fostering inland navigation as such, increasing its capacity and reducing travel times for marking trips, offering shore side electricity) and increasing the benefits for its users (quality and availability of mooring places, increased safety at locks, improved surveying information and improved fairway marking).

“FAIRway works!” clusters and implements the most mature waterway-related initiatives in the corridor at this point in time. It represents a major step in the implementation of the Corridor Work Plan and will trigger additional investments (e.g. mooring infrastructures in other Danube countries).

The proposed actions shall substantially improve the quality of Danube waterway and related infrastructure and will therefore result in more competitive, more reliable, more sustainable and safer Danube navigation operations.

#### 1. Upgrade of Iron Gate II navigational lock (Serbia):

The reconstruction and upgrade of the Iron Gate II navigational lock will improve functional performance of the lock and reduce the duration of its lock cycles. Moreover, reliability, predictability and stability of operations will be increased, resulting in a decrease of waiting times for vessels, the elimination of unscheduled downtime risks, improved safety of navigation and improved overall Good Navigation Status parameters on the Danube waterway.

#### 2. Upgrade of infrastructure for mooring operations (Austria)

#### 3. Procurement of equipment to ensure year-round navigability (Austria and Serbia):

The objective for this action is to ensure year-round navigability through the procurement of one high-quality multifunctional marking vessels in Austria and Serbia respectively and, in addition, a state-of-the-art surveying vessel and AIS AtoNs in Serbia. This equipment shall facilitate the exploitation of the benefits of the dynamic fairway marking approach. The surveying modules installed on the multifunctional vessels and the additional surveying vessel in Serbia enable gathering of up-to-date riverbed data required for efficient marking and dredging interventions. In Serbia, AIS AtoNs will be procured additionally. These enable the digital supervision of fairway marks and thus much faster detection of dislocated buoys and provision of precise information to navigation users through electronic navigational maps. The Austrian multifunctional marking vessel will additionally be equipped with a meeting room and can thus be used for on-site coordination meetings – for instance with navigation authorities, inland waterway users or Transboundary River Commissions – to facilitate rapid decision-making processes. Furthermore, it will be equipped with icebreaking equipment, which will help to reduce disruptions due to formation of ice (e.g. in locks, ports, waterway service centres, public mooring places in side-arms) and also contribute to ensuring year-round navigability.

### **Project: Preparing FAIRway 2 works in the Rhine-Danube Corridor**

IWW sections: Danube (sections in Austria and Serbia), Sava (section in Croatia)

Section lengths (km):-

Project category: Capacity improvement

Duration: 07/2020 – 04/2024

The proposed Action contributes to all of these objectives – it contributes to

- reducing infrastructure quality gaps and improving efficiency: by preparing interventions to eliminate bottlenecks on the Serbian-Croatian common Danube stretch, by preparing infrastructure investments to establish high-quality mooring places along the Danube
- increases sustainability through fostering inland navigation as such, increasing its capacity and reducing resource need for surveying trips, by preparing innovative measures regarding mooring places infrastructure, by preparing concepts for improved stakeholder integration; and
- increases the benefits for its users (quality and availability of mooring places).

The proposed Action represents a major step in the implementation of the Corridor Work Plan and will trigger additional investments.

The proposed Action consists of following activities:

1. An inventory of navigational and environmental characteristics of the Croatian/Serbian common section of the Danube. The data collected through these surveys will be used for navigation purposes and as well as to support the environmental authorities in the definition of the conservation objectives for the River Basin Management Plans in Croatia.
2. Delivery of a study including the results of the 1D hydraulic modelling for the entire Croatian and Serbian Danube common section.
3. Delivery of the terms of references for the functional upgrades of the transnational waterway monitoring system (WAMOS 2.0).
4. Definition of a concept for the stakeholders' cooperation and coordination along the Austrian, Croatian and Serbian sections of the Danube.
5. Delivery of a study for Austria, Croatia and Serbia to assess the needs to upgrade/construct mooring places along the sections of the Danube and the Sava.

### **Project: Arrangements of critical sectors on the Sava River**

IWW sections: Drina and Sava (sections in Serbia),

Section lengths (km):-83-87, 100.5-101.3

Project category: Capacity improvement

Duration: 07/2017 – 12/2024



The realization of the project will increase the safety of navigation and a larger volume of traffic on the Sava River. The project includes dredging of the river sediment and construction of hydro-technical facilities in order to ensure the prescribed dimensions of the waterway during 265 days a year, regardless of the water level.

In November 2017, the works on the arrangement of the first critical sector "Kamičak" on the Sava River from km 87 to km 83 were completed. The works included dredging of the river sediment in order to ensure the prescribed dimensions of the waterway.

Excavation of the "Sabac" sector is divided into two sections. Work on the first section began in August 2018. After a break during the winter, the works continued in mid-June and were completed in September. The works on the second section (km 101.3 to 100.5 km) were performed in the period from October to December 2019. About 50% of the planned works were done due to the sharp rise in the water level in November, which made it impossible for the works to be completed in their entirety. The works will continue in 2020 as soon as the hydrological conditions are met and will last for about 45 days.

In September 2019, work began on the preparation of technical documentation (Preliminary feasibility study with the General Design, Feasibility Study with the Preliminary Design and the Project for construction permit, as well as tender documentation) for hydraulic and excavation works on the critical sector "Drina estuary and Sava", which are financed from EIB ERI TA grant funds.

### **Project: Adaptation of the ship's lock in the HPP "Đerdap 1"**

IWW sections: Danube (sections in Serbia),

Section lengths (km):-943

Project category: Capacity improvement

Duration: 01/2019 – 12/2021

The project will significantly increase the functionality of the ship lock in terms of shortening the time required for the implementation of the ship transfer operation, which will have positive effects on the overall navigation on the Danube, as well as on the development of industry and economy in the region. The project includes the replacement of electro-hydraulic and hydromechanical equipment, the reconstruction of the control tower, as well as the dredging of access fairways.

### **Project: Removal of sunken vessels in sector Prahovo**

IWW section: Danube: Prahovo, rkm 845.5

Section length (km): various locations

Project category: Capacity improvement

Duration: 1/2017 - at the earliest 2022

OBJECTIVE(S) OF THE PROJECT

The project's objective is to improve the conditions for safe navigation on the Danube (sector Prahovo), in particular during the low water level periods by removal of the German sunken vessels from WW II.

The Ministry of Construction, Transport and Infrastructure, in cooperation with the German Government and the United Nations Development Program (UNDP), initiated the first phase of this project which includes the searching for and the removal of the UXO on boards of these ships.

In July 2017, the site was visited by specialized German divers. Based on their analysis and work plan the removal of UXO on boards of all these ships will be conducted during 2018. The costs of implementing this first phase of the project have been estimated to amount to approximately EUR 2 million and funding required will be provided from the State Budget.

Following the removal of UXOs, the technical documentation and tender dossier will be updated. The Ministry of Construction, Transport and Infrastructure has provided financial and technical assistance for these activities through the PPF8 Project. Based on the updated technical documentation and tender dossier, the Ministry of Construction, Transport and Infrastructure will apply for funding for the second phase of this project, which includes the removal of the demined sunken vessels.

Planned project activities:

1. Phase: Removal of unexploded ordnance
2. Phase: Removal of sunken vessels

#### TRANSBOUNDARY IMPACT

The whole inland navigation sector in the Danube Region will benefit from the planned measures. River traffic on the Serbian part of the Danube is mainly transit from the Black Sea to Hungary, Austria and Germany. Consequently, there is a large benefit for the EU to keep this corridor functional and guarantee safe and efficient navigation. Resolved bottlenecks in one sector of the Danube have a positive impact on all Danube riparian states involved in inland navigation.

Moreover, due to the ongoing corrosion of the vessels leakage of contaminated materials might take place which is an environmental hazard.

The users of the waterway are the main beneficiaries of the project.

## 9.2 Planned projects

A total of 1 planned project related to inland waterways on the territory of Serbia were analysed. The total known costs for these projects, based on available data, are 1 million euro. There are projects start and end dates are not available.

### 9.2.1 Ports – including intermodal terminals within ports

No info on relevant projects available.

## 9.2.2 Railways

No info on relevant projects available.

## 9.2.3 Roads

No info on relevant projects available.

## 9.2.4 Inland waterways

### **Project: Improving navigation conditions on the Danube River from 1295.5 -1433.1 river km – Eliminating bottlenecks on the Croatian/Serbian part of Danube River**

IWW section: Danube: critical sectors from Bezdan(RS) - Batina(RH) to Backa Palanka(RS) - Ilok (RH), rkm 1,433.1 - rkm 1,297.5

Section length (km):135.6 km

Project category: Capacity improvement

Duration: t.b.d.

The common Croatian and Serbian part of Danube River stretch from 1433.1 – 1295.5 rkm is considered critical in terms of navigation conditions and dissemination of sediment and ice.

On the partly regulated reaches of the Danube River between 1433.1 – 1295.5 rkm, ships can operate a minimal draft of 2.5 m at low water during the majority of a year.

Based on international conventions for Inland waterways (AGN, Joint Statement, NAIADES; Luxembourg convention...) the analyzed stretch is not able to ensure the required conditions.

In order to ensure an adequate water regime for transport and the protection of banks from further erosion and morphological changes in the riverbed of the Danube, it is necessary to propose adequate measures, due to the fact that at this stretch there were almost no activities performed in last 25 – 30 years (mainly due to the war and bilaterally non-agreed border line).

Therefore, the main objective of the project is to define the present situation through monitoring (ecological, hydro-morphological, water quality,... ), propose measures which would ensure smooth and safe river navigation while preserving and protecting existing natural habitats and protected sites.

The first step of the proposed project, besides the identification of transport needs, will be to identify environmental needs, identify other land and water uses and plans, identify potential transboundary issues, identify the integrated project objectives and benefits, define the proposal for financial means of the project and communicate and involve stakeholders and the public.

Planned project activities can be summarized as follows:

- Data collection and analysis – existing situation
- Identification of main elements: transport needs, environmental needs and constraints, conditions from other planning activities, transboundary elements, integrated project objectives and benefits, definition on project objectives and benefits, communication and involvement of stakeholders and the public
- Mathematical modelling of the river
- Initial planning and establishment of a forum
- Monitoring of major elements
- Preparation of necessary project documentation and assessments

#### TRANSBOUNDARY IMPACT

Mainly the Republic of Croatia, the Republic of Serbia and Hungary; but eventually the entire Danube Region, as bottlenecks should be removed.

#### PROJECT BENEFICIARIES / TARGET GROUPS

- Inland waterway companies
- Industries in the Danube Region (especially steel, oil, fertilizer and agriculture production)
- Ports
- Tourism (Cruisers)
- Inland waterway authorities in the Danube riparian countries
- Nature park Kopački Rit and Nature park Gornje Podunavlje
- Other stakeholders

### 9.3 Gaps in transport projects

Transport and mobility play a fundamental role in the Rhine-Danube corridor region. The aim of the projects is to promote efficient, safe, secure and environmentally friendly transport and to create the conditions for a competitive industry generating growth and jobs. The issues and challenges connected to this aim require action at international level including countries in Danube region. No national government can address them successfully alone.

#### 9.3.1 Ports and intermodal terminals in ports

Gap, introduced in this section related to Inland port of Prahovo and port of Bogojevo is insufficient capacity of infrastructure and superstructure. Over the wider region of Port of Prahovo and Port of Bogojevo (ports) there are industries associated with the production of large quantities of products, mainly copper and artificial fertilizers. Industries and port of Prahovo have the common interest in expansion of the Port of Prahovo which is reflected in greater use of port services. Both sides, ports and industries will increase the profit by increasing throughputs of the ports and by increasing production of industries.

Storage capacity includes the construction of additional storage capacities and the expansion of the operational port and the procurement of additional portal cranes.

### 9.3.2 Railways

No info available.

### 9.3.3 Roads

No info available.

### 9.3.4 Inland waterways

There are several gaps which are identified on the basis of analysed projects related to IWW mode in Serbia. Gaps like partial digitalization and restriction of navigation in critical sectors and dependence of transport on climatic factors have been highlighted to indicate the possibility of creating conditions for a competitive industry to generate growth and employment and to show how the proposed solutions contribute to efficient, safe, secure and environmentally friendly transport.

Gaps, related to navigation conditions, are identified for the following sectors of IWW: Danube **River** from 1295.5 -1433.1 river km and river from 83-87, and 100.5-101.3 river km as well as for the lock Djerdap I.

Proposed solutions involve protection of banks for the Danube River from 1295.5 - 1433.1 river km, dredging of the river sediment and construction of hydro-technical facilities of the Sava River from 83-87, and 100.5-101.3 river km and technical operations leading to increased predictability and stability of navigation through lock Djerdap I.

Partial digitalization may be the way forward for the years when there was no digitalization, but today it is recognized as a constant gap in achieving safe and secure transportation. Today digitalization in IWW mode is mainly referred to aids to navigation. Proposed solutions enable the digital supervision of fairway marks and faster detection of dislocated buoys as well as provision of precise information to navigation users through electronic navigational charts.

### 9.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
Inland Port	Insufficient capacity of infrastructure and superstructure in the port of Prahovo	The construction of additional storage capacities, as well as the expansion of the operational port and the procurement of additional portal cranes in port Prahovo.

Mode	Gaps	Proposed solutions
Inland port	Insufficient capacity of infrastructure and superstructure in the port of Bogojevo	The building new silos for grain and oilseeds, additional storage capacities and supporting infrastructure (railway industrial track to connect the port with the national railway network in the length of 2.5 km, as well as another vertical quay, including smaller container terminal) in port of Bogojevo.
Inland waterways	Navigational bottlenecks on the Danube sector 1295.5-1433.1 river km	Protection of banks from further erosion and morphological changes in the riverbed of the Danube River from 1295.5 -1433.1 river km;  Increasing of predictability and stability of operations related to navigation and passing through lock Djerdap I.
Inland waterways	Navigational bottlenecks on the Sava sector 100.5-101.3 river km	Dredging of the river sediment and construction of hydro-technical facilities of the Sava River from 83-87, and 100.5-101.3 river km.
Inland waterways	Partial Digitalization	Enable the digital supervision of fairway marks and thus much faster detection of dislocated buoys and provision of precise information to navigation users through electronic navigational maps;  Enable gathering of up-to-date riverbed data required for efficient marking and dredging interventions;  Improving dynamic fairway marking approach;

**Table 5: Summary of transport infrastructure gaps in (Serbia)**



## 10 Transport projects in Romania

For the ports development and the movement of cargo, there were identified **43** infrastructure projects which contributes to the port capacity improvement and to the connectivity and integration in the supply chains. The projects are related to ports, road, rail and inland waterway infrastructure as follows:

- 16 projects related to port infrastructure, consisting in deepening the port basins and accesses, berths modernisations or new berths, creating new areas for ports development, modernising the networks of utilities
- 5 projects related to the infrastructure of inland waterways having impact on the fairway as well as on the stability of the river / canal banks
- 12 projects related to the road infrastructure, consisting in highways or express roads **on the main corridors**, which improves the connectivity and the movement of cargo by road.
- 10 projects related to the modernisation of railway lines as well on the main corridors.

### 10.1 On-going projects

The on-going projects are split between modes of transport as follows:

- 3 projects related to the maritime ports, on the TEN-T core network,
- 3 projects related to the inland waterways ports, on the TEN-T core network,
- 8 projects related to road infrastructure on main corridors,
- 5 projects related to rail infrastructure on main corridors,
- 1 project on inland waterways,

described below.

For the scope of this report, the ongoing projects are considered only those ones having contracts signed for the execution of detailed technical design and works.

#### 10.1.1 Ports – including intermodal terminals within ports

##### **Port: Constanta**

##### **Project: The modernization of port infrastructure through assuring depths in fairways and basins and navigation safety in Constanta Port**

Project category: Capacity improvement

Duration: 11/2018 – 08/2021

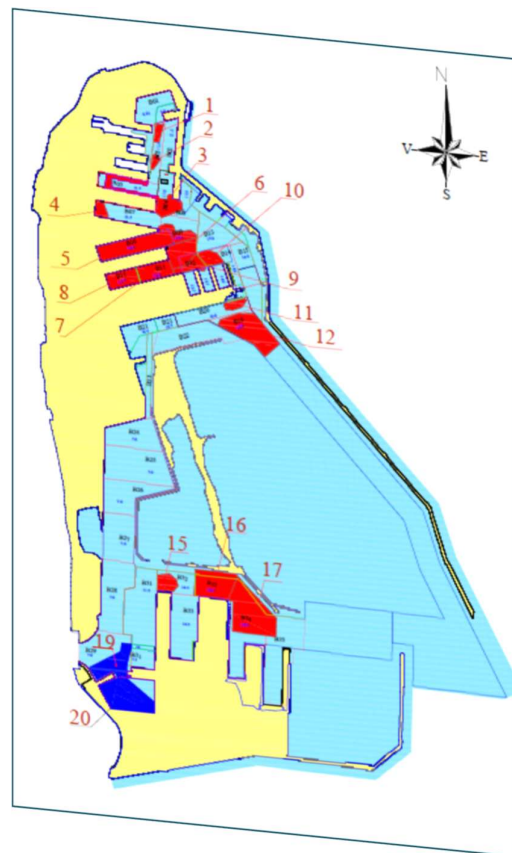
Description:

Within the project the following objectives<sup>20</sup> will be achieved:

- Investment dredging to eliminate depth deficiencies and to increase navigation safety in 17 areas related to the port basins, access channels as well as in the ships maneuvering areas.
- Ensuring the stability of the berths in the working port affected by the deepening process from 7 meters to 9 meters.
- Delivery and commissioning of the hydrographic system (including a vessel for hydrographic measurements and research) for tracking and calculating the dredged volumes in the port. The hydrographic system consist of specific equipment: the multifaceted hydrographic probe, single-beam hydrographic probe and side scan, "SUB - BOTTOM" profiler, speed sensor for sound in the water, water temperature sensor at the keel level, sound velocity profiler in water, sensor measurement of ship movements; guidance system (gyro compass), DGNSS RTK MOBIL receiver, reference station DGNSS RTK, portable sea level reference station (MAREGRAF), equipment for underwater hydroacoustic inspections, CHARTPLOTTER (RADAR).

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<sup>20</sup> [https://www.portofconstantza.com/pn/page/np\\_programe\\_strategii](https://www.portofconstantza.com/pn/page/np_programe_strategii)



**Figure 13: Dredging areas in the Port of Constanta**

This project will increase the safety of navigation in the port of Constanta for larger vessels, the capacity of port to accommodate larger vessels and the capacity for port operations in the Southern part of the port.

### **Port: Constanta**

#### **Project: Implementation of Deep Water Specialized Berth (Berth 80)**

Project category: Capacity improvement

Duration: 06/2018 – 06/2021

#### Description

The port of Constanta accommodates and handles large quantities of cereals. In order to operate large vessels (more than 100.000 tdw) there were executed works to deepen the basin at berth 80, the berth with a length of 490 m was modernized and railway links were developed the on a port surface of 39,527 sqm. A new railway line was realized, having a length of 4,114 m.

The works were finalized in 2021.

## Port: Constanta

### Project: Extension to 4 lanes of the existing road between Gate no. 10bis and Gate no. 10

Project category: Connectivity and integration

Duration: 07/2021 – 12/2023

Description:

The general objective<sup>21</sup> is the modernization of the port infrastructure in order to handle an increased volume of goods, in competitive conditions, modernization and streamlining of the existing road between Gate 10 bis and Gate 10 to reduce the transit time of vehicles to the access gates of Constanta port, in safe conditions. There will be built a 4-lane road with a length of 982 meters, inside the port, a roundabout adapted to a significant traffic of long vehicles with trailers or semi-trailers and two access straps which will be the connection point on each direction of entry or exit access traffic at Gate 10 bis. The investment will help increase the efficiency of loading-unloading operations of goods arriving or leaving Constanta port by road and will increase the capacity of the infrastructure by being able to operate a larger volume of goods in a shorter time.

The contract for the design and execution was signed on 15.07.2021. The duration of the works is 24 months, of which 4 months are reserved for design.

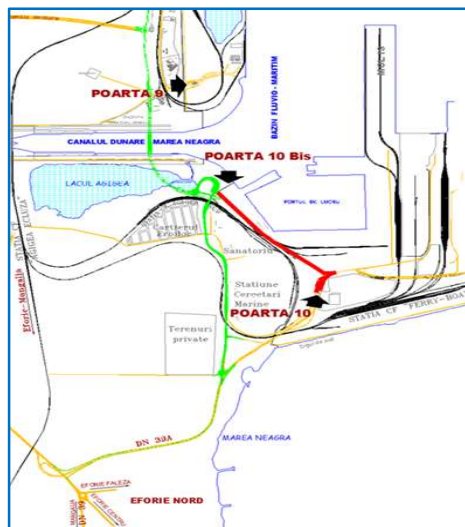


Figure 14: Port of Constanta – Road poarta 10 – Poarta 10 bis

## Port Giurgiu

### Project: High Performance Green Port Giurgiu – Stage II – Construction

Project category: Capacity improvement

<sup>21</sup> [https://www.portofconstantza.com/pn/page/np\\_programe\\_strategii](https://www.portofconstantza.com/pn/page/np_programe_strategii)

Duration: 09/2015 – 12/2021

Description:

The port of Giurgiu located at river km 493 of the Danube, in the proximity of Bucharest and the Bulgarian port of Ruse, is a crossroad for flows and transshipment of freight between inland waterway, rail and road transport. Its infrastructure upgrade will contribute to enhance the connections between different modes of transport allowing an increase of freight handled along the Romanian section of the Danube and the overall Rhine-Danube core network corridor. The construction Works foreseen in the project will aim to develop Giurgiu as a green port that embraces environmental and climate protection.

The general objectives<sup>22</sup> of the Action are:

- Improving the quality of the existing port infrastructure in Romania on the Rhine-Danube Corridor
- Increasing the capacity by upgrading the port of Giurgiu's existing basic infrastructure and by procuring facilities for enhancing loading and transshipment at the port
- Turning Giurgiu into the first "Green Danube Port" based on "Joint Statement on Guiding Principles for Development of Inland Navigation in the Danube River Basin"
- Supporting modal split by fostering the use of inland waterway transport and eliminating bottlenecks by building the missing links with rail/road/inland waterway networks

The scope of the project is to:

- Build a covered "all-weather" trimodal terminal
- Upgrade the port water side basic infrastructure
- Construct the missing links with road, rail and inland waterway networks
- Develop and implement a supply chain system within the intermodal terminal
- Apply for obtaining the EMAS certification for the trimodal "all-weather" terminal

The project started effectively in July 2016 with the demolition work to prepare the site. The works are nearly completed.

## **Port Galați**

### **Project: Infrastructure Works in Port of Galați: Modernisation of Berth 32 / Grain terminal in the Port of Galați**

Project category: Capacity improvement

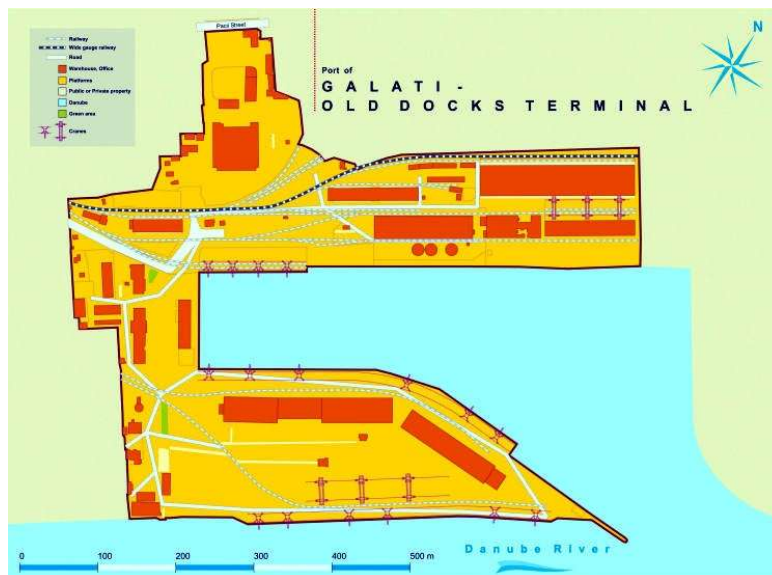
Duration: 02/2021 – 12/2023

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<sup>22</sup> <https://www.ilr.com.ro/projects/high-performance-green-port-giurgiu.html>

Description: The works consist in the modernization of a vertical quay (berth 32) with a length of 70 m. In the area of berth 32 there is a cereal terminal. The berth no. 31 was modernized with financing from the state budget and has a different alignment after modernization, so it resulted the necessity to modernize the berth no 32 for better operation of ships with cereals.

The contract for the detailed design and execution of works was signed on February 2021.



**Figure 15: Port Docuri Galati – used for cereals and general cargo**

## Port Galați

### Project: Galați intermodal terminal

Project category: Capacity improvement

Duration: 07/2016 – 12/2023

Description:

The project is implemented by a consortium composed of National Company Maritime Danube Ports Administration (APDM), Port Bazinul Nou (PBN) and Metaltrade International. Financing is assured from CEF, POIM 2014 – 2020 and private sources.

APDM is responsible for the construction of a vertical quay with a length of 868 m, modernization of the road network on a length of 2,284 m and the repositioning of the railway lines on 390m. The private operators are responsible with building the platform (125,264 sqm), works on the access area and the handling equipment.

The detailed design was carried out for the entire project with CEF financing.



## 10.1.2 Railways

The railway sections chosen in the context of DIONYSUS project are located on main rail corridors and even they are not located in the vicinity of ports they are important for the cargo movement on the Romanian territory and for the logistic chains.

Railway section: **Sections km 614 - Guraşada and Guraşada – Simeria**

Section length (km): 141.78 km

Project category: Connectivity and integration

Duration: 12/2017 – 03/2023

Description:

The rehabilitation project has the objective<sup>23</sup> to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus, it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and local rail services. The project will ensure full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation

- Axle load -22.5 t.;
- Loading gauge C;
- Length of station lines - 740m
- Implementation of ERTMS (ETCS Level II and GSM-R communication system).

The modernization works include earthworks, railway superstructure, works of art (tunels, viaducts, bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems, implementation of ERTMS Level II and GSM-R communication system, for maximum speed of 160 km/h.

Railway section: **Braşov – Simeria, subsection Apaţa – Caţa**

Section length (km): 28.2 km

Project category: Connectivity and integration

Duration: 09/2020 – 12/2024

Description:

The rehabilitation project has the objective to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus, it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and

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<sup>23</sup> <http://www.cfr.ro/files/proiecte/POIM/FC-POIM/Prezentare%20general%20Km%20614%20-%20SIMERIA.pdf>

local rail services. The project includes rehabilitation works for existing double-tracks electrified railway for maximum speed of 160 km/h on 28.2 km and signalling improvements, ERTMS level 2.

The modernization works include earthworks, railway superstructure, works of art (tunnels, viaducts, bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems.

Railway section: **Braşov – Simeria, subsections Braşov – Apaşa and Caţa – Sighişoara**

Section length (km): 85 km

Project category: Connectivity and integration

Duration: 03/2020 – 06/2024

Description:

The rehabilitation project has the objective<sup>24</sup> to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus, it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and local rail services. The project will ensure full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation

- Axle load -22.5 t;
- Loading gauge C;
- Length of station lines - 740m
- Implementation of ERTMS (ETCS Level II and GSM-R communication system).

The modernization works include earthworks, railway superstructure, works of art (tunnels, viaducts, bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems, implementation of ERTMS Level II and GSM-R communication system, for maximum speed of 160 km/h.

Railway section: **Bucureşti Nord – Jilava – Giurgiu Nord – Giurgiu Nord Border (feasibility study)**

Section length (km): 91 km

Project category: Connectivity and integration

Duration: 10/2017 – 03/2022

<sup>24</sup>

<http://www.cfr.ro/files/proiecte/CEF/2021/Proiecte/Brasov%20-%20Sighisoara%20S1+%20S3%20Prezentare%20martie%202021.pdf>

Description:

The railway line Bucharest – Giurgiu (67 km) is the first railway line build in Romania, in order to connect the capital city Bucharest with the port of Giurgiu. It was opened in October 1869. Currently the railway line is not electrified and it is not in use since 2005 when a bridge over the Arges river collapsed (Grădistea bridge). Since 2005 passengers trains were redirected via Videle station – Giurgiu – RO-BG border, but the cargo coming / exiting the port did not used the railways.

Feasibility Study<sup>25</sup> for "Modernization of the railway line on the section North Bucharest - Jilava - North Giurgiu - North Giurgiu Border modernization of 91 km c.f. line contains the following lots:

LOT 1 - Reopening of the rail traffic on the bridge over the Arges river, between station VIDRA km 18+180 and station COMANA km 30+990; maximum speed 120 km/h. – finalized

LOT 2 - Modernization of rail infrastructure on the section București Nord – Jilava - Giurgiu Nord - Giurgiu Border + modernization of the railway line section Jilava – Progresu - estimated date to finalize feasibility study March 2022

Railway section: **București Nord – Jilava – Giurgiu Nord – Giurgiu Nord Frontieră**

**LOT 1 - Reopening of the rail traffic on the bridge over the Arges river, between station VIDRA km 18+180 and station COMANA km 30+990**

Section length (km): 12.02 km

Project category: Connectivity and integration

Duration: 12/2020 – 12/2023

Description:

The railway line Bucharest – Giurgiu is the first railway line built in Romania, in order to connect the capital city Bucharest with the port of Giurgiu. It was opened in October 1869. Currently the railway line is not electrified and it is not in use since 2005 when a bridge over the Arges river collapsed (Grădistea bridge). Since 2005 passengers' trains were redirected via Videle station – Giurgiu – RO-BG border, but the cargo coming / exiting the port didn't used the railways.

In 2020 it was signed the contract for the detailed technical design and works for the reopening of the rail traffic on the bridge over the Arges river, between station VIDRA km 18+180 and station COMANA km 30+990. On this section the maximum speed for cargo will be 120 km/h.

The project is important for the development of port of Giurgiu and its connections with the hinterland.

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<sup>25</sup> <http://www.cfr.ro/files/proiecte/POIM/FC-POIM/Prezentare%20generală%20Bucuresti-Giurgiu.pdf>

### 10.1.3 Roads

The road sections chosen in the context of DIONYSUS project are located on main corridors (core TEN-T network) and even they are not located in the vicinity of ports they are important for the cargo movement on the Romanian territory and for the logistic chains.

#### Road section: **Highway Sibiu - Curtea de Arges - Pitesti**

Section length (km): 122 km

Project category: Connectivity and integration

Duration: 04/2019 – 12/2025

Description:

The section<sup>26</sup> is part of the main road corridor that ensures the movement of cargo from East to West (and vice-versa) and it is important for the cargo coming from / going to Constanta Port. It makes the road connection with the landlocked countries from Central Europe (Hungary, Austria).

The project is divided in 5 sections/lots:

Section 1: Sibiu – Boița (KM 0+000 - KM 14+150) – execution of works in progress (2019 – 2023)

Section 2: Boița – Cornetu (km 13+170 – km 44+500) – under tender for works execution (2022 – 2025)

Section 3: Cornetu – Tigveni (km 44+500 – km 81+900) - under tender for works execution (2022 – 2025)

Section 4: Tigveni – Curtea de Argeș (km 81+900 – km 91+761) - under tender for works execution (2022 – 2025)

Section 5: Curtea de Argeș – Pitești (km 91+761 – km 122+110) - execution of works in progress (2020 – 2025)

#### Road section: **Highway Lugoj – Deva**

Section length (km): 99,5km

Project category: Connectivity and integration

Duration: 11/2013 – 12/2025

Description:

The section is part of the main road corridor that ensures the movement of cargo from East to West (and vice-versa) and it is important for the cargo coming from /

<sup>26</sup>

<https://cestrin.maps.arcgis.com/apps/webappviewer/index.html?id=210f9dcdbeaf48349e3ed19e92ee2f19>

going to Constanta Port. It makes the road connection with the landlocked countries from Central Europe (Hungary, Austria).

From this section some sectors are opened to the traffic and the remaining sections are under tender for works as follows:

Section E, Lot 2, km 27+620 - km 56+220 (**13.6 km**)

Section D MARGINA - HOLDEA (KM 47+090 - KM 56+220) – **9.13 km**, out of which 2.13 km of tunnel

Road section: **National Road Craiova – Calafat/ Vidin bridge (DN 56)**

Section length (km): 103 km

Project category: Connectivity and integration

Duration: 09/2012 – 06/2021

Description:

The traffic from Craiova to Calafat is on a national road with two lanes. Craiova is an important industrial centre and a lot of materials or finite products can be supplied / delivered by water, the nearest port being Calafat.

The section between Calafat and Glicea Mare (33.83 km), km 47+000 – km 84+020 was modernized between 2012 and 2021.

Road section: **Express road Brăila - Galați**

Section length (km): 11.8 km

Project category: Connectivity and integration

Duration: 04/2021 – 05/2024

Description:

On 15.04.2021 it was signed the contract for the detailed design and execution of works for the express road Brăila – Galați. The road link connects two important cities and ports situated on the Maritime Danube. It represents an important connection mostly for Galați port, for the distribution / or collecting of cargo to / from its hinterland.

#### **10.1.4 Inland waterways**

IWW section: **Banks protection on the Sulina Canal – last stage (63 km)**

Section length (km): 36 km

Project category: Connectivity and integration

Duration: 12/2020 – 12/2026

Description:

The project consists in banks protections on 36.679 Km; 6 new scaffolds; 5 rehabilitated scaffold; consolidation of jetties on 16.6 km.

Banks protection on the Sulina Canal is an important investment projects concerning the maritime sector of the Danube River. The protection works for both banks of the Sulina Canal against damages caused by navigation of high-capacity maritime vessels and the protection of the Danube Delta area have been executed in several stages. The objectives of the works executed or planned to be executed are:

- Stopping the massive bank erosion of the Sulina Canal
- Keeping under control the water flow in the Sulina Canal
- Decreasing the amount of sediments passing through the Sulina Canal to the sea
- Decreasing the risk of flooding for human settlements and economic operations located along the Sulina Canal as well as of polluting the Danube Delta

## 10.2 Planned projects

The planned projects are projects being in various stages of preparation, including ongoing feasibility studies. Contributing to the port development and increase traffic there were identified:

- 5 projects related to the capacity development and connectivity in the seaport of Constanta
  - 5 projects related to the inland waterway ports, on the TEN-T core network,
  - 4 projects related to road infrastructure on main corridors,
  - 5 projects related to rail infrastructure on main corridors,
  - 4 projects on inland waterways,
- described below.

### 10.2.1 Ports – including intermodal terminals within ports

#### **Port: Constanta**

#### **Project: New-Construction and Expansion of Electric Networks**

Project category: Capacity improvement

Duration: 01/2022 – 12/2024

Description:

In the Northern part of the Port of Constanța the distribution of electricity is made at a voltage of 6 kV through a distribution network with an advanced degree of usage, in the Southern part of the Port of Constanța the distribution of electricity is currently done through underground electrical networks of 20 kV and the transformers 6 /0.4 kV, respectively 20 / 0.4 kV are as well largely obsolete and physically and morally



worn out. These are the premises for the modernisation of the electric networks in the port of Constanta. The modernization works propose the complete replacement of medium / low voltage equipment in existing transformation posts with new equipment, in accordance with current standards of performance and safety with operation on the medium voltage side at 20 kV, the ultimate goal of the beneficiary being the transition of the entire RED electricity distribution network from the working voltage of 6 kV to the voltage of 20 kV.ta. There will be 21 km of underground electrical networks modernized.

From this project of modernisation will benefit the port operators as well as the ships during their stay in the port of Constanta

**Port: Constanta**

**Project: Infrastructure works, access and utilities in order to develop specialized terminals on Pier III-IVS**

Project category: Capacity improvement

Duration: unknown

Description:

The completion of piers III and IV situated on the Sothern part of the Constanta port, meaning land reclaimed over the sea will create the opportunity for the development of new specialized terminals and development of port activities. Several studies were made for the alignment of piers II and IV, but due to the high cost of investment (estimations 500 MEURO), the works were not started. In order to realize the project needs a new feasibility study.



**Figure 16: Piers III & IV located in the Southern part of the Port of Constanta**

**Port: Constanta**

**Project: Expansion of road between Gates 7 and the junction with "Road bridge at km 0+540 of the Danube Black Sea Canal**

Project category: Connectivity and integration

Duration: 01/2023 – 12/2025

Description:

The existing road connecting the Bypass of the city of Constanta and the Gates no.7 and 9, has only two traffic lanes and has already reached its capacity limit. In addition, the road is in a poor technical condition, being insufficiently designed for heavy traffic from the Constanta North Port which runs mostly through Gate 7. The project is in the preparation at the level of the National Company the Administration of Maritime Ports Constanta

**Port: Constanta**

**Project: Development of Railway Capacity in the River-Maritime Area (Berths no. 86-103) - 2nd Stage**

Project category: Connectivity and integration

Duration: 01/2023 – 12/2025

Description:

The project aims to build a complex railways system (railroad yard) in the river-maritime sector to supply optimal and uniform services for current and future port operators. The railroad yard station shall have 3 tracks for the reception of trains from the Romanian railways network, 12 tracks for the handling of carriages, their separation for the port operators and 2 tracks for the review and repair of the carriages. A feasibility study was carried out. Currently is ongoing the project "Feasibility study for the modernization of railway lines within the Port of Constanta" financed from CEF and having as beneficiary the rail infrastructure company CN CFR SA. So all the rail projects in the port of Constanta will be postponed after the completion of this feasibility study.

**Port: Constanta**

**Project: Development of the artificial island (fillings, embankments, including the quays, the realization of the mooring constructions afferent to the deep berths on the western side of the island)**

Project category: Capacity development

Duration: unknown

Description:

In the Port of Constanta an artificial island was created, but not completed, with the materials excavated from the Danube – Black Sea Canal. The island can be developed in order to create port areas for new specialized terminals. Currently in the master

Plan of the Port of Constanta it is foreseen the development of container terminal in phase I and its extension in the stages II and III.

#### Container Terminal

##### Stage I

- New Container Terminal could be operated by several operators sharing the facilities.
- Increase the competitiveness between operators
- Ensure a modern infrastructure, establish the basis for increasing container traffic and attract new container lines.

##### Stage II - III

- Cover the forecasted demand in container
- Ensure a modern infrastructure in line with the 1st stage of development and increase the capacity of the container terminal.
- Guarantee the good position of the port in container traffic of the Black Sea region.

#### Export Processing Zone

- Improve the logistic activities within the Port boundaries
- Initiates the export processing activities and developing new industrial activities inside the Port borders to strength the location of Constanta Port
- Generate additional cargo and establish Constanta Port as industrial hub.

Due to the large investment cost works did not start yet.



**Figure 17: Artificial island in the Port of Constanta**

### **Port: Drobeta Turnu Severin**

#### **Project: Modernization of port infrastructure in the Port of Drobeta Turnu Severin**

Project category: Capacity development

Duration: 01/2022 – 12/2023

Description:

The works consist in hydrotechnical construction works and shall result in the rehabilitation of the vertical and stone-lined quays in the commercial and passenger ports. In the last years, no rehabilitation projects were implemented in the port of Drobeta Turnu Severin and the infrastructure is quite old.

A feasibility study will be carried on in 2021 with financing from the state budget.

### **Port: Drobeta Turnu Severin**

#### **Project: Feasibility study, technical project and detailed technical design for development of the Drobeta Turnu Severin TEN-T Core port**

Project category: Capacity development

Duration: 07/2021 – 02/2023

Description:

Project that aims to develop a trimodal terminal in the TEN-T Core port of Drobeta Turnu Severin in order to create modern facilities for handling containers. The project aims to carry out a feasibility study, a technical project and a detailed design for the construction of the trimodal terminal. These studies will address the extension of the existent quays, extension of the existent platform, storage and warehouse facilities, triage warehouse, construction and upgrade of the road and rail access, and endowment with specific equipment for the terminal.

The contract for the execution of the feasibility study was sign on 28.07.2021 with a duration of 18 months.

### **Port: Calafat**

#### **Project: The extension of infrastructure in the port of Calafat (km 795) and the systematization of railway capacity within the port - stage I**

Project category: Capacity development

Duration: 11/2021 – 12/2023

Description:

The works consist in hydrotechnical construction works and shall result in the rehabilitation of the vertical and stone-lined quays in the port. There will be rehabilitated the berths 2 – 6, having a length of 560 m and th RO-RO ramp with a length of 60 m. Within the project will be rehabilitated the port utilities networks (water supply and electricity) and the road infrastructure within the port. The project

will improve the port activities and will attract new cargo. An application form for financing from POIM 2014 – 2020 was submitted in 2020 and it is under evaluation.

### **Port: Giurgiu**

#### **Project: Modernization of port infrastructure in the Port of Giurgiu**

Project category: Capacity development

Duration: 11/2021 – 12/2023

The works consist of:

- Reinforcement of stone-lined wharves in Veriga Basin (L = 350 m)
- Reinforcement of the mole in Veriga Basin (L = 90 m)
- Modernization of the stone-lined wharves in Ramadan Basin (L = 895 m)

The infrastructure in the port of Giurgiu is quite old. The project will improve the port activities and will attract new cargo.

A feasibility study was carried out in 2020 with financing from the state budget. The application form for financing of works from POIM 2014 – 2020 was submitted as well in 2020.

### **Port: Galati**

#### **Project: Development of the Port of Galati: RO – RO berths**

Project category: Capacity development

Duration: 01/2022 – 12/2025

The projects is situated in the proximity of the Galati intermodal terminal and consist in the modernization of berths 39 – 41. A feasibility study was carried out and currently the investment is in the approval process.

## **10.2.2 Railways**

The railway sections planned to be modernized, chosen in the context of DIONYSUS project, are located on main rail corridors and even they are not located in the vicinity of ports they are important for the cargo movement on the Romanian territory and for the logistic chains.

Railway section: **Caransebeş – Timișoara - Arad**

Section length (km): 162 km

Project category: Connectivity and integration

Duration: 01/2022 – 12/2026

Description:

The rehabilitation project has the objective to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus, it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and local rail services. The project will ensure full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation.

- Axle load -22.5 t.;
- Loading gauge C;
- Length of station lines - 740m
- Implementation of ERTMS (ETCS Level II and GSM-R communication system).

The modernization works include earthworks, railway superstructure, works of art (bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems, implementation of ERTMS Level II and GSM-R communication system, for maximum speed of 160 km/h. It will be doubled the electrified line on the entire length.

The tender for detailed technical design and for the execution of works is ongoing.

#### Railway section: **Predeal – Braşov (feasibility study)**

Section length (km): 26.9 km

Project category: Connectivity and integration

Duration: 08/2020 – 10/2022

Description:

The specific objectives<sup>27</sup> of the project are:

- to elaborate analyses of the current condition of the existing line Predeal- Brasov in order to identify the bottlenecks and other deficiencies;
- to elaborate a feasibility study with the purpose to determine the optimal investment solution for upgrading the technical parameters;
- to elaborate/develop the documentation necessary for the next phases of the project: technical project, detailed design and works.

The project contributes to the achievements of the objectives of the global project by preparing for implementation an investment ensuring:

1. Full electrification of the line tracks in 25 kV power system;
2. Ensuring interoperability of railway infrastructure through the implementation of technical specification for interoperability and, in particular, the following parameters defined in the TEN-T Regulation:
  - Axle load - 22.5 t.;

<sup>27</sup>

<http://www.cfr.ro/files/proiecte/CEF/2021/Proiecte/Predeal%20-%20Brasov%20Prezentare%20aprilie%202021.pdf>



- Loading gauge - C;
- Length of station lines – min. 740 m;
- Nominal track gauge for railway lines – 1,435 mm;
- Implementation of ERTMS;
- Improving facilities for people with reduced mobility.

3. Increase the design speed as much as feasible whilst ensuring the maximum speed of 100 km/h for freight trains.

Railway section: **Craiova – Drobeta Turnu Severin – Caransebeş (feasibility study)**

Section length (km): 234 km

Project category: Connectivity and integration

Duration: 04/2017 – 12/2021

Description:

Craiova–Drobeta Turnu Severin–Caransebes railway section is located along the Orient-East Med Core Network Corridor. The purpose of the feasibility study is to evaluate the technical and operational characteristics of the existing railway line, analyse the socio-economic environment, obtain the environmental impact approval and town planning certificate and deliver the final preliminary design. In the long run the project will contribute to the internal market by improving accessibility, connectivity, modal integration, sustainability and enhancing the capacity, safety and security of the line.

The rehabilitation project has the objective<sup>28</sup> to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus, it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and local rail services. The project will ensure full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation

- Axle load -22.5 t.;
- Loading gauge C;
- Length of station lines - 740m
- Implementation of ERTMS (ETCS Level II and GSM-R communication system).

The modernization works will include earthworks, railway superstructure, works of art (tunnels, viaducts, bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems, implementation of ERTMS Level II and GSM-R communication system, for maximum speed of 160 km/h.

<sup>28</sup>

<http://www.cfr.ro/files/proiecte/CEF/2021/Proiecte/Craiova%20-%20Caransebes%20Prezentare%20martie%202021.pdf>

The feasibility study was finalized in 2020 and it is under approval procedure.

Railway section: **Craiova - Calafat (works)**

Section length (km): 107 km

Project category: Connectivity and integration

Duration: 01/2023 – 01/2027

Description:

The rehabilitation project has the objective to increase the speed of trains to 160km/h for passengers and 120km/h for cargo, according to the standards established for the TEN-T network. Thus it will decrease the travel/transport times between Western Europe and Southern Europe and it will be enhanced the quality of the regional and local rail services. The project will ensure full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation

- Axle load -22.5 t.;
- Loading gauge C;
- Length of station lines - 740m
- Implementation of ERTMS (ETCS Level II and GSM-R communication system).

The modernization works include earthworks, railway superstructure, works of art (bridges, culverts), buildings, platforms, canopies, pedestrian de-levelled access to platforms, electrification systems in 25 KV, electronic interlocking systems, implementation of ERTMS Level II and GSM-R communication system, for maximum speed of 160 km/h.

Railway section: **Port of Constanța – modernization of the railway network (feasibility study)**

Section length (km): 180 km

Project category: Connectivity and integration

Duration: 09/2019 – 04/2022

Description:

The scope<sup>29</sup> of the projects is to identify the optimal solution from a technical, operational, financial perspective, as well as in terms of environmental impact, for the modernization of railways lines and installations in the Port of Constanța, taking into account the European standards and requirements for interoperability, in order to

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<sup>29</sup>

<http://www.cfr.ro/files/proiecte/CEF/2021/Proiecte/Port%20Constanta%20Prezentare%20aprilie%202021.pdf>

increase the intermodality of the Port of Constanța and to stimulate rail freight transport.

The objective of the projects is the elaboration of technical and economic documentation, according to European railways regulations and directives related to the interoperability and environment in order to prepare the project implementation stage. There were some projects related to the railway lines, identified by the port administration and included in the Master Plan of the Port of Constanta which were postponed after the finalization of this complex feasibility study carried on by the national rail company.

The benefits of the project are:

- increasing the efficiency, speed and safety of rail freight transport on the Rhine-Danube Corridor;
- accessibility and connectivity of the railway connections of the port of Constanța with the central TEN-T network;
- facilitating an optimal level of integration and interoperability between the different modes of
- transport to the point of departure / end of the Rhine-Danube core network corridor;
- attracting new investors in the respective area, thus improving the local / regional workforce market.

### 10.2.3 Roads

For the planned projects<sup>30</sup> there were chosen the connections South – East, important for the hinterland of the ports Braila, Galați and Constanta. The route goes to North to the border with Ukraine. Currently the traffic is on a national road with 2 lanes and partially on an express road.

For the East – West road connections, highway links of the Port of Constanta with Central Europe (Hungary, Austria), most of the remaining sections are under contracts for the execution of works.

Road section: **Highway Ploiești - Buzău**

Section length (km): 63.25 km

Project category: Connectivity and integration

Duration: 01/2022 – 12/2025

Description:

A feasibility study for this section was realized between 2018 and 2021.

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<sup>30</sup>

<https://cestrin.maps.arcgis.com/apps/webappviewer/index.html?id=210f9dcdbeaf48349e3ed19e92ee2f19>

For the following sections it was launched in 2021 the tender for detailed design and works:

LOT 1 DUMBRAVA - MIZIL, KM 0+000 - KM 21+000

LOT 2 MIZIL - PIETROASELE, KM 21+000 - KM 49+350

LOT 3 PIETROASELE - MUNICIPIUL BUZĂU, KM 49+350 - 63+250

Road section: **Highway Buzău – Pașcani**

Section length (km): 255 km

Project category: Connectivity and integration

Duration: unknown

Description:

Highway Buzău – Focșani 82.44 km – feasibility study finalized in 2021, under the approval procedures

Highway Focșani – Bacău (96,052 km) - feasibility study will be finalized in 2021

Highway Bacău – Pașcani (77.28 km) - feasibility study will be finalized in 2021

Road section: **Express road Pașcani – Siret (Border with Ukraine)**

Section length (km): 100 km

Project category: Connectivity and integration

Duration: unknown

Description:

Express road Pașcani – Suceava, 61 km, feasibility study ongoing, 2020 - 2022

Express road Suceava – Siret, 40 km, feasibility study ongoing, 2020 - 2022

Road section: **Express road Buzău – Brăila**

Section length (km): 98 km

Project category: Connectivity and integration

Duration: unknown

Description:

Express road Buzău – Brăila, 98 km, feasibility study ongoing, 2020 - 2022

## 10.2.4 Inland waterways

Inland waterways, the River Danube and the navigable canals Danube – Black Sea and Poarta Albă – Midia Năvodari, are an important asset in the transport network of Romania. Although the navigation is taking place on these networks, there are some

critical points were the navigation conditions can be improved as well as the transport services.

In this chapter of planned projects, it was included as well the Danube – Bucharest Canal, this canal being in an advanced stage of construction at the end of 1989.

### **IWW section: Danube, Romanian – Bulgarian common sector (km 845,5 – km 375)**

Section length (km): 470.5 km

Project category: Connectivity and integration

Duration: 01/2023 – 12/2030

Description:

River Engineering Works to improve navigation conditions on the Romanian-Bulgarian common section (rkm 845.5–375) are developed within the project FAST Danube financed from CEF. Currently the technical solutions are under EIA procedure for obtaining the environmental permits from Romanian and Bulgarian authorities.

The main objective of the FAST Danube project<sup>31</sup> is to identify the technical solutions to be implemented, in order to ensure navigation conditions on the Romanian-Bulgarian common sector of the Danube and safely conducting the transport activities on Danube throughout the entire year, in accordance with the recommendations of the Danube Commission in Budapest.

The benefits will be:

- Developing an integrated approach on the Danube by increasing traffic, avoiding any adverse impact on the river and the ecological system;
- Improving the waterway infrastructure and the river transport on the Romanian-Bulgarian common sector of the Danube (rkm 845.5 to rkm 375);
- Supporting sustainable transport, encouraging the use of inland waterways transport.

### **IWW section: Danube, Călărași – Brăila sector (km 375 – km 175)**

Section length (km): 200 km

Project category: Connectivity and integration

Duration: 01/2023 – 12/2030

Description:

The initial project started in 2006. River engineering works were to be executed in 3 bottleneck points. During the Environmental Impact Assessment process of this Project the NGO's and EC-DG Environment, DG Regio has recommended the implementation of a complex programme for monitoring the impact of the works on biotic and abiotic factors in all the critical points.

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<sup>31</sup> <http://www.fastdanube.eu/>

The works have been stopped till 2011 when the Monitoring Programme was elaborated. The results of the 3D modelling presented raised some question marks with regard to the water flow velocities over the bottom sill in critical point 01 Bala which may be an obstacle for sturgeon migration. AFDJ has taken the decision to restructure the project as follows: 1. AFDJ has stopped the execution of the bottom sill in critical point Bala at a 50% lower level in order to allow sturgeon migration and 2. AFDJ has concluded a contract for elaboration of a Feasibility Study for technical alternative solutions in critical point Bala. The works initially designed in critical point 02 Epurasu and 10 Ostrovul Lupu have been executed 100%.

For the critical point Bala the solutions are in the phase of obtaining the environmental permits.

### **IWW section: Danube – Black Sea Canal (64 km)**

#### **Poarta Albă – Midia Năvodari Canal (33 km)**

Section length (km): 97 km

Project category: Connectivity and integration

Duration: 05/2020 – 03/2022

Description:

The Danube – Black Sea Canal and Poarta Albă – Midia Năvodari Canal connects the Danube River with the Black Sea and were opened for navigation in 1984, respectively in 1987. The works for ensuring the stability of banks were not finalized when the navigation was opened and since then the rhythm of the works execution and the financial allocation decreased. In 2020 started a feasibility study in order to determine the remaining works and their actual value.

### **IWW section: Systematization of Argeş and Dâmbovița Rivers for navigation and other uses Danube –Bucharest Canal**

Section length (km): 96 km

Project category: Connectivity and integration

Duration: 05/2020 – 03/2022

Description:

By accomplishing these works, there will be given into operation a 104 km long waterway, out of which 73 km come from arranging the Arges river and 31 km are represented by the arrangement of Dambovita river.

The works for arranging the lower part of the Arges river consist in the regularization of the river flow, in order to allow the access of convoys made up of one barge (2,000 tons) and its related towboat (800 HP), as well as the confinement of the river with 4 successive damming which will take over the 53 different levels between the Argeş waters in the area of the Bucharest port and its junction with the Danube. The transportation capacity of the Arges waterway, having in view the reference convoy and the sizes of the locks is up to 16 million tons/year.



The waterworks for making the Dambovită river navigable pursue the channelling, erection of dams and confinement of the river waters on the sector limited by the road bridge crossing the river in Glina and its junction with the Argeş River in Budeşti. The Dambovița waterway and its related waterworks, including the locks from the water junctions at Tanganu and Cucuieti were based on the reference convoy made up of a 1,500 tons barge and its related towboat. The transportation capacity of the Dâmbovița waterway–Glina – Budești sector is 4 million tons/year.

The waterway will have 2 ports in Bucharest (1 Decembrie and Glina) and at the junction of the Argeş River with the Danube there is the Oltenița Port.

At the completion of the works, in the two ports from Bucharest there will have access self-propelled ships that operate frequently on the European waterways, namely: the container ships having a capacity of 200 TEU, the ships for the transport of 600 cars, the RO-RO ships for 72 units, the passenger ships with a capacity of 150 passengers.

The last evaluation in terms of technical solutions and costs was done in 2012. The estimated value of works was 1.706 MEURO. Due to the high cost of investment the works did not start yet.

The benefits can be multiples for such a complex:

- Confine and harness the flooding flows;
- Connect Bucharest with the Danube through a waterway;
- Protect thousands of hectares of farming land and 11 localities from flooding;
- Supply the necessary water to irrigate around over 150,000 hectares of farming land and supply the drinking water for the neighbouring localities;
- Produce electric energy in the water power plants located at the water junctions of the works;
- Supply around 1,250 hectares for aquafarming;
- Develop leisure and tourism in the area;
- Favourably influence the environment, considering that the alternative of the water transportation is less polluting than the other transportation modes, as well as that, by creating an important 3,000 hectares lake, added to those around 1,000 hectares on the Dambovița, in an area lacking in rains, can result in positive influences on the microclimate.

### **10.3 Gaps in transport projects**

In terms of gaps in the transport projects it is worth to underline the necessity of the modernization of the railway links connecting the ports of Braila and Galați with their hinterland, respectively with the capital city Bucharest and other historical regions of Romania like Moldova (a North direction) and Transylvania (a West direction). Current connections have limitations in terms of speed and quality of services for cargo trains. Galați and Brăila ports should be more integrated in the rail services. The first railway lines were opened in 1872 (Marasesti - Tecuci - Galati – Braila). During 1970 – 1980 the rail connections in the area were electrified and doubled. In 2013 it was opened the

railway line with European standard between Galați and Giurgiulesti (Republic of Moldova)<sup>32</sup>. Major modernization are needed.

### 10.3.1 Ports and intermodal terminals in ports

No gaps identified.

### 10.3.2 Railways

Modernization of the rail connections to the Ports of Braila and Galați.

### 10.3.3 Roads

No gaps identified.

### 10.3.4 Inland waterways

No gaps identified.

### 10.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
Rail	Braila and Galați connections with the hinterland	Preparation of feasibility studies and financial allocations

**Table 6: Summary of transport infrastructure gaps in Romania**

<sup>32</sup> <https://romania594.blogspot.com/2020/04/cai-ferate-din-galati-de-la-inceputuri.html>

## 11 Transport projects in Bulgaria

### 11.1 On-going projects

Only those projects which have a direct link with Danube River and ports, identified as important for the survey (Lom and Ruse), are selected in this section. The selection is based also on the possibility for the project to be part of bigger network, where different types of transport communicate with each other and create conditions for intermodal transport services.

The total number of included on-going projects is 4, at value of 998,42 ME.

#### 11.1.1 Ports – including intermodal terminals within ports

**Project: Technical assistance for preparation and implementation of “Delivery, Installation and Implementation of the port reception facilities (PRF) in the Bulgarian public transport ports of national importance“ project (9757)**

Project category: Capacity improvement

Duration: 02/2018 – 08/2023

Description:

The project is a consultancy service called „Strategic Adviser“, which aims to update and expand the scope of the available waste reception and handling plans (WRHP) in ports of national importance. It presents an assessment of the need to implement facilities for prevention and response to operational or accidental pollution in indoor waters and in the coastal area of the port area as well as for the reception of these wastes. The project includes an assessment of the need to implement and develop an integrated information system (IIS), integrating and presenting in an appropriate way the results, information flows and data from the deployed information systems related to the functions performance of BPI Co. The territorial scope for the implementation of the project includes the five Bulgarian ports of national importance located on the Black Sea and in the Bulgarian leg of the River Danube. Its main objective is to provide highly qualified and specific consultancy assistance for the preparation and implementation of an investment project through which the management of the environment in the field of water transport will be improved.

#### 11.1.2 Railways

Railway section: Medkovets - Mezdra

**Project: Preparation for modernisation of Medkovets - Mezdra section (4205)**

Section length (km): 85.57

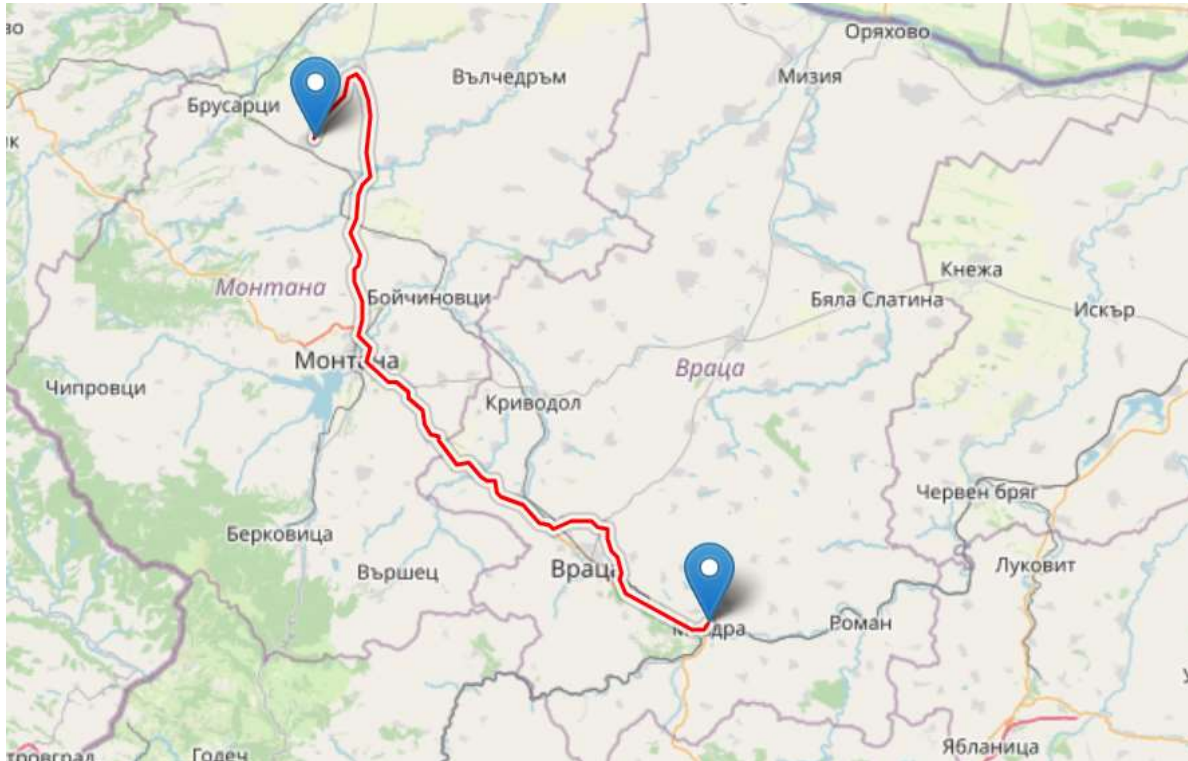
Project category: Connectivity and integration

Duration: 02/2020 – 07/2023

Description:

The railway section Mezdra - Medkovets is part of the VII main railway line Mezdra - Vidin. The total length of the railway is 85,568 km, according to the conceptual design for the section Ruska Byala - Medkovets and the existing route in the section Mezdra - Ruska Byala.

The above-mentioned project is preparatory for the development of the planned investment project. Its final goal is to elaborate for later implementation the whole project documentation, including technical design, EIA, etc.



**Figure 18: Railway section Medkovets - Mezdra**

### 11.1.3 Roads

Road section: Mezdra - Botevgrad

**Project: Modernization of Mezdra - Botevgrad express road (4515)**

Section length (km): 32,8 km.

Project category: Connectivity and integration

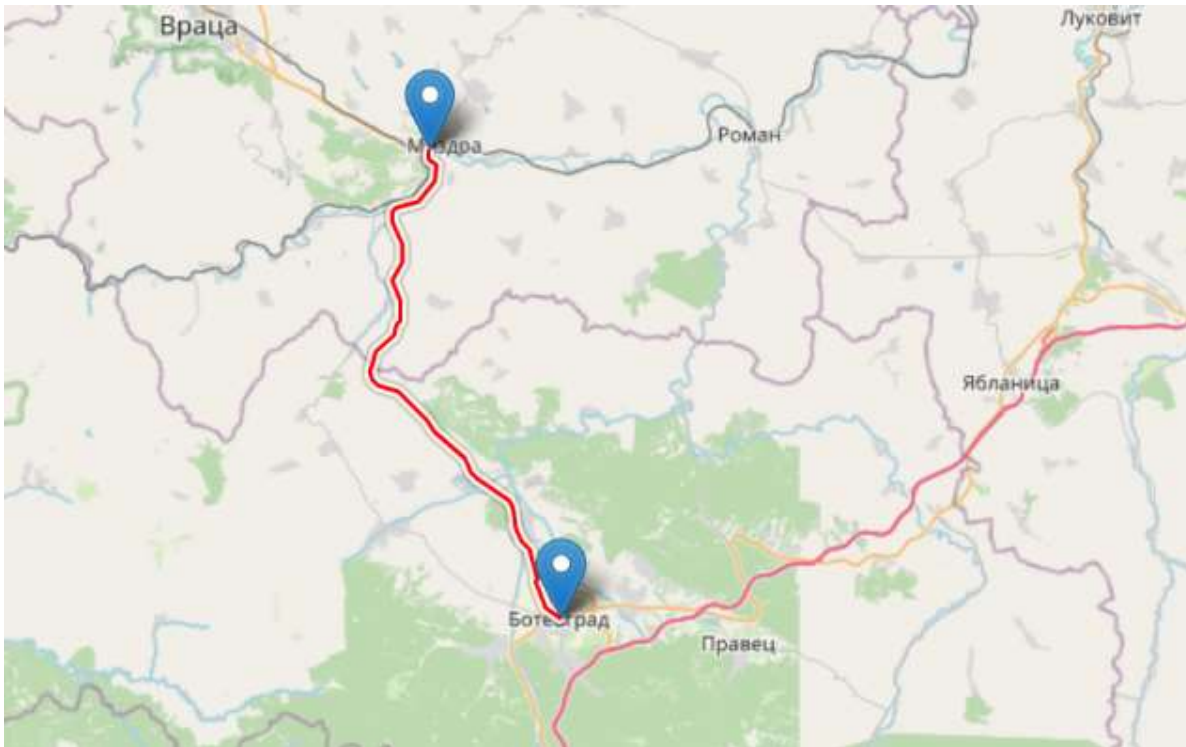
Duration: 10/2019 – 12/2023

Description:

The road is part of bigger project “Reconstruction of road Vidin – Botevgrad”. It will provide quick access to Danube region, and will link the traffic with highways system in Bulgaria. It will have two lanes in one direction with a gauge of 20 m. It is planned to build a bypass road in the village of Lyutidol, which will take the heavy traffic out of

town. Two tunnels with 2 pipes of 160 m and 260 m length respectively will be built on the bypass of the village of Lyutidol.

Due to unforeseen circumstances, the duration of signed contracts for implementation is increased with 1,5 years, as well as the budget is increased because of changes in the technical design.



**Figure 19: Road section: Mezdra - Botevgrad**

Road section: Vidin - Montana

**Project: Modernization of Vidin - Montana express road (4514)**

Section length (km): 95.4 km

Project category: Connectivity and integration

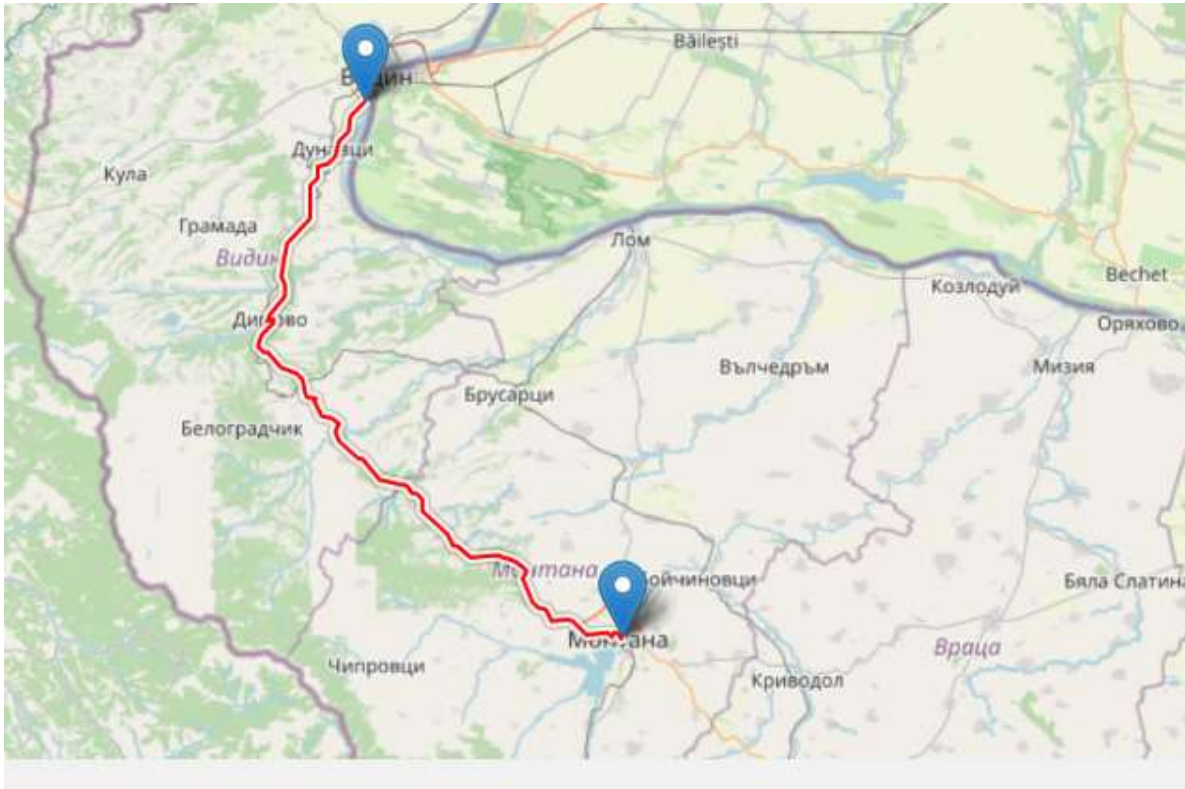
Duration: 10/2019-12/2023

Description:

The road section Vidin- Makresh - Montana is part of main transport road Vidin - Sofia. The route of the road follows the existing bypass road of Vidin, which will be reconstructed and expanded to the connection with road section Makresh where it will have two lanes in one direction, a green strip and banquets. Then it will pass on new terrain. The new section will have a highway gauge - with two lanes for traffic in the direction, emergency lane, dividing strip, leading lanes and banquets. Total length of this section is 29.6 km. The next one is from Makresh to Montana with length of 65.8



km, where there will be reconstruction with improved technical parameters, safety and speed conditions.



**Figure 20: Vidin – Montana road section**

#### 11.1.4 Inland waterways

Currently there are not on-going projects on inland waterways.

### 11.2 Planned projects

Projects, relevant to objectives of the survey, which are part of different programs and plans at national level, are included in the list due to the following main criteria - they will have direct link with the Danube River and ports, identified as important, being part of the plans / programs they could rely on financing in the foreseen period.

The total number of included on-going projects is 12, at total value of 3.004,75 ME, out of which:

- For ports – 2 projects / 378,00 ME.
- For railways – 6 projects / 1375,33 ME.
- For roads – 4 projects / 1251,42 ME.



### 11.2.1 Ports – including intermodal terminals within ports

Port of Lom

**Project: Development and expansion of the port of Lom in order to create conditions for the construction of a multimodal terminal**

Project category: Capacity improvement

Duration: 12/2023 – 12/2027

Description:

The project is included in the Programme Transport connectivity, financed by ERDF, but in one common project with the port of Varna, so the given budget is for the overall project. Main activities are related to reconstruction and modernization of the port of Lom in order to create conditions for the construction of a multimodal terminal.

Ports of Lom and Ruse

**Project: Reconstruction of ports of national importance**

Project category: Capacity improvement

Duration: 12/2023 – 12/2027

Description:

The project is included in the Programme Transport connectivity, financed by ERDF, as main objectives are reconstruction of ports of national importance - construction of facilities against flooding of Ruse-West terminal, reconstruction of Lom terminal, reconstruction of port facilities for ballast operations.

### 11.2.2 Railways

Railway section: Vidin - Medkovets

**Project: Modernisation of Vidin - Medkovets railway section (4204)**

Section length (km): 61.9 km

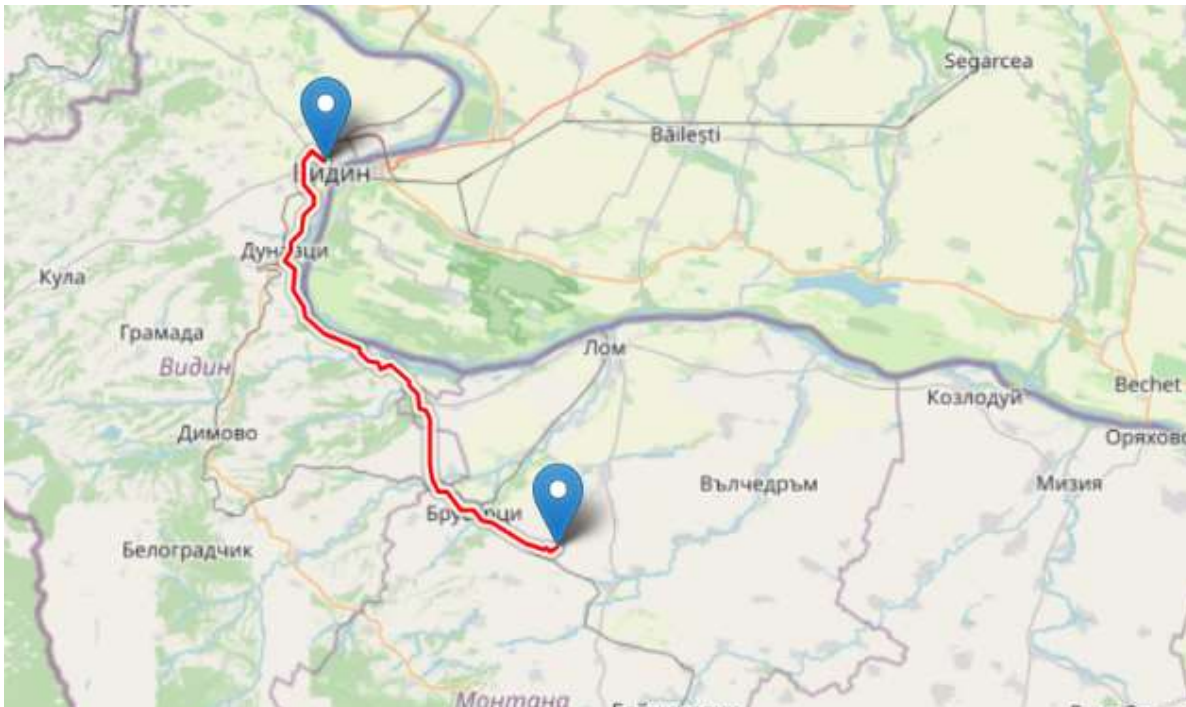
Project category: Connectivity and integration

Duration: 10/2022 – 10/2025

Description:

The route of the railway Vidin - Medkovets is part of Corridor 4 of the TEN-T network on the territory of the Republic of Bulgaria, which connects the European Union through Bulgaria with other countries in the Balkans and Turkey. The project is part of a bigger project (Vidin – Sofia, which is divided into 3 lots) and includes: - Modernization of the railway infrastructure from the beginning arrow 1 at km 84 + 621 Medkovets station (Vidin side) to the beginning Vidin station - Border station for freight trains; - Rehabilitation of existing reception buildings and construction of new ones, according to a technical project for modernization of the railway; - Exclusion of

conflict points by going through two levels; - Introduction of the SCADA system; - Modernization of the security equipment and the telecommunication systems in the stations through Implementation of ERTMS and GSM-R Voice. Project readiness: Feasibility studies were carried out in 2010. There is an updated conceptual design and prepared technical design. The EIA procedure was terminated in 2015, the procedure will be restarted. An update of Financial Analysis and CBA is forthcoming.



**Figure 21: Railway section Vidin - Medkovets**

Railway section: Medkovets – Mezdra

**Project: Modernisation of Medkovets - Mezdra section (4206)**

Section length (km): 85.57

Project category: Connectivity and integration

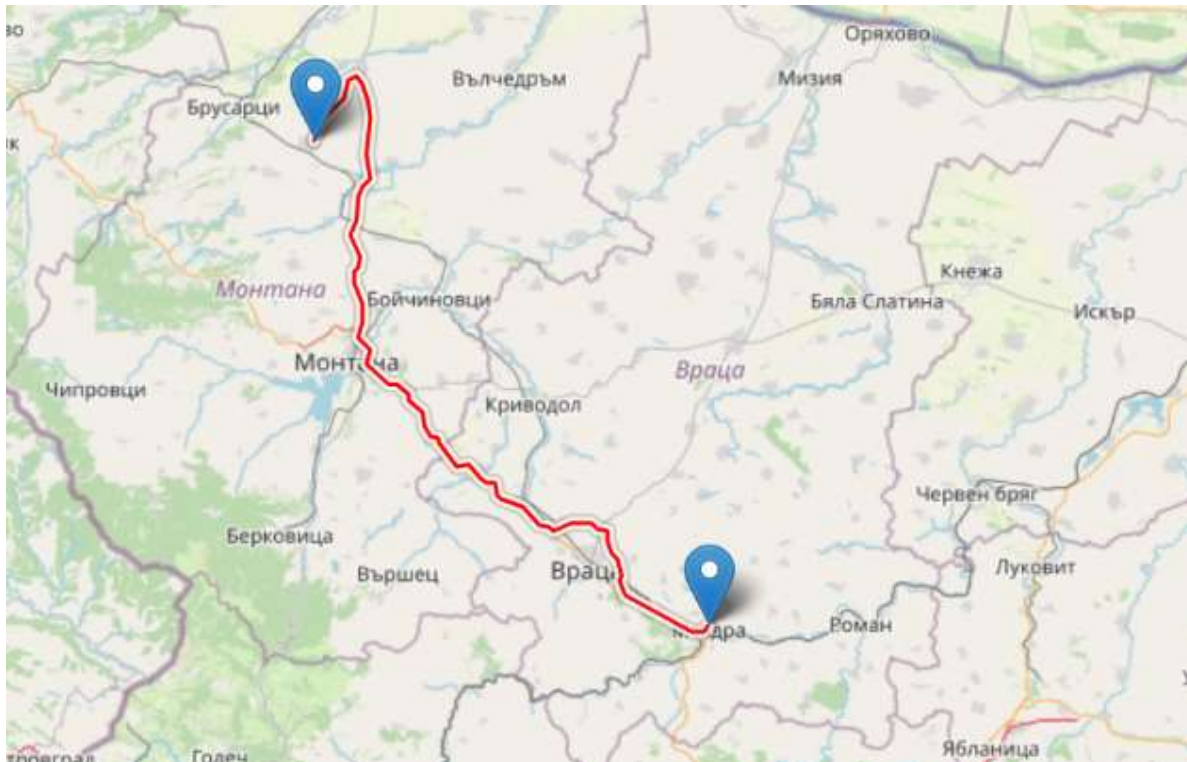
Duration: 01/2024 – 12/2027

Description:

The railway section Mezdra - Medkovets is part of the VII main railway line Mezdra - Vidin. The total length of the railway is 85,568 km, according to the conceptual design for the section Ruska Byala - Medkovets and the existing route in the section Mezdra - Ruska Byala.

Expected results from the project are: Increasing the design speed; Modernization of the catenary facilities; Construction of noise protection facilities, reducing noise levels in urban areas, as well as construction of fences that prevent the passage through the areas of the stations; Modernization of signalling and telecommunications systems;

Introduction of modern passenger information systems; Construction of a network of video surveillance systems at critical places and areas of the railway infrastructure.



**Figure 22: Railway section Medkovets – Mezdra**

**Project: Modernisation of Mezdra - Sofia section (4207)**

Section length (km): 76,3

Project category: Connectivity and integration

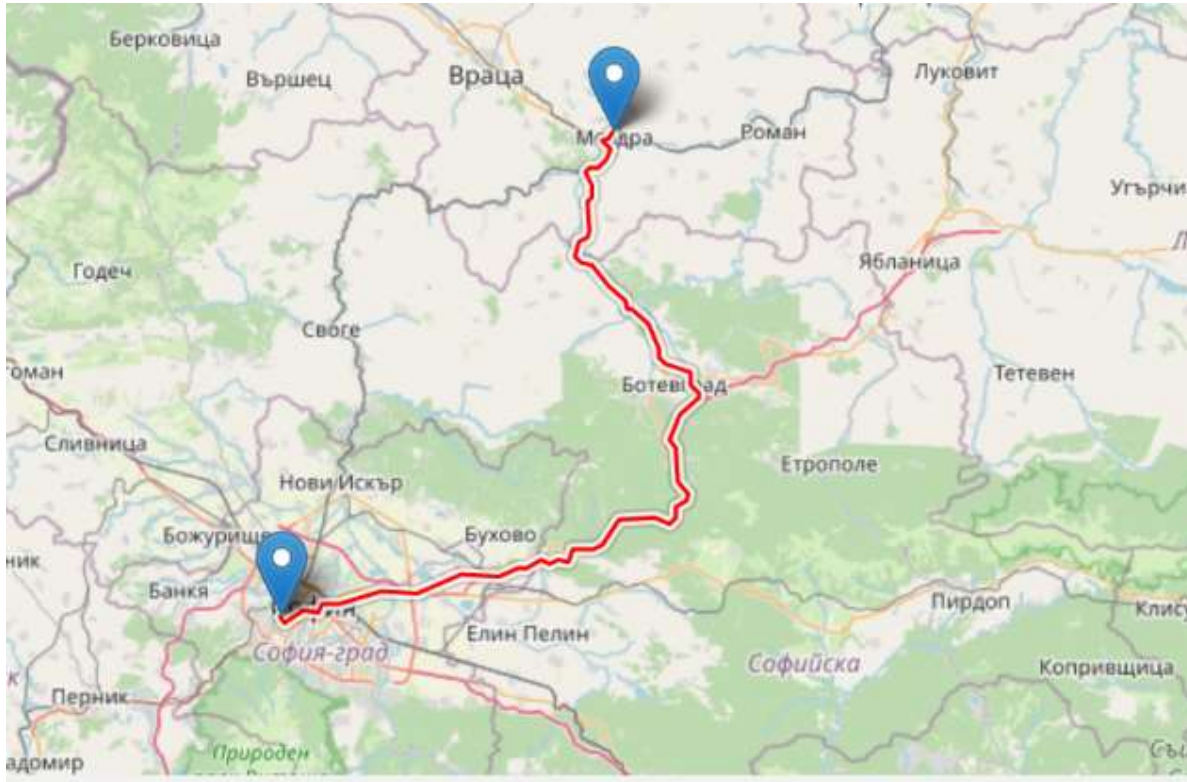
Duration: 01/2028 – 12/2033

Description:

The railway section Sofia - Mezdra is part of main railway line Sofia - Mezdra – Vidin, as this is the last lot, foreseen for implementation, which has to be completed in next programming period. The budget is subject to further detailing.

Expected results from the project are: Increasing the design speed; Modernization of the catenary facilities; Construction of noise protection facilities, reducing noise levels in urban areas, as well as construction of fences that prevent the passage through the areas of the stations; Modernization of signalling and telecommunications systems; Introduction of modern passenger information systems; Construction of a network of video surveillance systems at critical places and areas of the railway infrastructure.





**Figure 23: Railway section: Mezdra - Sofia**

Railway section: Sofia - Mezdra

**Project: Deployment of ERTMS along the Sofia-Mezdra railway (4850)**

Section length (km): 76,3

Project category: Traffic management and digitalization

Duration: 01/2028 – 12/2033

Description:

The railway Sofia-Mezdra is part of the main TEN-T network on the territory of the Republic of Bulgaria and the Orient / East-Mediterranean corridor. The project has a horizontal priority and is a project of common interest in accordance with Article 7 of Regulation (EU) № 1315/2013 on Union guidelines for the development of TEN-T. The project includes modernization of SiT systems, station centralizations and level crossing devices on the Sofia-Mezdra railway line, including - route-computer centralizations; autoblocking with axle counters without pass signals; replacement of manual barrier mechanisms with automatic and electric barriers; modernization of telecommunication systems in stations, including optical transmission medium and digital transmission medium; Dispatching Office at Sofia. The project also includes the construction and implementation of ERTMS level 1 (ETCS and GSM-R).

Railway section: Mezdra - Gorna Oryahovitsa

**Project: Construction of ERTMS, level 1 on the railway Mezdra - Gorna Oryahovitsa**

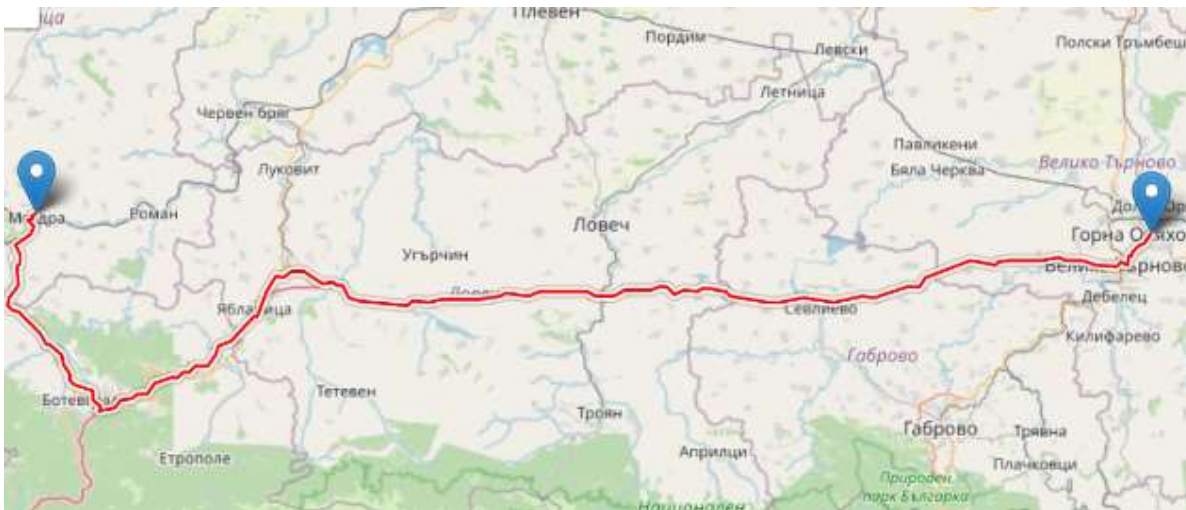
Section length (km): 210,0 km.

Project category: Traffic management and digitalization

Duration: 12/2023 – 12/2027

Description:

The project includes Modernization of SiT systems, station centralizations and crossing devices on the railway Mezdra-Gorna Oryahovitsa, incl.: route-computer centralizations; autoblocking with axle counters without pass signals; replacement of manual barrier mechanisms with automatic and electric barriers; modernization of telecommunication systems in stations, including optical transmission medium and digital transmission medium. The project also includes the construction and implementation of ERTMS level 1 (ETCS and GSM-R).



**Figure 24: Mezdra - Gorna Oryahovitsa**

Railway section: Ruse railway junction

**Project: Development of railway junction Ruse**

Section length (km): n/a

Project category: Capacity improvement

Duration: 10/2021 – 11/2023

Description: NRIC is going to contract a project for elaboration of detailed design and spatial plans for project preparation - Development of railway junction Ruse, as part of biggest project, where the railway junctions of Varna and Gorna Oryahovitsa are included as well. The objective is preparation of project maturity, needed for execution of investment part, which is not part of the plans for period 2021-2027.

Location – Ruse, railway junction

### 11.2.3 Roads

Road section: Vratsa - Mezdra

#### **Project: Reconstruction of Vratsa - Mezdra express road (4222)**

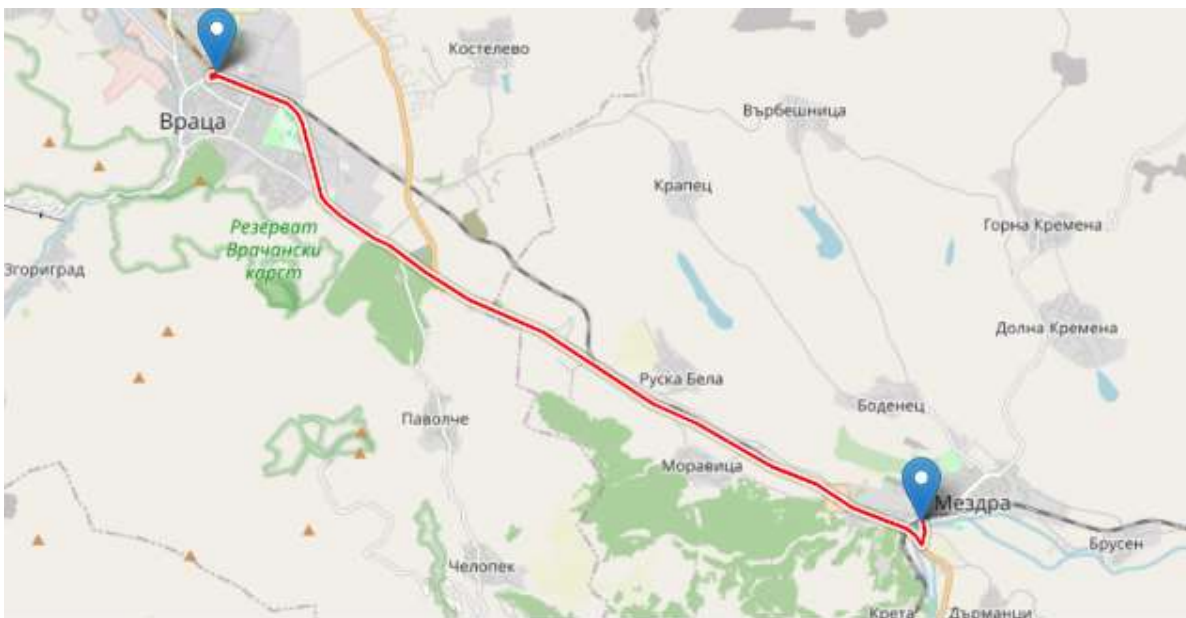
Section length (km): 8.9 km

Project category: Connectivity and integration

Duration: 06/2022-06/2024

Description:

The road section Vratsa - Mezdra is part of the main transport road Vidin - Sofia. The expected results from its implementation are reconstruction of 8.9 km section of the existing two-lane road I-1/E 79 as express road (20 m width), improvement of safety conditions and average travel time.



**Figure 25: Express road Vratsa - Mezdra**

Road section: Montana - Vratsa

#### **Project: Modernization of Montana - Vratsa express road (4221)**

Section length (km): 28.7 km

Project category: Connectivity and integration

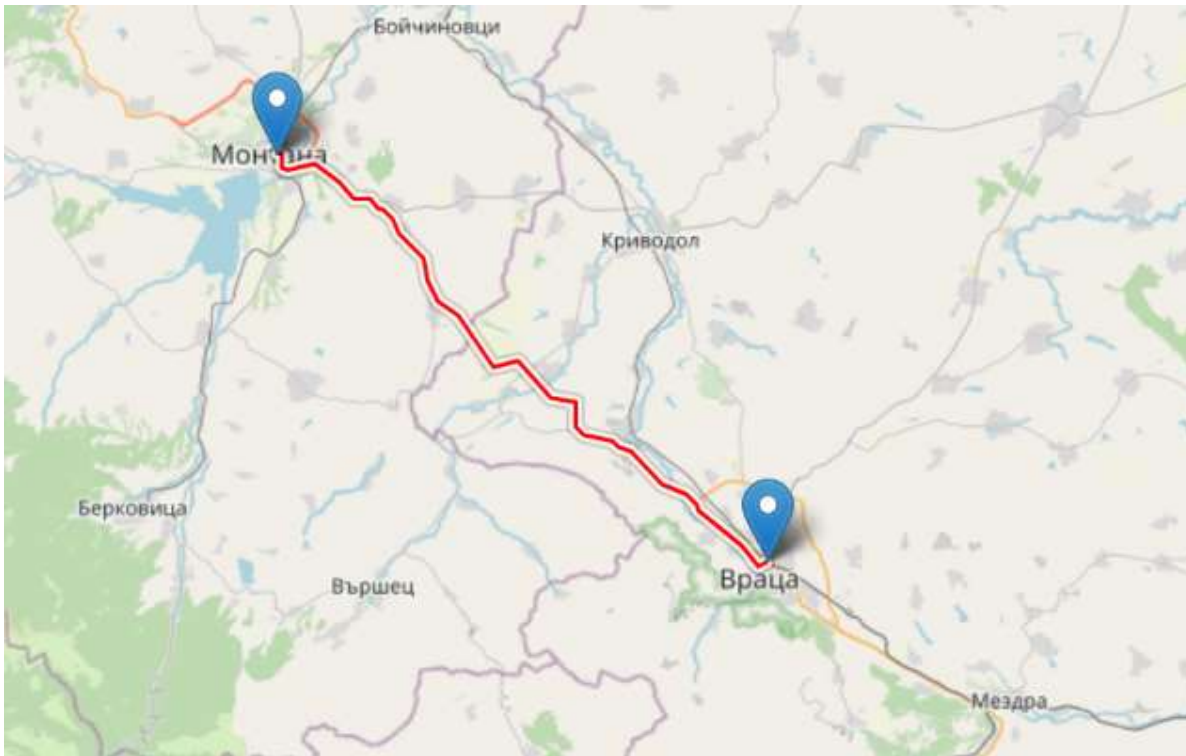
Duration: 12/2023-12/2027

Description:



The project is included in the bigger one - “Modernization of the road I-1 Vidin-Botevgrad” being part of the “main” Trans-European transport network on the territory of the country, providing connection with the Rhine-Danube Trans-European transport corridor in the North-South direction.

Expected results are construction of new express road with 28 m width, increased speed limit, all auxiliary works for provision of safety transport.



**Figure 26: Montana – Vratsa express road**

Road section: Ruse – Veliko Tarnovo

**Project: Construction of highway Ruse - Veliko Tarnovo**

Section length (km): 133 km

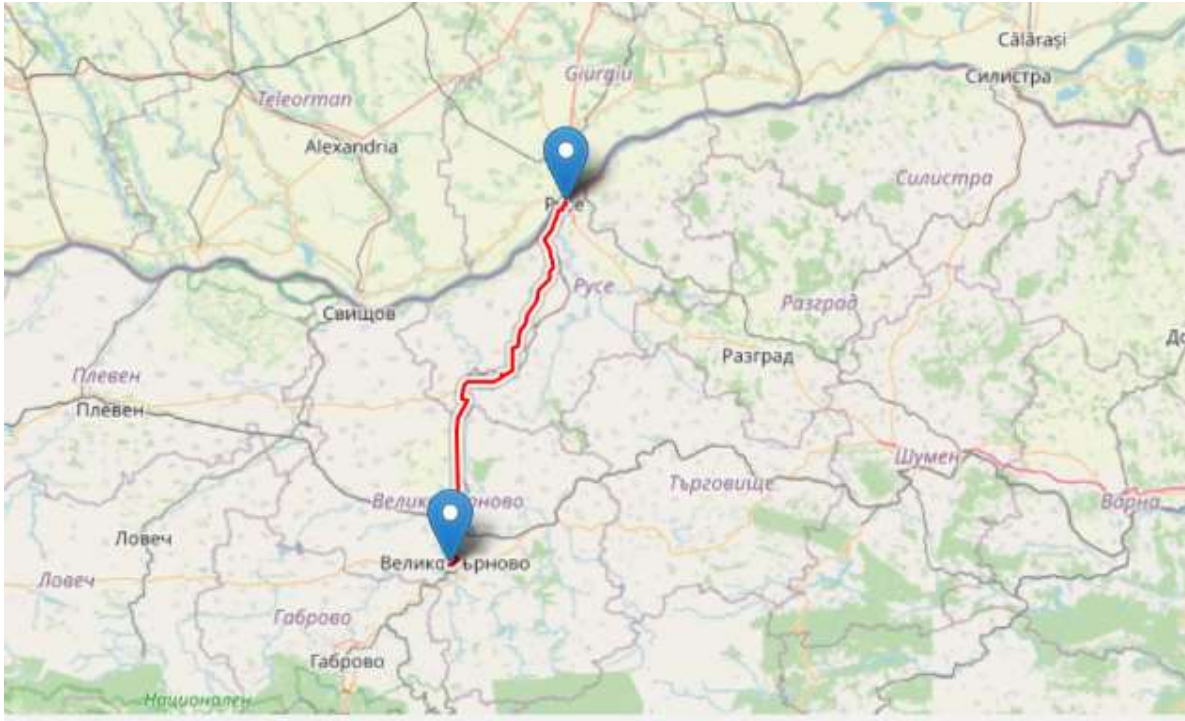
Project category: Connectivity and integration

Duration: 12/2023-12/2027

Description:

The Ruse-Veliko Tarnovo section is part of European transport corridor 9. The implementation of the project will contribute to the construction of the Rhine-Danube and Orient / Eastern Mediterranean trans-European Transport Corridors in the North-South direction. The project envisages the implementation of the following main activities: 1. Preparation of a technical project; 2. Execution of construction and installation works; 3. Implementation of consulting services and construction supervision. With the implementation of the project, a highway with an approximate

length of 133 km and gauge A27 will be built. The route is divided into 3 sections: Ruse-Byala; bypass of Byala; Byala - Veliko Tarnovo. Project readiness – ready technical design, incomplete land acquisition procedures.



**Figure 27: Ruse – Veliko Tarnovo highway**

Road section: Gabrovo detour

**Project: Detour of the town of Gabrovo, including a tunnel under Shipka Peak**

Section length (km): 133 km

Project category: Connectivity and integration

Duration: 12/2021-12/2025

Description:

Project is a continuation of road Ruse – Veliko Tarnovo, part of European corridor 9. The road construction has an approximate length of 10.5 km and gauge G10.50. The project also envisages the construction of a tunnel under Shipka Peak with an approximate length of 3.2 km. The project will facilitate the traffic and will provide direct connection from the Danube region to the central and south part of Bulgaria, with options for connections with other motorways, being part of European transport corridors.



**Figure 28: Gabrovo town bypass**

#### **11.2.4 Inland waterways**

There are no planned projects in the domain of inland waterways.

### **11.3 Gaps in transport projects**

#### **11.3.1 Ports and intermodal terminals in ports**

Based on identified needs, main ports included in the survey are those in Ruse and Lom.

Ruse Port Terminal - East has capacity for transshipment of containers, but such have not been processed in the recent years. However, in the terminal there is a Ro-Ro terminal with a ramp for simultaneous mooring of two vessels and two parking areas



with a capacity of 80 trucks each. The capacity of the terminal is up to about 100,000 conventional trucks per year.

Port of Lom, Vidin - south terminal has mechanization for container handling, but such have not been processed since 2015.

The port terminals have a connection to the railway network, however, container traffic is practically absent, there are only Ro-Ro transportations between Bulgarian and Romanian settlements located on both sides of the Danube.

The operating railway terminals are few and all of them are in southern Bulgaria - outside the target Danube region.

Therefore, main gaps are related to:

- The transshipment mechanization in the ports is outdated and with low productivity/capacity
- Low quality and efficiency of railway services
- Lack of logistics centres / multimodal terminals, offering conditions for different cargoes, popular among small and medium production enterprises.

### **11.3.2 Railways**

The railway transport in Bulgaria suffered in the last 2 decades from lack of financing for modernization of the systems, which led to insufficient level of services and decreased technical parameters. As the efforts have been focused on roads and motorways, the railway transport became the second option for transport policy. The consequence is worse technical condition of the railway, switches and equipment in many places on the intermodal transport network, which has a negative impact on the permissible maximum speeds. The design parameters and the technical condition of the railway and the facilities for the most part do not meet the requirements for efficient and effective intermodal rail transport in terms of speed, load gauge for combined transport and train length.

Another problem is the fact, that the financing predominantly went to projects in South Bulgaria, which additionally create pressure over the railway system. The last approach, which is adopted by EU, where the railway transport should be considered as priority, compared to road transport, gave new reading of the opportunities of the sector. Several main projects in South and North Bulgaria have been started, but because of their complexity, they are divided into lots, as the aim is to be completed by 2027.

Main gaps are related to:

- technical conditions of the railway and the facilities do not meet the requirements for efficient and effective intermodal transport;
- low level of competition between transport providers, where private licensed providers are very few, and the national one (state owned) is not market oriented;
- lack of qualified human resources needed for the railway sector.

### 11.3.3 Roads

Roads in Bulgaria are divided (based on their ownership) between Government and municipalities. The roads, where the Government has the obligation to maintain and develop the network, are the main roads, part of transport corridors. Development of core road system has used huge financing mainly from EU programmes and funds, as well as the national budget in recent years. The result is the construction of the new motorways Trakia and Maritza; Struma motorway which is partially ready, and they all serve the traffic to Turkey and Greece and are located in South Bulgaria. The orientation of construction of motorways only in the South part of the country additionally increases the difference in the economic development at a regional level. The most developed regions become stronger, while regions from the North part face problems with the level of investments, GDP, income of the labour resources, and higher migration compared to the rest regions. Those effects were provoked in certain extend from different development of the territory, and caused delay of implementation of some ambitious projects, discussed in the past, but never found financing. Now, in the period 2021-2027 the intention is the road investment projects to address the needs of the North part of the country, therefore several key projects are included for implementation in the transport programmes.

From the other side, the municipal roads located in the urban areas sometimes become part of the transport destination between the ports and main roads. They rely only on modest municipal budget, which leads to lack of regular maintenance. The technical condition of such roads is good to weak, the potential speed and safety conditions are disputable. Very often, when some section of a municipal road is part of international corridor, a financing is sought again from the central authorities.

Main gaps related to the road sector are:

- Insufficient financing for reconstruction and maintenance of the main road network;
- Long period for preparation of investment project, due to needs of land acquisition, ecological assessment, preparation and approval of detailed design.

### 11.3.4 Inland waterways

Not applicable for Bulgaria

### 11.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the table below.

Mode	Gaps	Proposed solutions
<b>Ports</b>	Transshipment mechanization in the ports is outdated and with low productivity.	Investments in modernization of key ports – Lom and Ruse.
	Low quality and efficiency of existing railway services.	Elaboration of supportive measures at national level in order to strengthen the position of railway transport.
	Lack of logistics centres / intermodal terminals, offering conditions for different cargoes, popular among small and medium production enterprises.	Developing such centers, supported with active information campaign. The current ports are actually multimodal hubs and if their development and modernisation include intermodal facilities, they may become a cheaper alternative to investment in newly built inland intermodal terminals. Another option may be the development of dry ports with intermodal facilities close to the inland industrial centres in the northern part of Bulgaria.
<b>Railways</b>	Technical conditions of the railway and the facilities do not meet the requirements for efficient and effective intermodal transport.	Investments in modernization of the railway and facilities related to intermodal transport.
	Low level of competition between transport providers, where private licensed providers are very few, and the national one (stated owned) is not market oriented and competitive.	Elaboration of supportive measures at national level in order to strengthen the position of railway transport.
	Lack of qualified human resources needed for the railway sector.	Implementation of national strategy for attracting labour to railway transport activities.
<b>ROAD</b>	Insufficient financing for reconstruction and maintenance of the main road system.	Strengthen the planning process in terms of prior identification and financing of key roads, directly related to intermodal transport needs.



Mode	Gaps	Proposed solutions
	Long period for preparation of investment project, due to needs of land acquisition, ecological assessment, preparation and approval of detailed design.	Timely completion of all procedures, before project start (there are cases where it starts, but not all of land acquisition procedures are completed).

**Table 7: Summary of transport infrastructure gaps in Bulgaria**

## 12 Transport projects in Ukraine

### 12.1 On-going projects

The plans for the development<sup>33</sup> of the ports of Ukraine for the short-term (for 5 years), medium-term (for 10 years) and long-term (for 25 years) are formed on the basis of the Law on the Seaports of Ukraine and the Strategy for the Development of Seaports of Ukraine. for the period until 2038, approved by the Resolution of the Cabinet of Ministers of Ukraine, 23.12.2020 No. 1634-r.

#### 12.1.1 Ports – including intermodal terminals within ports

##### **Project: Construction of a transshipment complex for grain and packaged cargo.**

Port: Reni

Project category: Capacity improvement

Duration: 11/2017 – 12/2025

The investor has repaired the roof of the warehouse, strengthened the walls, replaced windows and doors, and repaired communications. Truck and railroad scales are installed. Forklift trucks, an Albatross portal crane, a TGM-23b diesel locomotive and transporters for loading sea vessels were purchased.

For storage of grain cargoes, warehouse No. 7a with an area of 1200 m<sup>2</sup>, a hangar for storage and repair of vehicles, inventory of goods and materials was additionally built in structure No. 6. A floor storage warehouse with an area of 1900 m<sup>2</sup> was built. Construction works continues.

##### **Project: Construction of a complex of temporary storage facilities**

Port: Reni

Project category: Capacity improvement

Duration: unknown – 12/2025

The implementation of the first stage of construction continues - floor storage warehouses of collapsible type were built for accumulation and temporary storage of grain.

Completed 25% of the project.

Investments made in the amount of UAH 211.6 million.

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<sup>33</sup> <http://investinports.com>

### **Project: Reconstruction of railway track No. 31 VPK-3**

Port: Izmail

Project category: Connectivity and integration

Duration: 12/2021 – 12/2023

Stage I: connection of track No. 30 and No. 31 with the device of the P50 1/9 turnout switch on the left and the continuation of the track No. 31 to the railway track No. 38 on the P50 rails with the device of the P50 1/9 turnout switch on the right, 185 m long;

Stage II: continuing track No. 38 for 114 m on the P50 rails.

The estimated cost is 5971 thousand UAH, Financing - own funds of the State Enterprise "Izmail MTP".

Expected Result: Increasing the number of wagons delivered and accelerating freight operations.

### **12.1.2 Railways**

There are no active relevant projects in railway sector

### **12.1.3 Roads**

#### **Project: "Development of design documentation for overhaul of the bridge at km 41 + 040 of the public highway of state importance M-15 Odessa-Reni (Bucharest)."**

Road section: at km 41

Project category: Traffic management and digitalization

Duration: 05/2021 – 03/2022

Purchase price ~ € 197 000.

#### **Project: Ferry crossing Orlovka-Isakcha**

Section length (km): not relevant

Project category: Traffic management and digitalization

Duration: 02/2017 – 06/2023

Ferry crossing "Orlovka-Isakcha" is a public-private partnership project built by private investors and opened by order of the Cabinet of Ministers of Ukraine No. 229-r dated 10.04.2019. The ferry has an international checkpoint across the state border for ferry, passenger and freight traffic between the settlements Orlovka (Ukraine) - Isaccea (Romania) with a capacity of about 200 units of trucks, 500 units of light transport and a passenger traffic of about 1500 people. In addition, four ferries will run here for passengers without a car. The distance between the Ukrainian and Romanian banks

of the Danube in the Orlovka area is about 900 meters, the ferry crossing takes 10-15 minutes. The ferry was put into operation and from 12.02.2021 carries out transportation every 3 hours, around the clock.

Initially, 2 auto-passenger ferries will operate at the crossing. The ferry accepts light vehicles, buses, container trucks and trailers on board. The total annual traffic volume is expected to be ~ 22 thousand TIR trucks and the same number of passenger cars, ~ 1800 buses, ~ 80 thousand passengers. Annual revenues are forecast to be € 5.3 million. In the future, it is planned to expand the territories and increase the capacity of the ferry complex. The estimated amount of funding is €21 million.

#### **12.1.4 Inland waterways**

**Project: Deep-Water Navigable Channel "Danube River - Black Sea in the Ukrainian part of the delta" , 2<sup>nd</sup> phase** (hereinafter- GSH Project)

IWW section: Danube in Ukraine (170.36-0 km)

Section length (km): 170.36

Project category: Traffic management and digitalization

Duration: 08/2007 - unknown

The total budgetary cost is UAH 543,500,000.

Expected results of construction of the 2nd stage (full development):

- increase the draft to 7.2m and round-the-clock two-way traffic throughout the year in accordance with the European norms for the safety of vessel traffic on the Danube;

## **12.2 Planned projects**

Please provide a very short overview of selected planned projects (as listed in Annex I), such as the total number of on-going projects for all modes, total cost and why are these projects important (why did you select those projects and not the others). Please use no more than 3-4 sentences (or max 5-6 text lines) here, since you will give more details in below sub-sections.

### **12.2.1 Ports – including intermodal terminals within ports**

**Project: Construction of transport and logistics infrastructure facilities for handling containers and the organization of intermodal transportation in the rear of berths No. 36.37**

Port: Reni

Project category: Connectivity and integration

Duration: unknown- 12/2028

Cargo collection for transshipment and temporary storage of cargo, organization of cargo transportation, container handling, intermodal transportation, warehouse services.

Expected results:

- an increase in capacities for handling and temporary storage of goods up to 0.1 million tons;
- additional 40 ship calls to the port per year.

The cost is ~ € 0.91 mln.

**Project: Construction of a transshipment complex for grain and containerized cargo**

Port: Reni

Project category: Capacity improvement

Duration: unknown - 12/2025

Reconstruction of the emergency structure of floor storage with an area of 7500 m<sup>2</sup> and placement of 8 tanks for storage and transshipment of grain cargo. Installation of a mobile grain loading machine, reconstruction of railway tracks leading to the floor storage warehouse, creation of capacities for receiving grain from wagons and cars.

The expected result is an increase in cargo turnover by 0.5 million tons per year.

The cost is UAH 50.6 million. (~ € 1.56 mln.)

**Project: Construction of temporary warehouses**

Port: Reni

Project category: Capacity improvement

Duration: unknown - 12/2025

Rear storage areas of berths No. 19 and No. 20. Implementation of the 1st stage. The construction of the complex is supposed to create additional capacities for transshipment of grain cargo.

Investment amount - 110.0 million UAH (~ € 1.56 mln.)

Planned capacity 0.65 million tons / year

The cost is 110 million UAH.

**Project: Construction of a grain complex for grain processing**

Port: Reni

Project category: Capacity improvement

Duration: unknown - 12/2025

Continuation of the construction of the complex, which includes 3 independent production facilities: direct transshipment, accumulation, storage, revision to the required conditions.

All objects are combined into a single technological line.

Investments- UAH 10.0 million (~ € 0.3mln.)

The expected result is an increase in cargo handling and storage capacities up to 0.2 million tons per year.

Currently, the possibility of transferring to the concession of the Izmail Commercial Sea Port State Enterprise, which is now engaged in stevedoring activities, is being considered.

**Project: Construction of the coastal complex of the Izmail-Tulcha automobile crossing**

Port: Izmail

Project category: Connectivity and integration

Duration: 12/2023 - 12/2038

Expected results:

- opening of sustainable movement of freight and passenger flows across the Danube;
- increase in the volume of cargo handling by 500 thousand tons per year.

**Project: Construction of a complex of facilities for transshipment and storage of general and liquid cargo on the 85 km section of the Danube.**

Port: Izmail

Project category: Capacity improvement

Duration: 12/2022- 12/2030

The annual volume of liquid cargo transshipment is 200 thousand tons a year.

The approximate number of vessels is 200 vessels per year.

Transshipment volume - 200 thousand tons / year.

The approximate number of vessels is 100 / year.

The total cost of the investment project is UAH 10 million (~ € 0.31 mln.).

Expected results:

- increasing the volume of cargo handling up to 200 thousand tons per year;
- an increase in the number of calls by 100 units per year.



**Project: Construction of a complex for the processing of mineral fertilizers at the 8th berth and in the rear area on the territory of the production and transshipment complex No. 1 of the State Enterprise Izmail Commercial Sea Port.**

Port: Izmail

Project category: Capacity improvement

Duration: unknown - 12/2030

Reloading, packing and temporary storage of chemical goods using energy-saving technologies, highly efficient equipment. The cargo can be transported by road, rail and river transport.

The annual transshipment volume is up to 100 thousand tons /year.

The approximate number of vessels is 100 /year.

The total cost of the 1st stage of the investment project is UAH 4 million.

Expected results:

- increasing the volume of cargo handling up to 100 thousand tons per year;
- to increase the number of calls per year by 100 units.

**Project: Construction of a modern marina for small boats**

Port: Izmail

Project category: Connectivity and integration

Duration: 12/2021- 12/2023

Infrastructure project “CB Connect-Trans - development of intermodal cross-border traffic along the route Isaccea - Orlovka - Izmail Tulcea”, funded by the EU within the framework of the Joint Operational Program “Romania - Ukraine 2014-2020”.

Main partner: Isakcha City Hall. Partners: Executive Committee of Izmail City Council, Oryol Village Council, District Council of Tulcea.

The project budget is ~2.3 mln euros. An integral part of this project is the construction of a small fleet parking lot (marina) for 12 places, adjacent to the embankment of the IF SE "AMPU" (Administration of Izmail MP). Buying of two small vessels (for 10 and 30 seats) is planned at the cost of 192 000 euros.

Expected results:

- passenger service Izmail-Tulcea (Romania)
  - additional possibility for the passage of goods and vehicles of the international ferry service of the type RO-RO Isaccia (Romania) - Orlovka (Ukraine).
- an increase in the number of calls of passenger boats and yachts up to 104 per year;
- an increase in the number of passengers at the Izmail Sea Station by 1250 people.

## 12.2.2 Railways

There are no relevant planned projects in the railway sector.

## 12.2.3 Roads

### **Development of design documentation for overhaul of the bridge at km 41 + 040 of the public highway of state importance M-15 Odessa-Reni (Bucharest)**

The length of the proposed bridge is 6 kilometers.

The expected result is the reduction of the road from Odessa to Belgorod-Dnestrovsky (-Reni) by 40km.

## 12.2.4 Inland waterways

### **Project: Full development of deep-water navigation Danube - Black Sea (hereinafter GSH), 2<sup>nd</sup> phase.**

No further information available.

## 12.3 Gaps in transport projects

### 12.3.1 Ports and intermodal terminals in ports

Port: Reni

The port of Reni has the following main constraints on development:

- a decrease in freight traffic in the region caused by a decrease in the transit of goods from Belarus and Russia;
- low level of interaction with the Danube ports of the EU;
- reorientation of cargo flows from Moldova to the port of Giurgiulesti, which is rapidly developing with the support of the EU and EBRD;
- lack of railway communication with the territory of Ukraine through the territory of Ukraine; - tariffs for railway transportation currently carried out through the territory of Moldova are much higher than the Ukrainian ones.

Port: Izmail

The port is currently focusing on retaining the volume of cargo it handles, given that all ports in the Danube region are largely dependent on limited cargo flows and compete more than usual to attract them in times of crisis.

Izmail aims to resume container handling, using its experience in filling containers with grain, packaged fertilizers and other bulk and packaged cargo. According to the calculations of the port authority, it could serve 400-450 TEU per week (loading and unloading rate of the port is 120 containers per day).

The development of the port is impeded by the draft of vessels entering the port -5.85 m, limited by the depth of the GSKh channel.

The port development is hindered by the low level of European integration.

### **12.3.2 Railways**

There are 3 main problems with the railway communication of the Ukrainian Danube region:

- lack of electrification of the Odessa-Izmail Road on the Belgorod-Dnestrovsky-Izmail section;
- lack of railway communication between the port of Reni and the railways of Ukraine through the territory of Ukraine;
- the absence of a section of the previously dismantled railway Berezino-Bessarabyaska.

In November 2010, the Committee for Economic Reforms under the President of Ukraine presented several projects corresponding to the state status, designated as priorities. One of the projects is “Construction of railway lines between Izmail and Reni, bypassing the territory of Moldova”, however, at the moment, the project has not been implemented.

### **12.3.3 Roads**

07/10/2011 The Government of Ukraine has prepared and approved a feasibility study - "On the approval of the feasibility of building a section of the highway of republican significance Odessa-Reni (to Bucharest) for the new direction" Odessa - Ovidiopol - Belgorod - Dnestrovsky - Monastyrsky "with a bridge across the Dniester estuary, Odessa region"

State Agency Ukravtodor prepared a proposal to improve the entire M-15 road in three stages:

- 1) -Odessa - Monastyrsky (Belgorod-Dnestrovsky) with a length of 81 kilometers, including a bridge over the Dniester estuary with a length of 5.7 km, the project cost is UAH 24.6 billion. ,
- 2) -Monastyrsky (Belgorod-Dnestrovsky) - Orlovka with an estimated length of 190 kilometers, the project cost is UAH 57.7 billion,
- 3) -construction of a bridge over the Danube, Orlovka - Isakcea (Romania), 10 km long, including a 4.3 km long bridge, for UAH 20 billion.

Currently, M-15 Odessa-Reni (to Bucharest) road, connecting the ports of Reni and Izmail with Odessa, has been repaired and maintained in good technical condition. However, the projects proposed above by Ukravtodor have not been implemented and are still under consideration.

### 12.3.4 Inland waterways

Completion of the environmental impact assessment considered in section 1.4 in a transboundary context, in accordance with the requirements of the ESPO, will lead to the receipt of the necessary permits for the start of construction of the 2nd stage of the construction of the SFS and the provision of navigation for vessels with a draft of 7.2 m, both in the Ukrainian Danube and EU located above Ukraine along the Danube.

A gap in this GSH Project is the lack of experience of the Ukrainian side in coordinating environmental projects of transboundary cooperation, as well as the fact that the Law of Ukraine "On Environmental Impact Assessment" was adopted only on 01.12.2020. That was the reason for the slow speed of passing the stages of approvals of the GSKh Project.

### 12.3.5 Summary of gaps and proposed solutions

The main limiting factor for the ports of Reni and Izmail to overcome the gaps noted above, as well as the revival of the entire Ukrainian Danube region, is the process of implementation of the 2nd stage of the GSKH Project (Full Development), which has been delayed since 2007, with a throughput draft of 7.2m for ships, on the GSKh canal.

With the completion of the construction of the 2nd stage of the GSH Project (full development), the Reni port will be able to receive vessels with a draft of up to 7.2 m at lower rates, which currently enter the port through the Sulinsky Canal, and the port of Izmail will be able to increase the draft of accepted vessels from current 5.85m to 7.2m.

Another factor that will significantly improve the situation of the entire Ukrainian Danube region, in particular, the ports of Reni and Izmail, in our opinion, should be the inclusion of the port of Izmail into the Core list of TEN-T ports, since, at present, the ports of TEN-T includes the ports of Ukraine: Odessa, Chornomorsk, Nikolaev. This will allow the EU to finance projects that are beneficial for all countries of the Danube region, for example, the construction of a bridge over the Danube in the Isakcha-Orlovka area, the Reni-Odessa railway, including with a gauge of 1435 mm, a bridge across the Dniester estuary - as a section of the M-15 road, other projects mentioned in p. 2.1-2.4 which are conceptual due to lack of funding.

Mode	Gaps	Proposed solutions
Ports	Low level of attraction of cargo flows, to the ports of Reni and Izmail	Eurointegration of Reni and Izmail ports Improvement of hinterland connections.
Railways	Lack of electrification of the Odessa-Izmail railway on the Belgorod-Dnestrovsky-Izmail section	Eurointegration of Reni and Izmail ports Electrification of the critical section.

Mode	Gaps	Proposed solutions
Railways	Railway Reni-Izmail is absent	Eurointegration of Reni and Izmail ports Connection of the two ports by rail
Railways	The dismantled section of the Berezino-Basarabyaska railway and others has not been restored - see section 1.3	Eurointegration of Reni and Izmail ports. Reconstruction and rehabilitation of the Berezino-Basarabyaska railway.
Roads	Not implemented Project- "Construction of a bridge across the Danube Orlovka - Isakcha", etc., see section 2.3	Eurointegration of Reni and Izmail ports To include port of Izmail into the TEN-T list of Core ports
Inland waterways	Deep-Water Navigable Channel - GSH Project (full development), delay since 2007	Completion of the environmental impact assessment examination in a cross-border context and completion of GSH construction of the 2nd stage (full development), Eurointegration of Ukrainian Danube region

**Table 8: Summary of transport infrastructure gaps in Ukraine**

## 13 Transport projects in Moldova

### 13.1 On-going projects

In accordance with the association agreement between the European Union and the Republic of Moldova, the development projects of the national transport infrastructure are foreseen in order to integrate with TEN-T.

During the last years, several projects have been carried out that directly or tangentially contribute to the integration of the port of Giurgiulesti in TEN-T. However, at the moment there are no on-going projects in the port itself.



**Figure 29: Connection of the national network to the Trans-European Transport Network (TEN-T)**

#### 13.1.1 Ports – including intermodal terminals within ports

Port: Giurgiulesti International Free Port

No on-going projects.



### 13.1.2 Railways

Currently, the state-owned enterprise Railways of Moldova is in a crisis state due to a strong decrease in traffic volumes. At the same time, the port of Giurgiulești is one of the main cargo-generating enterprises for the railway. As a result, in the development program of the state enterprise "Moldovan Railway" for the period 2018-2031, priority attention is given to the project of rehabilitation of the railway infrastructure in the Southern corridor: Bender-Basarabeasca-Etulia-Giurgiulesti.

Nevertheless, there are no on-going projects at this moment.

### 13.1.3 Roads

In recent years, road transport has been the leader in the volume of freight transport. As a result, the main investments are made in road infrastructure. The purpose of the investments is to rehabilitate the roads and first of all those that are part of the central national network, ensure accessibility to logistics centres, including the port of Giurgiulesti.

As of 2020 the following works are taking place at this moment:

- On-going roads rehabilitation and construction projects - 540 km. Estimated cost – 360 mils. euro;
- Ready for launch in 2020 (rehabilitation) - 460 km. Estimated cost - 330 mil. euro;
- Medium-term planned (stage I, FS & Design) - 850 km. Estimated costs of works – 730 mils. Euro.

The national central network provides direct connection to corridor 7 "Orient/East-Mediterranean" and corridor 9 "Rhine-Danube".



**Figure 30: Core and comprehensive national transport network**

**Project: RSP / W9 / 02: Construction of the M3 Porumbrei - Cimişlia road**

Road section: km 0 + 000 – km 19 + 010

Section length (km): 19,010

Project category: Connectivity and integration

Duration: 01.02.2019-31.02.2022

The amount of the contract is 29903744 euro. The project is financed under an agreement with the European Investment Bank.

At the moment, earthworks are being carried out, partial construction of bridges and footbridges. The main problem solved was the expropriation of land.

The M3 international road is the comprehensive part of TEN-T. Therefore, the realization of the project will raise the ability to cross the road especially for heavy vehicles and, of course, promote economic integration.

**Project: RSP / W9 / 03: Construction of the M3 road, bypassing Comrat**

Road section: km 0 + 000 - km 18 + 263

Section length (km): 18,263

Project category: Capacity improvement

Duration: 01.02.2019 - 31.01.2022

The amount of the contract is 29497220 euros. The project is financed under an agreement with the European Investment Bank.



**Figure 31: Construction of the Comrat bypass road**

The realization of the project will allow the unloading of the city of Comrat from transit traffic and, as a result, solving the problem of traffic jams and air pollution.

The essential Comrat ring road will increase the crossing capacity on the international route M3. The fact gives very current tests for the city of Comrat where in recent years several industrial enterprises, logistics centres and intensive development of the agricultural sector have opened.

**Project: RSP / W10 / 01: Rehabilitation of the M3 road Chisinau - Giurgiulesti,**

Road section: km 96 + 800 - km 171 + 290 and km 179 + 650 - km 190 + 750

Section length (km): 85,590

Project category: Connectivity and integration

Duration: 01.02.2019-31.01.2022

The amount of the contract is 29932874 euros. The investments are made due to the financial agreement with the European Bank for Reconstruction and Development.

The international route M3, being the comprehensive part of TEN-T, is in high demand. The flow of road traffic is quite high and especially of high capacity vehicles. The rehabilitation of the M3 road promotes the economic and social development as well as the integration of the Southern region of the Republic of Moldova in development projects of the Danube Region.

### **Project: RSP / W9 / 05: Construction of the M3 road, bypassing the locality of Slobozia Mare**

Road section: km 0 + 000 - km 18 + 290

Section length (km): 18,290

Project category: Capacity improvement

Duration: 27.05.2019 - 26.05.2022

The amount of the project is 18.284.399 euros.

The road sector examined is quite problematic (narrow) on the M3 route. At the moment, the road traffic of high capacity trucks is carried out through localities in quite complicated conditions. As a result, both villagers and drivers are dissatisfied. Giurgiulesti International Free Port is facing serious problems with large volumes of transport, including containers.

Therefore, the realization of the project will solve the problem of the inhabitants, will raise the capacity to cross the M3 route, as well as the competitiveness of the Giurgiulesti port.

#### **13.1.4 Inland waterways**

Due to the geographical and logistic characteristics of the national economy, inland waterway transport is poorly developed. The main features include:

- lack of demand in the domestic freight market for transportation in large volumes for small transportation;
- the need for large investments in river vessels and infrastructure, as well as a long payback period;
- problems related to navigation and others.

Due to the above issues, road transport takes 77% of total modal split over the past 10 years.

Giurgiulesti International Free Port occupies a special position in the freight and logistics services market. The advantages of the port are:

- this is the only port in the country with international status and access to the Black Sea;
- the port provides transport services for the transportation of “large volumes over long distances”;
- pricing policy with favorable tariffs for the client in comparison with other modes of transport.

Attractive investment projects for the development of inland waterways include:

- opening of navigation on the Prut River in the section of the city of Ungheni, port of Giurgiulesti for the carriage of goods;
- development of navigation on the Dniester River for tourist cruises.

Currently, in connection with the receipt by the Republic of Moldova, the status of a sea power, the project “Improving Flag State Control” is the only relevant project.

### **Project: Improving Flag State Control**

IWW section: entire Moldovan sector of the Danube, left bank.

Project category: Traffic management and digitalization

Duration: 2020-2021

The aim of the project is to develop legal and regulatory documentation in accordance with international acts and practice, as well as its approval to regulate the activities of sea vessels, develop a methodology for calculating tariffs for services and others.

## **13.2 Planned projects**

As of the current year 2021, despite the economic problems due to COVID-19, there are a number of projects for the development of transport infrastructure. However, most of the projects are aimed at developing local road infrastructure, mainly in settlements.

Below are considered the most significant planned projects, the purpose of which is to integrate port Giurgiulesti into the transport network of national and European importance.

### **13.2.1 Ports – including intermodal terminals within ports**

Port: Giurgiulesti International Free Port

#### **Project: Multipurpose berth construction**

The port plans to construct a new universal berth allowing for berthing of both maritime and river vessels with a draft of up to 7 m. This berth will be connected to railway.

Duration: 1/2022-12/2023

The estimated cost of the project is 5 million euros.

The realization of the essential project will raise the transshipment capacity and strengthen the port as multi-modal logistic hub.

### **13.2.2 Railways**

#### **Project: Rehabilitation of the railway infrastructure within the Southern corridor**

Railway section: Southern corridor: Bender-Basarabeasca-Etulia-Giurgiulesti.

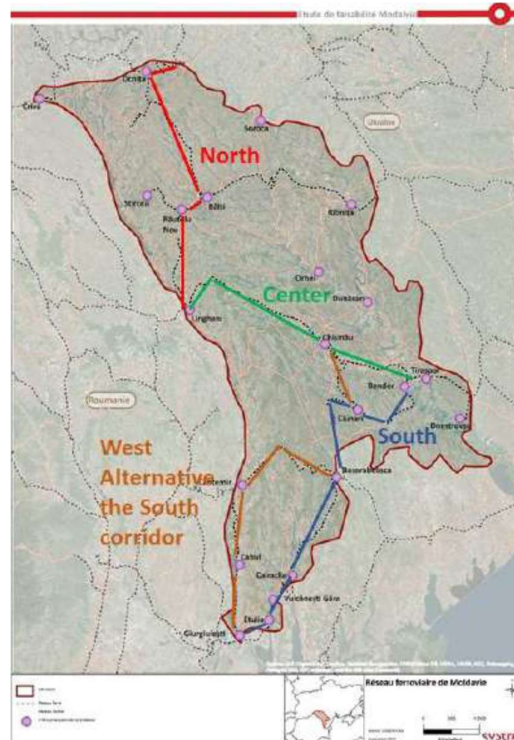
Section length (km):

Project category: Capacity improvement



Duration: 2022-2031

From the list of projects planned by the "Moldovan Railway", the main one for the port of Giurgiulesti is the one related to the rehabilitation of the railway infrastructure within the Southern corridor. According to the development program, the typical approximate costs for the capital reconstruction of the railway infrastructure and railway systems (centralization and blocking systems and communications) constitute for the South Corridor - 75.7 million euros. The duration of the rehabilitation project is 4-5 years. The realization of the project can be essential to raise the level of competitiveness of the port of Giurgiulesti.



**Figure 32: Moldovan railway corridors**

### 13.2.3 Roads

One of the planned and essential projects for the integration of the port Giurgiulesti into the national and European transport network is the construction of a bypass road around the city of Cimislia.

**Project: M3 bypass Cimislia (construction)**

Road section: km 0+000 – km 7+200

Section length (km): 7.200

Project category: Connectivity and integration

Duration: 12/2021-12/2024



The estimated cost of the project is 11 million euros.

The realization of the essential project will raise the capacity to cross the international route. The problems of the city of Cimislia with the traffic of high-capacity vehicles and the pollution of the environment will be solved.

#### **13.2.4 Inland waterways**

No planned projects of inland waterways.

### **13.3 Gaps in transport projects**

#### **13.3.1 Ports and intermodal terminals in ports**

Giurgiulesti International Free Port is the only river port in the Republic of Moldova located on the Danube. On average, the port annually promotes international trade of Moldovan companies with more than 50 countries.

It is the only regional logistics hub on the border with the European Union with a 3-modular transport infrastructure, low costs and a unique tax and customs regime.

All these listed advantages create sufficient conditions for the development of a successful business in this Danube region with free access to the markets of Romania and Ukraine.

However, at the moment the material, technical and economic potential of the Giurgiulesti International Free Port has not been fully realized.

It is proposed to develop a project for the integrated development of the Giurgiulesti International Free Port until 2030. The project should include a SWOT analysis of the port's activities, legal and regulatory documents governing its activities, as well as the development of ways to improve the productivity and efficiency of the port.

#### **13.3.2 Railways**

In connection with the critical situation that has developed due to the decrease in the volume of freight traffic, the latest development programs of the state-owned enterprise "Moldovan Railway" must be revised.

In this situation, the investment should be aimed at increasing the competitiveness of the services provided by "Moldovan Railway". The strategic task for the state economy is the modernization of the central railway network and the preservation of the rolling stock.

The priority projects include the rehabilitation of railway tracks in the TENT-T direction, namely:

- central corridor: Chişinău-Ungheni;
- southern corridor: Chişinău-Tighina-Basarabesca-Etulia-Giurgiuleşi.

These areas are the most in demand. They connect the main industrial and logistics centres.

### 13.3.3 Roads

An analysis of the national transport network shows that the Republic of Moldova has three main directions for joining TENT-T (Figure 13.6.a) with the flows of freight and passenger traffic that have been established in recent years:

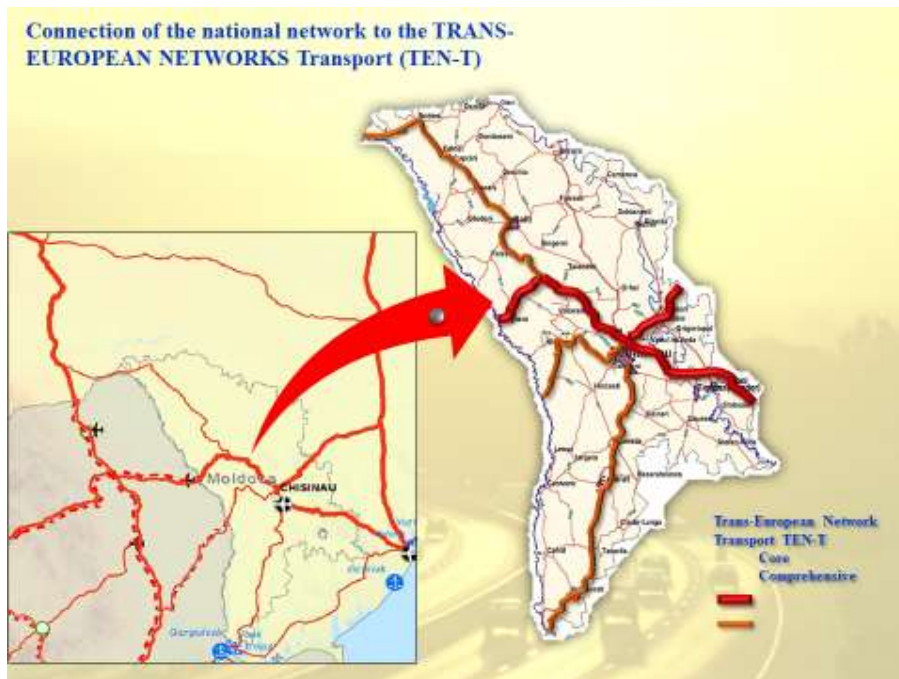
- Northern Europe: Chisinau-Lvov-Krakov-Berlin and beyond;
- Western Europe: Chisinau-Iasi-Budapest-Venice and beyond;
- Southern Europe: Chisinau-Bucharest-Budapest-Ljubljana-Venice and beyond.

It should be noted that the national transport network fits quite well in the Black Sea Ring Highway.

In the direction of Ukraine, transport flows have changed a lot over the past 10 years. There is a steady demand for freight and passenger transportation in the direction of:

- Chisinau-Odessa;
- Chisinau-Kiev and beyond.

It is proposed to revise the central transport network as shown in the following figure.



**Figure 33: Connection of the national network to the Trans-European Transport Network**



**Figure 34: Revision proposals Connection of the national network**

### 13.3.4 Inland waterways

Due to the current situation on the national market of transport services, the strategic documents defining the state policy practically do not pay attention to the development of inland waterways.

It is proposed to assess the potential for the development of navigation on the Prut River in the section Ungheni-Giurgiulesti port.

### 13.3.5 Summary of gaps and proposed solutions

Overview of identified gaps and proposed solutions is given in the below table:

Mode	Gaps	Proposed solutions
<b>Ports and intermodal terminals in ports</b>	Lack of the strategic project for the development and raising of the potential of GIFP in current conditions on the transport services market.	Development of a project for the integrated development of the Giurgiulesti International Free Port until 2030. The project should include a SWOT analysis of the port's activities, legal and regulatory document, as well as the development of ways to improve the productivity and efficiency of the port.
<b>Railways</b>	The development program of the	Development of the business plan to

Mode	Gaps	Proposed solutions
	state enterprise "Moldovan Railway" for the period 2018-2030 is elaborated based on the optimistic evaluation of the current economic situation	raise the competitiveness of the LJC. Priority investment projects are to rehabilitate the railway lines in the Central and South corridors.
<b>Roads</b>	Elaboration of perspectives for the development of the basic national network based on the existing ones and not according to the transport demand	Revision of the central transport network.
<b>Inland waterways</b>	Lack of strategic development plans of inland waterways.	Assess the potential for the development of navigation on the Prut River in the section Ungheni-Giurgiulesti port.

**Table 9: Summary of transport infrastructure gaps in Moldova**

## 14 Overall analysis

Data given in previous chapters, as well as the technical data on on-going and planned projects compiled in Annex I, demonstrated that 135 relevant projects of all modes were identified as relevant for the Danube ports and integration of ports and inland waterway transport (IWT) into intermodal and multimodal transport chains.

Country	Road	Rail	IWW	Inland port	Seaport	Total
AT	2	4	2	2	0	10
SK	1	1	3	4	0	9
HU	0	0	4	2	0	6
HR	2	0	6	1	0	9
RS	0	0	2	2	0	4
RO	8	5	1	3	3	20
BG	2	1	0	1	0	4
MD	8	0	0	0	0	8
UA	2	2	1	0	1	6
Multi	0	0	2	0	0	2
<b>Total</b>	<b>25</b>	<b>13</b>	<b>21</b>	<b>15</b>	<b>4</b>	<b>78</b>

**Table 10: Number of on-going projects of relevance per mode**

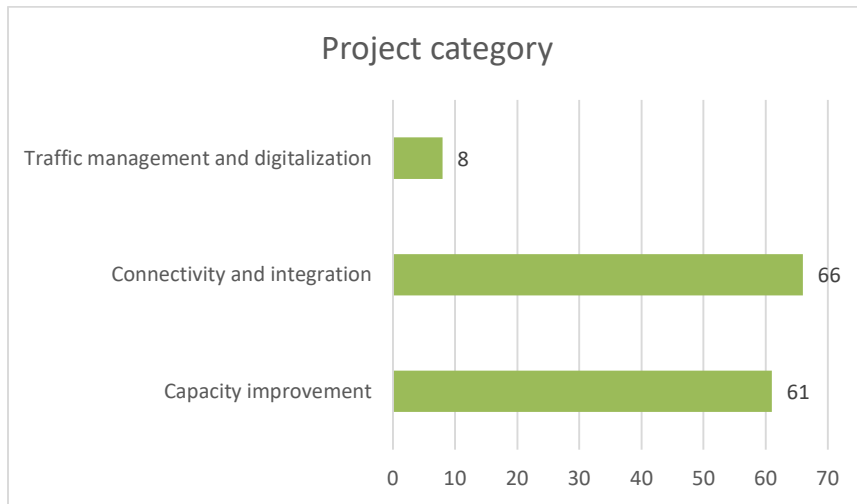
Country	Road	Rail	IWW	Inland port	Seaport	Total
AT	0	0	0	7	0	7
SK	0	0	1	1	0	2
HU	0	0	0	1	0	1
HR	0	0	0	0	0	0
RS	0	0	1	0	0	1
RO	4	5	3	5	5	22
BG	4	7	0	2	0	13
MD	1	0	0	1	0	1
UA	0	0	0	0	8	8
Multi	0	0	1	0	0	1
<b>Total</b>	<b>9</b>	<b>12</b>	<b>6</b>	<b>17</b>	<b>13</b>	<b>57</b>

**Table 11: Number of planned projects of relevance per mode**

Out of the total of 135 projects, road sector has the largest number of on-going projects (25), whereas the sector of inland ports shows growing interest and investments in ports, having the largest number of planned projects (16).

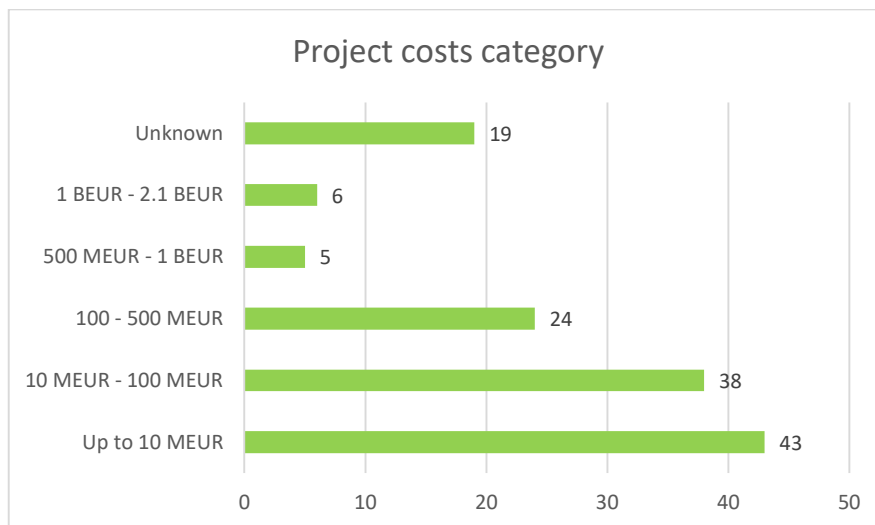
When project categories are concerned (description of project categories is given in Section 4.2.1), it is interesting to note that the largest share of projects (both on-going

and planned) is taken by the category of connectivity and integration projects (Table 12). This demonstrates that countries are fully aware of the need to connect their ports with their hinterland and the rest of the network. Projects within the category of capacity improvement follow closely behind, while the number of projects in the category of traffic management and digitalization demonstrate that, on the average, Danube ports are still in early phase of digitalization and that such capital projects are yet to be planned.



**Table 12: Distribution of projects per category**

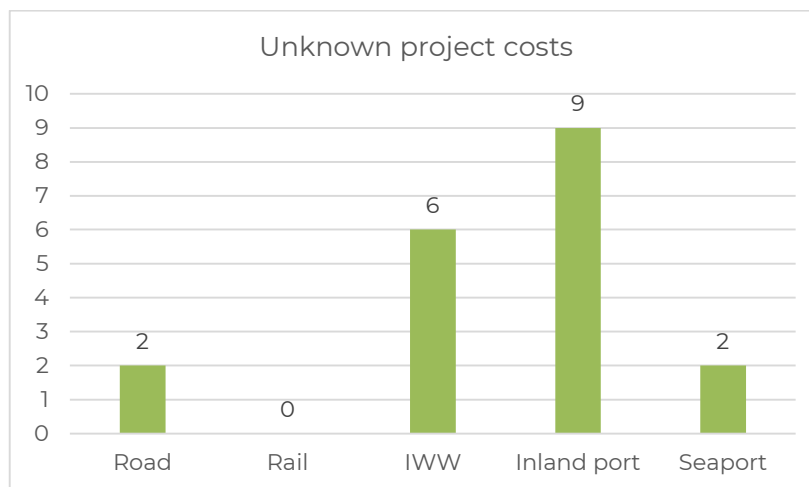
In terms of costs, projects significantly vary from pre-design studies worth less than 1 million EUR to capital infrastructure works in road and rail, amounting to more than 1-2 billion EUR. Projects worth less than half a million Euro are mostly projects in the domain of inland waterways and inland ports, whereas projects of more than 1 billion EUR are almost exclusively the projects in road and rail transport.



**Table 13: Project costs category**



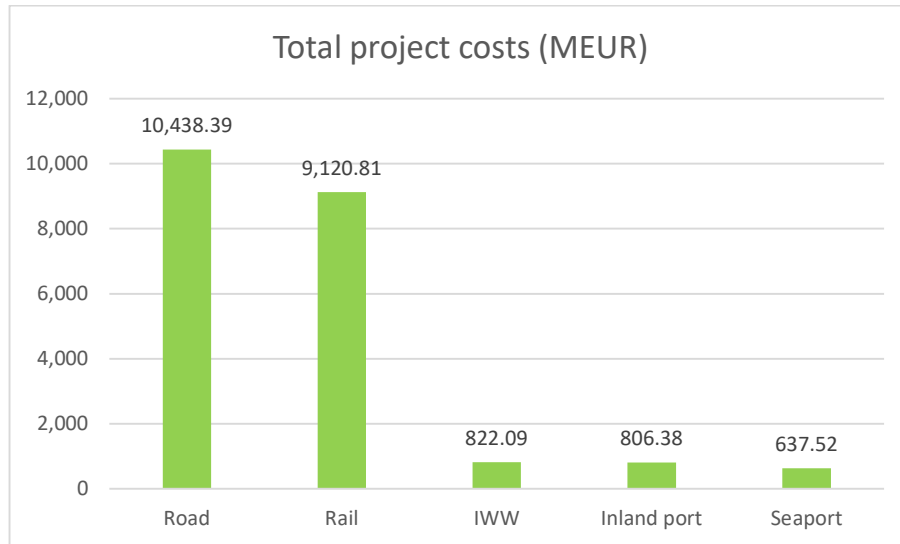
Unfortunately, there is a relatively large share of projects with unknown costs (Table 14), where this information could not be estimated by project partners or where such information was not available. There is an interesting correlation between the number of projects in inland ports, which are generally of the lowest value comparing to others modes, and the number of projects with unknown costs. The fact that the largest number of projects with unknown costs is within the domain of inland ports, where costs are comparatively lower than in other modes, may reveal a situation in which the projects in inland ports are the projects with the highest uncertainty of realization. This can also mean that the investment attractiveness and importance awareness for ports has significant room for improvement.



**Table 14: Projects with unknown costs in different modes**

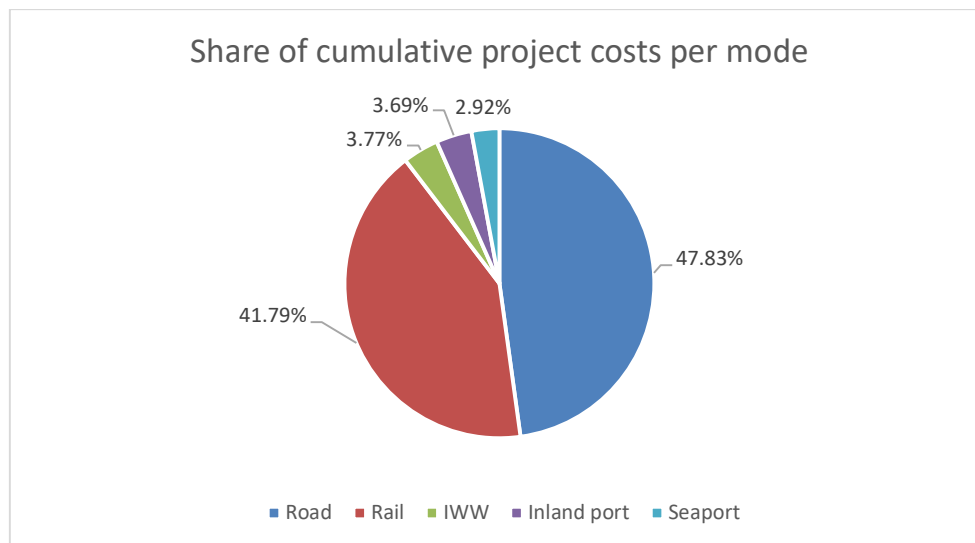
Not surprisingly, the projects with the highest costs are those in road transport, immediately followed by projects in rail transport. Projects with more than ten times lower costs are the so called “wet” projects, that is, the projects in the domain of inland waterways, inland ports and seaports. Generally, the costs of projects in seaports tend to be considerably higher than those in inland ports due to sheer size, but in this case only three seaports were analysed – Constanta, Reni and Izmail<sup>34</sup>.

<sup>34</sup> Although the ports of Reni and Izmail are usually classified as inland ports due to their position on the Danube, project partner (USPA) covering Ukraine classified these ports as seaports, being their roof administrative organization (port authority). For this reason, it has been accepted to treat these two ports as seaports in this report.



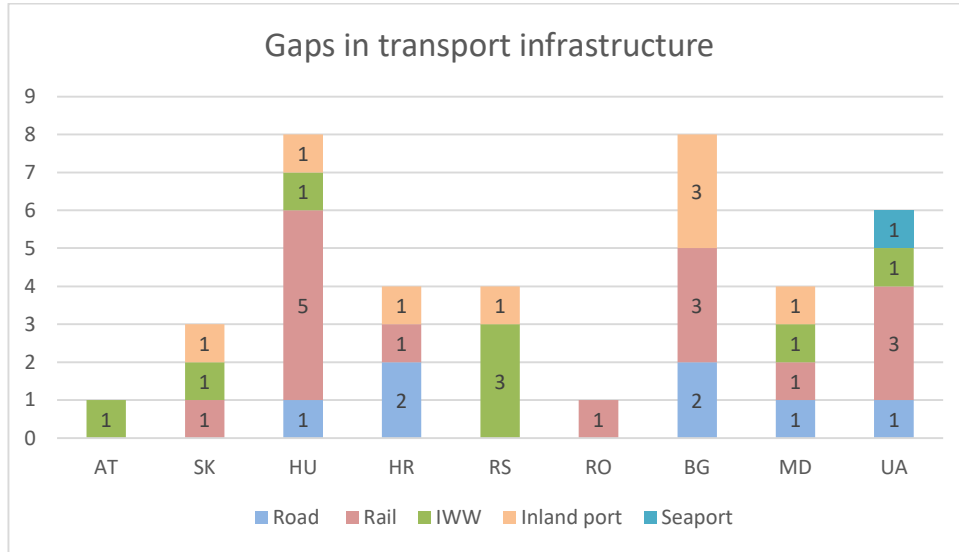
**Table 15: Total project costs per transport mode**

The total value of all identified projects reaches 21 billion EUR, whereas the largest share (almost 48%) belongs to projects in the road sector. The costs of projects in rail sector closely follows those in road sector and reach almost 42%. Project costs in the so called “wet” infrastructure (projects in inland waterways, inland ports and seaports) are significantly lower and all of them amount to barely 10%.



**Figure 35: Share of cumulative project costs per mode**

Apart from the identified on-going and planned projects of relevance for the Danube ports and their integration into multimodal transport chains, a significant number (40!) of transport infrastructure gaps has been identified and summarized in Table 16.



**Table 16: Gaps in transport infrastructure per country and transport mode**

The gaps that were identified are supposed to be embryos of future projects and that is why their inclusion into analysis is important. It needs to be noted that it is not always the rule that the country with the largest number of gaps has less developed transport infrastructure. It may also be that such countries performed a more detailed analysis of gaps in their transport infrastructure.

## References

## Annex I – Project list





Table with columns: ID, Project name, Mode, Project promoter or Authority in charge, Member States / Countries involved, Section or route, Project description, Project start date, Project end date, Total cost (Million EUR), Project category, Planned / On-going, Remarks.

ID	Project Name	Mode	Project promoter or Authority in charge	Member States / Countries involved	Section or route	Project description					Remarks	
						Short Project Description	Project start date	Project end date	Total costs (billions) (EUR)	Project category		Planned / On-going
0003	Danube-Bucharest Canal - Systematization of Arges and Danube-Argeș for navigation and other uses	WW	Administration of Navigable Canals (ANC)	RO	Danube - Bucharest Canal	Arges river embankments works, consolidation and protection of river banks, works to achieve hydro-mechanical lock with locks; earthworks related to river piers; required works to ensure floating over the river; Danube-Argeș river embankments works, consolidation and protection of river banks, works to achieve hydro-mechanical lock with locks; earthworks related to river piers; required works to ensure floating over the river; The Bucharest-Danube Canal - included in the OTM but is not part of the implementation Strategy until 2020	unknown	unknown	unknown	Connectivity and integration	Planned	
0004	Highway Săbiu - Curtea de Argeș - Filiași (Lot 1)	Road	CMAR (Former CNADNR)	RO	Săbiu - Bala	Lot 1: Săbiu - Curtea de Argeș - Filiași - km 0+000 - km 12+131.50 Lot 2: Filiași - Curtea de Argeș - Filiași - km 12+131.50 - km 14+000	04/2010	05/2013	146.90	Connectivity and integration	On-going	
0005	Highway Săbiu - Curtea de Argeș - Filiași (Lot 2)	Road	CMAR (Former CNADNR)	RO	Bala - Cornești	Section 2: CORNEȘTI - TÂMBULEA (km 44+000 - km 55+000)	01/2022	12/2025	993.32	Connectivity and integration	On-going	
0006	Highway Săbiu - Curtea de Argeș - Filiași (Lot 3)	Road	CMAR (Former CNADNR)	RO	Cornești - Tâmbulea	Section 3: TÂMBULEA - CURTEA DE ARGEȘ (km 55+000 - km 55+763)	01/2022	12/2025	1,594.21	Connectivity and integration	On-going	
0007	Highway Săbiu - Curtea de Argeș - Filiași (Lot 4)	Road	CMAR (Former CNADNR)	RO	Tâmbulea - Curtea de Argeș	Section 4: CURTEA DE ARGEȘ - FILIAȘI (km 55+763 - km 124+130)	06/2020	12/2025	486.71	Connectivity and integration	On-going	
0008	Highway Săbiu - Curtea de Argeș - Filiași (Lot 5)	Road	CMAR (Former CNADNR)	RO	Curtea de Argeș - Filiași	Section Lot 5: km 124+131 - km 174+202 - km 174+202 - km 174+202	06/2020	12/2025	416.13	Connectivity and integration	On-going	
0009	Highway Lugoj - Deva	Road	CMAR (Former CNADNR)	RO	Lugoj - Deva	Section Lot 2: km 174+202 - km 174+202 - km 174+202 - km 174+202	11/2013	12/2015	379.75	Connectivity and integration	On-going	
0010	Oravea (RO) - Maglaci - Cahul/Valea Vinului (Slo) - Lugoj - Lugoj (RO) - Lugoj (RO)	Road	CMAR (Former CNADNR)	RO	GALICIA MARE - CALAFAT	National route - modernization GALICIA MARE - CALAFAT (km 47+000 - km 84+000)	09/2012	06/2011	13.94	Connectivity and integration	On-going	Works finished in June 2021
0011	Highway Ploiești - Buzău	Road	CMAR (Former CNADNR)	RO	Ploiești - Buzău	Highway Ploiești - Buzău (km 0+000 - km 31+300) LOT 1: PLOIEȘTI - MĂGAREȘ (km 0+000 - km 15+400) LOT 2: MĂGAREȘ - PLOIEȘTI (km 15+400 - km 31+300) LOT 3: PLOIEȘTI - MĂGAREȘ (km 0+000 - km 15+400) LOT 4: MĂGAREȘ - PLOIEȘTI (km 15+400 - km 31+300)	01/2022	12/2025	279	Connectivity and integration	Planned	Feasibility study finished in 2020. Under tender for construction
0012	Highway Buzău - Păcoani	Road	CMAR (Former CNADNR)	RO	Buzău - Păcoani	Highway Buzău - Păcoani (km 0+000 - km 12+463) Highway Păcoani - Buzău (km 12+463 - km 12+463) Highway Buzău - Păcoani - Buzău (km 0+000 - km 12+463) Highway Păcoani - Buzău - Păcoani (km 12+463 - km 12+463) Highway Buzău - Păcoani - Buzău (km 0+000 - km 12+463) Highway Păcoani - Buzău - Păcoani (km 12+463 - km 12+463)	unknown	unknown	1044.305	Connectivity and integration	Planned	Feasibility study ongoing
0013	Expressway Păcoani - Sucavea - Siret	Road	CMAR (Former CNADNR)	RO	Păcoani - Sucavea - Siret	Expressway Păcoani - Sucavea - Siret (km 0+000 - km 40+000) Expressway Sucavea - Siret (km 40+000 - km 40+000)	unknown	unknown	532.42	Connectivity and integration	Planned	Feasibility study ongoing
0014	Expressway Buzău - Brăila	Road	CMAR (Former CNADNR)	RO	Buzău - Brăila	Expressway Buzău - Brăila (km 0+000 - km 89+000)	unknown	unknown	438.39	Connectivity and integration	Planned	Feasibility study ongoing
0015	Galat - Brăila	Road	CMAR (Former CNADNR)	RO	Galat - Brăila	Expressway Galat - Brăila (km 0+000 - km 11+000)	04/2021	05/2024	90.39	Connectivity and integration	On-going	Under tender for technical design and works
0106	Modernization/Rehabilitation of the railway line Caraculeni - Tronești - Așaf	Rail	Romanian National Railways Company "CFR" S.A.	RO	Caraculeni - Tronești - Așaf (162 km) Lot 1: Caraculeni - Tronești Lot 2: Tronești - Așaf Lot 3: Tronești - Așaf Lot 4: Așaf - Tronești	01/2022	12/2026	1,848.45	Connectivity and integration	Planned		
0017	Modernizing and rehabilitation of TEN-T corridor network on RO territory, sections km 614 - Guraani and Guraani - Sirena	Rail	Romanian National Railways Company "CFR" S.A.	RO	Guraani - Sirena	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2017	01/2023	2,071.00	Connectivity and integration	On-going	Financing from FOM 2014 - 2020
0108	Rehabilitation of Brașov-Sirena railway component of the Nine-Device Corridor, Section Brașov - Sighișoara (Ploaie - Așaf and Călea Sighișoara)	Rail	Romanian National Railways Company "CFR" S.A.	RO	Brașov - Sighișoara, subsection Așaf - Călea	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	11/2020	12/2024	451.28	Connectivity and integration	On-going	CFR financing
0109	Rehabilitation of Brașov-Sirena railway component of the Nine-Device Corridor, Section Brașov - Sighișoara (Ploaie - Așaf and Călea Sighișoara)	Rail	Romanian National Railways Company "CFR" S.A.	RO	Brașov - Sighișoara	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	03/2020	03/2024	488.49	Connectivity and integration	On-going	CFR financing
0110	Feasibility study for modernization of railway section Ploiești - Brașov according to Nine-Device Corridor parameters	Rail	Romanian National Railways Company "CFR" S.A.	RO	Brașov - Ploiești	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	08/2020	10/2022	3.95	Connectivity and integration	Planned	CFR financing
0111	Feasibility study for rehabilitation of Railway the Craiova-Cărbonești Corridor - Caraculeni (218 km)	Rail	Romanian National Railways Company "CFR" S.A.	RO	Craiova - Caraculeni	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	09/2018	12/2021	5.86	Connectivity and integration	On-going	CFR financing, project under approval of technical and economic indicators
0112	Modernization/Rehabilitation and Electrification of Craiova-Cărbonești railway section (107 km)	Rail	Romanian National Railways Company "CFR" S.A.	RO	Craiova - Cărbonești	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m - Implementation of ETCS Level 2 and GSM-R communication system	01/2023	01/2027	624.62	Connectivity and integration	Planned	Investment approved by Government Decision 684/2021
0113	Feasibility Study for "Modernization of the railway line on the section North-Bucharest - Jilava - North-Giurgu - North-Giurgu Border"	Rail	Romanian National Railways Company "CFR" S.A.	RO	București - Giurgu/Giurgu Border	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	10/2017	01/2021	1.95	Connectivity and integration	On-going	Financing from FOM 2014 - 2020
0114	Modernization of the Bucharest - Jilava - North-Giurgu - North-Giurgu border railway line. Lot 1: "Resurfacing of the railway tracks on the bridge over the Jilava river, between Jilava and Cărbonești"	Rail	Romanian National Railways Company "CFR" S.A.	RO	bridge over the Argeș river, between Vidra and Comana	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2020	12/2023	134.69	Connectivity and integration	On-going	CFR financing, CEF 2014-RO TMC 1248-5
0115	Feasibility study for the modernization of railway line within the Port of Constanta	Rail	Romanian National Railways Company "CFR" S.A.	RO	Port of Constanta	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	09/2019	04/2022	2.13	Connectivity and integration	Planned	CFR financing, CEF 2014-RO TMC 1248-5
0116	Construction of a transshipment complex for grain and packaged cargo	Support	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	11/2017	12/2025	0.12	Capacity improvement	On-going	
0117	Construction of a complex of temporary storage facilities	Rail	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2025	4.66	Capacity improvement	On-going	
0118	Reconstruction of railway track No. 10 to 10.3	Rail	SE "USPA"	UA	Sea port of Ismail	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2021	12/2023	0.19	Connectivity and integration	On-going	
0119	Road State Agency "Ukrainian"	Road	SE "USPA"	UA	4.1 km of M-15 Odessa-Pereval road	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	05/2021	03/2023	0.01	Traffic management and digitalization	On-going	
0120	Ferry crossing Orkivka-Ishakha	Road	Private-public partnership project, built by private investors and owned by the State of Ukraine	UA	Orkivka (Ukraine) - Ishakha (Romania)	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	03/2017	06/2023	0.66	Traffic management and digitalization	On-going	
0121	Construction of transport and logistics infrastructure facilities for handling containers and the organization of intermodal transport (LOT 1) (M 100, km 10.2)	Support	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2028	0.91	Connectivity and integration	Planned	
0122	Construction of a transshipment complex for grain and containerized cargo	Support	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2025	1.56	Capacity improvement	Planned	
0123	Construction of temporary warehouses	Support	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2025	1.56	Capacity improvement	Planned	
0124	Construction of a grain complex for grain processing	Support	SE "USPA"	UA	Sea port of Bani	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2025	0.20	Capacity improvement	Planned	
0125	Construction of the installed complex of the Ismail-Turkmenistan crossing	Support	SE "USPA"	UA	Sea port of Ismail	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2023	12/2028	unknown	Connectivity and integration	On-going	
0126	Construction of a complex of facilities for transshipment and storage of general and liquid cargo on the 85 km section of the Danube	Support	SE "USPA"	UA	Sea port of Ismail	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2022	12/2030	0.91	Connectivity and integration	Planned	
0127	Construction of a complex for the processing of mineral resources at the 80 km section of the Danube (LOT 1) (M 100, km 10.2)	Support	SE "USPA"	UA	Sea port of Ismail	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	unknown	12/2030	0.13	Connectivity and integration	Planned	
0128	Construction of a modern marina for small boats	Support	SE "USPA"	UA	Sea port of Ismail	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2021	12/2023	2.20	Connectivity and integration	Planned	
0129	Full development of Deep Water Navigable Channel "Danube River - Black Sea in the Ukrainian part of the delta", 2nd phase	WW	SE "USPA"	UA	The total length of the deep-water channel Danube - Black Sea - 173.36 km	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	04/2020	unknown	17.11	Traffic management and digitalization	On-going	
0130	Construction of the M3 road, bypassing Cornil, vector km 0 + 000 - km 10 + 000	Road	Administrația de Stat a Drumurilor	MD	Cornil	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	02/2019	01/2022	29.50	Capacity improvement	On-going	
0131	Construction of the M3 road, bypassing Cornil, vector km 0 + 000 - km 10 + 000	Road	Administrația de Stat a Drumurilor	MD	Favarișeni-Cornil	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	02/2019	01/2022	29.90	Connectivity and integration	On-going	
0132	Rehabilitation of the M3 road Chisinau - Giurgiulești, vector km 0 + 000 - km 170 + 200 and km 170 + 200 - km 190 + 750	Road	Administrația de Stat a Drumurilor	MD	Chisinau - Giurgiulești	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	03/2019	01/2022	29.90	Connectivity and integration	On-going	
0133	M3 bypass Cornil (construction)	Road	Administrația de Stat a Drumurilor	MD	Giurgiulești-Cornil	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	12/2021	12/2024	11.00	Connectivity and integration	Planned	
0134	Construction of the M3 road, bypassing Cornil, vector km 0 + 000 - km 10 + 000	Road	Administrația de Stat a Drumurilor	MD	Stolacii Mare	1. increasing the maximum designed speed from 120 km/hour to 160 km/hour for passenger trains and 120 km/hour for freight trains; 2. ensuring full interoperability through the implementation of technical specifications for interoperability and in particular the following standards defined in the TEN-T Regulation - Adm. level: 22.1.1 - - Loading gauge: C - Length of station lines: -70m	05/2019	05/2022	18.28	Capacity improvement	On-going	

Database ID No.	Project name			Member States / Countries involved	Section or route	Project description				Project start date		Project end date	Total cost (billions) (M EUR)	Project category	Planned / On-going	Remarks
	Mode	Project promoter or Authority in charge				Short Project Description										
0115	Multipurpose berth construction	Inland port	ES División Logística SA / Gargales International Free Port	MD	Gargales	The port plans to construct a new universal berth allowing for berthing of both maritime and river vessels with a draft of up to 7 m. This berth will be connected to railway. The realisation of the essential project will raise the transport capacity and strengthen the port as multi-modal BREEZ hub	01/2022	11/2023	5.00	Capacity improvement	Planned					